

2.Tabulated Data on Density - Rings Attached To Carbon Chain

2.1 Saturated Compounds with Alicyclic Rings

2.1.1 Saturated Compounds with Alicyclic Rings, C₇ - C₁₉

Dicyclopropylmethane [5685-47-2] C₇H₁₂ MW =96.17 1

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|--------|
| 293.15 | 787.8 ± 0.6 | 56-ano |

Dicyclopentylmethane [2619-34-3] C₁₁H₂₀ MW =152.28 2

Table 1. Experimental and recommended values with uncertainties.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|--------------|
| 293.15 | 871.0 ± 2.0 | 36-nen/cio-1 |
| 293.15 | 867.4 ± 2.0 | 61-koz/sku |
| 293.15 | 869.2 ± 2.4 | Recommended |

Cyclohexylcyclopentylmethane [4431-89-4] C₁₂H₂₂ MW =166.31 3

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|--------------|
| 292.15 | 878.9 ± 3.0 | 31-zel/tit |
| 296.15 | 872.1 ± 3.0 | 36-den-1 |
| 293.15 | 868.1 ± 6.0 | 36-nen/cio-1 |

1,2-Dicyclopentylethane [4461-16-9] C₁₂H₂₂ MW =166.31 4

Table 1. Experimental and recommended values with uncertainties.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|--------------------------|
| 295.15 | 858.3 ± 3.0 | 33-zel/mic ¹⁾ |
| 293.15 | 863.3 ± 2.0 | 37-pin/mar |
| 293.15 | 862.0 ± 2.0 | 57-pla/sta-1 |
| 293.15 | 862.6 ± 2.1 | Recommended |

¹⁾ Not included in calculation of recommended value.

1-Cyclohexyl-2-cyclopentylethane [500030-29-5] C₁₃H₂₄ MW =180.33 5

Table 1. Experimental values with uncertainties.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 294.15 | 878.0 ± 2.0 | 36-den-1 |
| 293.15 | 874.6 ± 2.0 | 36-pin/nes |

Cyclohexyl(2-methylcyclopentyl)-methane [2883-06-9] C₁₃H₂₄ MW =180.33 6

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--------------|
| 293.15 | 871.2 ± 2.0 | 36-nen/cio-1 |

Dicyclohexylmethane [3178-23-2] C₁₃H₂₄ MW = 180.33 7

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction):

$\sigma_{\text{c,w}} = 4.5251 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{\text{c,uw}} = 2.0152 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

| Coefficient | $T = 273.15 \text{ to } 372.05 \text{ K}$ $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|--|
| A | $1.08193 \cdot 10^3$ |
| B | $-7.01275 \cdot 10^{-1}$ |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|----------------------|--|--|--------------------------|----------------------|--|--|-------------------------|
| 292.85 | 876.50 ± 1.00 | -0.06 | 03-eyk(◆) | 333.15 | 848.80 ± 0.70 | 0.50 | 58-ano(○) |
| 352.65 | 834.20 ± 1.00 | -0.42 | 03-eyk(◆) | 372.04 | 821.60 ± 0.70 | 0.58 | 58-ano(○) |
| 293.15 | 875.00 ± 2.00 | -1.35 | 26-zel/tit(✕) | 310.93 | 863.00 ± 1.00 | -0.88 | 63-gud/cam(▽) |
| 293.15 | 874.20 ± 2.00 | -2.15 | 27-ipa/dol(✕) | 273.15 | 890.70 ± 0.50 | 0.33 | 68-ano-1(Δ) |
| 293.15 | 883.60 ± 5.00 | 7.25 | 27-ipa/dol ¹⁾ | 293.15 | 876.80 ± 0.50 | 0.45 | 68-ano-1(Δ) |
| 293.15 | 876.42 ± 0.50 | 0.07 | 51-ser/wis(□) | 310.95 | 864.40 ± 0.50 | 0.54 | 68-ano-1(Δ) |
| 273.15 | 890.70 ± 0.50 | 0.33 | 58-ano(○) | 333.15 | 848.80 ± 0.70 | 0.50 | 68-ano-1(Δ) |
| 293.15 | 876.80 ± 0.50 | 0.45 | 58-ano(○) | 372.05 | 821.60 ± 0.70 | 0.58 | 68-ano-1(Δ) |
| 310.93 | 864.40 ± 0.50 | 0.52 | 58-ano(○) | | | | |

¹⁾ Not included in Fig. 1.

Further references: [12-sab/mur, 28-ada/mar, 55-col-1].

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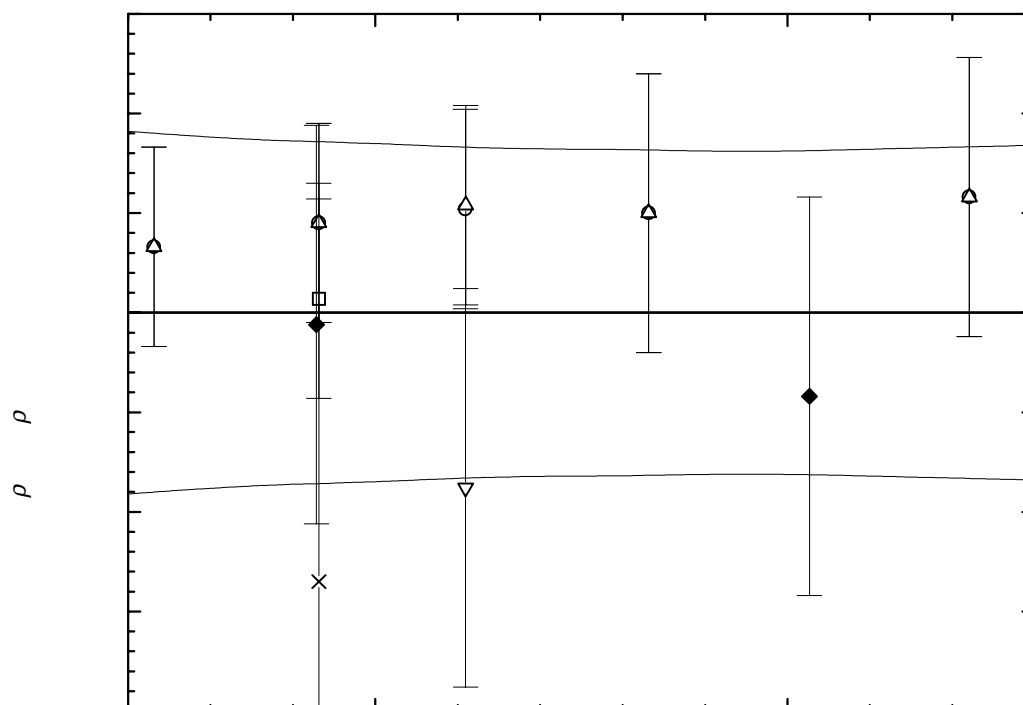


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

Table 3. Recommended values (fit to the reliable experimental values according to the equations $\rho = A + BT + CT^2 + DT^3 + \dots$ or $\rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$).

| $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|----------------------|--|----------------------|--|----------------------|--|
| 270.00 | 892.58 ± 0.91 | 300.00 | 871.54 ± 0.85 | 350.00 | 836.48 ± 0.81 |
| 280.00 | 885.57 ± 0.88 | 310.00 | 864.53 ± 0.83 | 360.00 | 829.47 ± 0.82 |
| 290.00 | 878.56 ± 0.86 | 320.00 | 857.52 ± 0.82 | 370.00 | 822.45 ± 0.83 |
| 293.15 | 876.35 ± 0.86 | 330.00 | 850.51 ± 0.82 | 380.00 | 815.44 ± 0.84 |
| 298.15 | 872.84 ± 0.85 | 340.00 | 843.49 ± 0.81 | | |

1-Cyclohexyl-3-cyclopentylpropane [2883-07-0] C₁₄H₂₆ MW = 194.36 8

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{c,w} = 9.7201 \cdot 10^{-2}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 3.4366 \cdot 10^{-2}$ (combined temperature ranges, unweighted).

| Coefficient | T = 273.15 to 372.05 K $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|---|
| A | $1.04691 \cdot 10^3$ |
| B | $-5.54369 \cdot 10^{-1}$ |
| C | $-1.95241 \cdot 10^{-4}$ |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|---------------|--|--|-------------------------|---------------|--|--|-------------------------|
| 273.15 | 881.00 ± 0.50 | 0.08 | 47-sch(□) | 273.15 | 881.00 ± 0.50 | 0.08 | 68-ano-1(○) |
| 293.15 | 867.50 ± 0.50 | -0.12 | 47-sch(□) | 293.15 | 867.50 ± 0.50 | -0.12 | 68-ano-1(○) |
| 310.93 | 855.60 ± 0.50 | -0.07 | 47-sch(□) | 310.95 | 855.60 ± 0.50 | -0.06 | 68-ano-1(○) |
| 333.15 | 840.70 ± 0.50 | 0.14 | 47-sch(□) | 333.15 | 840.70 ± 0.50 | 0.14 | 68-ano-1(○) |
| 372.04 | 813.60 ± 0.50 | -0.04 | 47-sch(□) | 372.05 | 813.60 ± 0.50 | -0.04 | 68-ano-1(○) |

Further references: [36-den-1].

Table 3. Recommended values (fit to the reliable experimental values according to the equations $\rho = A + BT + CT^2 + DT^3 + \dots$ or $\rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$).

| $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|---------------|--|---------------|--|---------------|--|
| 270.00 | 883.00 ± 0.60 | 300.00 | 863.03 ± 0.52 | 350.00 | 828.97 ± 0.53 |
| 280.00 | 876.38 ± 0.54 | 310.00 | 856.30 ± 0.52 | 360.00 | 822.04 ± 0.54 |
| 290.00 | 869.73 ± 0.52 | 320.00 | 849.52 ± 0.53 | 370.00 | 815.07 ± 0.58 |
| 293.15 | 867.62 ± 0.51 | 330.00 | 842.71 ± 0.53 | 380.00 | 808.06 ± 0.65 |
| 298.15 | 864.27 ± 0.51 | 340.00 | 835.86 ± 0.53 | | |

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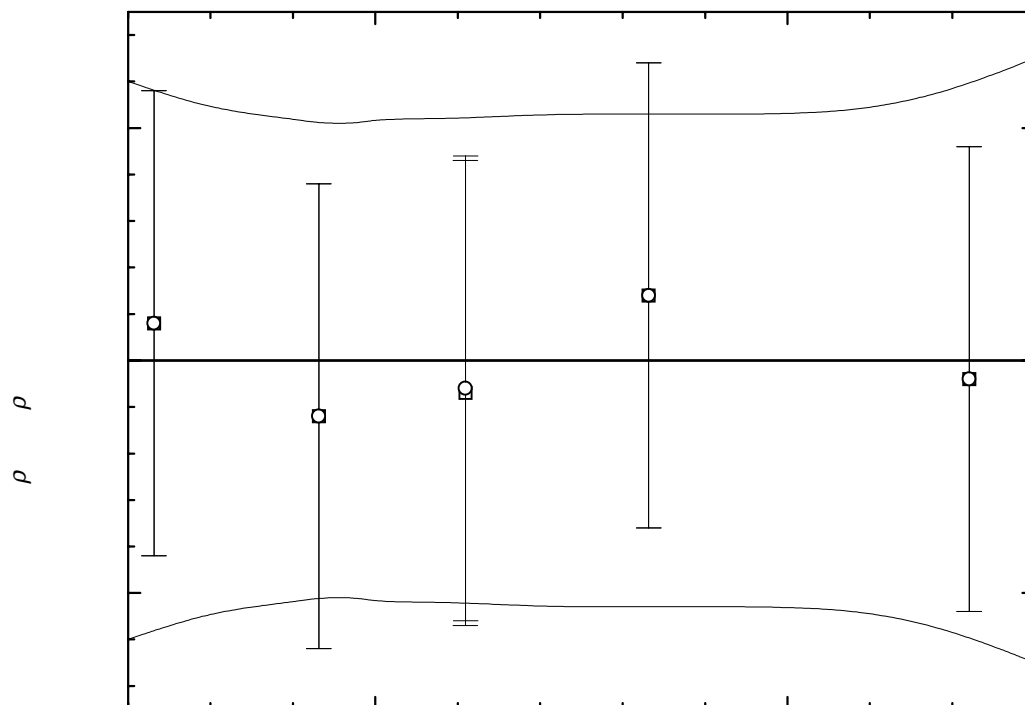


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

Cyclohexyl(2-methylcyclohexyl)methane [500039-53-2] C₁₄H₂₆ MW =194.36 9
(low-boiling form)

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 293.15 | 874.6 ± 1.0 | 54-lam/wis |

Cyclohexyl(2-methylcyclohexyl)methane [500039-54-3] C₁₄H₂₆ MW =194.36 10
(high-boiling form)

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 293.15 | 884.9 ± 1.0 | 54-lam/wis |

Cyclohexyl(2-methylcyclohexyl)methane [66826-96-8] C₁₄H₂₆ MW =194.36 11

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 310.93 | 874.6 ± 1.0 | 63-gud/cam |

Cyclohexyl(3-methylcyclohexyl)methane [500039-52-1] C₁₄H₂₆ MW =194.36 12
(high-boiling form)

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 293.15 | 875.7 ± 1.0 | 54-lam/wis |

Cyclohexyl(4-methylcyclohexyl)methane [700002-32-0] C₁₄H₂₆ MW =194.36 13
(low boiling isomer)

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 293.15 | 864.1 ± 1.0 | 54-lam/wis |

Cyclohexyl(4-methylcyclohexyl)methane [500039-41-0] C₁₄H₂₆ MW =194.36 14
(high-boiling isomer)

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 293.15 | 876.0 ± 1.0 | 54-lam/wis |

1,1-Dicyclohexylethane [2319-61-1] C₁₄H₂₆ MW = 194.36 15

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{\text{c,w}} = 1.6055 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{\text{c,uw}} = 8.1478 \cdot 10^{-2}$ (combined temperature ranges, unweighted).

| Coefficient | T = 273.15 to 372.05 K $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|---|
| A | $1.09442 \cdot 10^3$ |
| B | $-6.86887 \cdot 10^{-1}$ |

cont.

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|----------------------|--|--|-------------------------|----------------------|--|--|-------------------------|
| 293.15 | 893.07 ± 0.60 | 0.01 | 51-ser/wis(\square) | 310.95 | 880.80 ± 0.50 | -0.04 | 68-ano-1(\circ) |
| 310.93 | 880.40 ± 0.70 | -0.45 | 63-gud/cam(Δ) | 333.15 | 865.80 ± 0.50 | 0.21 | 68-ano-1(\circ) |
| 273.15 | 906.90 ± 0.50 | 0.10 | 68-ano-1(\circ) | 372.05 | 838.90 ± 0.50 | 0.03 | 68-ano-1(\circ) |
| 293.15 | 893.20 ± 0.50 | 0.14 | 68-ano-1(\circ) | | | | |

Further references: [12-sab/mur, 15-sab/mur, 28-ada/mar, 36-pin/nes].

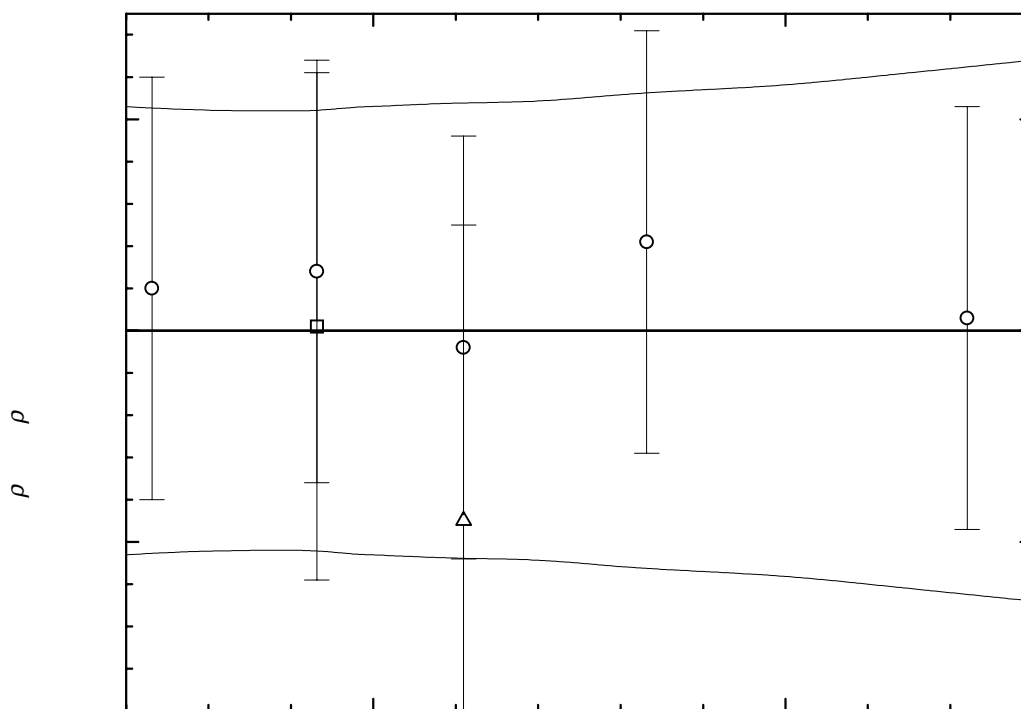


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cont.

1,1-Dicyclohexylethane (cont.)**Table 3.** Recommended values (fit to the reliable experimental values according to the equations

$$\rho = A + BT + CT^2 + DT^3 + \dots \text{ or } \rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$$

| $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|----------------------|--|----------------------|--|----------------------|--|
| 270.00 | 908.96 ± 0.53 | 300.00 | 888.36 ± 0.53 | 350.00 | 854.01 ± 0.58 |
| 280.00 | 902.10 ± 0.52 | 310.00 | 881.49 ± 0.54 | 360.00 | 847.14 ± 0.60 |
| 290.00 | 895.23 ± 0.52 | 320.00 | 874.62 ± 0.54 | 370.00 | 840.28 ± 0.62 |
| 293.15 | 893.06 ± 0.52 | 330.00 | 867.75 ± 0.56 | 380.00 | 833.41 ± 0.64 |
| 298.15 | 889.63 ± 0.53 | 340.00 | 860.88 ± 0.57 | | |

1,2-Dicyclohexylethane**[3321-50-4]****C₁₄H₂₆****MW = 194.36****16****Table 1.** Coefficients of the polynomial expansion equation. Standard deviations (see introduction):

$\sigma_{c,w} = 3.4473 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 1.7265 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

| Coefficient | $T = 273.15 \text{ to } 372.05 \text{ K}$ $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|--|
| <i>A</i> | $1.07554 \cdot 10^3$ |
| <i>B</i> | $-6.86575 \cdot 10^{-1}$ |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|----------------------|--|--|-------------------------|----------------------|--|--|-------------------------|
| 291.15 | 877.40 ± 2.00 | 1.75 | 28-ada/mar(✕) | 293.15 | 874.00 ± 0.50 | -0.27 | 59-dix-1(Δ) |
| 293.15 | 875.72 ± 1.50 | 1.45 | 37-zal/sch(✕) | 310.93 | 861.60 ± 0.50 | -0.47 | 63-gud/cam(○) |
| 273.15 | 888.00 ± 0.50 | -0.01 | 47-sch(∇) | 273.15 | 888.00 ± 0.50 | -0.01 | 68-ano-1(◆) |
| 293.15 | 874.00 ± 0.50 | -0.27 | 47-sch(∇) | 293.15 | 874.00 ± 0.50 | -0.27 | 68-ano-1(◆) |
| 310.93 | 861.60 ± 0.50 | -0.47 | 47-sch(∇) | 310.95 | 861.60 ± 0.50 | -0.45 | 68-ano-1(◆) |
| 333.15 | 846.60 ± 0.50 | -0.21 | 47-sch(∇) | 333.15 | 846.60 ± 0.50 | -0.21 | 68-ano-1(◆) |
| 372.04 | 820.00 ± 0.70 | -0.11 | 47-sch(∇) | 372.05 | 820.00 ± 0.70 | -0.10 | 68-ano-1(◆) |
| 293.15 | 873.93 ± 0.40 | -0.34 | 51-ser/wis(□) | | | | |

Further references: [12-sab/mur-2, 15-sab/mur, 31-buc/ide, 36-pin/nes, 38-eva-2, 47-tuo/guy].

cont.

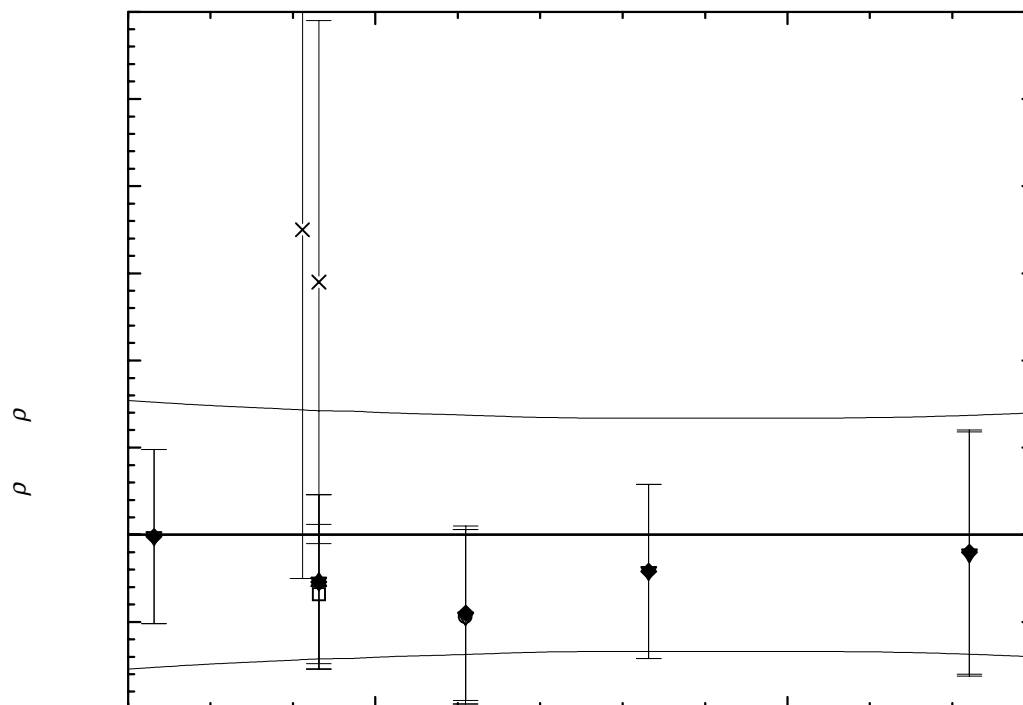


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

Table 3. Recommended values (fit to the reliable experimental values according to the equations $\rho = A + BT + CT^2 + DT^3 + \dots$ or $\rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$).

| $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|----------------------|--|----------------------|--|----------------------|--|
| 270.00 | 890.17 ± 0.77 | 300.00 | 869.57 ± 0.70 | 350.00 | 835.24 ± 0.67 |
| 280.00 | 883.30 ± 0.74 | 310.00 | 862.71 ± 0.69 | 360.00 | 828.38 ± 0.67 |
| 290.00 | 876.44 ± 0.72 | 320.00 | 855.84 ± 0.67 | 370.00 | 821.51 ± 0.68 |
| 293.15 | 874.27 ± 0.71 | 330.00 | 848.97 ± 0.67 | 380.00 | 814.64 ± 0.70 |
| 298.15 | 870.84 ± 0.71 | 340.00 | 842.11 ± 0.67 | | |

1,4-Dicyclopentylbutane

[2980-70-3]

C₁₄H₂₆

MW =194.36

17

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 293.15 | 860.6 ± 1.0 | 57-pla/sta |

Cyclohexyl(1,2-dimethylcyclohexyl)-methane [500039-68-9] C₁₅H₂₈ MW =208.39 18

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 293.15 | 877.0 ± 2.0 | 66-che/lub |

Cyclohexyl(2-ethylcyclohexyl)methane (low-boiling isomer) [500019-44-3] C₁₅H₂₈ MW =208.39 19

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--------------|
| 293.15 | 881.4 ± 0.3 | 54-lam/wis-1 |

Cyclohexyl(2-ethylcyclohexyl)methane (high-boiling isomer) [500019-43-2] C₁₅H₂₈ MW =208.39 20

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--------------|
| 293.15 | 885.6 ± 0.3 | 54-lam/wis-1 |

Cyclohexyl(3-ethylcyclohexyl)methane (high-boiling isomer) [500019-40-9] C₁₅H₂₈ MW =208.39 21

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--------------|
| 293.15 | 870.4 ± 0.3 | 54-lam/wis-1 |

Cyclohexyl(4-ethylcyclohexyl)methane (low-boiling isomer) [500019-41-0] C₁₅H₂₈ MW =208.39 22

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--------------|
| 293.15 | 867.5 ± 0.3 | 54-lam/wis-1 |

Cyclohexyl(4-ethylcyclohexyl)methane (high-boiling isomer) [500019-42-1] C₁₅H₂₈ MW =208.39 23

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--------------|
| 293.15 | 877.7 ± 0.3 | 54-lam/wis-1 |

1-Cyclohexyl-3-(2-methylcyclopentyl)-propane [500040-35-7] C₁₅H₂₈ MW =208.39 24

Table 1. Experimental value with uncertainty.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ kg · m ⁻³ | Ref. |
|----------|--|--------|
| 293.15 | 863.9 ± 1.5 | 48-den |

1,1-Dicyclohexylpropane [54934-91-7] C₁₅H₂₈ MW =208.39 25

Table 1. Fit with estimated B coefficient for 3 accepted points. Deviation $\sigma_w = 0.961$.

| Coefficient | $\rho = A + BT$ |
|-------------|-----------------|
| A | 1088.93 |
| B | -0.670 |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ kg · m ⁻³ | $\rho_{\text{exp}} - \rho_{\text{calc}}$ kg · m ⁻³ | Ref. |
|----------|--|--|--------------------------|
| 273.15 | 903.8 ± 3.0 | -2.12 | 15-sab/mur |
| 296.15 | 888.5 ± 3.0 | -1.96 | 15-sab/mur |
| 293.15 | 902.3 ± 8.0 | 9.78 | 47-tuo/guy ¹⁾ |
| 293.15 | 893.0 ± 1.0 | 0.45 | 51-ser/wis |

¹⁾ Not included in calculation of linear coefficients.

Table 3. Recommended values.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ kg · m ⁻³ |
|----------|--|
| 270.00 | 908.0 ± 2.8 |
| 280.00 | 901.3 ± 2.2 |
| 290.00 | 894.6 ± 1.8 |
| 293.15 | 892.5 ± 1.8 |
| 298.15 | 889.2 ± 1.9 |

1,2-Dicyclohexylpropane [41851-34-7] C₁₅H₂₈ MW =208.39 26

Table 1. Experimental and recommended values with uncertainties.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ kg · m ⁻³ | Ref. | T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ kg · m ⁻³ | Ref. |
|----------|--|--------------------------|----------|--|--------------------------|
| 273.15 | 888.9 ± 6.0 | 15-sab/mur ¹⁾ | 293.15 | 881.7 ± 0.6 | 51-ser/wis-2 |
| 294.15 | 872.4 ± 6.0 | 15-sab/mur ¹⁾ | 310.93 | 876.0 ± 6.0 | 63-gud/cam ¹⁾ |
| 293.15 | 881.9 ± 1.0 | 47-tuo/guy | 293.15 | 881.7 ± 0.6 | Recommended |
| 293.15 | 881.7 ± 0.6 | 51-ser/wis | | | |

¹⁾ Not included in calculation of recommended value.

1,3-Dicyclohexylpropane**[3178-24-3]****C₁₅H₂₈****MW =208.39****27****Table 1.** Fit with estimated *B* coefficient for 5 accepted points. Deviation $\sigma_w = 0.327$.

| Coefficient | $\rho = A + BT$ |
|-------------|-----------------|
| <i>A</i> | 1099.89 |
| <i>B</i> | -0.780 |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. | $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|--|------------------------|---------------|--|--|--------------------------|
| 297.15 | 872.8 ± 4.0 | 4.73 | 12-fre-1 ¹⁾ | 294.15 | 870.0 ± 2.0 | -0.49 | 15-sab/mur |
| 273.15 | 887.3 ± 2.0 | 0.43 | 12-sab/mur-1 | 293.15 | 874.0 ± 3.0 | 2.77 | 47-tuo/guy ¹⁾ |
| 294.15 | 870.0 ± 2.0 | -0.49 | 12-sab/mur-1 | 293.15 | 871.3 ± 1.0 | 0.03 | 51-ser/wis |
| 273.15 | 887.3 ± 2.0 | 0.43 | 15-sab/mur | | | | |

¹⁾ Not included in calculation of linear coefficients.**Table 3.** Recommended values.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|---------------|--|
| 270.00 | 889.3 ± 2.2 |
| 280.00 | 881.5 ± 1.5 |
| 290.00 | 873.7 ± 1.2 |
| 293.15 | 871.2 ± 1.3 |
| 298.15 | 867.3 ± 1.5 |

2,2-Dicyclohexylpropane**[54934-90-6]****C₁₅H₂₈****MW =208.39****28****Table 1.** Experimental and recommended values with uncertainties.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|--------------------------|
| 296.15 | 900.0 ± 2.0 | 15-sab/mur ¹⁾ |
| 293.15 | 906.7 ± 1.0 | 51-ser/wis |
| 293.15 | 906.7 ± 1.0 | 51-ser/wis-2 |
| 293.15 | 906.7 ± 1.0 | Recommended |

¹⁾ Not included in calculation of recommended value.**1,5-Dicyclopentylpentane****[500032-96-2]****C₁₅H₂₈****MW =208.39****29****Table 1.** Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 293.15 | 860.4 ± 1.0 | 57-pla/sta |

Tricyclopentylmethane**[3752-92-9]****C₁₆H₂₈****MW = 220.40****30**

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction):

$\sigma_{c,w} = 3.7509 \cdot 10^{-2}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 1.2581 \cdot 10^{-2}$ (combined temperature ranges, unweighted).

| Coefficient | T = 273.15 to 372.05 K $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|---|
| A | $1.13278 \cdot 10^3$ |
| B | $-6.69140 \cdot 10^{-1}$ |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|---------------|--|--|-------------------------|---------------|--|--|-------------------------|
| 273.15 | 950.00 ± 1.00 | -0.00 | 68-ano-1(□) | 333.15 | 909.90 ± 1.00 | 0.05 | 68-ano-1(□) |
| 293.15 | 936.60 ± 1.00 | -0.02 | 68-ano-1(□) | 372.05 | 883.80 ± 1.00 | -0.02 | 68-ano-1(□) |
| 310.95 | 924.70 ± 1.00 | -0.01 | 68-ano-1(□) | | | | |

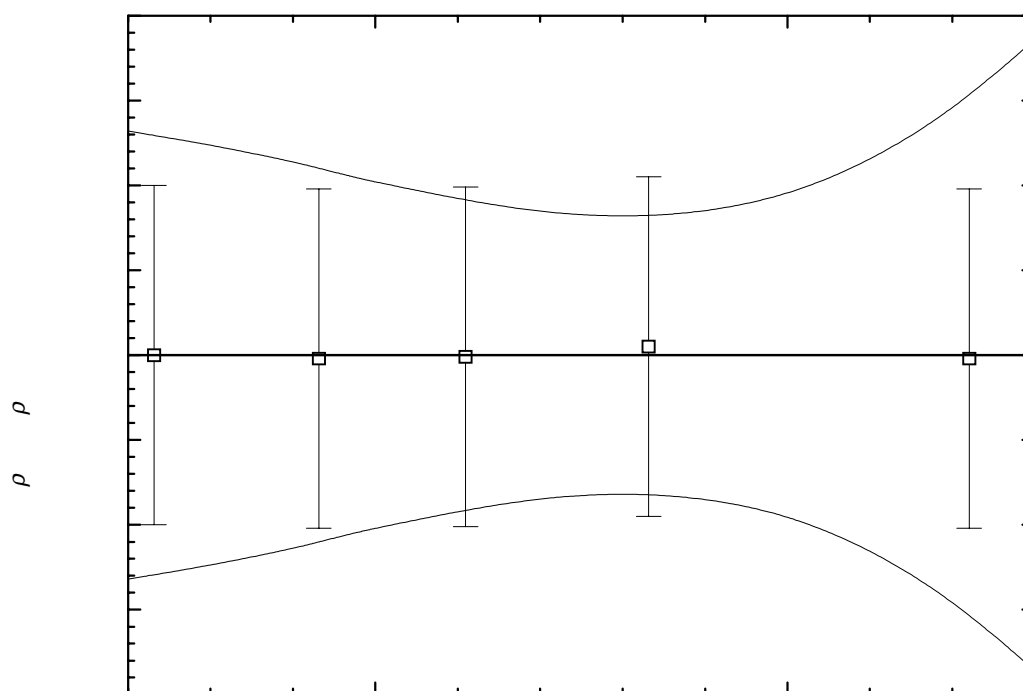


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)
cont.

Tricyclopentylmethane (cont.)**Table 3.** Recommended values (fit to the reliable experimental values according to the equations

$$\rho = A + BT + CT^2 + DT^3 + \dots \text{ or } \rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$$

| $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|----------------------|--|----------------------|--|----------------------|--|
| 270.00 | 952.11 ± 1.32 | 300.00 | 932.03 ± 1.02 | 350.00 | 898.58 ± 0.94 |
| 280.00 | 945.42 ± 1.24 | 310.00 | 925.34 ± 0.92 | 360.00 | 891.89 ± 1.14 |
| 290.00 | 938.73 ± 1.14 | 320.00 | 918.65 ± 0.84 | 370.00 | 885.19 ± 1.44 |
| 293.15 | 936.62 ± 1.10 | 330.00 | 911.96 ± 0.81 | 380.00 | 878.50 ± 1.86 |
| 298.15 | 933.27 ± 1.04 | 340.00 | 905.27 ± 0.84 | | |

1,2-Bis(1-ethylcyclopentyl)ethane**[500040-15-3]****C₁₆H₃₀****MW =222.41****31****Table 1.** Fit with estimated *B* coefficient for 2 accepted points. Deviation $\sigma_w = 0.050$.

| Coefficient | $\rho = A + BT$ |
|-------------|-----------------|
| <i>A</i> | 1081.39 |
| <i>B</i> | -0.680 |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--|------------|
| 293.15 | 882.0 ± 1.0 | -0.05 | 52-bir/gri |
| 298.15 | 878.7 ± 1.0 | 0.05 | 52-bir/gri |

Table 3. Recommended values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|----------------------|--|
| 290.00 | 884.2 ± 1.1 |
| 293.15 | 882.1 ± 0.9 |
| 298.15 | 878.7 ± 0.9 |

Cyclohexyl-[4-(1-methylethyl)cyclohexyl]-methane, (low-boiling isomer)**[500039-04-3]****C₁₆H₃₀****MW =222.41****32****Table 1.** Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--------------|
| 293.15 | 878.4 ± 0.5 | 54-lam/wis-2 |

Cyclohexyl-[4-(1-methylethyl)cyclohexyl]-methane (high-boiling isomer) **[500039-05-4]** **C₁₆H₃₀** **MW =222.41** **33**

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--------------|
| 293.15 | 870.8 ± 0.5 | 54-lam/wis-2 |

1,1-Dicyclohexylbutane **[54890-00-5]** **C₁₆H₃₀** **MW =222.41** **34**

Table 1. Experimental and recommended values with uncertainties.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 273.15 | 892.0 ± 6.0 | 15-sab/mur |
| 289.15 | 884.0 ± 6.0 | 15-sab/mur |
| 293.15 | 890.1 ± 1.0 | 52-ser/wis |

1,2-Dicyclohexylbutane **[54890-01-6]** **C₁₆H₃₀** **MW =222.41** **35**

Table 1. Experimental values with uncertainties.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 273.15 | 910.3 ± 10.0 | 15-sab/mur |
| 291.15 | 908.3 ± 2.0 | 15-sab/mur |
| 293.15 | 914.6 ± 3.0 | 47-tuo/guy |

1,3-Dicyclohexylbutane **[41851-35-8]** **C₁₆H₃₀** **MW =222.41** **36**

Table 1. Experimental and recommended values with uncertainties.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--------------------------|
| 293.15 | 879.3 ± 1.0 | 39-gro/wac |
| 293.15 | 880.1 ± 1.0 | 52-ser/wis |
| 310.93 | 871.5 ± 3.0 | 63-gud/cam ¹⁾ |
| 293.15 | 879.7 ± 1.0 | Recommended |

¹⁾ Not included in calculation of recommended value.

1,4-Dicyclohexylbutane [6165-44-2] C₁₆H₃₀ MW =222.41 37

Table 1. Experimental and recommended values with uncertainties.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ kg · m ⁻³ | Ref. |
|----------|--|----------------------------|
| 294.15 | 877.2 ± 4.0 | 13-sab/mur ¹⁾ |
| 294.15 | 877.0 ± 4.0 | 13-sab/mur-2 ¹⁾ |
| 293.15 | 873.1 ± 2.0 | 47-tuo/guy |
| 293.15 | 870.2 ± 1.0 | 52-ser/wis |
| 293.15 | 870.8 ± 1.1 | Recommended |

¹⁾ Not included in calculation of recommended value.

2,2-Dicyclohexylbutane [54890-02-7] C₁₆H₃₀ MW =222.41 38

Table 1. Experimental value with uncertainty.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ kg · m ⁻³ | Ref. |
|----------|--|------------|
| 293.15 | 913.3 ± 0.3 | 52-ser/wis |

2,3-Dicyclohexylbutane [74663-71-1] C₁₆H₃₀ MW =222.41 39

Table 1. Experimental value with uncertainty.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ kg · m ⁻³ | Ref. |
|----------|--|------------|
| 293.15 | 890.4 ± 0.6 | 52-ser/wis |

1,1-Dicyclohexyl-2-methylpropane [93189-71-0] C₁₆H₃₀ MW =222.41 40

Table 1. Fit with estimated *B* coefficient for 2 accepted points. Deviation $\sigma_w = 0.075$.

| Coefficient | $\rho = A + BT$ |
|-------------|-----------------|
| <i>A</i> | 1100.88 |
| <i>B</i> | -0.730 |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ kg · m ⁻³ | $\rho_{\text{exp}} - \rho_{\text{calc}}$ kg · m ⁻³ | Ref. |
|----------|--|--|------------|
| 273.15 | 901.6 ± 2.0 | 0.07 | 15-sab/mur |
| 288.15 | 890.5 ± 2.0 | -0.08 | 15-sab/mur |

cont.

Table 3. Recommended values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|----------------------|--|
| 270.00 | 903.8 ± 2.1 |
| 280.00 | 896.5 ± 1.8 |
| 290.00 | 889.2 ± 2.0 |

1,3-Dicyclohexyl-2-methylpropane [2883-08-1] C₁₆H₃₀ MW =222.41 41

Table 1. Experimental values with uncertainties.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 273.15 | 891.5 ± 2.0 | 15-sab/mur |
| 292.15 | 883.9 ± 2.0 | 15-sab/mur |
| 293.15 | 871.5 ± 1.0 | 54-cav/mcl |

1,3-Dicyclohexyl-2-ethylpropane [54833-34-0] C₁₇H₃₂ MW =236.44 42

Table 1. Experimental values with uncertainties.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 273.15 | 896.5 ± 2.0 | 15-sab/mur |
| 294.15 | 884.5 ± 2.0 | 15-sab/mur |
| 293.15 | 874.9 ± 1.0 | 54-cav/mcl |

1,1-Dicyclohexyl-3-methylbutane [101573-01-7] C₁₇H₃₂ MW =236.44 43

Table 1. Experimental values with uncertainties.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 273.15 | 905.7 ± 2.0 | 15-sab/mur |
| 294.15 | 893.9 ± 2.0 | 15-sab/mur |
| 293.15 | 888.5 ± 2.0 | 57-che/pet |
| 293.15 | 888.5 ± 2.0 | 60-pet/zal |

1,1-Dicyclohexylpentane [54833-30-6] C₁₇H₃₂ MW =236.44 44

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--------------|
| 293.15 | 887.9 ± 0.6 | 51-ser/wis-1 |

1,2-Dicyclohexylpentane [500039-37-2] C₁₇H₃₂ MW =236.44 45

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 293.15 | 912.8 ± 1.0 | 47-tuo/guy |

1,5-Dicyclohexylpentane

[54833-31-7]

C₁₇H₃₂

MW =236.44

46

Table 1. Fit with estimated *B* coefficient for 7 accepted points. Deviation $\sigma_w = 1.565$.

| Coefficient | $\rho = A + BT$ |
|-------------|-----------------|
| <i>A</i> | 1086.32 |
| <i>B</i> | -0.740 |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. | $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|--|------------|---------------|--|--|--------------|
| 273.15 | 883.6 ± 2.0 | -0.59 | 01-kur-1 | 294.15 | 871.8 ± 2.0 | 3.11 | 15-sab/mur |
| 273.15 | 883.1 ± 2.0 | -1.13 | 13-sab/mur | 273.15 | 883.6 ± 2.0 | -0.59 | 27-ipa/orl |
| 294.15 | 871.8 ± 2.0 | 3.11 | 13-sab/mur | 293.15 | 868.7 ± 1.0 | -0.69 | 51-ser/wis-1 |
| 273.15 | 883.1 ± 2.0 | -1.13 | 15-sab/mur | | | | |

Table 3. Recommended values.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|---------------|--|
| 270.00 | 886.5 ± 2.8 |
| 280.00 | 879.1 ± 2.3 |
| 290.00 | 871.7 ± 2.3 |
| 293.15 | 869.4 ± 2.4 |
| 298.15 | 865.7 ± 2.6 |

1,1-Bis(dimethylcyclohexyl)ethane

[98803-06-6]

C₁₈H₃₄

MW =250.47

47

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 310.93 | 881.0 ± 0.8 | 63-gud/cam |

1,2-Bis(1-ethylcyclohexyl)ethane

[500039-55-4]

C₁₈H₃₄

MW =250.47

48

Table 1. Fit with estimated *B* coefficient for 2 accepted points. Deviation $\sigma_w = 0.050$.

| Coefficient | $\rho = A + BT$ |
|-------------|-----------------|
| <i>A</i> | 1102.89 |
| <i>B</i> | -0.680 |

cont.

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--|------------|
| 293.15 | 903.5 ± 2.0 | -0.05 | 52-bir/gri |
| 298.15 | 900.2 ± 2.0 | 0.05 | 52-bir/gri |

Table 3. Recommended values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|----------------------|--|
| 290.00 | 905.7 ± 1.9 |
| 293.15 | 903.6 ± 1.8 |
| 298.15 | 900.2 ± 1.8 |

1-Cyclohexyl-2-(cyclohexylmethyl)-pentane

[55030-21-2]

C₁₈H₃₄

MW =250.47

49

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 293.15 | 871.9 ± 0.4 | 54-cav/mcl |

2,3-Dicyclohexyl-2,3-dimethylbutane

[5171-88-0]

C₁₈H₃₄

MW =250.47

50

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 293.15 | 932.1 ± 2.0 | 66-mes/erz |

1,1-Dicyclohexylhexane

[55030-20-1]

C₁₈H₃₄

MW =250.47

51

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--------------|
| 293.15 | 884.8 ± 0.4 | 51-ser/wis-1 |

1,6-Dicyclohexylhexane**[1610-23-7]****C₁₈H₃₄****MW = 250.47****52****Table 1.** Coefficients of the polynomial expansion equation. Standard deviations (see introduction):

$\sigma_{c,w} = 2.2763$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 8.4702 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

| Coefficient | T = 293.15 to 573.15 K $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|---|
| A | $1.06001 \cdot 10^3$ |
| B | $-6.53483 \cdot 10^{-1}$ |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|---------------|--|--|-------------------------|---------------|--|--|-------------------------|
| 294.15 | 870.20 ± 1.00 | 2.41 | 48-fie/ber-2(○) | 403.15 | 795.00 ± 2.00 | -1.56 | 50-boe/ned(Δ) |
| 294.15 | 870.20 ± 1.00 | 2.41 | 48-fie/ber-2(○) | 453.15 | 763.00 ± 2.50 | -0.89 | 50-boe/ned(Δ) |
| 293.15 | 868.00 ± 2.00 | -0.44 | 50-boe/ned(Δ) | 513.15 | 721.00 ± 3.50 | -3.68 | 50-boe/ned(Δ) |
| 323.15 | 847.00 ± 2.00 | -1.84 | 50-boe/ned(Δ) | 573.15 | 691.00 ± 5.00 | 5.53 | 50-boe/ned(Δ) |
| 353.15 | 828.00 ± 2.00 | -1.23 | 50-boe/ned(Δ) | 293.15 | 867.73 ± 0.40 | -0.71 | 51-ser/wis-1(□) |

Table 3. Recommended values (fit to the reliable experimental values according to the equations

$$\rho = A + BT + CT^2 + DT^3 + \dots \text{ or } \rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4].$$

| $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|---------------|--|---------------|--|---------------|--|
| 290.00 | 870.50 ± 1.13 | 380.00 | 811.69 ± 2.14 | 490.00 | 739.81 ± 2.96 |
| 293.15 | 868.44 ± 1.19 | 390.00 | 805.15 ± 2.19 | 500.00 | 733.27 ± 3.11 |
| 298.15 | 865.18 ± 1.28 | 400.00 | 798.62 ± 2.24 | 510.00 | 726.74 ± 3.29 |
| 300.00 | 863.97 ± 1.31 | 410.00 | 792.08 ± 2.29 | 520.00 | 720.20 ± 3.50 |
| 310.00 | 857.43 ± 1.48 | 420.00 | 785.55 ± 2.34 | 530.00 | 713.67 ± 3.73 |
| 320.00 | 850.90 ± 1.62 | 430.00 | 779.01 ± 2.40 | 540.00 | 707.13 ± 3.99 |
| 330.00 | 844.36 ± 1.74 | 440.00 | 772.48 ± 2.46 | 550.00 | 700.60 ± 4.29 |
| 340.00 | 837.83 ± 1.85 | 450.00 | 765.94 ± 2.53 | 560.00 | 694.06 ± 4.62 |
| 350.00 | 831.29 ± 1.94 | 460.00 | 759.41 ± 2.62 | 570.00 | 687.53 ± 5.00 |
| 360.00 | 824.76 ± 2.01 | 470.00 | 752.87 ± 2.71 | 580.00 | 680.99 ± 5.41 |
| 370.00 | 818.22 ± 2.08 | 480.00 | 746.34 ± 2.83 | | |

cont.

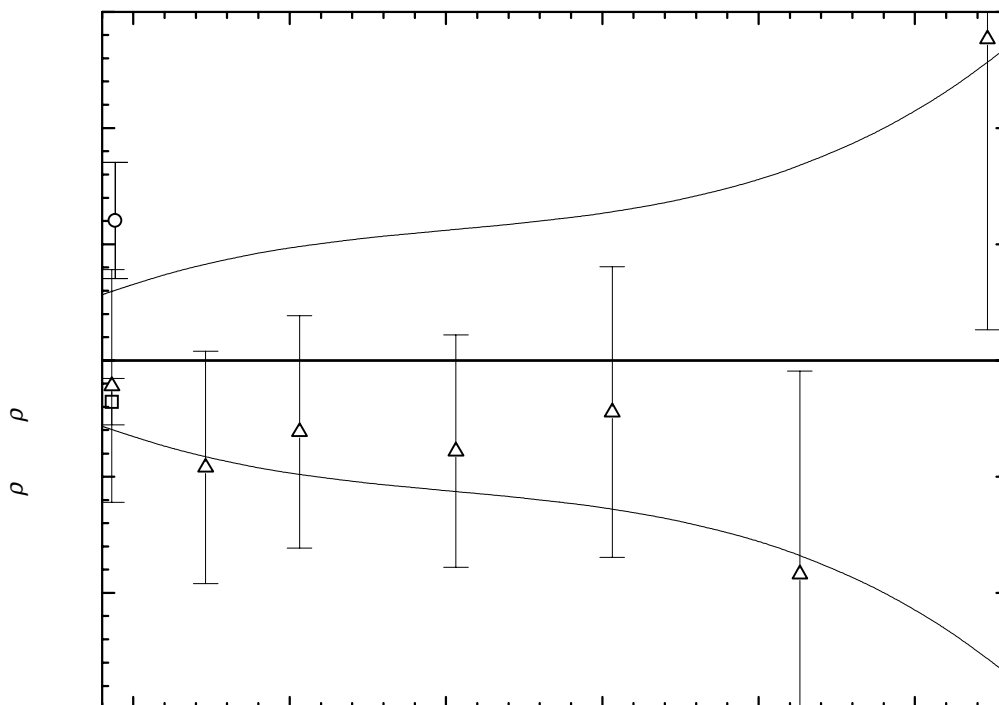


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

2,5-Dicyclohexylhexane

[500039-38-3]

C₁₈H₃₄

MW =250.47

53

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 293.15 | 890.1 ± 1.0 | 47-tuo/guy |

3,4-Dicyclohexylhexane

[101881-40-7]

C₁₈H₃₄

MW =250.47

54

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 293.15 | 896.2 ± 2.0 | 60-pet/zal |

Tricyclohexylmethane**[1610-24-8]****C₁₉H₃₄****MW = 262.48****55****Table 1.** Coefficients of the polynomial expansion equation. Standard deviations (see introduction):

$\sigma_{c,w} = 1.8991 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 1.1138 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

| Coefficient | T = 273.15 to 372.05 K $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|---|
| A | $1.15117 \cdot 10^3$ |
| B | $-6.94690 \cdot 10^{-1}$ |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| T | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | T | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|--------|--|--|-------------------------|--------|--|--|-------------------------|
| 323.15 | 926.15 ± 1.00 | -0.53 | 27-ipa/dol(V) | 293.15 | 947.40 ± 0.50 | -0.12 | 68-ano-1(□) |
| 323.15 | 927.40 ± 1.00 | 0.72 | 27-ipa/dol(V) | 310.95 | 935.00 ± 0.50 | -0.16 | 68-ano-1(□) |
| 293.15 | 947.70 ± 1.00 | 0.18 | 49-foe/fen(Δ) | 333.15 | 919.70 ± 0.50 | -0.03 | 68-ano-1(□) |
| 293.15 | 947.40 ± 0.50 | -0.12 | 59-dix-1(O) | 372.05 | 892.70 ± 0.50 | -0.01 | 68-ano-1(□) |
| 273.15 | 961.50 ± 0.50 | 0.08 | 68-ano-1(□) | | | | |

Further references: [28-ada/mar].**Table 3.** Recommended values (fit to the reliable experimental values according to the equations

$$\rho = A + BT + CT^2 + DT^3 + \dots \text{ or } \rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$$

| $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|----------------------|--|----------------------|--|----------------------|--|
| 270.00 | 963.60 ± 0.52 | 300.00 | 942.76 ± 0.71 | 350.00 | 908.03 ± 0.72 |
| 280.00 | 956.66 ± 0.59 | 310.00 | 935.82 ± 0.75 | 360.00 | 901.08 ± 0.68 |
| 290.00 | 949.71 ± 0.66 | 320.00 | 928.87 ± 0.76 | 370.00 | 894.14 ± 0.63 |
| 293.15 | 947.52 ± 0.68 | 330.00 | 921.92 ± 0.77 | 380.00 | 887.19 ± 0.58 |
| 298.15 | 944.05 ± 0.70 | 340.00 | 914.98 ± 0.75 | | |

cont.

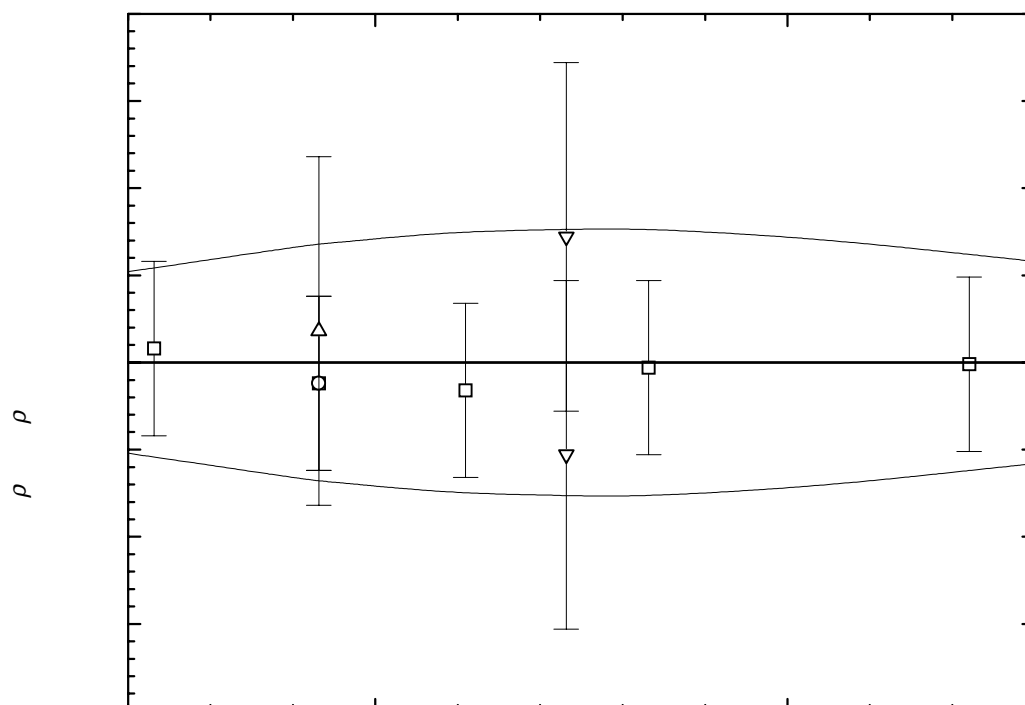


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

1,1-Dicyclohexylheptane

[2090-15-5]

C₁₉H₃₆

MW = 264.49

56

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction):

$\sigma_{c,w} = 7.1554 \cdot 10^{-2}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 3.0883 \cdot 10^{-2}$ (combined temperature ranges, unweighted).

| Coefficient | T = 273.15 to 372.05 K |
|-------------|---------------------------------------|
| | $\rho = A + BT + CT^2 + DT^3 + \dots$ |
| A | $1.07456 \cdot 10^3$ |
| B | $-6.53363 \cdot 10^{-1}$ |

cont.

1,1-Dicyclohexylheptane (cont.)

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|----------------------|--|--|-------------------------|----------------------|--|--|-------------------------|
| 293.15 | 883.00 ± 1.00 | -0.02 | 49-foe/fen(□) | 310.95 | 871.40 ± 0.50 | 0.01 | 68-ano-1(✕) |
| 273.15 | 896.20 ± 0.50 | 0.11 | 68-ano-1(✕) | 333.15 | 856.90 ± 0.50 | 0.01 | 68-ano-1(✕) |
| 293.15 | 882.90 ± 0.50 | -0.12 | 68-ano-1(✕) | 372.05 | 831.50 ± 0.50 | 0.03 | 68-ano-1(✕) |

Further references: [57-che/pet, 63-gud/cam].

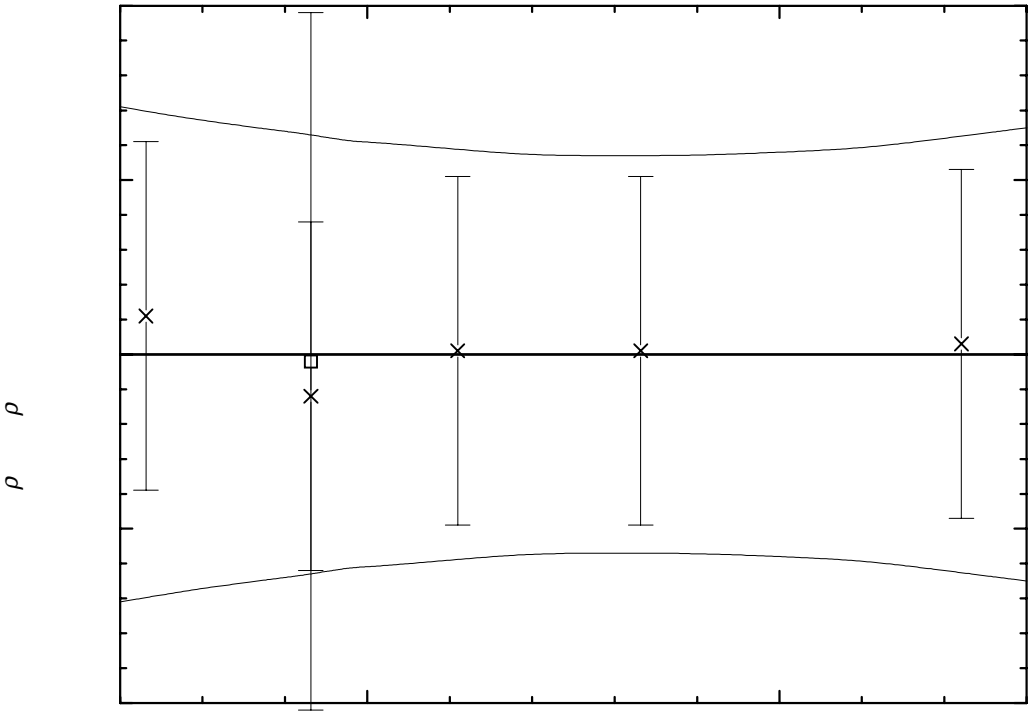


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

cont.

Table 3. Recommended values (fit to the reliable experimental values according to the equations
 $\rho = A + BT + CT^2 + DT^3 + \dots$ or $\rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$).

| $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|---------------|--|---------------|--|---------------|--|
| 270.00 | 898.15 ± 0.71 | 300.00 | 878.55 ± 0.61 | 350.00 | 845.88 ± 0.58 |
| 280.00 | 891.62 ± 0.67 | 310.00 | 872.02 ± 0.59 | 360.00 | 839.35 ± 0.59 |
| 290.00 | 885.08 ± 0.64 | 320.00 | 865.48 ± 0.57 | 370.00 | 832.81 ± 0.62 |
| 293.15 | 883.02 ± 0.63 | 330.00 | 858.95 ± 0.57 | 380.00 | 826.28 ± 0.65 |
| 298.15 | 879.76 ± 0.61 | 340.00 | 852.41 ± 0.57 | | |

2.1.2 Saturated Compounds with Alicyclic Rings, C₂₀ - C₃₀

Bis(cyclohexylmethyl)cyclohexane [103071-09-6] C₂₀H₃₆ MW =276.51 57

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 310.93 | 906.7 ± 1.0 | 63-gud/cam |

1,1,2-Tricyclohexylethane [55682-86-5] C₂₀H₃₆ MW =276.51 58

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|--------------|
| 298.15 | 930.1 ± 2.0 | 33-zar/adk-1 |

2,2-Bis(cyclohexylmethyl)-4-methylpentane [110331-86-7] C₂₀H₃₈ MW =278.52 59

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 293.15 | 882.0 ± 2.0 | 60-pet/zal |

3,4-Dicyclohexyl-3,4-dimethylhexane [500039-96-3] C₂₀H₃₈ MW =278.52 60

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 293.15 | 927.0 ± 3.0 | 60-pet/zal |

1,1,3-Tricyclohexylpropane [55682-89-8] C₂₁H₃₈ MW =290.53 61

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 310.93 | 926.4 ± 1.0 | 63-gud/cam |

1,1-Dicyclohexyl-2-methyloctane [102444-82-6] C₂₁H₄₀ MW =292.55 62

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 293.15 | 909.0 ± 3.0 | 60-pet/zal |

1,5-Dicyclopentyl-3-(2-cyclopentylethyl)pentane

[55255-85-1]

C₂₂H₄₀

MW = 304.56

63

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction):
 $\sigma_{c,w} = 4.2098 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 1.6458 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

| Coefficient | T = 273.15 to 372.05 K $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|---|
| A | $1.08644 \cdot 10^3$ |
| B | $-6.51208 \cdot 10^{-1}$ |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|---------------|--|--|-------------------------|---------------|--|--|-------------------------|
| 273.15 | 909.00 ± 1.00 | 0.44 | 68-ano-1(□) | 333.15 | 869.60 ± 1.00 | 0.11 | 68-ano-1(□) |
| 293.15 | 895.00 ± 1.00 | -0.54 | 68-ano-1(□) | 372.05 | 844.00 ± 1.00 | -0.16 | 68-ano-1(□) |
| 310.95 | 884.10 ± 1.00 | 0.15 | 68-ano-1(□) | | | | |

Table 3. Recommended values (fit to the reliable experimental values according to the equations

$$\rho = A + BT + CT^2 + DT^3 + \dots \text{ or } \rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$$

| $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|---------------|--|---------------|--|---------------|--|
| 270.00 | 910.61 ± 1.32 | 300.00 | 891.08 ± 1.02 | 350.00 | 858.52 ± 0.94 |
| 280.00 | 904.10 ± 1.24 | 310.00 | 884.57 ± 0.92 | 360.00 | 852.01 ± 1.14 |
| 290.00 | 897.59 ± 1.14 | 320.00 | 878.05 ± 0.84 | 370.00 | 845.49 ± 1.44 |
| 293.15 | 895.54 ± 1.10 | 330.00 | 871.54 ± 0.81 | 380.00 | 838.98 ± 1.86 |
| 298.15 | 892.28 ± 1.04 | 340.00 | 865.03 ± 0.84 | | |

cont.

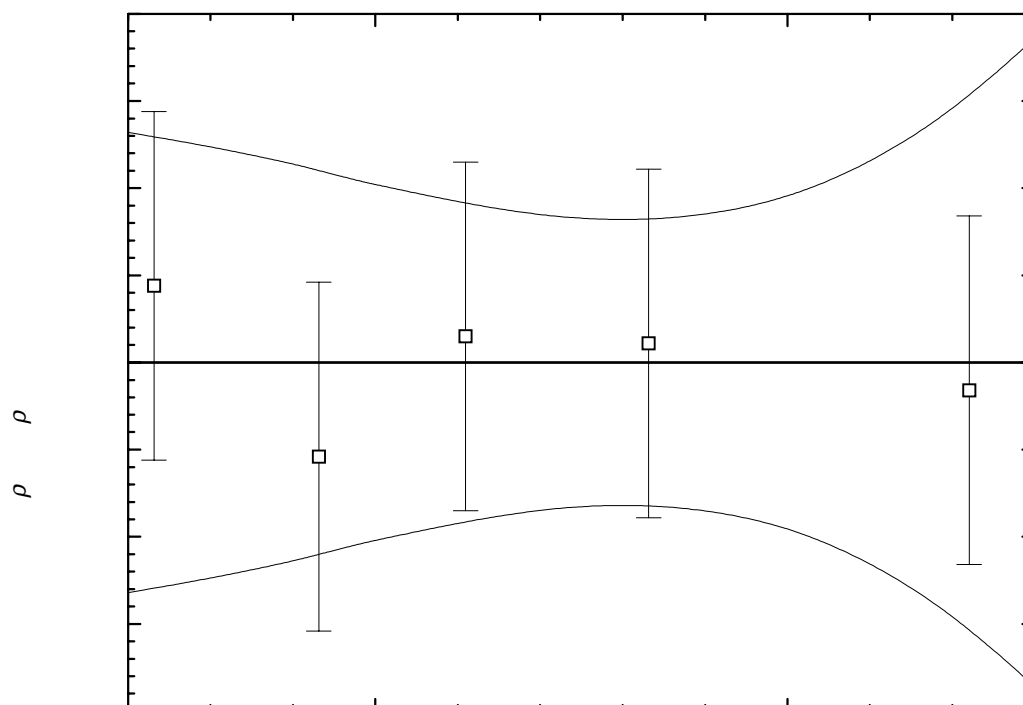


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

1,2-Bis(1,1-dimethylethyl)-1,2-dicyclohexylethane [500039-98-5] C₂₂H₄₂ MW =306.58 64

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 293.15 | 902.0 ± 3.0 | 60-pet/zal |

1,10-Dicyclohexyldecane [500030-44-4] C₂₂H₄₂ MW =306.58 65

Table 1. Experimental values with uncertainties.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 323.15 | 845.0 ± 2.0 | 50-boe/ned |
| 453.15 | 763.0 ± 3.0 | 50-boe/ned |

5,8-Dicyclohexyldodecane [500037-69-4] C₂₄H₄₆ MW = 334.63 66

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|----------|
| 288.15 | 882.3 ± 2.0 | 01-kur-1 |

1-Cyclohexyl-3-(2-cyclohexylethyl)-6-cyclopentylhexane [55401-70-2] C₂₅H₄₆ MW = 346 67

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{\text{c,w}} = 1.8855 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{\text{c,uw}} = 9.6446 \cdot 10^{-2}$ (combined temperature ranges, unweighted).

| Coefficient | T = 273.15 to 372.05 K $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|---|
| A | $1.08462 \cdot 10^3$ |
| B | $-6.37041 \cdot 10^{-1}$ |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|----------------------|--|--|-------------------------|----------------------|--|--|-------------------------|
| 273.15 | 910.80 ± 0.50 | 0.19 | 68-ano-1(□) | 333.15 | 872.20 ± 0.50 | -0.19 | 68-ano-1(□) |
| 293.15 | 897.60 ± 0.50 | -0.27 | 68-ano-1(□) | 372.05 | 847.80 ± 0.70 | 0.19 | 68-ano-1(□) |
| 310.95 | 886.60 ± 0.50 | 0.07 | 68-ano-1(□) | | | | |

Table 3. Recommended values (fit to the reliable experimental values according to the equations $\rho = A + BT + CT^2 + DT^3 + \dots$ or $\rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$).

| $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|----------------------|--|----------------------|--|----------------------|--|
| 270.00 | 912.62 ± 0.73 | 300.00 | 893.50 ± 0.51 | 350.00 | 861.65 ± 0.58 |
| 280.00 | 906.25 ± 0.66 | 310.00 | 887.13 ± 0.45 | 360.00 | 855.28 ± 0.73 |
| 290.00 | 899.88 ± 0.59 | 320.00 | 880.76 ± 0.42 | 370.00 | 848.91 ± 0.94 |
| 293.15 | 897.87 ± 0.56 | 330.00 | 874.39 ± 0.43 | 380.00 | 842.54 ± 1.22 |
| 298.15 | 894.68 ± 0.53 | 340.00 | 868.02 ± 0.48 | | |

cont.

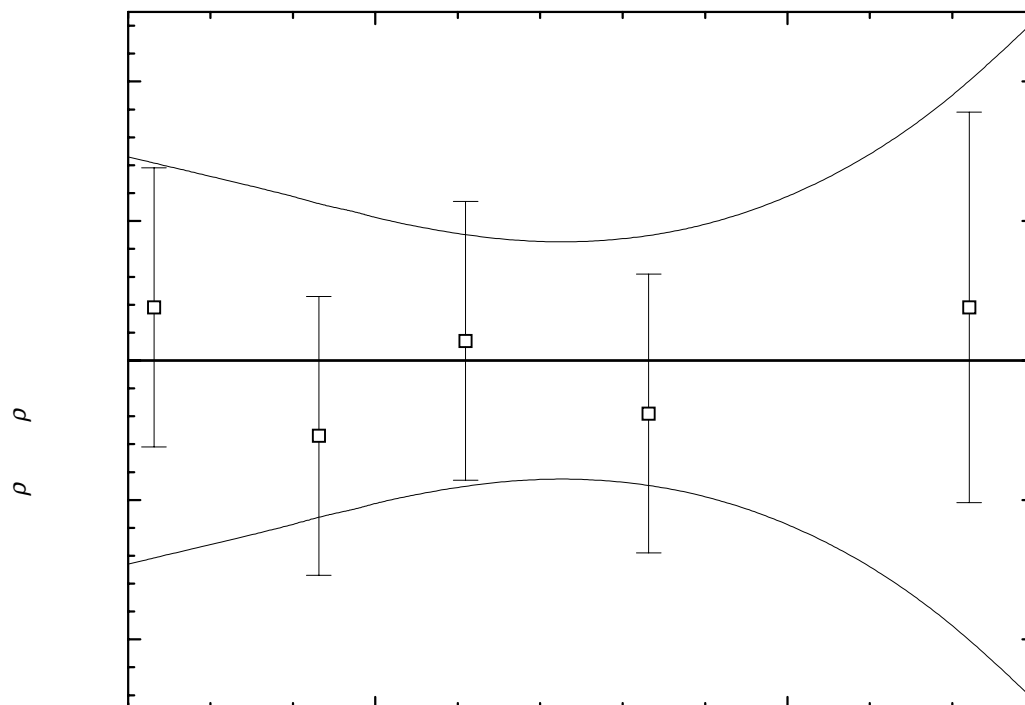


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

**4-(2-Cyclohexylethyl)-
1,7-dicyclopentylheptane**

[900001-39-0]

C₂₅H₄₆

MW = 346.64

68

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction):

$\sigma_{c,w} = 2.1643 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 9.1537 \cdot 10^{-2}$ (combined temperature ranges, unweighted).

| Coefficient | T = 273.15 to 372.05 K $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|---|
| A | $1.08016 \cdot 10^3$ |
| B | $-6.38393 \cdot 10^{-1}$ |

cont.

4-(2-Cyclohexylethyl) -1,7-dicyclopentylheptane (cont.)

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|----------------------|--|--|-------------------------|----------------------|--|--|-------------------------|
| 273.15 | 905.50 ± 1.00 | -0.29 | 68-ano-1(□) | 333.15 | 867.70 ± 1.00 | 0.22 | 68-ano-1(□) |
| 293.15 | 893.20 ± 1.00 | 0.18 | 68-ano-1(□) | 372.05 | 842.60 ± 1.00 | -0.05 | 68-ano-1(□) |
| 310.95 | 881.60 ± 1.00 | -0.06 | 68-ano-1(□) | | | | |

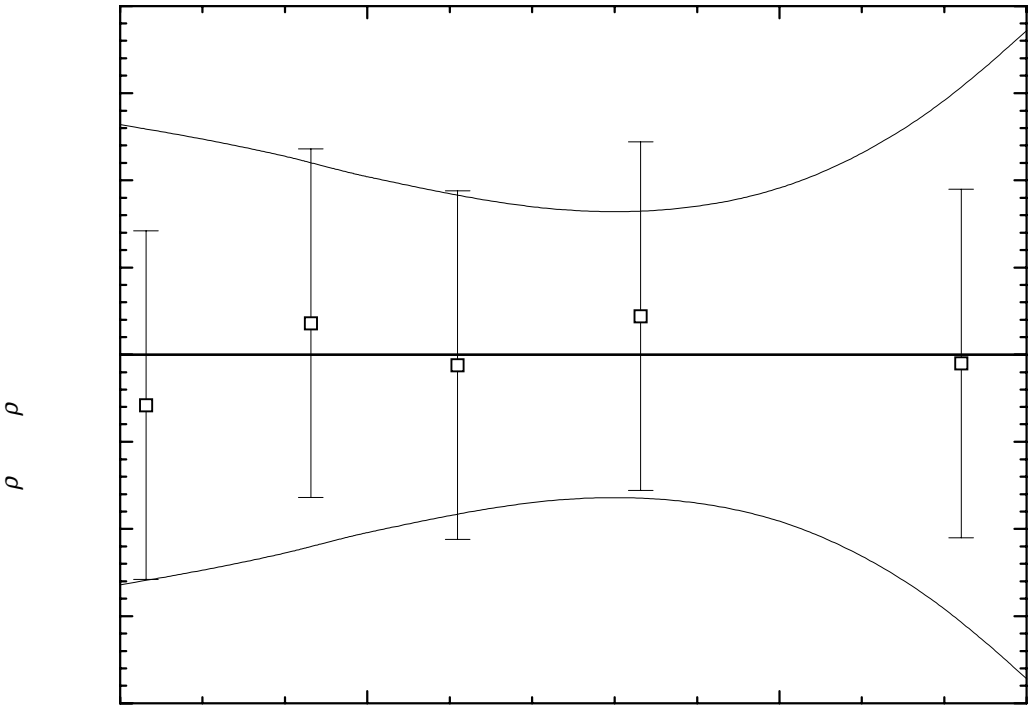


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

cont.

Table 3. Recommended values (fit to the reliable experimental values according to the equations

$$\rho = A + BT + CT^2 + DT^3 + \dots \text{ or } \rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$$

| $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|---------------|--|---------------|--|---------------|--|
| 270.00 | 907.80 ± 1.32 | 300.00 | 888.65 ± 1.02 | 350.00 | 856.73 ± 0.94 |
| 280.00 | 901.41 ± 1.24 | 310.00 | 882.26 ± 0.92 | 360.00 | 850.34 ± 1.14 |
| 290.00 | 895.03 ± 1.14 | 320.00 | 875.88 ± 0.84 | 370.00 | 843.96 ± 1.44 |
| 293.15 | 893.02 ± 1.10 | 330.00 | 869.50 ± 0.81 | 380.00 | 837.58 ± 1.86 |
| 298.15 | 889.83 ± 1.04 | 340.00 | 863.11 ± 0.84 | | |

1,5-Dicyclohexyl-3-(2-cyclohexylethyl)- [2090-16-6]
pentane

C₂₅H₄₆

MW = 346.64

69

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction):
 $\sigma_{c,w} = 1.0093 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 4.7392 \cdot 10^{-2}$ (combined temperature ranges, unweighted).

| Coefficient | T = 273.15 to 372.05 K $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|---|
| A | $1.09167 \cdot 10^3$ |
| B | $-6.42369 \cdot 10^{-1}$ |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|---------------|--|--|-------------------------|---------------|--|--|-------------------------|
| 293.15 | 903.20 ± 0.60 | -0.16 | 49-foe/fen(□) | 310.95 | 892.00 ± 0.50 | 0.07 | 68-ano-1(✕) |
| 273.15 | 916.30 ± 0.50 | 0.09 | 68-ano-1(✕) | 333.15 | 877.80 ± 0.50 | 0.13 | 68-ano-1(✕) |
| 293.15 | 903.30 ± 0.50 | -0.06 | 68-ano-1(✕) | 372.05 | 852.60 ± 0.70 | -0.08 | 68-ano-1(✕) |

Table 3. Recommended values (fit to the reliable experimental values according to the equations

$$\rho = A + BT + CT^2 + DT^3 + \dots \text{ or } \rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$$

| $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|---------------|--|---------------|--|---------------|--|
| 270.00 | 918.23 ± 0.58 | 300.00 | 898.96 ± 0.55 | 350.00 | 866.84 ± 0.59 |
| 280.00 | 911.81 ± 0.58 | 310.00 | 892.54 ± 0.52 | 360.00 | 860.42 ± 0.68 |
| 290.00 | 905.38 ± 0.57 | 320.00 | 886.11 ± 0.51 | 370.00 | 853.99 ± 0.80 |
| 293.15 | 903.36 ± 0.56 | 330.00 | 879.69 ± 0.51 | 380.00 | 847.57 ± 0.96 |
| 298.15 | 900.15 ± 0.55 | 340.00 | 873.27 ± 0.54 | | |

cont.

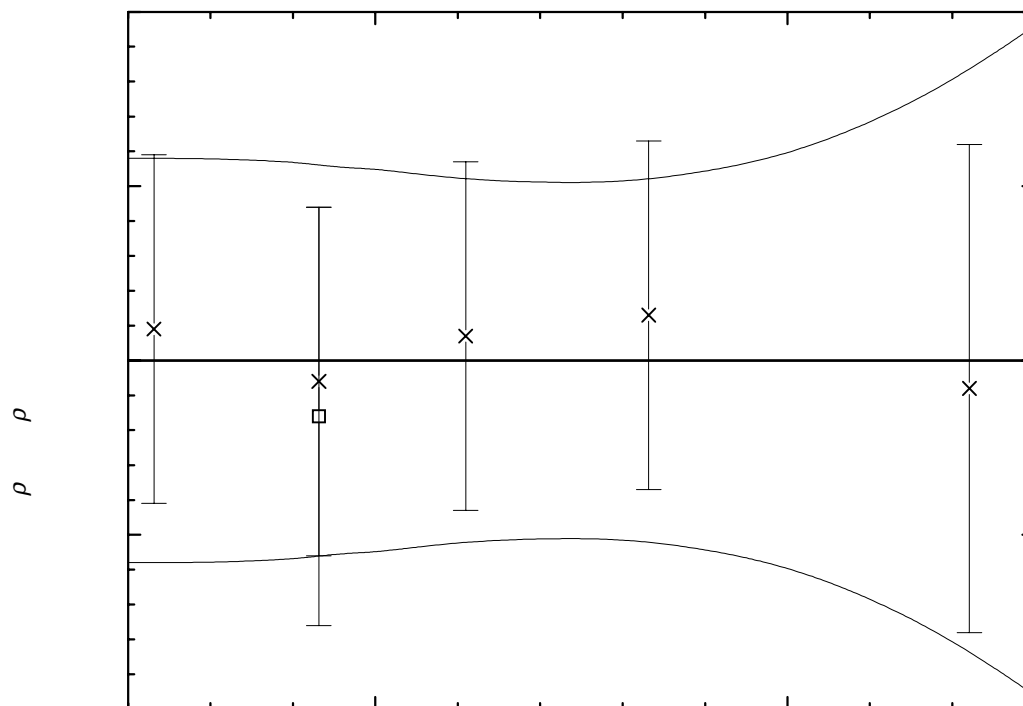
1,5-Dicyclohexyl-3-(2-cyclohexylethyl)-pentane (cont.)

Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

**1,7-Dicyclopentyl-4-
(3-cyclopentylpropyl)heptane**

[55429-35-1]

C₂₅H₄₆

MW = 346.64

70

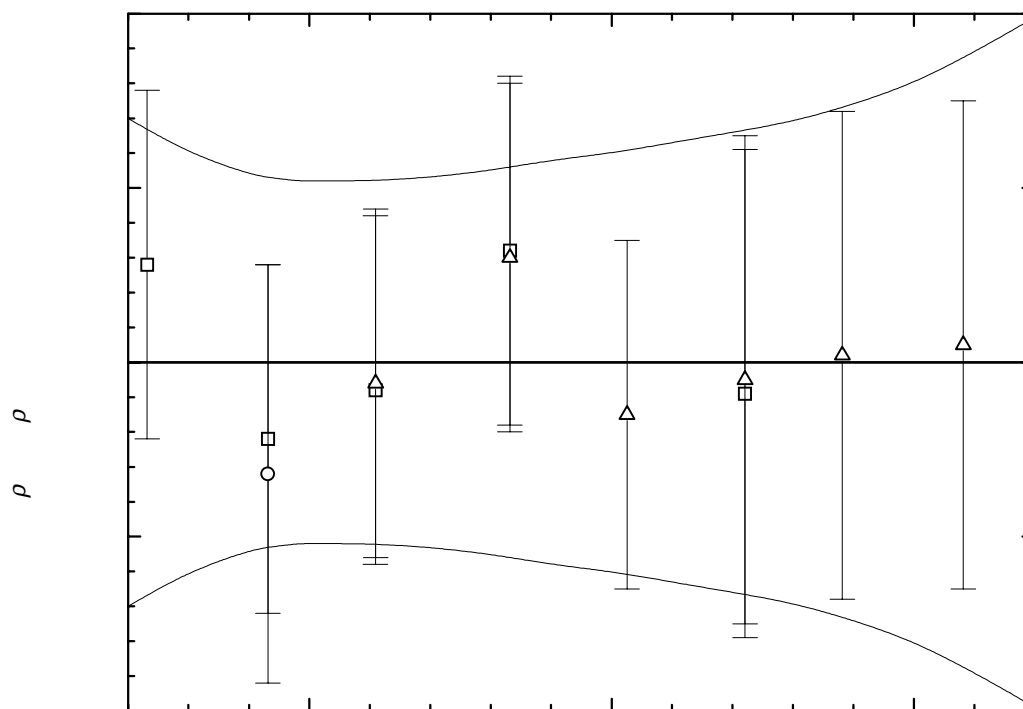
Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{c,w} = 2.0046 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 6.2347 \cdot 10^{-2}$ (combined temperature ranges, unweighted).

| Coefficient | T = 273.15 to 408.15 K |
|-------------|---------------------------------------|
| | $\rho = A + BT + CT^2 + DT^3 + \dots$ |
| A | $1.07266 \cdot 10^3$ |
| B | $-6.12128 \cdot 10^{-1}$ |
| C | $-5.00630 \cdot 10^{-5}$ |

cont.

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|----------------------|--|--|-------------------------|----------------------|--|--|-------------------------|
| 293.15 | 888.60 ± 0.60 | -0.32 | 49-foe/fen(O) | 408.15 | 814.53 ± 0.70 | 0.05 | 58-cut/mcm(Δ) |
| 310.95 | 877.42 ± 0.50 | -0.06 | 58-cut/mcm(Δ) | 273.15 | 902.00 ± 0.50 | 0.28 | 68-ano-1(\square) |
| 333.15 | 863.48 ± 0.50 | 0.30 | 58-cut/mcm(Δ) | 293.15 | 888.70 ± 0.50 | -0.22 | 68-ano-1(\square) |
| 352.55 | 850.48 ± 0.50 | -0.15 | 58-cut/mcm(Δ) | 310.95 | 877.40 ± 0.50 | -0.08 | 68-ano-1(\square) |
| 372.05 | 837.94 ± 0.70 | -0.05 | 58-cut/mcm(Δ) | 333.15 | 863.50 ± 0.50 | 0.32 | 68-ano-1(\square) |
| 388.15 | 827.54 ± 0.70 | 0.02 | 58-cut/mcm(Δ) | 372.05 | 837.90 ± 0.70 | -0.09 | 68-ano-1(\square) |

**Fig. 1.** The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

cont.

1,7-Dicyclopentyl-4-(3-cyclopentylpropyl)heptane (cont.)**Table 3.** Recommended values (fit to the reliable experimental values according to the equations

$$\rho = A + BT + CT^2 + DT^3 + \dots \text{ or } \rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$$

| $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|---------------|--|---------------|--|---------------|--|
| 270.00 | 903.74 ± 0.70 | 310.00 | 878.09 ± 0.52 | 370.00 | 839.32 ± 0.66 |
| 280.00 | 897.34 ± 0.60 | 320.00 | 871.66 ± 0.53 | 380.00 | 832.82 ± 0.69 |
| 290.00 | 890.94 ± 0.54 | 330.00 | 865.21 ± 0.55 | 390.00 | 826.32 ± 0.74 |
| 293.15 | 888.92 ± 0.53 | 340.00 | 858.75 ± 0.58 | 400.00 | 819.80 ± 0.80 |
| 298.15 | 885.71 ± 0.52 | 350.00 | 852.29 ± 0.60 | 410.00 | 813.27 ± 0.89 |
| 300.00 | 884.52 ± 0.52 | 360.00 | 845.81 ± 0.63 | 420.00 | 806.74 ± 0.99 |

1,1,1-Tricyclohexylheptane**[115386-44-2]****C₂₅H₄₆****MW = 346.64****71****Table 1.** Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 313.15 | 934.4 ± 3.0 | 60-pet/zal |

1-Cyclohexyl-3-(2-cyclohexylethyl)-undecane**[7225-69-6]****C₂₅H₄₈****MW = 348.66****72****Table 1.** Coefficients of the polynomial expansion equation. Standard deviations (see introduction):

$\sigma_{c,w} = 1.0810 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 2.8972 \cdot 10^{-2}$ (combined temperature ranges, unweighted).

| Coefficient | $T = 273.15 \text{ to } 408.15 \text{ K}$ $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|--|
| <i>A</i> | $1.05282 \cdot 10^3$ |
| <i>B</i> | $-6.37150 \cdot 10^{-1}$ |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|---------------|--|--|-------------------------|---------------|--|--|-------------------------|
| 273.15 | 878.90 ± 0.50 | 0.12 | 47-sch(□) | 372.04 | 815.80 ± 0.50 | 0.03 | 53-ano-7(Δ) |
| 293.15 | 865.90 ± 0.50 | -0.13 | 47-sch(□) | 388.15 | 805.50 ± 0.50 | -0.01 | 53-ano-7(Δ) |
| 310.93 | 854.80 ± 0.50 | 0.09 | 47-sch(□) | 408.15 | 792.80 ± 0.70 | 0.04 | 53-ano-7(Δ) |
| 333.15 | 840.50 ± 0.50 | -0.05 | 47-sch(□) | 273.15 | 878.90 ± 0.50 | 0.12 | 68-ano-1(○) |
| 372.04 | 815.80 ± 0.50 | 0.03 | 47-sch(□) | 293.15 | 865.90 ± 0.50 | -0.13 | 68-ano-1(○) |
| 293.15 | 865.70 ± 0.60 | -0.33 | 49-foe/fen(∇) | 310.95 | 854.80 ± 0.50 | 0.11 | 68-ano-1(○) |
| 273.15 | 878.90 ± 0.50 | 0.12 | 53-ano-7(Δ) | 333.15 | 840.50 ± 0.50 | -0.05 | 68-ano-1(○) |
| 333.15 | 840.50 ± 0.50 | -0.05 | 53-ano-7(Δ) | 372.05 | 815.80 ± 0.50 | 0.04 | 68-ano-1(○) |
| 352.15 | 828.50 ± 0.50 | 0.06 | 53-ano-7(Δ) | | | | |

¹⁾ Not included in Fig. 1.

cont.

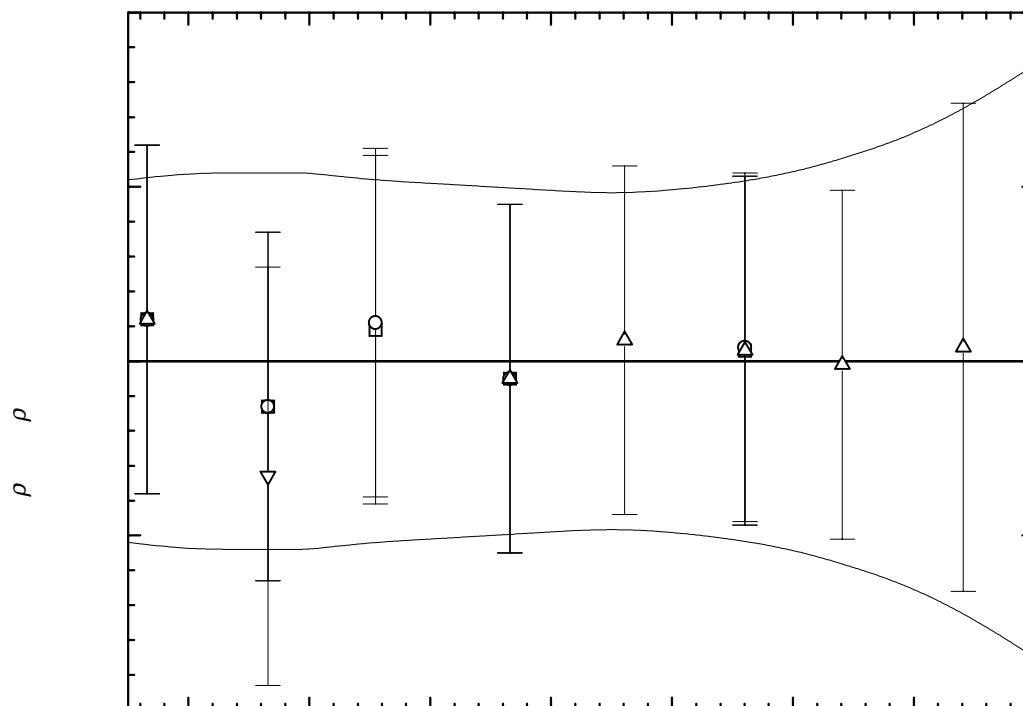
1-Cyclohexyl-3-(2-cyclohexylethyl)-undecane (cont.)

Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

Table 3. Recommended values (fit to the reliable experimental values according to the equations $\rho = A + BT + CT^2 + DT^3 + \dots$ or $\rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$).

| $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|---------------|--|---------------|--|---------------|--|
| 270.00 | 880.78 ± 0.52 | 310.00 | 855.30 ± 0.52 | 370.00 | 817.07 ± 0.51 |
| 280.00 | 874.41 ± 0.54 | 320.00 | 848.93 ± 0.51 | 380.00 | 810.70 ± 0.54 |
| 290.00 | 868.04 ± 0.54 | 330.00 | 842.56 ± 0.50 | 390.00 | 804.33 ± 0.59 |
| 293.15 | 866.03 ± 0.54 | 340.00 | 836.18 ± 0.49 | 400.00 | 797.96 ± 0.65 |
| 298.15 | 862.85 ± 0.54 | 350.00 | 829.81 ± 0.48 | 410.00 | 791.58 ± 0.74 |
| 300.00 | 861.67 ± 0.54 | 360.00 | 823.44 ± 0.49 | 420.00 | 785.21 ± 0.85 |

**1-Cyclopentyl-4-(3-cyclopentylpropyl)-
dodecane**

[7225-68-5]

C₂₅H₄₈

MW = 348.66

73

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction):

$\sigma_{c,w} = 2.1918 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 5.0147 \cdot 10^{-2}$ (combined temperature ranges, unweighted).

| Coefficient | T = 273.15 to 408.15 K $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|---|
| A | $1.03732 \cdot 10^3$ |
| B | $-5.79058 \cdot 10^{-1}$ |
| C | $-1.09779 \cdot 10^{-4}$ |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|---------------|--|--|-----------------------------|---------------|--|--|-------------------------|
| 273.15 | 871.00 ± 0.50 | 0.04 | 47-sch(O) | 310.95 | 846.88 ± 0.50 | 0.23 | 58-cut/mcm(V) |
| 293.15 | 857.90 ± 0.50 | -0.24 | 47-sch(O) | 333.15 | 832.43 ± 0.50 | 0.20 | 58-cut/mcm(V) |
| 310.93 | 846.90 ± 0.50 | 0.24 | 47-sch(O) | 352.55 | 819.20 ± 0.50 | -0.33 | 58-cut/mcm(V) |
| 333.15 | 832.40 ± 0.50 | 0.17 | 47-sch(O) | 372.05 | 806.52 ± 0.70 | -0.17 | 58-cut/mcm(V) |
| 372.04 | 806.50 ± 0.70 | -0.20 | 47-sch(O) | 388.15 | 795.99 ± 0.70 | -0.03 | 58-cut/mcm(V) |
| 293.15 | 857.70 ± 0.60 | -0.44 | 49-foe/fen(Δ) | 408.15 | 783.02 ± 0.70 | 0.33 | 58-cut/mcm(V) |
| 310.93 | 846.90 ± 0.50 | 0.24 | 53-ano-7(\blacklozenge) | 273.15 | 871.00 ± 0.50 | 0.04 | 68-ano-1(\square) |
| 333.15 | 832.40 ± 0.50 | 0.17 | 53-ano-7(\blacklozenge) | 293.15 | 857.90 ± 0.50 | -0.24 | 68-ano-1(\square) |
| 352.59 | 819.20 ± 0.50 | -0.31 | 53-ano-7(\blacklozenge) | 310.95 | 846.90 ± 0.50 | 0.25 | 68-ano-1(\square) |
| 372.04 | 806.50 ± 0.70 | -0.20 | 53-ano-7(\blacklozenge) | 333.15 | 832.40 ± 0.50 | 0.17 | 68-ano-1(\square) |
| 388.15 | 796.00 ± 0.70 | -0.02 | 53-ano-7(\blacklozenge) | 372.05 | 806.50 ± 0.70 | -0.19 | 68-ano-1(\square) |
| 408.15 | 783.00 ± 0.70 | 0.31 | 53-ano-7(\blacklozenge) | | | | |

Table 3. Recommended values (fit to the reliable experimental values according to the equations

$$\rho = A + BT + CT^2 + DT^3 + \dots \text{ or } \rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$$

| $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|---------------|--|---------------|--|---------------|--|
| 270.00 | 872.98 ± 0.63 | 310.00 | 847.27 ± 0.50 | 370.00 | 808.04 ± 0.65 |
| 280.00 | 866.58 ± 0.56 | 320.00 | 840.78 ± 0.51 | 380.00 | 801.43 ± 0.68 |
| 290.00 | 860.17 ± 0.52 | 330.00 | 834.28 ± 0.54 | 390.00 | 794.79 ± 0.72 |
| 293.15 | 858.14 ± 0.51 | 340.00 | 827.75 ± 0.56 | 400.00 | 788.14 ± 0.76 |
| 298.15 | 854.92 ± 0.50 | 350.00 | 821.21 ± 0.59 | 410.00 | 781.46 ± 0.81 |
| 300.00 | 853.73 ± 0.50 | 360.00 | 814.64 ± 0.62 | 420.00 | 774.76 ± 0.86 |

cont.

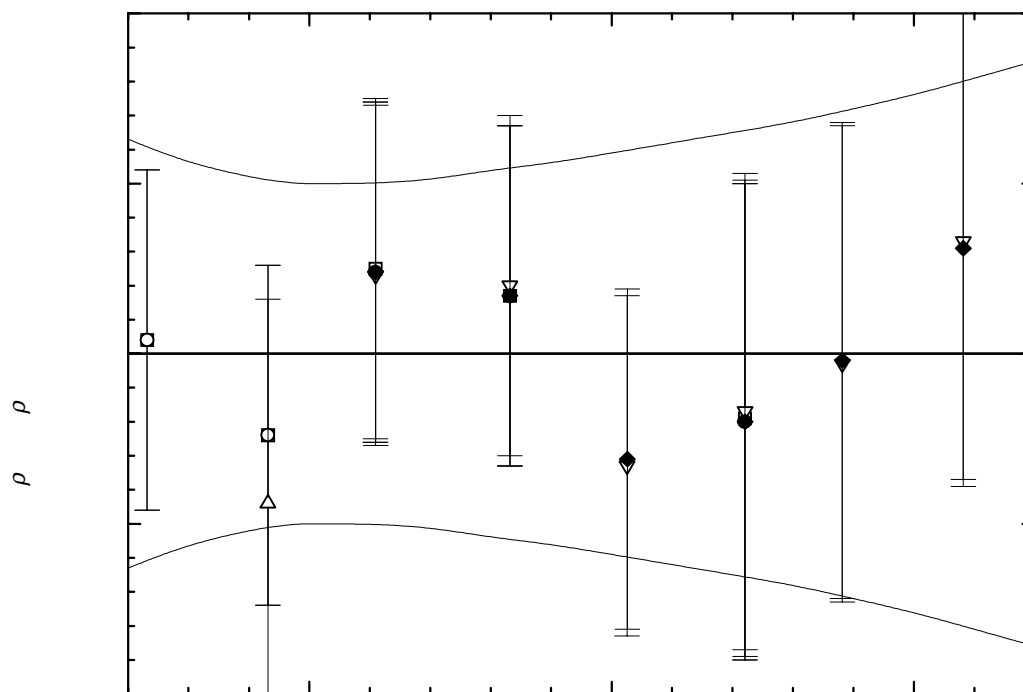


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

1,1,1,2-Tetracyclohexylethane [500037-80-9] C₂₆H₄₆ MW = 358.65 74

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|--------------|
| 298.15 | 960.8 ± 2.0 | 33-zar/adk-1 |

1,1-Bis(4-methylcyclohexyl)dodecane [55334-09-3] C₂₆H₅₀ MW = 362.68 75

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction):

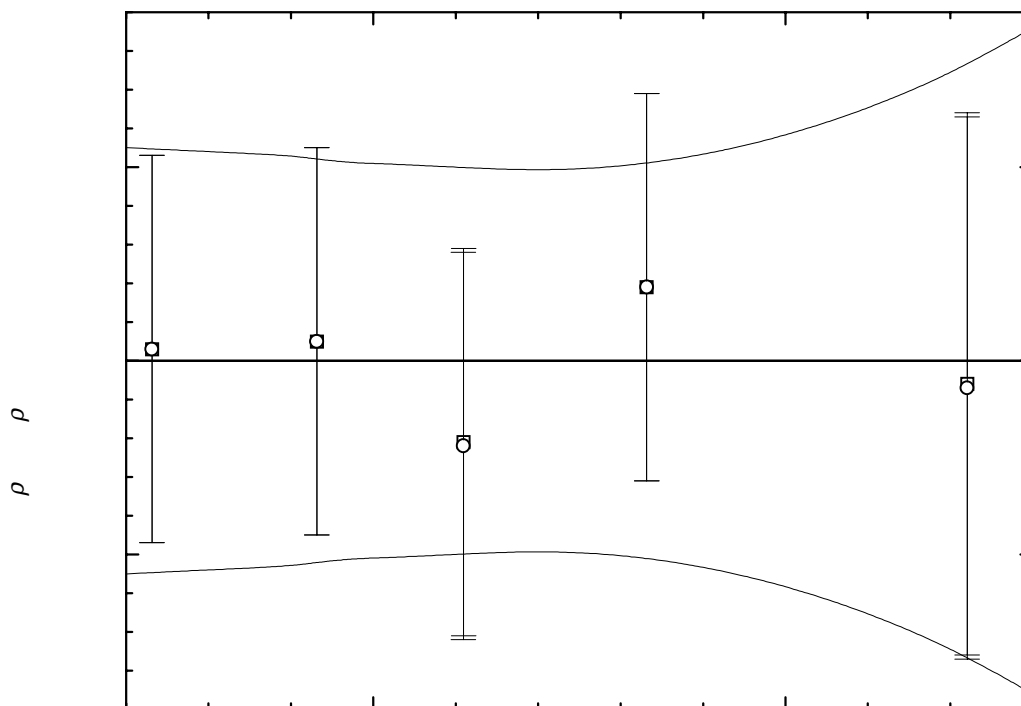
$\sigma_{\text{c,w}} = 1.3593 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{\text{c,uw}} = 4.4472 \cdot 10^{-2}$ (combined temperature ranges, unweighted).

| Coefficient | $T = 273.15 \text{ to } 372.05 \text{ K}$ $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|--|
| A | $1.05325 \cdot 10^3$ |
| B | $-6.25976 \cdot 10^{-1}$ |

cont.

1,1-Bis(4-methylcyclohexyl)dodecane (cont.)**Table 2.** Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|----------------------|--|--|-------------------------|----------------------|--|--|-------------------------|
| 273.15 | 882.30 ± 0.50 | 0.03 | 47-sch(□) | 273.15 | 882.30 ± 0.50 | 0.03 | 68-ano-1(O) |
| 293.15 | 869.80 ± 0.50 | 0.05 | 47-sch(□) | 293.15 | 869.80 ± 0.50 | 0.05 | 68-ano-1(O) |
| 310.93 | 858.40 ± 0.50 | -0.22 | 47-sch(□) | 310.95 | 858.40 ± 0.50 | -0.21 | 68-ano-1(O) |
| 333.15 | 844.90 ± 0.50 | 0.19 | 47-sch(□) | 333.15 | 844.90 ± 0.50 | 0.19 | 68-ano-1(O) |
| 372.04 | 820.30 ± 0.70 | -0.07 | 47-sch(□) | 372.05 | 820.30 ± 0.70 | -0.06 | 68-ano-1(O) |

**Fig. 1.** The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

cont.

Table 3. Recommended values (fit to the reliable experimental values according to the equations

$$\rho = A + BT + CT^2 + DT^3 + \dots \text{ or } \rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$$

| $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|---------------|--|---------------|--|---------------|--|
| 270.00 | 884.24 ± 0.55 | 300.00 | 865.46 ± 0.51 | 350.00 | 834.16 ± 0.58 |
| 280.00 | 877.98 ± 0.54 | 310.00 | 859.20 ± 0.50 | 360.00 | 827.90 ± 0.65 |
| 290.00 | 871.72 ± 0.53 | 320.00 | 852.94 ± 0.49 | 370.00 | 821.64 ± 0.74 |
| 293.15 | 869.75 ± 0.52 | 330.00 | 846.68 ± 0.50 | 380.00 | 815.38 ± 0.86 |
| 298.15 | 866.62 ± 0.51 | 340.00 | 840.42 ± 0.53 | | |

1,1-Dicyclohexyltetradecane

[55334-08-2]

C₂₆H₅₀

MW =362.68

76

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation $\sigma_w = 0.338$.

| Coefficient | $\rho = A + BT$ |
|-------------|-----------------|
| A | 1058.02 |
| B | -0.630 |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|--|------------|
| 293.15 | 872.6 ± 0.8 | -0.73 | 49-foe/fen |
| 310.95 | 862.2 ± 0.5 | 0.08 | 68-ano-1 |
| 333.15 | 848.1 ± 0.5 | -0.03 | 68-ano-1 |
| 372.05 | 824.1 ± 0.7 | 0.47 | 68-ano-1 |

Table 3. Recommended values.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|---------------|--|---------------|--|---------------|--|
| 290.00 | 875.3 ± 3.8 | 320.00 | 856.4 ± 1.0 | 360.00 | 831.2 ± 3.4 |
| 293.15 | 873.3 ± 3.4 | 330.00 | 850.1 ± 0.7 | 370.00 | 824.9 ± 4.4 |
| 298.15 | 870.2 ± 3.0 | 340.00 | 843.8 ± 1.5 | 380.00 | 818.6 ± 5.3 |
| 310.00 | 862.7 ± 1.8 | 350.00 | 837.5 ± 2.4 | | |

1,7-Dicyclohexyl-4-(2-cyclohexylethyl)-heptane

[55429-36-2]

C₂₇H₅₀

MW =374.69

77

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 313.15 | 900.5 ± 3.0 | 60-pet/zal |

1,1,1-Tricyclohexyl-2-methyloctane [103099-43-0] C₂₇H₅₀ MW = 374.69 78

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 313.15 | 926.9 ± 3.0 | 60-pet/zal |

3-Decyl-1,5-dicyclohexylpentane [500040-01-7] C₂₇H₅₂ MW = 376.71 79

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 293.15 | 869.5 ± 3.0 | 60-pet/zal |

1,7-Dicyclohexyl-4-(3-cyclohexylpropyl)-heptane [55334-73-1] C₂₈H₅₂ MW = 388.72 80

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{\text{c,w}} = 6.0667 \cdot 10^{-2}$ (combined temperature ranges, weighted), $\sigma_{\text{c,uw}} = 2.9454 \cdot 10^{-2}$ (combined temperature ranges, unweighted).

| Coefficient | $T = 273.15 \text{ to } 372.05 \text{ K}$ $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|--|
| A | $1.07608 \cdot 10^3$ |
| B | $-6.15181 \cdot 10^{-1}$ |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|---------------|--|--|-------------------------|---------------|--|--|-------------------------|
| 273.15 | 908.10 ± 0.50 | 0.06 | 68-ano-1(□) | 333.15 | 871.20 ± 0.50 | 0.07 | 68-ano-1(□) |
| 293.15 | 895.70 ± 0.50 | -0.04 | 68-ano-1(□) | 372.05 | 847.20 ± 0.70 | -0.00 | 68-ano-1(□) |
| 310.95 | 884.70 ± 0.50 | -0.09 | 68-ano-1(□) | | | | |

Table 3. Recommended values (fit to the reliable experimental values according to the equations $\rho = A + BT + CT^2 + DT^3 + \dots$ or $\rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$).

| $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|---------------|--|---------------|--|---------------|--|
| 270.00 | 909.98 ± 0.73 | 300.00 | 891.52 ± 0.51 | 350.00 | 860.77 ± 0.58 |
| 280.00 | 903.83 ± 0.66 | 310.00 | 885.37 ± 0.45 | 360.00 | 854.61 ± 0.73 |
| 290.00 | 897.68 ± 0.59 | 320.00 | 879.22 ± 0.42 | 370.00 | 848.46 ± 0.94 |
| 293.15 | 895.74 ± 0.56 | 330.00 | 873.07 ± 0.43 | 380.00 | 842.31 ± 1.22 |
| 298.15 | 892.66 ± 0.53 | 340.00 | 866.92 ± 0.48 | | |

cont.

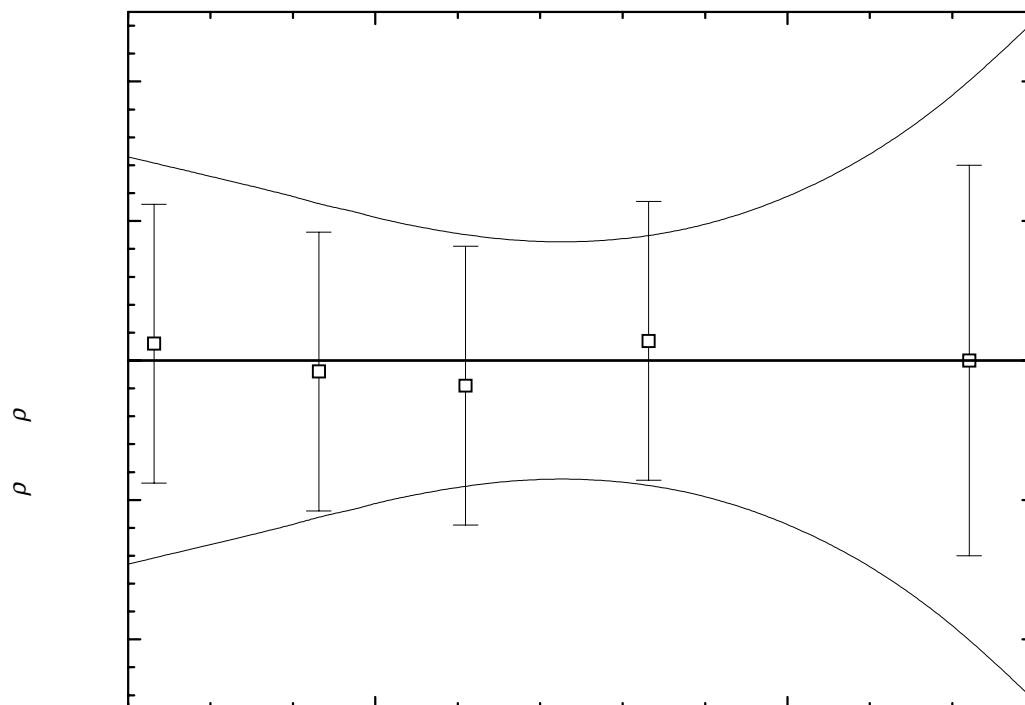


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

1,1,1-Tricyclohexyldecane

[103279-57-8]

C₂₈H₅₂

MW =388.72

81

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 313.15 | 916.7 ± 3.0 | 60-pet/zal |

1-Cyclohexyl-2-(cyclohexylmethyl)-pentadecane [55255-74-8] C₂₈H₅₄ MW = 390.74 82

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{c,w} = 1.2864 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 4.8304 \cdot 10^{-2}$ (combined temperature ranges, unweighted).

| Coefficient | T = 293.15 to 372.05 K $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|---|
| A | $1.04794 \cdot 10^3$ |
| B | $-6.29904 \cdot 10^{-1}$ |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|---------------|--|--|-------------------------|---------------|--|--|-------------------------|
| 293.15 | 863.20 ± 1.00 | -0.08 | 49-foe/fen(○) | 333.15 | 838.00 ± 0.50 | -0.09 | 68-ano-1(□) |
| 293.15 | 863.40 ± 0.50 | 0.12 | 68-ano-1(□) | 372.05 | 813.70 ± 0.70 | 0.12 | 68-ano-1(□) |
| 310.95 | 852.00 ± 0.50 | -0.07 | 68-ano-1(□) | | | | |

Further references: [47-sch].

Table 3. Recommended values (fit to the reliable experimental values according to the equations $\rho = A + BT + CT^2 + DT^3 + \dots$ or $\rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$).

| $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|---------------|--|---------------|--|---------------|--|
| 290.00 | 865.27 ± 0.93 | 310.00 | 852.67 ± 0.52 | 350.00 | 827.47 ± 0.58 |
| 293.15 | 863.28 ± 0.85 | 320.00 | 846.37 ± 0.42 | 360.00 | 821.17 ± 0.76 |
| 298.15 | 860.13 ± 0.73 | 330.00 | 840.07 ± 0.40 | 370.00 | 814.87 ± 0.98 |
| 300.00 | 858.97 ± 0.70 | 340.00 | 833.77 ± 0.45 | 380.00 | 808.57 ± 1.27 |

cont.

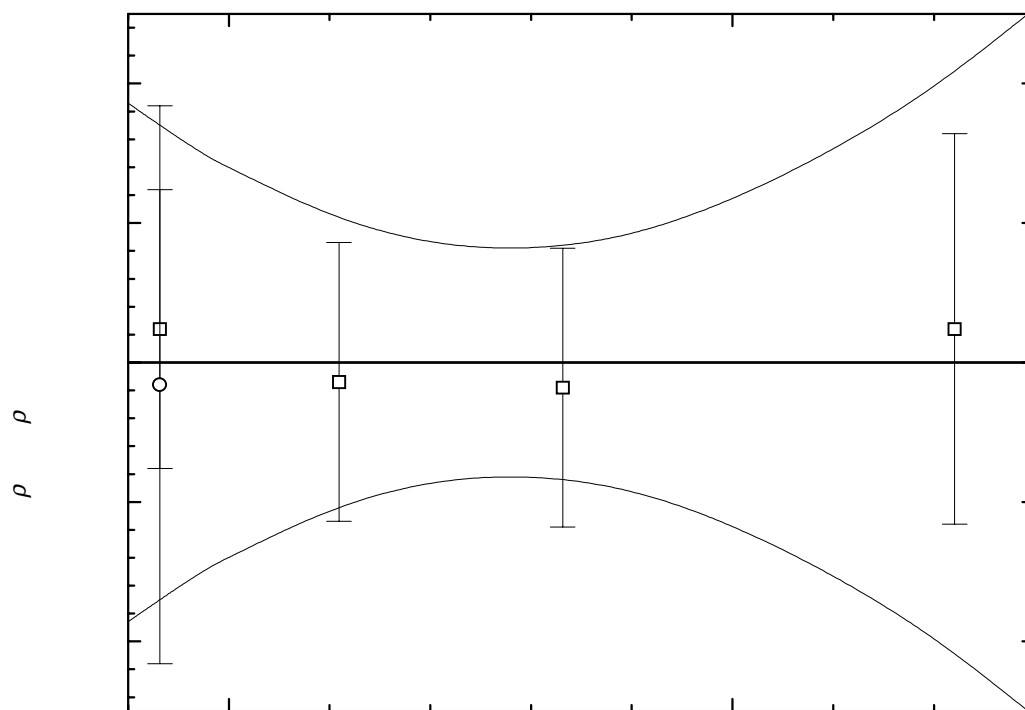


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

1,1-Dicyclohexylhexadecane [13287-09-7] C₂₈H₅₄ MW =390.74 83

Table 1. Experimental value with uncertainty.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ kg · m ⁻³ | Ref. |
|----------|--|------------|
| 293.15 | 879.1 ± 2.0 | 34-lan/cec |

1,1,1-Tricyclohexylundecane [103403-68-5] C₂₉H₅₄ MW =402.75 84

Table 1. Experimental value with uncertainty.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ kg · m ⁻³ | Ref. |
|----------|--|------------|
| 313.15 | 903.5 ± 3.0 | 60-pet/zal |

1-Cyclohexyl-2-(cyclohexylmethyl)-heptadecane [500017-76-5] C₃₀H₅₈ MW =418.79 85

Table 1. Experimental values with uncertainties.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 293.15 | 886.0 \pm 2.0 | 34-lan/cec |
| 293.15 | 866.1 \pm 2.0 | 43-wib/ove |

3,8-Dimethyl-1,10-bis(2,2,6-trimethylcyclohexyl)decane [500037-70-7] C₃₀H₅₈ MW =418.79 86

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 290.45 | 886.0 \pm 2.0 | 32-kar/sal |

2.2 Unsaturated Compounds with Alicyclic Rings

1,1-Dicyclopentyl-1,3-butadiene [1618-12-8] $C_{10}H_{14}$ MW =134.22 87

Table 1. Experimental value with uncertainty.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|------------|
| 293.15 | 910.6 ± 2.0 | 61-dya/beg |

1-(1-Cyclopenten-1-ylethynyl)-cyclohexene [80221-20-1] $C_{13}H_{16}$ MW =172.27 88

Table 1. Experimental value with uncertainty.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|------------|
| 293.15 | 961.0 ± 3.0 | 36-pin/nes |

1-Methyl-6-cyclohexylidene-1-cyclohexene [500040-79-9] $C_{13}H_{20}$ MW =176.30 89

Table 1. Fit with estimated B coefficient for 2 accepted points. Deviation $\sigma_w = 0.000$.

| Coefficient | $\rho = A + BT$ |
|-------------|-----------------|
| A | 1148.06 |
| B | -0.750 |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | $\rho_{\text{exp}} - \rho_{\text{calc}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|---|------------|
| 293.15 | 928.2 ± 3.0 | 0.00 | 25-gar/rei |
| 273.15 | 943.2 ± 3.0 | 0.00 | 25-gar/rei |

Table 3. Recommended values.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ |
|----------|---|
| 270.00 | 945.6 ± 3.0 |
| 280.00 | 938.1 ± 2.7 |
| 290.00 | 930.6 ± 2.8 |
| 293.15 | 928.2 ± 2.9 |
| 298.15 | 924.5 ± 3.1 |

1,2-Bis(1-cyclohexenyl)ethyne [500030-30-8] $C_{14}H_{18}$ MW =186.30 90

Table 1. Experimental values with uncertainties.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 293.15 | 993.4 ± 4.0 | 36-pin/nes |
| 286.15 | 959.8 ± 20.0 | 37-sal/sch |

1-(1-Cyclohexenyl)-2-(1-cyclopentenyl)-ethyne [500030-31-9] $C_{14}H_{18}$ MW =186.30 91

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 293.15 | 961.0 ± 1.0 | 36-pin/nes |

1-Ethyl-6-cyclohexylidene-1-cyclohexene [500040-82-4] $C_{14}H_{22}$ MW =190.33 92

Table 1. Fit with estimated B coefficient for 2 accepted points. Deviation $\sigma_w = 0.050$.

| Coefficient | $\rho = A + BT$ |
|-------------|-----------------|
| A | 1153.64 |
| B | -0.760 |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|--|------------|
| 293.15 | 930.8 ± 3.0 | -0.05 | 25-gar/rei |
| 273.15 | 946.1 ± 3.0 | 0.05 | 25-gar/rei |

Table 3. Recommended values.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|---------------|--|
| 270.00 | 948.4 ± 3.0 |
| 280.00 | 940.8 ± 2.7 |
| 290.00 | 933.2 ± 2.8 |
| 293.15 | 930.9 ± 2.9 |
| 298.15 | 927.0 ± 3.1 |

1-(1-Cycloheptenyl)-1-cycloheptene [500040-83-5] $C_{14}H_{22}$ MW =190.33 93

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 292.15 | 973.6 ± 3.0 | 28-god/cau |

2-Cyclohexyl-2-(cyclohexen-3-yl)-propane [500017-29-8] $C_{15}H_{26}$ MW = 206.37 94

Table 1. Experimental value with uncertainty.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|------------|
| 293.15 | 923.4 ± 0.6 | 51-ser/wis |

2-Methyl-5-(1-methylethyl)-1-[2-methyl-5-(1-methylethyl)-1-cyclohexenyl]-1-cyclohexene [500050-01-1] $C_{20}H_{34}$ MW = 274.49 95

Table 1. Experimental value with uncertainty.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|----------|
| 293.15 | 945.0 ± 3.0 | 14-wal-2 |

1,5-Dicyclopentyl-3-(2-cyclopentylethyl)-2-pentene [54934-71-3] $C_{22}H_{38}$ MW = 302. 96

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{\text{c,w}} = 2.0249 \cdot 10^{-2}$ (combined temperature ranges, weighted), $\sigma_{\text{c,uw}} = 9.8322 \cdot 10^{-3}$ (combined temperature ranges, unweighted).

| Coefficient | $T = 273.15 \text{ to } 372.05 \text{ K}$ $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|--|
| A | $1.09883 \cdot 10^3$ |
| B | $-6.60203 \cdot 10^{-1}$ |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | $\rho_{\text{exp}} - \rho_{\text{calc}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. (Symbol in Fig. 1) | T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | $\rho_{\text{exp}} - \rho_{\text{calc}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. (Symbol in Fig. 1) |
|----------|---|---|----------------------------|----------|---|---|----------------------------|
| 273.15 | 918.50 ± 0.50 | 0.01 | 68-ano-1(□) | 333.15 | 878.90 ± 0.50 | 0.02 | 68-ano-1(□) |
| 293.15 | 905.30 ± 0.50 | 0.01 | 68-ano-1(□) | 372.05 | 853.20 ± 0.70 | 0.00 | 68-ano-1(□) |
| 310.95 | 893.50 ± 0.50 | -0.04 | 68-ano-1(□) | | | | |

cont.

1,5-Dicyclopentyl-3-(2-cyclopentylethyl)-2-pentene (cont.)

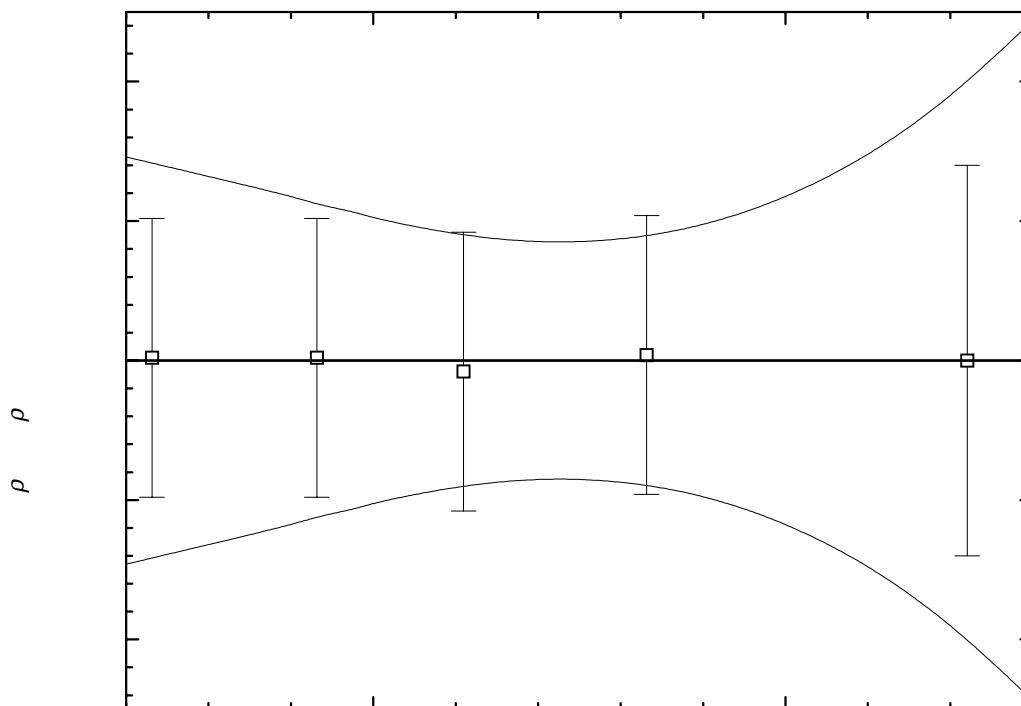


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

Table 3. Recommended values (fit to the reliable experimental values according to the equations $\rho = A + BT + CT^2 + DT^3 + \dots$ or $\rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$).

| $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|----------------------|--|----------------------|--|----------------------|--|
| 270.00 | 920.57 \pm 0.73 | 300.00 | 900.77 \pm 0.51 | 350.00 | 867.76 \pm 0.58 |
| 280.00 | 913.97 \pm 0.66 | 310.00 | 894.16 \pm 0.45 | 360.00 | 861.15 \pm 0.73 |
| 290.00 | 907.37 \pm 0.59 | 320.00 | 887.56 \pm 0.42 | 370.00 | 854.55 \pm 0.94 |
| 293.15 | 905.29 \pm 0.56 | 330.00 | 880.96 \pm 0.43 | 380.00 | 847.95 \pm 1.22 |
| 298.15 | 901.99 \pm 0.53 | 340.00 | 874.36 \pm 0.48 | | |

1,5-Dicyclohexyl-3-(2-cyclohexylethyl)-2-pentene [66374-92-3] $C_{25}H_{44}$ MW = 344.62 97

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{c,w} = 1.1631 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 5.7283 \cdot 10^{-2}$ (combined temperature ranges, unweighted).

| Coefficient | $T = 273.15 \text{ to } 372.05 \text{ K}$ $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|--|
| A | $1.10168 \cdot 10^3$ |
| B | $-6.47614 \cdot 10^{-1}$ |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|---------------|--|--|-------------------------|---------------|--|--|-------------------------|
| 273.15 | 924.90 ± 0.50 | 0.11 | 68-ano-1(□) | 333.15 | 886.00 ± 0.50 | 0.07 | 68-ano-1(□) |
| 293.15 | 911.80 ± 0.50 | -0.04 | 68-ano-1(□) | 372.05 | 860.80 ± 0.70 | 0.06 | 68-ano-1(□) |
| 310.95 | 900.10 ± 0.50 | -0.21 | 68-ano-1(□) | | | | |

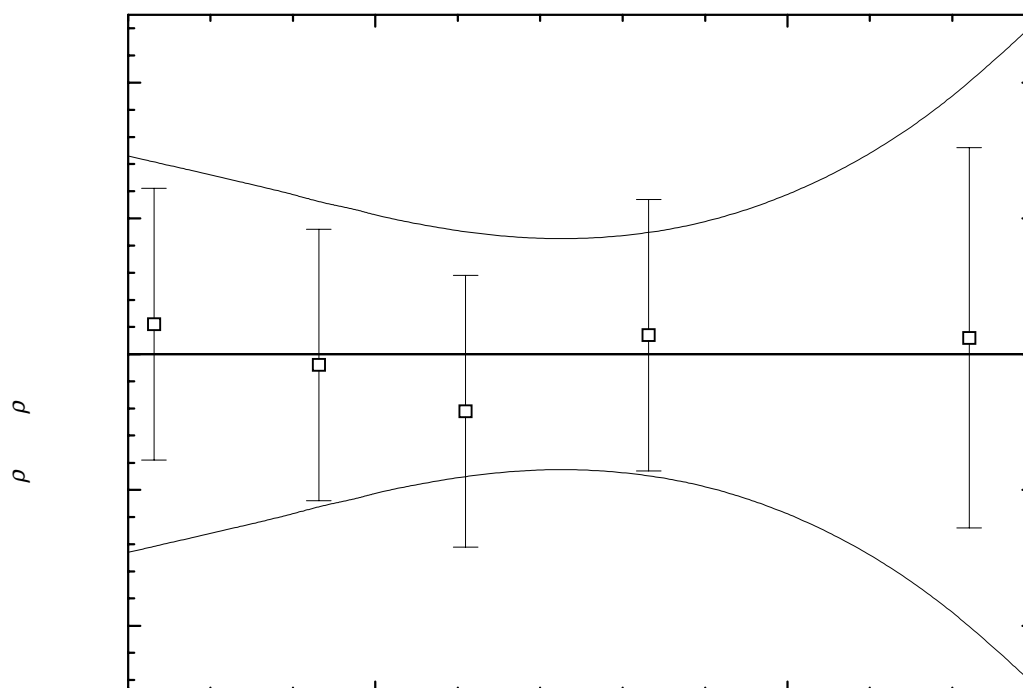


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)
cont.

1,5-Dicyclohexyl-3-(2-cyclohexylethyl)-2-pentene (cont.)**Table 3.** Recommended values (fit to the reliable experimental values according to the equations

$$\rho = A + BT + CT^2 + DT^3 + \dots \text{ or } \rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$$

| $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|----------------------|--|----------------------|--|----------------------|--|
| 270.00 | 926.83 \pm 0.73 | 300.00 | 907.40 \pm 0.51 | 350.00 | 875.02 \pm 0.58 |
| 280.00 | 920.35 \pm 0.66 | 310.00 | 900.92 \pm 0.45 | 360.00 | 868.54 \pm 0.73 |
| 290.00 | 913.88 \pm 0.59 | 320.00 | 894.45 \pm 0.42 | 370.00 | 862.07 \pm 0.94 |
| 293.15 | 911.84 \pm 0.56 | 330.00 | 887.97 \pm 0.43 | 380.00 | 855.59 \pm 1.22 |
| 298.15 | 908.60 \pm 0.53 | 340.00 | 881.49 \pm 0.48 | | |

1,7-Dicyclopentyl-4-(3-cyclopentylpropyl)-3-heptene

[66374-93-4]

 $\text{C}_{25}\text{H}_{44}$

MW = 344.62

98

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction):

$\sigma_{c,w} = 3.2721 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 1.5269 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

| Coefficient | $T = 273.15 \text{ to } 372.05 \text{ K}$ $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|--|
| A | $1.09586 \cdot 10^3$ |
| B | $-6.68767 \cdot 10^{-1}$ |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|----------------------|--|--|-------------------------|----------------------|--|--|-------------------------|
| 293.15 | 899.90 \pm 0.60 | 0.09 | 49-foe/fen(\square) | 310.95 | 887.30 \pm 0.50 | -0.60 | 68-ano-1(O) |
| 273.15 | 913.30 \pm 0.50 | 0.12 | 68-ano-1(O) | 333.15 | 872.80 \pm 0.50 | -0.26 | 68-ano-1(O) |
| 293.15 | 900.00 \pm 0.50 | 0.19 | 68-ano-1(O) | 372.05 | 847.50 \pm 0.70 | 0.46 | 68-ano-1(O) |

Table 3. Recommended values (fit to the reliable experimental values according to the equations

$$\rho = A + BT + CT^2 + DT^3 + \dots \text{ or } \rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$$

| $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|----------------------|--|----------------------|--|----------------------|--|
| 270.00 | 915.29 \pm 0.58 | 300.00 | 895.23 \pm 0.55 | 350.00 | 861.79 \pm 0.59 |
| 280.00 | 908.60 \pm 0.58 | 310.00 | 888.54 \pm 0.52 | 360.00 | 855.10 \pm 0.68 |
| 290.00 | 901.91 \pm 0.57 | 320.00 | 881.85 \pm 0.51 | 370.00 | 848.41 \pm 0.80 |
| 293.15 | 899.81 \pm 0.56 | 330.00 | 875.16 \pm 0.51 | 380.00 | 841.73 \pm 0.96 |
| 298.15 | 896.46 \pm 0.55 | 340.00 | 868.48 \pm 0.54 | | |

cont.

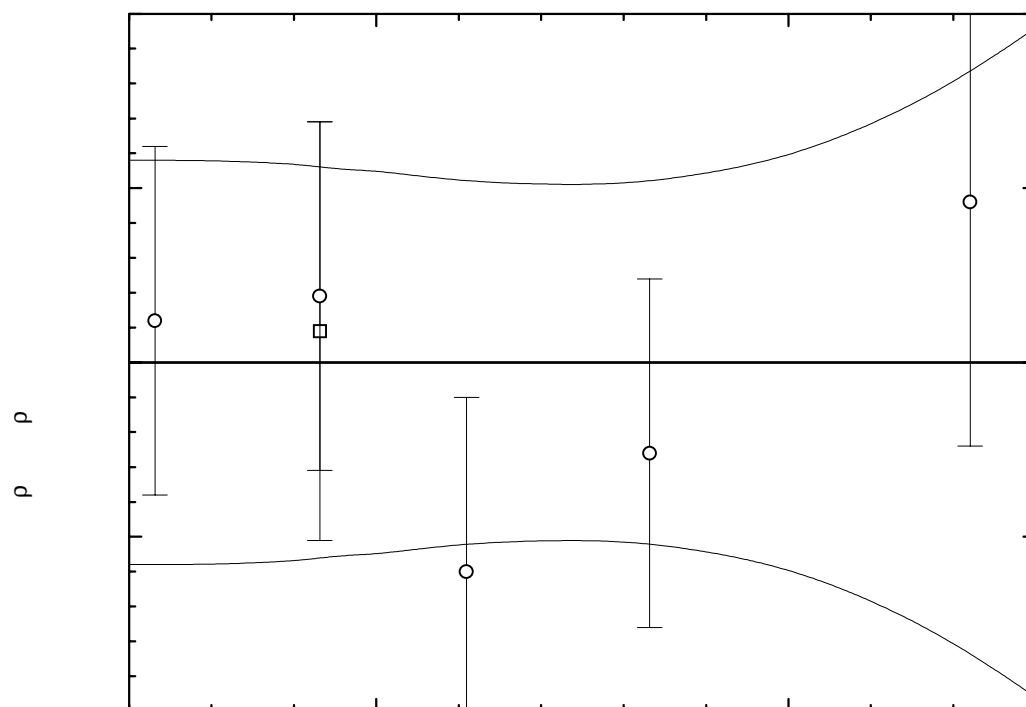


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

2.3 Alicyclic and Phenyl Rings

Cyclopropylphenylmethane [1667-00-1] $C_{10}H_{12}$ MW =132.21 99

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 293.15 | 1055.9 ± 1.0 | 11 -kis -3 |

1-Cyclopropyl-1-phenylethene [825-76-3] $C_{11}H_{12}$ MW =144.22 100

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|-----------|
| 292.15 | 955.2 ± 2.0 | 11-kis- 3 |

Cyclobutylphenylmethane [5244-88-2] $C_{11}H_{14}$ MW =146.23 101

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 293.15 | 955.6 ± 0.6 | 34-hus/goo |

(2-Ethylcyclopropyl)benzene [1588-56-3] $C_{11}H_{14}$ MW =146.23 102

Table 1. Experimental values with uncertainties.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 290.15 | 948.0 ± 20.0 | 08-bor/men |
| 293.15 | 918.0 ± 3.0 | 44-dav/fel |

1-Cyclopentenylphenylmethane [15507-35-4] $C_{12}H_{14}$ MW =158.24 103

Table 1. Experimental values with uncertainties.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|----------|
| 296.15 | 952.0 ± 6.0 | 34-pia |
| 295.15 | 958.0 ± 6.0 | 35-pia |
| 290.65 | 977.3 ± 3.0 | 36-den-1 |

Cyclopentylphenylmethane [4410-78-0] $C_{12}H_{16}$ MW =160.26 104

Table 1. Experimental values with uncertainties.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|------------|
| 291.15 | 934.5 ± 2.0 | 31-zel/tit |
| 293.15 | 941.8 ± 2.0 | 34-hus/goo |
| 294.15 | 928.3 ± 2.0 | 36-den-1 |

1-Cyclohexenylphenylmethane [4714-09-4] $C_{13}H_{16}$ MW =172.27 105

Table 1. Fit with estimated B coefficient for 5 accepted points. Deviation $\sigma_w = 0.680$.

| Coefficient | $\rho = A + BT$ |
|-------------|-----------------|
| A | 1180.63 |
| B | -0.740 |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | $\rho_{\text{exp}} - \rho_{\text{calc}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. | T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | $\rho_{\text{exp}} - \rho_{\text{calc}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|---|------------|----------|---|---|--------------------------|
| 293.15 | 964.0 ± 1.0 | 0.30 | 07-fri | 286.55 | 967.8 ± 2.0 | -0.78 | 15-von/tre |
| 273.15 | 980.2 ± 2.0 | 1.70 | 22-tif/por | 286.85 | 966.3 ± 3.0 | -2.06 | 15-von/tre ¹⁾ |
| 293.15 | 963.4 ± 1.0 | -0.30 | 31-kur | 287.45 | 965.6 ± 3.0 | -2.32 | 15-von/tre ¹⁾ |
| 286.35 | 967.8 ± 2.0 | -0.93 | 15-von/tre | | | | |

¹⁾ Not included in calculation of linear coefficients.

Table 3. Recommended values.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ |
|----------|---|
| 270.00 | 980.8 ± 2.4 |
| 280.00 | 973.4 ± 1.6 |
| 290.00 | 966.0 ± 1.2 |
| 293.15 | 963.7 ± 1.3 |
| 298.15 | 960.0 ± 1.5 |

1-(1-Cyclopenten-1-yl)-2-phenylethane [4413-18-7] $C_{13}H_{16}$ MW =172.27 106

Table 1. Experimental value with uncertainty.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|----------|
| 293.65 | 952.7 ± 2.0 | 36-den-2 |

(Phenylmethylene)cyclohexane [500039-30-5] $C_{13}H_{16}$ MW =172.27 107

Table 1. Experimental values with uncertainties.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 290.15 | 964.0 ± 10.0 | 21-rei/van |
| 293.15 | 957.9 ± 3.0 | 31-kur |
| 296.15 | 966.3 ± 4.0 | 34-pre/don |

Cyclohexylphenylmethane [4410-75-7] $C_{13}H_{18}$ MW =174.29 108

Table 1. Experimental values with uncertainties.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 293.15 | 928.1 ± 3.0 | 34-hus/goo |
| 290.15 | 943.6 ± 6.0 | 41-sid/tsu |

1-Cyclopentyl-2-phenylethane [4413-19-8] $C_{13}H_{18}$ MW =174.29 109

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|--------|
| 292.15 | 927.6 ± 2.0 | 39-den |

1-Cyclohexen-1-yl-2-phenylethyne [84248-95-3] $C_{14}H_{14}$ MW =182.27 110

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 293.15 | 939.1 ± 2.0 | 37-pin/nes |

1-Cyclohexen-1-yl-2-phenylethane [500033-74-9] $C_{14}H_{18}$ MW =186.30 111

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 288.15 | 958.7 ± 2.0 | 33-coo/hew |

1-Cyclohexylidene-1-phenylethane [500039-47-4] $C_{14}H_{18}$ MW =186.30 112

Table 1. Fit with estimated B coefficient for 2 accepted points. Deviation $\sigma_w = 0.050$.

| Coefficient | $\rho = A + BT$ |
|-------------|-----------------|
| A | 1177.21 |
| B | -0.750 |

cont.

1-Cyclohexylidene-1-phenylethane (cont.)**Table 2.** Experimental values with uncertainties and deviation from calculated values.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | $\rho_{\text{exp}} - \rho_{\text{calc}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|---|------------|
| 293.15 | 957.3 ± 2.0 | -0.05 | 42-ven/bol |
| 273.15 | 972.4 ± 2.0 | 0.05 | 42-ven/bol |

Table 3. Recommended values.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ |
|----------|---|
| 270.00 | 974.7 ± 2.2 |
| 280.00 | 967.2 ± 1.8 |
| 290.00 | 959.7 ± 1.9 |
| 293.15 | 957.4 ± 2.1 |
| 298.15 | 953.6 ± 2.3 |

1-Cyclohexylidene-2-phenylethane

[500039-48-5]

 $\text{C}_{14}\text{H}_{18}$

MW =186.30

113

Table 1. Fit with estimated B coefficient for 2 accepted points. Deviation $\sigma_w = 0.050$.

| Coefficient | $\rho = A + BT$ |
|-------------|-----------------|
| A | 1201.82 |
| B | -0.720 |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | $\rho_{\text{exp}} - \rho_{\text{calc}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|---|------------|
| 293.15 | 990.8 ± 2.0 | 0.05 | 42-ven/bol |
| 273.15 | 1005.1 ± 2.0 | -0.05 | 42-ven/bol |

Table 3. Recommended values.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ |
|----------|---|
| 270.00 | 1007.4 ± 2.2 |
| 280.00 | 1000.2 ± 1.8 |
| 290.00 | 993.0 ± 1.9 |
| 293.15 | 990.8 ± 2.0 |
| 298.15 | 987.1 ± 2.3 |

1-Cyclohexyl-2-phenylethene [500039-49-6] $C_{14}H_{18}$ MW =186.30 114

Table 1. Experimental value with uncertainty.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|------------|
| 290.15 | 959.5 ± 2.0 | 21-rei/van |

1-(1-Cyclopenten-1-yl)-3-phenylpropane [500039-39-4] $C_{14}H_{18}$ MW =186.30 115

Table 1. Experimental value with uncertainty.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|----------|
| 291.65 | 947.1 ± 2.0 | 36-den-2 |

(4-Methyl-1-cyclohexen-1-yl)-phenylmethane [500040-07-3] $C_{14}H_{18}$ MW =186.30 116

Table 1. Fit with estimated B coefficient for 2 accepted points. Deviation $\sigma_w = 0.000$.

| Coefficient | $\rho = A + BT$ |
|-------------|-----------------|
| A | 1173.56 |
| B | -0.750 |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | $\rho_{\text{exp}} - \rho_{\text{calc}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|---|------------|
| 289.15 | 956.7 ± 2.0 | 0.00 | 06-sab/mai |
| 273.15 | 968.7 ± 2.0 | 0.00 | 06-sab/mai |

Table 3. Recommended values.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ |
|----------|---|
| 270.00 | 971.1 ± 2.1 |
| 280.00 | 963.6 ± 1.8 |
| 290.00 | 956.1 ± 2.0 |

1-(1-Methyl-2-cyclopenten-1-yl)-2-phenylethane [500039-40-7] $C_{14}H_{18}$ MW =186.30 117

Table 1. Experimental value with uncertainty.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|--------------|
| 289.45 | 930.6 ± 2.0 | 38-kon/nar-1 |

1-(Phenylethyl)-2-methyl-1-cyclopentene [500060-04-8] $C_{13}H_{16}$ MW =172.27 118

Table 1. Experimental values with uncertainties.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|--------------|
| 293.45 | 937.5 ± 2.0 | 38-kon/nar-1 |
| 291.65 | 936.4 ± 2.0 | 38-kon/nar-1 |

1-Methyl-2-(phenylmethyl)-1-cyclohexene [500039-42-9] $C_{14}H_{18}$ MW =186.30 119

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 290.95 | 993.8 ± 2.0 | 36-coo/hew |

1-Methyl-2-(phenylmethyl)-2-cyclohexene [500039-43-0] $C_{14}H_{18}$ MW =186.30 120

Table 1. Experimental values with uncertainties.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|--------|
| 291.15 | 981.0 ± 3.0 | 09-mur |
| 273.15 | 990.0 ± 6.0 | 09-mur |

4-Methyl-2-(phenylmethyl)-1-cyclohexene [500039-46-3] $C_{14}H_{18}$ MW =186.30 121

Table 1. Experimental values with uncertainties.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 293.15 | 959.1 ± 3.0 | 10-mai/mur |
| 273.15 | 969.3 ± 3.0 | 10-mai/mur |

1-Cyclohexyl-1-phenylethane [4413-16-5] $C_{14}H_{20}$ MW = 188.31 122

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{\text{c,w}} = 4.9833 \cdot 10^{-2}$ (combined temperature ranges, weighted), $\sigma_{\text{c,uw}} = 2.8771 \cdot 10^{-2}$ (combined temperature ranges, unweighted).

| Coefficient | $T = 273.15 \text{ to } 372.05 \text{ K}$ $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|--|
| A | $1.13243 \cdot 10^3$ |
| B | $-6.34133 \cdot 10^{-1}$ |
| C | $-1.26472 \cdot 10^{-4}$ |

cont.

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|----------------------|--|--|-------------------------|----------------------|--|--|-------------------------|
| 273.15 | 949.80 ± 0.50 | 0.02 | 68-ano-1(□) | 333.15 | 907.10 ± 0.50 | -0.03 | 68-ano-1(□) |
| 293.15 | 935.60 ± 0.50 | -0.07 | 68-ano-1(□) | 372.05 | 879.00 ± 0.50 | 0.00 | 68-ano-1(□) |
| 310.95 | 923.10 ± 0.50 | 0.08 | 68-ano-1(□) | | | | |

Further references: [12-sab/mur].

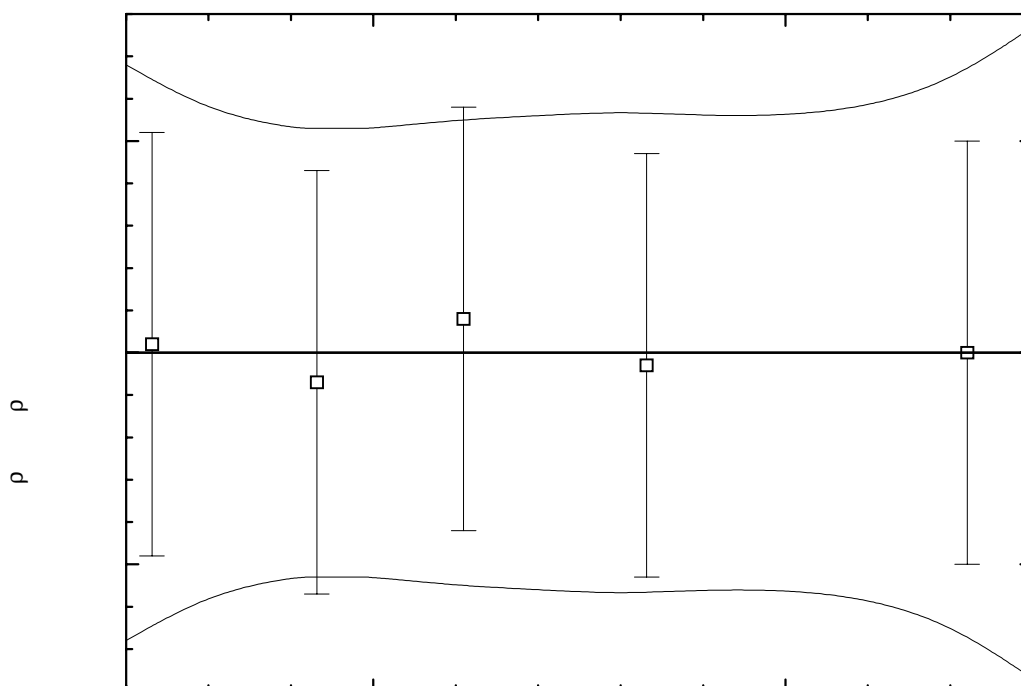


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

Table 3. Recommended values (fit to the reliable experimental values according to the equations $\rho = A + BT + CT^2 + DT^3 + \dots$ or $\rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$).

| $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|----------------------|--|----------------------|--|----------------------|--|
| 270.00 | 952.00 ± 0.68 | 300.00 | 930.81 ± 0.53 | 350.00 | 894.99 ± 0.56 |
| 280.00 | 944.96 ± 0.57 | 310.00 | 923.70 ± 0.55 | 360.00 | 887.75 ± 0.58 |
| 290.00 | 937.90 ± 0.53 | 320.00 | 916.56 ± 0.56 | 370.00 | 880.49 ± 0.64 |
| 293.15 | 935.67 ± 0.53 | 330.00 | 909.40 ± 0.57 | 380.00 | 873.20 ± 0.77 |
| 298.15 | 932.12 ± 0.53 | 340.00 | 902.21 ± 0.56 | | |

1-Cyclopentyl-3-phenylpropane**[2883-12-7]****C₁₄H₂₀****MW = 188.31****123****Table 1.** Coefficients of the polynomial expansion equation. Standard deviations (see introduction):
 $\sigma_{c,w} = 2.1265 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 1.0632 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

| Coefficient | T = 273.15 to 372.05 K $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|---|
| A | $1.12872 \cdot 10^3$ |
| B | $-7.20475 \cdot 10^{-1}$ |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|---------------|--|--|-------------------------|---------------|--|--|-------------------------|
| 273.15 | 932.10 ± 0.50 | 0.17 | 68-ano-1(□) | 333.15 | 888.90 ± 0.50 | 0.20 | 68-ano-1(□) |
| 293.15 | 917.50 ± 0.50 | -0.02 | 68-ano-1(□) | 372.05 | 860.70 ± 0.50 | 0.03 | 68-ano-1(□) |
| 310.95 | 904.30 ± 0.50 | -0.39 | 68-ano-1(□) | | | | |

Further references: [36-den-2].**Table 3.** Recommended values (fit to the reliable experimental values according to the equations

$$\rho = A + BT + CT^2 + DT^3 + \dots \text{ or } \rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$$

| $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|---------------|--|---------------|--|---------------|--|
| 270.00 | 934.19 ± 0.59 | 300.00 | 912.58 ± 0.51 | 350.00 | 876.56 ± 0.55 |
| 280.00 | 926.99 ± 0.55 | 310.00 | 905.38 ± 0.50 | 360.00 | 869.35 ± 0.58 |
| 290.00 | 919.79 ± 0.53 | 320.00 | 898.17 ± 0.50 | 370.00 | 862.15 ± 0.61 |
| 293.15 | 917.52 ± 0.52 | 330.00 | 890.97 ± 0.51 | 380.00 | 854.94 ± 0.65 |
| 298.15 | 913.91 ± 0.51 | 340.00 | 883.76 ± 0.52 | | |

cont.

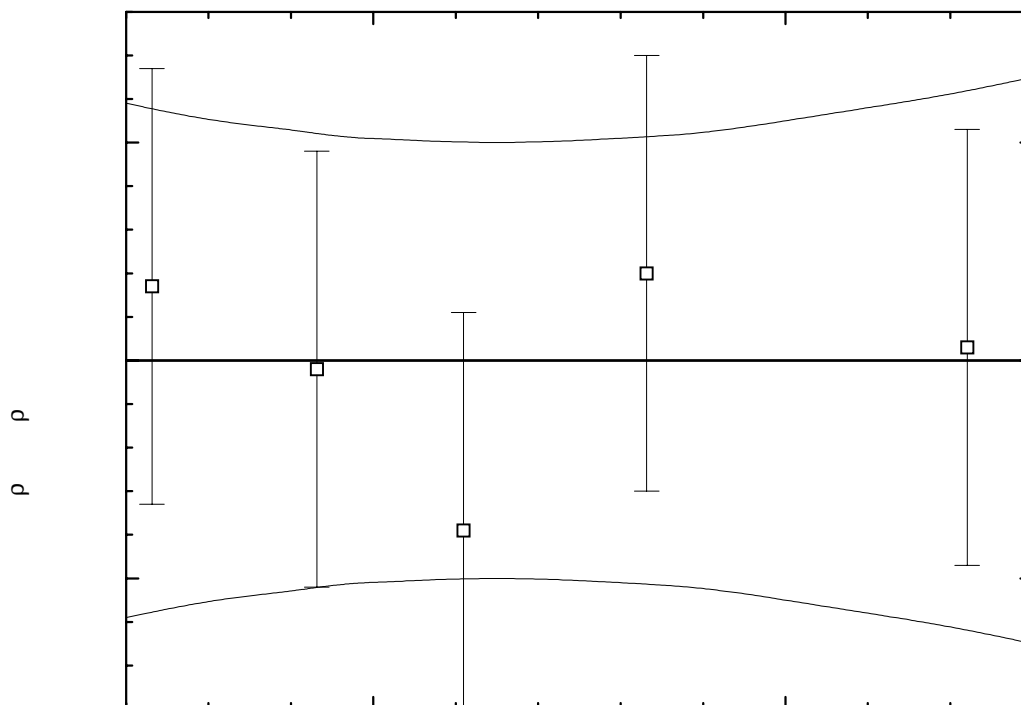


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

2-Cyclohexyl-1-phenyl-1-propene [500050-11-3] $C_{15}H_{20}$ MW =200.32 124

Table 1. Experimental values with uncertainties.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|------------|
| 293.15 | 961.9 ± 3.0 | 53-kha/yan |
| 273.15 | 986.9 ± 3.0 | 53-kha/yan |

1-(1-Methyl-2-cyclohexen-1-yl)-2-phenylethane [500039-60-1] $C_{15}H_{20}$ MW =200.32 125

Table 1. Experimental value with uncertainty.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|--------------|
| 290.75 | 934.9 ± 2.0 | 38-kon/nar-1 |

1-(2-Methyl-1-cyclohexen-1-yl)-2-phenylethane [63521-79-9] $C_{15}H_{20}$ MW =200.32 126

Table 1. Experimental values with uncertainties.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|--------------|
| 293.15 | 956.4 ± 3.0 | 38-kon/nar-1 |
| 292.55 | 951.4 ± 3.0 | 38-kon/nar-1 |

2-Cyclohexyl-2-phenylpropane [25683-97-0] $C_{15}H_{22}$ MW =202.34 127

Table 1. Experimental value with uncertainty.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|------------|
| 293.15 | 946.4 ± 0.5 | 51-ser/wis |

1-Cyclopentyl-4-phenylbutane [5716-74-5] $C_{15}H_{22}$ MW =202.34 128

Table 1. Experimental value with uncertainty.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|--------|
| 293.15 | 923.7 ± 2.0 | 39-den |

1,2-Dimethyl-4-(cyclohexylmethyl)-benzene [500039-61-2] $C_{15}H_{22}$ MW =202.34 129

Table 1. Experimental value with uncertainty.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|------------|
| 293.15 | 950.4 ± 2.0 | 66-che/lub |

1,4-Dimethyl-3-(cyclohexylmethyl)-benzene [500039-62-3] $C_{15}H_{22}$ MW =202.34 130

Table 1. Experimental value with uncertainty.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|------------|
| 293.15 | 929.2 ± 2.0 | 66-che/lub |

2-Cyclohexyl-2-(4-methylphenyl)-propane [500039-77-0] $C_{16}H_{24}$ MW =216.37 131

Table 1. Experimental value with uncertainty.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|--------|
| 297.15 | 916.0 ± 2.0 | 28-bod |

(5-Cyclopentylpentyl)benzene [2883-11-6] $C_{16}H_{24}$ MW =216.37 132

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|--------|
| 293.15 | 918.1 ± 2.0 | 39-den |

Cyclobutyldiphenylmethane [500037-39-8] $C_{17}H_{18}$ MW =222.33 133

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|----------|
| 316.65 | 1000.1 ± 2.0 | 15-kis-2 |

1-Methyl-4-(1-methylethyl)-2-(phenylmethyl)-1-cyclohexene [500039-81-6] $C_{17}H_{24}$ MW =228.38 134

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 288.95 | 944.8 ± 2.0 | 36-coo/hew |

Cyclohexylcyclohexyldenephenylmethane [500039-87-2] $C_{18}H_{24}$ MW =240.39 135

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 296.15 | 982.0 ± 2.0 | 26-con/sma |

1-Methylene-2-methyl-3(phenylmethyl)-5-(1-methylethenyl)-cyclohexane [500039-88-3] $C_{18}H_{24}$ MW =240.39 136

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 293.15 | 945.6 ± 2.0 | 14-rup/tom |

Dicyclohexylphenylmethane [94440-27-4] $C_{19}H_{28}$ MW =256.43 137

Table 1. Experimental values with uncertainties.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 286.15 | 989.4 ± 3.0 | 08-god |
| 293.15 | 989.0 ± 10.0 | 28-zel/gav |
| 293.15 | 977.4 ± 3.0 | 30-ros/boc |
| 298.15 | 969.3 ± 3.0 | 31-adk/zar |

1,1-Dicyclohexyl-3-methyl-1-phenylbutane [102544-03-6] $C_{23}H_{36}$ MW =312.54 138

Table 1. Experimental value with uncertainty.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|------------|
| 313.15 | 960.1 ± 2.0 | 60-che/pet |

1,1-Dicyclohexyl-1-phenylpentane [112685-73-1] $C_{23}H_{36}$ MW =312.54 139

Table 1. Experimental value with uncertainty.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|------------|
| 313.15 | 963.1 ± 2.0 | 60-che/pet |

1-Benzyl-3-benylidene-2-methyl-4-(1-methylethenyl) cyclohexane [500037-42-3] $C_{24}H_{28}$ MW = 140

Table 1. Experimental value with uncertainty.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|------------|
| 293.15 | 1001.5 ± 2.0 | 14-rup/tom |

4-Cyclohexyl-1,7-diphenylheptane [500039-99-6] $C_{25}H_{26}$ MW =326.48 141

Table 1. Experimental value with uncertainty.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|------------|
| 293.15 | 970.5 ± 2.0 | 60-che/pet |

1,5-Diphenyl-3-(3-cyclopentylpropyl)-pentane [500037-33-2] $C_{25}H_{34}$ MW = 334.54 142

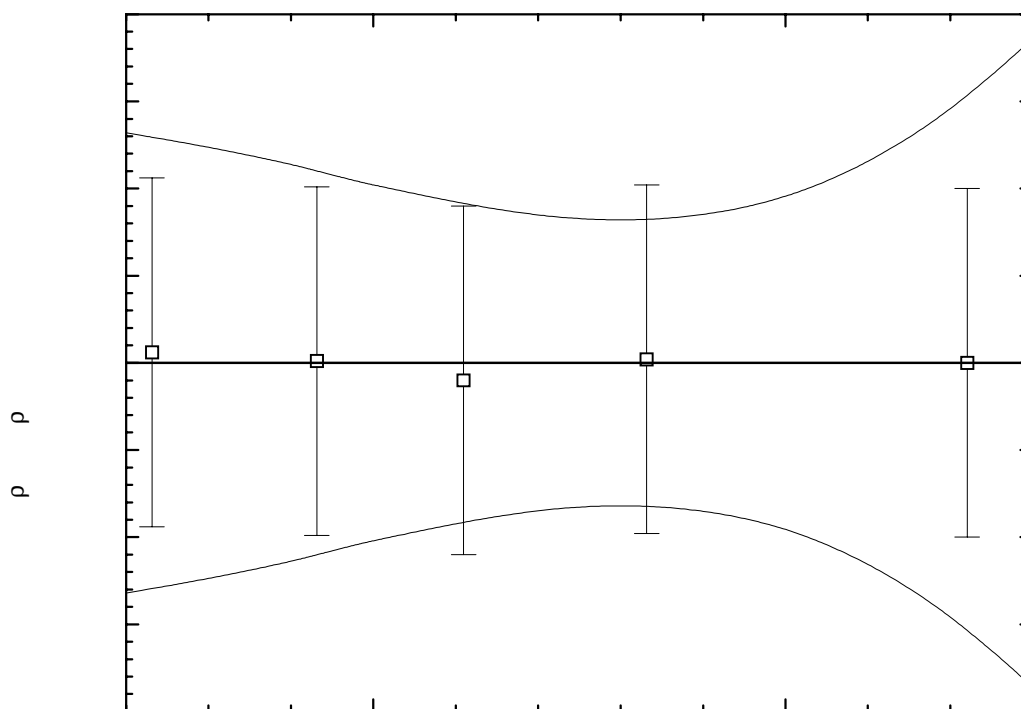
Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{\text{c,w}} = 7.1760 \cdot 10^{-2}$ (combined temperature ranges, weighted), $\sigma_{\text{c,uw}} = 2.6688 \cdot 10^{-2}$ (combined temperature ranges, unweighted).

| Coefficient | $T = 273.15 \text{ to } 372.05 \text{ K}$ $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|--|
| A | $1.15464 \cdot 10^3$ |
| B | $-6.67754 \cdot 10^{-1}$ |

cont.

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|----------------------|--|--|-------------------------|----------------------|--|--|-------------------------|
| 273.15 | 972.30 ± 1.00 | 0.06 | 68-ano-1(□) | 333.15 | 932.20 ± 1.00 | 0.02 | 68-ano-1(□) |
| 293.15 | 958.90 ± 1.00 | 0.01 | 68-ano-1(□) | 372.05 | 906.20 ± 1.00 | 0.00 | 68-ano-1(□) |
| 310.95 | 946.90 ± 1.00 | -0.10 | 68-ano-1(□) | | | | |

**Fig. 1.** The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)**Table 3.** Recommended values (fit to the reliable experimental values according to the equations

$$\rho = A + BT + CT^2 + DT^3 + \dots \text{ or } \rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4].$$

| $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|----------------------|--|----------------------|--|----------------------|--|
| 270.00 | 974.34 ± 1.32 | 300.00 | 954.31 ± 1.02 | 350.00 | 920.92 ± 0.94 |
| 280.00 | 967.67 ± 1.24 | 310.00 | 947.63 ± 0.92 | 360.00 | 914.25 ± 1.14 |
| 290.00 | 960.99 ± 1.14 | 320.00 | 940.96 ± 0.84 | 370.00 | 907.57 ± 1.44 |
| 293.15 | 958.89 ± 1.10 | 330.00 | 934.28 ± 0.81 | 380.00 | 900.89 ± 1.86 |
| 298.15 | 955.55 ± 1.04 | 340.00 | 927.60 ± 0.84 | | |

1-Cyclohexyl-6-cyclopentyl-3-(2-phenylethyl)hexane**[55334-30-0]****C₂₅H₄₀****MW = 340.59****143**

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{c,w} = 8.4689 \cdot 10^{-2}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 2.9684 \cdot 10^{-2}$ (combined temperature ranges, unweighted).

| Coefficient | T = 273.15 to 372.05 K $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|---|
| A | $1.11240 \cdot 10^3$ |
| B | $-6.45950 \cdot 10^{-1}$ |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|---------------|--|--|-------------------------|---------------|--|--|-------------------------|
| 273.15 | 936.00 ± 1.00 | 0.04 | 68-ano-1(□) | 333.15 | 897.10 ± 1.00 | -0.10 | 68-ano-1(□) |
| 293.15 | 923.00 ± 1.00 | -0.04 | 68-ano-1(□) | 372.05 | 872.10 ± 1.00 | 0.03 | 68-ano-1(□) |
| 310.95 | 911.60 ± 1.00 | 0.06 | 68-ano-1(□) | | | | |

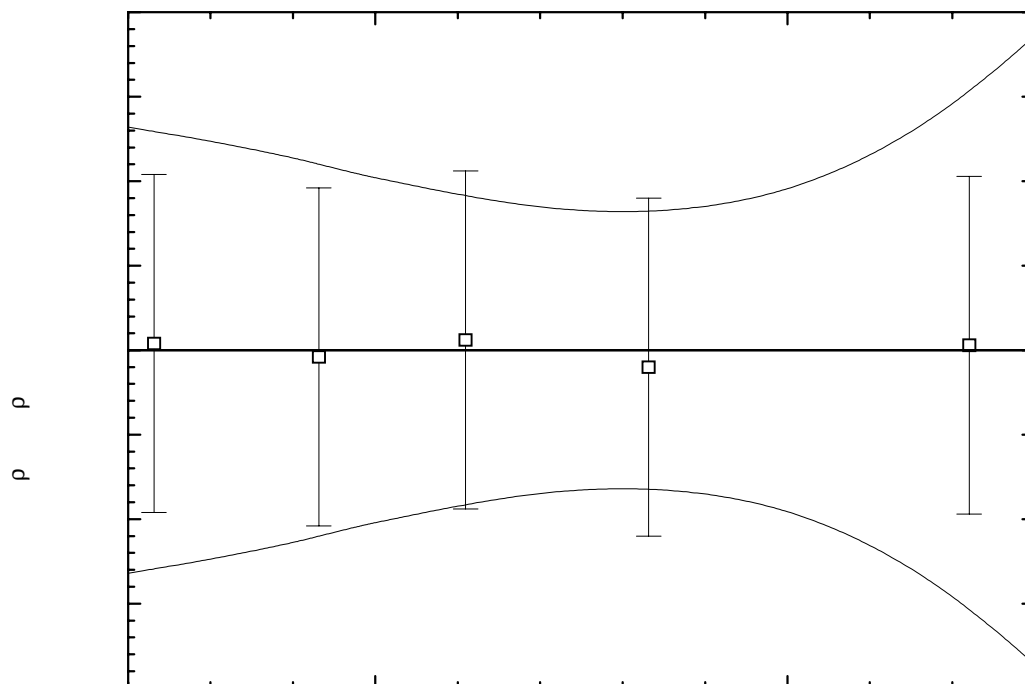


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

cont.

Table 3. Recommended values (fit to the reliable experimental values according to the equations
 $\rho = A + BT + CT^2 + DT^3 + \dots$ or $\rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$).

| $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|---------------|--|---------------|--|---------------|--|
| 270.00 | 937.99 \pm 1.32 | 300.00 | 918.61 \pm 1.02 | 350.00 | 886.31 \pm 0.94 |
| 280.00 | 931.53 \pm 1.24 | 310.00 | 912.15 \pm 0.92 | 360.00 | 879.85 \pm 1.14 |
| 290.00 | 925.07 \pm 1.14 | 320.00 | 905.69 \pm 0.84 | 370.00 | 873.40 \pm 1.44 |
| 293.15 | 923.04 \pm 1.10 | 330.00 | 899.23 \pm 0.81 | 380.00 | 866.94 \pm 1.86 |
| 298.15 | 919.81 \pm 1.04 | 340.00 | 892.77 \pm 0.84 | | |

1,1-Dicyclohexyl-1-phenylheptane [115211-35-3] $\text{C}_{25}\text{H}_{40}$ MW = 340.59 144

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 313.15 | 951.3 \pm 2.0 | 60-che/pet |

1,7-Dicyclopentyl-4-(2-phenylethyl)-heptane [55334-31-1] $\text{C}_{25}\text{H}_{40}$ MW = 340.59 145

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction):
 $\sigma_{c,w} = 5.9532 \cdot 10^{-2}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 2.7348 \cdot 10^{-2}$ (combined temperature ranges, unweighted).

| Coefficient | T = 273.15 to 372.05 K $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|---|
| A | $1.11088 \cdot 10^3$ |
| B | $-6.49366 \cdot 10^{-1}$ |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|---------------|--|--|-------------------------|---------------|--|--|-------------------------|
| 273.15 | 933.60 \pm 1.00 | 0.10 | 68-ano-1(□) | 333.15 | 894.50 \pm 1.00 | -0.04 | 68-ano-1(□) |
| 293.15 | 920.50 \pm 1.00 | -0.02 | 68-ano-1(□) | 372.05 | 869.30 \pm 1.00 | 0.02 | 68-ano-1(□) |
| 310.95 | 908.90 \pm 1.00 | -0.06 | 68-ano-1(□) | | | | |

¹⁾ Not included in Fig. 1.

cont.

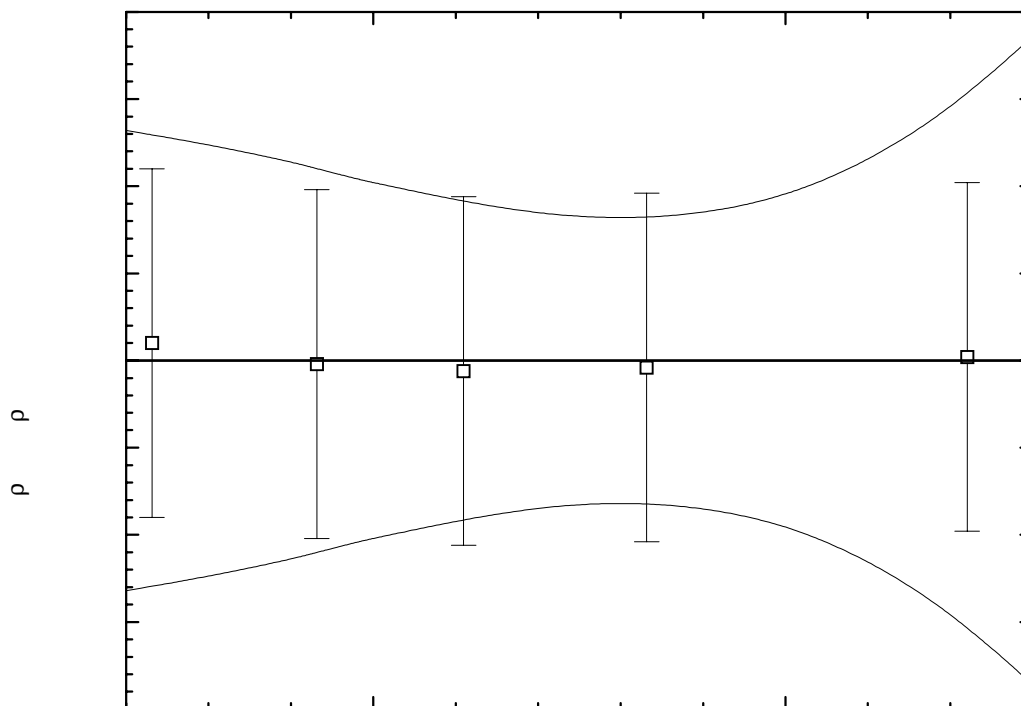
1,7-Dicyclopentyl-4-(2-phenylethyl)-heptane (cont.)

Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

Table 3. Recommended values (fit to the reliable experimental values according to the equations $\rho = A + BT + CT^2 + DT^3 + \dots$ or $\rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$).

| $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|---------------|--|---------------|--|---------------|--|
| 270.00 | 935.55 \pm 1.32 | 300.00 | 916.07 \pm 1.02 | 350.00 | 883.60 \pm 0.94 |
| 280.00 | 929.06 \pm 1.24 | 310.00 | 909.57 \pm 0.92 | 360.00 | 877.11 \pm 1.14 |
| 290.00 | 922.56 \pm 1.14 | 320.00 | 903.08 \pm 0.84 | 370.00 | 870.61 \pm 1.44 |
| 293.15 | 920.52 \pm 1.10 | 330.00 | 896.59 \pm 0.81 | 380.00 | 864.12 \pm 1.86 |
| 298.15 | 917.27 \pm 1.04 | 340.00 | 890.09 \pm 0.84 | | |

1,1-Dicyclohexyl-1-phenyloctane [103047-99-0] $C_{26}H_{42}$ MW =354.62 146

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 313.15 | 954.7 ± 2.0 | 60-che/pet |

1,1-Dicyclohexyl-3-ethyl-1-phenylheptane [114792-37-9] $C_{27}H_{44}$ MW =368.65 147

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 313.15 | 946.3 ± 3.0 | 57-che/pet |

1,1-Dicyclohexyl-2-methyl-1-phenyloctane [114792-38-0] $C_{27}H_{44}$ MW =368.65 148

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 313.15 | 963.0 ± 2.0 | 60-che/pet |

2.4 Phenyl Groups on Saturated Carbon Chains

2.4.1 Phenyl Groups on Saturated Carbon Chains, C₁₃ - C₁₈

Diphenylmethane

[101-81-5]

C₁₃H₁₂

MW = 168.24

149

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{c,w} = 5.9832 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 8.1835 \cdot 10^{-2}$ (combined temperature ranges, unweighted).

| Coefficient | T = 284.15 to 523.15 K $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|---|
| A | $1.22498 \cdot 10^3$ |
| B | $-7.21739 \cdot 10^{-1}$ |
| C | $-8.65342 \cdot 10^{-5}$ |
| D | $1.63332 \cdot 10^{-9}$ |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|----------------|--|--|-------------------------|---------------|--|--|-------------------------|
| <i>crystal</i> | | | | 358.15 | 954.99 ± 1.00 | -0.47 | 1896-per(X) |
| 298.15 | 1117.12 ± 4.45 | | 61-sch/sau | 363.15 | 950.93 ± 1.00 | -0.61 | 1896-per(X) |
| <i>liquid</i> | | | | 368.15 | 947.00 ± 1.00 | -0.62 | 1896-per ¹⁾ |
| 284.15 | 1012.60 ± 0.50 | -0.34 | 1893-eyk(X) | 373.15 | 944.30 ± 0.60 | 0.60 | 15-kur/oks(X) |
| 299.15 | 1000.80 ± 0.50 | -0.57 | 1893-eyk(X) | 293.15 | 1006.00 ± 0.60 | -0.00 | 21-von/fru(X) |
| 348.85 | 962.60 ± 0.50 | -0.14 | 1893-eyk(X) | 299.15 | 1000.20 ± 0.60 | -1.17 | 42-ju /woo(X) |
| 404.25 | 918.10 ± 0.50 | -1.08 | 1893-eyk(X) | 332.75 | 975.70 ± 0.50 | 0.40 | 44-fri/har(X) |
| 289.95 | 1007.89 ± 0.30 | -0.58 | 1895-and(Δ) | 373.15 | 943.70 ± 0.50 | 0.00 | 44-fri/har(X) |
| 298.15 | 1002.64 ± 0.60 | 0.50 | 1896-per(X) | 403.05 | 920.00 ± 0.50 | -0.13 | 44-fri/har(X) |
| 303.15 | 998.88 ± 0.60 | 0.61 | 1896-per(X) | 418.55 | 908.20 ± 0.50 | 0.35 | 44-fri/har(X) |
| 308.15 | 995.00 ± 0.60 | 0.60 | 1896-per(X) | 434.65 | 895.00 ± 0.55 | -0.06 | 44-fri/har(X) |
| 313.15 | 991.01 ± 0.60 | 0.48 | 1896-per(X) | 451.45 | 882.10 ± 0.55 | 0.44 | 44-fri/har(X) |
| 318.15 | 987.03 ± 0.60 | 0.38 | 1896-per(X) | 464.45 | 871.10 ± 0.55 | -0.16 | 44-fri/har(X) |
| 323.15 | 983.16 ± 0.60 | 0.39 | 1896-per(X) | 484.15 | 856.90 ± 0.60 | 1.45 | 44-fri/har(X) |
| 328.15 | 979.23 ± 0.60 | 0.35 | 1896-per(X) | 293.15 | 1005.89 ± 0.20 | -0.11 | 51-ser/wis(\square) |
| 333.15 | 975.24 ± 0.60 | 0.25 | 1896-per(X) | 303.08 | 998.37 ± 0.20 | 0.04 | 56-duf/eve(\circ) |
| 338.15 | 971.30 ± 0.60 | 0.21 | 1896-per(X) | 310.93 | 992.90 ± 0.40 | 0.65 | 58-ano(X) |
| 343.15 | 967.24 ± 0.60 | 0.05 | 1896-per(X) | 333.15 | 975.60 ± 0.40 | 0.61 | 58-ano(X) |
| 348.15 | 963.16 ± 0.60 | -0.12 | 1896-per(X) | 372.04 | 945.30 ± 0.40 | 0.73 | 58-ano(X) |
| 353.15 | 959.07 ± 0.60 | -0.30 | 1896-per(X) | 323.15 | 982.10 ± 0.30 | -0.67 | 65-ros(∇) |

¹⁾ Not included in Fig. 1.

cont.

Diphenylmethane (cont.)**Table 2.** (cont.)

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ kg·m ⁻³ | $\rho_{\text{exp}} - \rho_{\text{calc}}$ kg·m ⁻³ | Ref. (Symbol in Fig. 1) | T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ kg·m ⁻³ | $\rho_{\text{exp}} - \rho_{\text{calc}}$ kg·m ⁻³ | Ref. (Symbol in Fig. 1) |
|----------|--|--|----------------------------|----------|--|--|----------------------------|
| 348.15 | 962.20 ± 0.30 | -1.08 | 65-ros(∇) | 310.95 | 992.90 ± 0.50 | 0.67 | 68-ano-1(×) |
| 373.15 | 943.10 ± 0.30 | -0.60 | 65-ros(∇) | 333.15 | 975.60 ± 0.50 | 0.61 | 68-ano-1(×) |
| 398.15 | 923.50 ± 0.30 | -0.50 | 65-ros(∇) | 372.05 | 945.30 ± 0.50 | 0.74 | 68-ano-1(×) |
| 423.15 | 904.00 ± 0.35 | -0.20 | 65-ros(∇) | 313.15 | 989.92 ± 0.40 | -0.61 | 80-sur(◆) |
| 448.15 | 884.30 ± 0.35 | 0.00 | 65-ros(∇) | 333.15 | 975.50 ± 0.50 | 0.51 | 97-cha/lee(×) |
| 473.15 | 864.40 ± 0.40 | 0.11 | 65-ros(∇) | 373.15 | 943.20 ± 0.50 | -0.50 | 97-cha/lee(×) |
| 498.15 | 844.20 ± 0.40 | 0.03 | 65-ros(∇) | 393.15 | 926.80 ± 0.50 | -1.15 | 97-cha/lee(×) |
| 523.15 | 823.30 ± 0.40 | -0.65 | 65-ros(∇) | 413.15 | 910.10 ± 0.50 | -2.03 | 97-cha/lee ¹⁾ |

¹⁾ Not included in Fig. 1.

Further references: [1898-kla/all, 00-dut/fri, 12-mor/dag, 19-har/ewi, 23-kro-1, 28-est, 29-zie/dit, 32-har/mac, 34-lov/cam, 36-par, 37-mck/sow, 38-oco/sow, 38-rie, 49-foe/fen, 49-kor/sam, 61-sch/sau, 68-pow/swi].

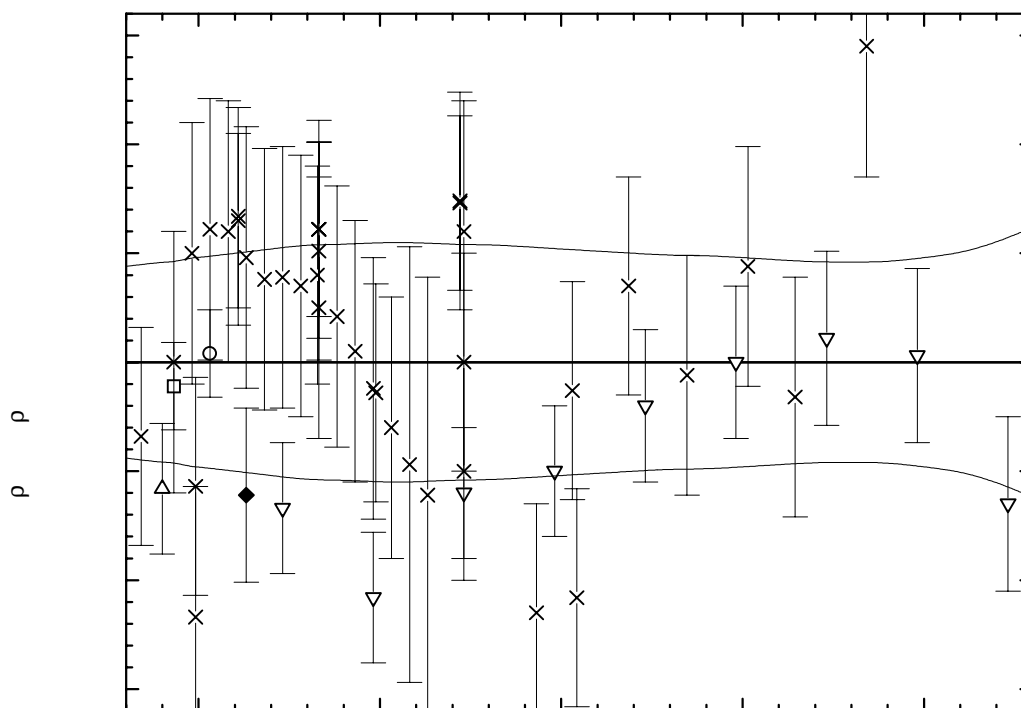


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)
cont.

Table 3. Recommended values (fit to the reliable experimental values according to the equations

$$\rho = A + BT + CT^2 + DT^3 + \dots \text{ or } \rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$$

| $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|----------------------|--|----------------------|--|----------------------|--|
| 280.00 | 1016.14 ± 0.44 | 360.00 | 954.01 ± 0.55 | 460.00 | 874.82 ± 0.47 |
| 290.00 | 1008.43 ± 0.46 | 370.00 | 946.17 ± 0.54 | 470.00 | 866.81 ± 0.46 |
| 293.15 | 1006.00 ± 0.46 | 380.00 | 938.31 ± 0.54 | 480.00 | 858.78 ± 0.46 |
| 298.15 | 1002.14 ± 0.48 | 390.00 | 930.43 ± 0.53 | 490.00 | 850.74 ± 0.46 |
| 300.00 | 1000.71 ± 0.48 | 400.00 | 922.54 ± 0.52 | 500.00 | 842.68 ± 0.48 |
| 310.00 | 992.97 ± 0.50 | 410.00 | 914.63 ± 0.51 | 510.00 | 834.60 ± 0.50 |
| 320.00 | 985.21 ± 0.52 | 420.00 | 906.70 ± 0.50 | 520.00 | 826.50 ± 0.55 |
| 330.00 | 977.44 ± 0.54 | 430.00 | 898.76 ± 0.49 | 530.00 | 818.39 ± 0.62 |
| 340.00 | 969.65 ± 0.54 | 440.00 | 890.80 ± 0.49 | | |
| 350.00 | 961.84 ± 0.55 | 450.00 | 882.82 ± 0.48 | | |

1,1-Diphenylethane**[612-00-0]****C₁₄H₁₄****MW = 182.27****150****Table 1.** Coefficients of the polynomial expansion equation. Standard deviations (see introduction):

$\sigma_{c,w} = 1.0361$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 8.1277 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

| Coefficient | $T = 273.15 \text{ to } 372.05 \text{ K}$ $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|--|
| <i>A</i> | $1.22540 \cdot 10^3$ |
| <i>B</i> | $-7.71150 \cdot 10^{-1}$ |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|----------------------|--|--|-------------------------|----------------------|--|--|-------------------------|
| 293.15 | 1001.00 ± 2.00 | 1.66 | 29-zie/col(X) | 372.04 | 938.70 ± 0.70 | 0.20 | 52-ano(O) |
| 293.15 | 999.70 ± 0.70 | 0.36 | 32-spi/sch(V) | 273.15 | 1015.20 ± 0.50 | 0.44 | 68-ano-1(Δ) |
| 293.15 | 999.51 ± 0.20 | 0.17 | 51-ser/wis(□) | 293.15 | 999.80 ± 0.50 | 0.46 | 68-ano-1(Δ) |
| 273.15 | 1015.20 ± 0.50 | 0.44 | 52-ano(O) | 310.95 | 986.00 ± 0.50 | 0.39 | 68-ano-1(Δ) |
| 293.15 | 999.80 ± 0.50 | 0.46 | 52-ano(O) | 333.15 | 969.00 ± 0.50 | 0.50 | 68-ano-1(Δ) |
| 310.93 | 986.00 ± 0.50 | 0.37 | 52-ano(O) | 372.05 | 938.70 ± 0.70 | 0.20 | 68-ano-1(Δ) |
| 333.15 | 969.00 ± 0.50 | 0.50 | 52-ano(O) | | | | |

Further references: [02-kla, 02-kla-4, 04-kla/hei, 12-sab/mur, 15-sab/mur, 19-har/ewi, 28-zel/gav, 46-bal/lur, 47-bal/mar, 48-mor/nic, 50-dol/lar].

cont.

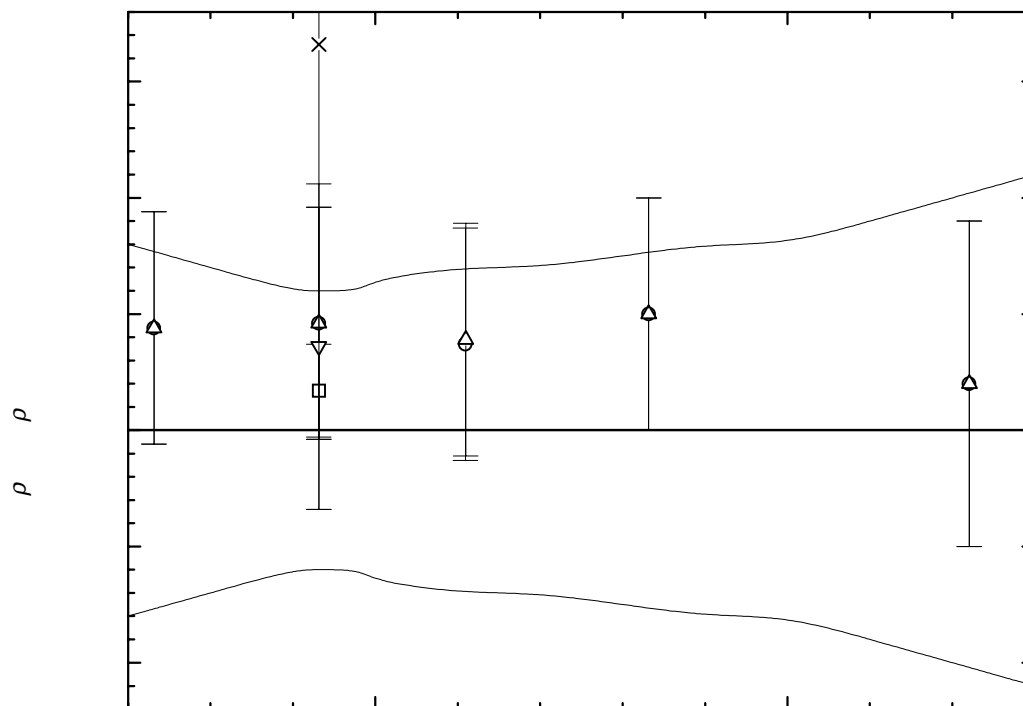
1,1-Diphenylethane (cont.)

Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

Table 3. Recommended values (fit to the reliable experimental values according to the equations $\rho = A + BT + CT^2 + DT^3 + \dots$ or $\rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$).

| $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|---------------|--|---------------|--|---------------|--|
| 270.00 | 1017.19 ± 0.8 | 300.00 | 994.06 ± 0.65 | 350.00 | 955.50 ± 0.8 |
| 280.00 | 1009.48 ± 0.7 | 310.00 | 986.35 ± 0.7 | 360.00 | 947.79 ± 0.9 |
| 290.00 | 1001.77 ± 0.6 | 320.00 | 978.64 ± 0.7 | 370.00 | 940.08 ± 1.0 |
| 293.15 | 999.34 ± 0.6 | 330.00 | 970.92 ± 0.75 | 380.00 | 932.37 ± 1.1 |
| 298.15 | 995.49 ± 0.6 | 340.00 | 963.21 ± 0.8 | | |

1,2-Diphenylethane**[103-29-7]****C₁₄H₁₄****MW = 182.27****151**

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction):

$\sigma_{c,w} = 3.8948 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 1.1308 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

| Coefficient | T = 310.03 to 483.35 K $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|---|
| A | $1.20551 \cdot 10^3$ |
| B | $-7.22872 \cdot 10^{-1}$ |
| C | $-5.66825 \cdot 10^{-5}$ |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|----------------|--|--|--------------------------|---------------|--|--|-------------------------|
| <i>crystal</i> | | | | 380.95 | 921.20 ± 2.00 | -0.70 | 00-dut/fri(✕) |
| 293.15 | 1130.0 ± 20.0 | | 26-skr/eis | 431.95 | 882.80 ± 2.00 | 0.11 | 00-dut/fri(✕) |
| 296.55 | 1101.9 ± 0.6 | | 33-hen/jef | 483.35 | 843.80 ± 2.00 | 0.94 | 00-dut/fri(✕) |
| 293.15 | 1110.0 ± 2.0 | | 33-muk | 358.15 | 939.00 ± 2.00 | -0.34 | 28-lau(✕) |
| 293.15 | 1105.0 ± 2.0 | | 35-rob | 393.15 | 913.00 ± 2.00 | 0.45 | 28-lau(✕) |
| <i>liquid</i> | | | | 420.15 | 891.00 ± 2.00 | -0.79 | 28-lau(✕) |
| 323.15 | 966.56 ± 0.60 | 0.57 | 1896-per(∇) | 451.15 | 867.00 ± 2.00 | -0.85 | 28-lau(✕) |
| 328.15 | 962.67 ± 0.60 | 0.48 | 1896-per(∇) | 333.15 | 958.10 ± 0.70 | -0.29 | 38-eva-2(✕) |
| 333.15 | 958.82 ± 0.60 | 0.43 | 1896-per(∇) | 373.15 | 928.30 ± 1.00 | 0.42 | 38-eva-2(✕) |
| 338.15 | 954.83 ± 0.60 | 0.24 | 1896-per(∇) | 333.15 | 959.00 ± 0.60 | 0.61 | 42-ju /woo(○) |
| 343.15 | 950.82 ± 0.60 | 0.04 | 1896-per(∇) | 310.03 | 975.20 ± 0.50 | -0.75 | 47-sch(□) |
| 348.15 | 946.78 ± 0.60 | -0.19 | 1896-per(∇) | 333.15 | 958.30 ± 0.50 | -0.09 | 47-sch(□) |
| 348.85 | 945.40 ± 2.00 | -1.04 | 00-dut/fri ¹⁾ | 372.04 | 928.90 ± 0.70 | 0.18 | 47-sch(□) |
| 380.95 | 921.20 ± 2.00 | -0.70 | 00-dut/fri(✕) | 374.15 | 926.20 ± 0.70 | -0.91 | 62-mcm/van(◆) |
| 431.95 | 882.80 ± 2.00 | 0.11 | 00-dut/fri(✕) | 333.15 | 958.30 ± 0.50 | -0.09 | 68-ano-1(Δ) |
| 483.35 | 843.80 ± 2.00 | 0.94 | 00-dut/fri(✕) | 372.05 | 928.90 ± 0.70 | 0.18 | 68-ano-1(Δ) |

¹⁾ Not included in Fig. 1.

Table 3. Recommended values (fit to the reliable experimental values according to the equations

$$\rho = A + BT + CT^2 + DT^3 + \dots \text{ or } \rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$$

| $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|---------------|--|---------------|--|---------------|--|
| 310.00 | 975.97 ± 0.51 | 380.00 | 922.63 ± 1.36 | 450.00 | 868.74 ± 2.31 |
| 320.00 | 968.38 ± 0.57 | 390.00 | 914.97 ± 1.49 | 460.00 | 860.99 ± 2.47 |
| 330.00 | 960.79 ± 0.68 | 400.00 | 907.29 ± 1.62 | 470.00 | 853.24 ± 2.63 |
| 340.00 | 953.18 ± 0.81 | 410.00 | 899.60 ± 1.76 | 480.00 | 845.47 ± 2.81 |
| 350.00 | 945.56 ± 0.95 | 420.00 | 891.90 ± 1.89 | 490.00 | 837.69 ± 2.99 |
| 360.00 | 937.93 ± 1.08 | 430.00 | 884.19 ± 2.03 | | |
| 370.00 | 930.28 ± 1.22 | 440.00 | 876.47 ± 2.17 | | |

cont.

1,2-Diphenylethane (cont.)

Further references: [1893-eyk, 04-bec, 13-van-2, 33-hen/jef, 36-ros-3, 38-eva-1, 38-rie, 55-bel/col].

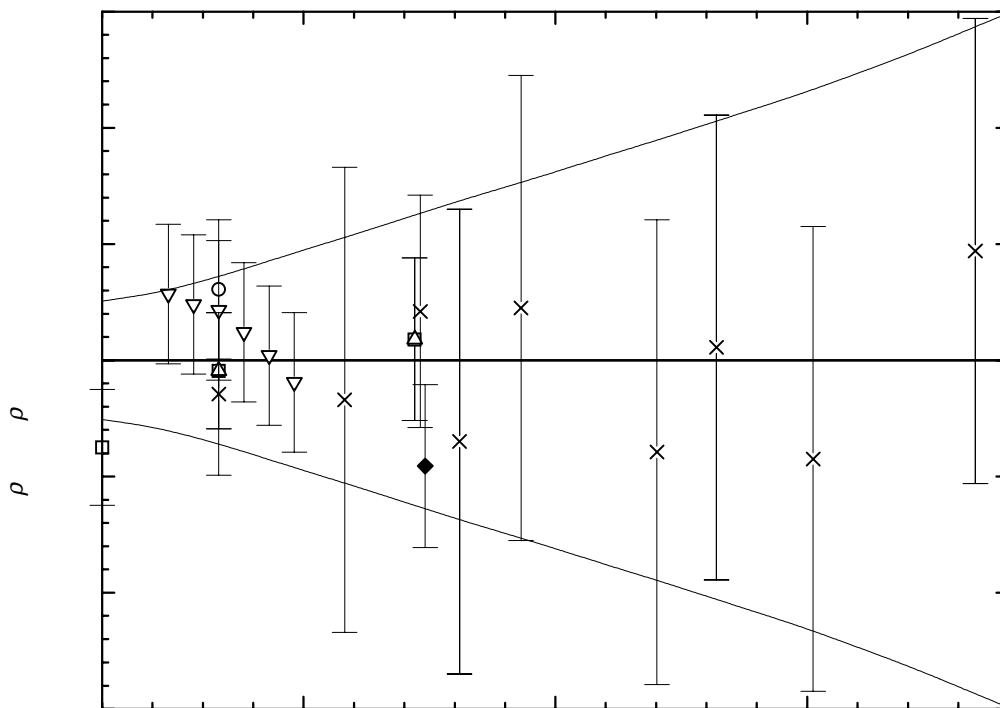


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

(3-Methylphenyl)phenylmethane

[620-47-3]

C₁₄H₁₄

MW =182.27

152

Table 1. Experimental and recommended values with uncertainties.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ kg · m ⁻³ | Ref. |
|----------|--|------------------------|
| 290.65 | 997.0 ± 2.0 | 1883-sen ¹⁾ |
| 293.15 | 991.3 ± 1.0 | 50-lam/wis |
| 293.15 | 991.3 ± 1.0 | 54-lam/wis |
| 293.15 | 991.4 ± 1.0 | Recommended |

¹⁾ Not included in calculation of recommended value.

(2-Methylphenyl)phenylmethane [713-36-0] C₁₄H₁₄ MW =182.27 153

Table 1. Experimental values with uncertainties.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 293.15 | 1002.0 ± 1.0 | 50-lam/wis |
| 293.15 | 1002.0 ± 1.0 | 54-lam/wis |

(4-Methylphenyl)-phenylmethane [620-83-7] C₁₄H₁₄ MW =182.27 154

Table 1. Experimental and recommended values with uncertainties.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|----------------------------|----------------------|--|--------------------------|
| 290.65 | 995.0 ± 2.0 | 1871-zin ¹⁾ | 293.15 | 995.8 ± 1.0 | 50-pet/shv |
| 291.15 | 994.0 ± 2.0 | 1898-kla/all ¹⁾ | 293.15 | 995.8 ± 1.0 | 51-pet/shv |
| 288.15 | 997.6 ± 2.0 | 08-hal ¹⁾ | 293.15 | 987.3 ± 3.0 | 54-lam/wis ¹⁾ |
| 292.45 | 997.8 ± 2.0 | 21-von/fru ¹⁾ | 293.15 | 996.4 ± 1.0 | Recommended |
| 293.15 | 997.6 ± 1.0 | 43-hen/kur | | | |

¹⁾ Not included in calculation of recommended value.

2,2'-Dimethyldiphenylmethane [1634-74-8] C₁₅H₁₆ MW =196.29 155

Table 1. Experimental values with uncertainties.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 293.15 | 980.0 ± 2.0 | 19-har/ewi |
| 298.15 | 977.7 ± 2.0 | 19-har/ewi |

(2,5-Dimethylphenyl)phenylmethane [13540-50-6] C₁₅H₁₆ MW =196.29 156

Table 1. Experimental values with uncertainties.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 293.15 | 995.0 ± 3.0 | 30-shi |
| 293.15 | 988.3 ± 3.0 | 66-che/lub |

(3,4-Dimethylphenyl)phenylmethane [13540-56-2] C₁₅H₁₆ MW =196.29 157

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 293.15 | 992.2 ± 2.0 | 66-che/lub |

(3,5-Dimethylphenyl)phenylmethane [28122-27-2] C₁₅H₁₆ MW =196.29 158

Table 1. Experimental values with uncertainties.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ kg · m ⁻³ | Ref. |
|----------|--|------------|
| 293.15 | 993.1 ± 1.0 | 50-pet/shv |
| 293.15 | 993.1 ± 1.0 | 51-pet/shv |

1,1-Diphenylpropane [1530-03-6] C₁₅H₁₆ MW =196.29 159

Table 1. Fit with estimated B coefficient for 8 accepted points. Deviation $\sigma_w = 2.561$.

| Coefficient | $\rho = A + BT$ |
|-------------|-----------------|
| A | 1199.71 |
| B | -0.720 |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ kg · m ⁻³ | $\rho_{\text{exp}} - \rho_{\text{calc}}$ kg · m ⁻³ | Ref. | T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ kg · m ⁻³ | $\rho_{\text{exp}} - \rho_{\text{calc}}$ kg · m ⁻³ | Ref. |
|----------|--|--|--------------------------|----------|--|--|--------------------------|
| 296.15 | 975.1 ± 5.0 | -11.38 | 02-kla ¹⁾ | 298.15 | 996.2 ± 4.0 | 11.16 | 19-har/ewi ¹⁾ |
| 287.15 | 991.9 ± 2.0 | -1.06 | 04-kla/hei | 287.25 | 995.1 ± 3.0 | 2.21 | 22-zie/tie |
| 291.65 | 993.8 ± 3.0 | 4.08 | 05-kon/dob | 293.15 | 990.0 ± 3.0 | 1.36 | 22-zie/tie |
| 297.15 | 987.9 ± 3.0 | 2.14 | 12-sab/mur-1 | 293.15 | 997.5 ± 4.0 | 8.86 | 47-tuo/guy ¹⁾ |
| 297.15 | 987.9 ± 3.0 | 2.14 | 15-sab/mur | 293.15 | 986.6 ± 2.0 | -2.04 | 51-ser/wis |
| 293.15 | 999.8 ± 4.0 | 11.16 | 19-har/ewi ¹⁾ | 293.15 | 983.7 ± 3.0 | -4.94 | 51-som/spo |

¹⁾ Not included in calculation of linear coefficients.

Table 3. Recommended values.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ kg · m ⁻³ |
|----------|--|
| 280.00 | 998.1 ± 3.3 |
| 290.00 | 990.9 ± 3.0 |
| 293.15 | 988.6 ± 3.0 |
| 298.15 | 985.0 ± 3.1 |

1,2-Diphenylpropane [5814-85-7] C₁₅H₁₆ MW =196.29 160

Table 1. Fit with estimated B coefficient for 5 accepted points. Deviation $\sigma_w = 0.450$.

| Coefficient | $\rho = A + BT$ |
|-------------|-----------------|
| A | 1191.81 |
| B | -0.720 |

cont.

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--|--------------------------|----------------------|--|--|--------------------------|
| 273.15 | 995.3 ± 2.0 | 0.16 | 1895-zhu | 293.15 | 980.7 ± 2.0 | -0.04 | 28-zel/gav |
| 293.15 | 981.2 ± 2.0 | 0.46 | 1895-zhu | 293.15 | 979.9 ± 2.0 | -0.84 | 47-tuo/guy |
| 296.15 | 982.4 ± 4.0 | 3.82 | 02-kla-4 ¹⁾ | 298.15 | 986.0 ± 8.0 | 8.86 | 48-bac/hel ¹⁾ |
| 296.65 | 980.9 ± 3.0 | 2.68 | 05-kon/dob ¹⁾ | 293.15 | 981.0 ± 2.0 | 0.26 | 51-los/smi |
| 296.15 | 974.3 ± 3.0 | -4.28 | 12-sab/mur ¹⁾ | 293.15 | 977.4 ± 3.0 | -3.38 | 51-ser/wis ¹⁾ |
| 296.15 | 974.3 ± 3.0 | -4.28 | 15-sab/mur ¹⁾ | | | | |

¹⁾ Not included in calculation of linear coefficients.**Table 3.** Recommended values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|----------------------|--|
| 270.00 | 997.4 ± 2.1 |
| 280.00 | 990.2 ± 1.3 |
| 290.00 | 983.0 ± 0.9 |
| 293.15 | 980.7 ± 1.0 |
| 298.15 | 977.1 ± 1.3 |

1,3-Diphenylpropane**[25167-94-6]****C₁₅H₁₆****MW =196.29****161****Table 1.** Experimental and recommended values with uncertainties.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--------------------------|----------------------|--|--------------------------|
| 293.15 | 1006.9 ± 10.0 | 05-kon/dob ¹⁾ | 288.15 | 984.6 ± 3.0 | 43-sir ¹⁾ |
| 292.15 | 900.4 ± 30.0 | 12-fre-1 ¹⁾ | 293.15 | 995.8 ± 4.0 | 44-den ¹⁾ |
| 293.15 | 1007.0 ± 10.0 | 25-vor/wal ¹⁾ | 293.15 | 1002.1 ± 10.0 | 47-tuo/guy ¹⁾ |
| 293.15 | 1005.3 ± 10.0 | 28-ipa/orl ¹⁾ | 293.15 | 979.9 ± 2.0 | 51-ser/wis |
| 290.65 | 998.2 ± 6.0 | 29-zel/tit ¹⁾ | 293.15 | 983.3 ± 2.0 | 54-eve/chi |
| 298.15 | 993.0 ± 6.0 | 38-rie ¹⁾ | 293.15 | 981.6 ± 2.3 | Recommended |

¹⁾ Not included in calculation of recommended value.**2,2-Diphenylpropane****[778-22-3]****C₁₅H₁₆****MW =196.29****162****Table 1.** Fit with estimated *B* coefficient for 3 accepted points. Deviation $\sigma_w = 0.504$.

| Coefficient | $\rho = A + BT$ |
|-------------|-----------------|
| <i>A</i> | 1203.95 |
| <i>B</i> | -0.700 |

cont.

2,2-Diphenylpropane (cont.)**Table 2.** Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--|--------------|
| 298.15 | 995.6 ± 2.0 | 0.36 | 12-sab/mur-1 |
| 298.15 | 995.6 ± 2.0 | 0.36 | 15-sab/mur |
| 293.15 | 998.0 ± 2.0 | -0.71 | 51-ser/wis |

Table 3. Recommended values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|----------------------|--|
| 290.00 | 1000.9 ± 2.0 |
| 293.15 | 998.7 ± 1.9 |
| 298.15 | 995.2 ± 1.9 |

(2-Ethylphenyl)phenylmethane

[28122-25-0]

C₁₅H₁₆

MW =196.29

163

Table 1. Experimental values with uncertainties.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--------------|
| 293.15 | 992.1 ± 2.0 | 50-lam/wis |
| 293.15 | 992.1 ± 2.0 | 54-lam/wis-1 |

(3-Ethylphenyl)phenylmethane

[28122-24-9]

C₁₅H₁₆

MW =196.29

164

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--------------|
| 293.15 | 979.7 ± 2.0 | 54-lam/wis-1 |

(4-Ethylphenyl)phenylmethane

[620-85-9]

C₁₅H₁₆

MW =196.29

165

Table 1. Experimental values with uncertainties.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--------------|
| 293.15 | 977.7 ± 2.0 | 50-lam/wis |
| 293.15 | 977.7 ± 2.0 | 54-lam/wis-1 |

1-(4-Methylphenyl)-1-phenylethane [3717-68-8] C₁₅H₁₆ MW =196.29 166**Table 1.** Experimental and recommended values with uncertainties.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. | $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|--------------------------|---------------|--|--------------------------|
| 290.05 | 984.9 ± 3.0 | 16-von ¹⁾ | 293.15 | 988.5 ± 3.0 | 51-pet/shv ¹⁾ |
| 290.35 | 984.7 ± 3.0 | 16-von ¹⁾ | 293.15 | 984.8 ± 2.0 | 61-ter/san |
| 293.15 | 982.0 ± 2.0 | 16-von | 293.15 | 983.4 ± 2.2 | Recommended |
| 293.15 | 988.5 ± 3.0 | 50-pet/shv ¹⁾ | | | |

¹⁾ Not included in calculation of recommended value.**1,1-Bis(2-methylphenyl)ethane** [33268-48-3] C₁₆H₁₈ MW =210.32 167**Table 1.** Fit with estimated *B* coefficient for 3 accepted points. Deviation $\sigma_w = 0.730$.

| Coefficient | $\rho = A + BT$ |
|-------------|-----------------|
| <i>A</i> | 1209.22 |
| <i>B</i> | -0.720 |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|--|--------|
| 273.15 | 1012.6 ± 1.0 | 0.05 | 63-bes |
| 323.15 | 977.0 ± 1.0 | 0.45 | 63-bes |
| 422.95 | 902.7 ± 2.0 | -1.99 | 63-bes |

Table 3. Recommended values.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|---------------|--|---------------|--|---------------|--|
| 270.00 | 1014.8 ± 2.5 | 320.00 | 978.8 ± 1.5 | 380.00 | 935.6 ± 3.7 |
| 280.00 | 1007.6 ± 2.1 | 330.00 | 971.6 ± 1.7 | 390.00 | 928.4 ± 4.1 |
| 290.00 | 1000.4 ± 1.8 | 340.00 | 964.4 ± 2.0 | 400.00 | 921.2 ± 4.6 |
| 293.15 | 998.2 ± 1.7 | 350.00 | 957.2 ± 2.4 | 410.00 | 914.0 ± 5.1 |
| 298.15 | 994.6 ± 1.6 | 360.00 | 950.0 ± 2.8 | 420.00 | 906.8 ± 5.6 |
| 310.00 | 986.0 ± 1.4 | 370.00 | 942.8 ± 3.2 | 430.00 | 899.6 ± 6.1 |

1,1-Bis(3-methylphenyl)ethane [89881-30-1] C₁₆H₁₈ MW =210.32 168**Table 1.** Fit with estimated *B* coefficient for 3 accepted points. Deviation $\sigma_w = 1.059$.

| Coefficient | $\rho = A + BT$ |
|-------------|-----------------|
| <i>A</i> | 1178.35 |
| <i>B</i> | -0.680 |

cont.

1,1-Bis(3-methylphenyl)ethane (cont.)**Table 2.** Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|--|--------|
| 273.15 | 992.5 ± 1.0 | -0.11 | 63-bes |
| 323.15 | 959.4 ± 1.0 | 0.79 | 63-bes |
| 422.95 | 888.0 ± 2.0 | -2.74 | 63-bes |

Table 3. Recommended values.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|---------------|--|---------------|--|---------------|--|
| 270.00 | 994.7 ± 6.5 | 320.00 | 960.7 ± 2.0 | 380.00 | 919.9 ± 10.3 |
| 280.00 | 987.9 ± 5.1 | 330.00 | 953.9 ± 3.1 | 390.00 | 913.1 ± 11.8 |
| 290.00 | 981.1 ± 3.7 | 340.00 | 947.1 ± 4.5 | 400.00 | 906.3 ± 13.3 |
| 293.15 | 979.0 ± 3.2 | 350.00 | 940.3 ± 5.9 | 410.00 | 899.5 ± 14.8 |
| 298.15 | 975.6 ± 2.6 | 360.00 | 933.5 ± 7.4 | 420.00 | 892.7 ± 16.3 |
| 310.00 | 967.5 ± 1.6 | 370.00 | 926.7 ± 8.8 | 430.00 | 885.9 ± 17.8 |

1,1-Bis(4-methylphenyl)ethane**[530-45-0]****C₁₆H₁₈****MW =210.32****169****Table 1.** Fit with estimated *B* coefficient for 2 accepted points. Deviation $\sigma_w = 0.100$.

| Coefficient | $\rho = A + BT$ |
|-------------|-----------------|
| <i>A</i> | 1185.57 |
| <i>B</i> | -0.720 |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|--|--------------------------|
| 293.15 | 980.9 ± 4.0 | 6.40 | 56-vai/ria ¹⁾ |
| 273.15 | 988.8 ± 1.0 | -0.10 | 63-bes |
| 323.15 | 953.0 ± 1.0 | 0.10 | 63-bes |
| 422.95 | 881.6 ± 2.0 | 0.56 | 63-bes ¹⁾ |

¹⁾ Not included in calculation of linear coefficients.**Table 3.** Recommended values.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|---------------|--|---------------|--|---------------|--|
| 270.00 | 991.2 ± 1.5 | 293.15 | 974.5 ± 0.8 | 320.00 | 955.2 ± 1.2 |
| 280.00 | 984.0 ± 1.0 | 298.15 | 970.9 ± 0.8 | 330.00 | 948.0 ± 1.7 |
| 290.00 | 976.8 ± 0.9 | 310.00 | 962.4 ± 1.0 | | |

1,2-Bis(3-methylphenyl)ethane [500036-60-2] C₁₆H₁₈ MW =210.32 170

Table 1. Fit with estimated B coefficient for 5 accepted points. Deviation $\sigma_w = 2.360$.

| Coefficient | $\rho = A + BT$ |
|-------------|-----------------|
| A | 1160.06 |
| B | -0.640 |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|--|------------|
| 278.15 | 979.6 \pm 3.0 | -2.44 | 35-dov/hen |
| 285.15 | 975.6 \pm 3.0 | -1.96 | 35-dov/hen |
| 295.15 | 970.3 \pm 3.0 | -0.86 | 35-dov/hen |
| 305.15 | 966.1 \pm 3.0 | 1.34 | 35-dov/hen |
| 315.15 | 962.3 \pm 3.0 | 3.94 | 35-dov/hen |

Table 3. Recommended values.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|---------------|--|---------------|--|---------------|--|
| 270.00 | 987.3 \pm 4.4 | 293.15 | 972.4 \pm 3.6 | 310.00 | 961.7 \pm 3.8 |
| 280.00 | 980.9 \pm 3.9 | 298.15 | 969.2 \pm 3.6 | 320.00 | 955.3 \pm 4.3 |
| 290.00 | 974.5 \pm 3.6 | | | | |

1-(2,4-Dimethylphenyl)-1-phenylethane [500038-82-4] C₁₆H₁₈ MW =210.32 171

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 293.15 | 980.1 \pm 2.0 | 50-pet/shv |

1-(2,5-Dimethyl)-1-phenylethane [6165-51-1] C₁₆H₁₈ MW =210.32 172

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 293.15 | 985.5 \pm 2.0 | 61-ter/san |

1,1-Diphenylbutane [719-79-9] C₁₆H₁₈ MW =182.27 173**Table 1.** Experimental and recommended values with uncertainties.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--------------------------|----------------------|--|--------------------------|
| 289.15 | 1006.0 ± 20.0 | 04-kla/hei ¹⁾ | 293.15 | 992.8 ± 10.0 | 44-ipa/pin ¹⁾ |
| 289.15 | 974.8 ± 3.0 | 13-sab/mur ¹⁾ | 293.15 | 974.9 ± 1.0 | 50-wis/ser |
| 289.15 | 974.8 ± 3.0 | 15-sab/mur ¹⁾ | 293.15 | 975.1 ± 1.0 | 52-ser/wis |
| 293.15 | 975.8 ± 1.0 | 41-sch/har | 293.15 | 975.3 ± 1.0 | Recommended |

¹⁾ Not included in calculation of recommended value.**1,2-Diphenylbutane** [5223-59-6] C₁₆H₁₈ MW =210.32 174**Table 1.** Experimental and recommended values with uncertainties.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--------------------------|----------------------|--|--------------------------|
| 291.15 | 1009.0 ± 20.0 | 15-sab/mur ¹⁾ | 293.15 | 947.6 ± 20.0 | 50-zie/eim ¹⁾ |
| 293.15 | 970.7 ± 2.0 | 44-ipa/pin | 293.15 | 967.3 ± 2.0 | 52-ser/wis |
| 293.15 | 977.7 ± 4.0 | 47-tuo/guy ¹⁾ | 293.15 | 969.0 ± 2.3 | Recommended |

¹⁾ Not included in calculation of recommended value.**1,3-Diphenylbutane** [1520-44-1] C₁₆H₁₈ MW =210.32 175**Table 1.** Experimental and recommended values with uncertainties.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|-------------|
| 293.15 | 972.2 ± 2.0 | 44-ipa/pin |
| 293.15 | 969.8 ± 1.0 | 52-ser/wis |
| 293.15 | 970.3 ± 1.1 | Recommended |

1,4-Diphenylbutane [1083-56-3] C₁₆H₁₈ MW =210.32 176**Table 1.** Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--------|
| 298.15 | 971.9 ± 2.0 | 38-rie |

2,2-Diphenylbutane [5223-61-0] C₁₆H₁₈ MW =210.32 177**Table 1.** Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 293.15 | 994.4 ± 1.0 | 52-ser/wis |

***d,l*-2,3-Diphenylbutane** [2726-21-8] C₁₆H₁₈ MW =210.32 178

Table 1. Experimental and recommended values with uncertainties.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|----------------------|
| 293.15 | 975.6 ± 3.0 | 12-lep ¹⁾ |
| 273.15 | 990.6 ± 3.0 | 12-lep ¹⁾ |
| 293.15 | 972.2 ± 1.0 | 52-ser/wis |
| 293.15 | 972.3 ± 1.0 | Recommended |

¹⁾ Not included in calculation of recommended value.

1,1-Diphenyl-2-methylpropane [1634-11-3] C₁₆H₁₈ MW =210.32 179

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 289.15 | 977.9 ± 2.0 | 15-sab/mur |

1,2-Diphenyl-2-methylpropane [500028-61-5] C₁₆H₁₈ MW =210.32 180

Table 1. Experimental values with uncertainties.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 288.15 | 984.0 ± 2.0 | 01-bod-1 |
| 290.15 | 980.3 ± 2.0 | 50-dol/lar |
| 288.15 | 979.9 ± 2.0 | 50-dol/lar |

1,3-Diphenyl-2-methylpropane [700002-66-0] C₁₆H₁₈ MW =210.32 181

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 293.15 | 966.9 ± 1.0 | 54-cav/mcl |

1-Ethyl-4-(1-phenylethyl)benzene [6196-94-7] C₁₆H₁₈ MW =210.32 182

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 293.15 | 976.2 ± 2.0 | 61-ter/san |

**[4-(1-Methylethyl)phenyl]-
phenylmethane****[500017-97-0]****C₁₆H₁₈****MW =210.32****183****Table 1.** Experimental and recommended values with uncertainties.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|----------------------------|
| 291.15 | 1007.0 ± 20.0 | 1898-kla/all ¹⁾ |
| 293.15 | 969.7 ± 3.0 | 50-pet/shv ¹⁾ |
| 293.15 | 969.7 ± 3.0 | 51-pet/shv ¹⁾ |
| 293.15 | 966.3 ± 1.0 | 54-lam/wis-2 |
| 293.15 | 966.3 ± 1.0 | Recommended |

¹⁾ Not included in calculation of recommended value.**1-(2-Methylphenyl)-1-(4-methylphenyl)-
ethane****[900000-03-5]****C₁₆H₁₈****MW =210.32****184****Table 1.** Fit with estimated *B* coefficient for 2 accepted points. Deviation $\sigma_w = 0.100$.

| Coefficient | $\rho = A + BT$ |
|-------------|-----------------|
| <i>A</i> | 1204.43 |
| <i>B</i> | -0.740 |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--|----------------------|
| 273.15 | 1002.4 ± 1.0 | 0.10 | 63-bes |
| 323.15 | 965.2 ± 1.0 | -0.10 | 63-bes |
| 422.95 | 892.6 ± 2.0 | 1.15 | 63-bes ¹⁾ |

¹⁾ Not included in calculation of linear coefficients.**Table 3.** Recommended values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|----------------------|--|----------------------|--|----------------------|--|
| 270.00 | 1004.6 ± 1.5 | 293.15 | 987.5 ± 0.8 | 320.00 | 967.6 ± 1.2 |
| 280.00 | 997.2 ± 1.1 | 298.15 | 983.8 ± 0.8 | 330.00 | 960.2 ± 1.7 |
| 290.00 | 989.8 ± 0.9 | 310.00 | 975.0 ± 0.9 | | |

**1-(3-Methylphenyl)-1-(2-methylphenyl)-
ethane****[94573-53-2]****C₁₆H₁₈****MW =210.32****185****Table 1.** Fit with estimated *B* coefficient for 2 accepted points. Deviation $\sigma_w = 0.050$.

| Coefficient | $\rho = A + BT$ |
|-------------|-----------------|
| <i>A</i> | 1210.61 |
| <i>B</i> | -0.750 |

cont.

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--|----------------------|
| 273.15 | 1005.7 ± 1.0 | -0.05 | 63-bes |
| 323.15 | 968.3 ± 1.0 | 0.05 | 63-bes |
| 422.95 | 895.1 ± 2.0 | 1.70 | 63-bes ¹⁾ |

¹⁾ Not included in calculation of linear coefficients.**Table 3.** Recommended values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|----------------------|--|----------------------|--|----------------------|--|
| 270.00 | 1008.1 ± 1.5 | 293.15 | 990.8 ± 0.8 | 320.00 | 970.6 ± 1.2 |
| 280.00 | 1000.6 ± 1.1 | 298.15 | 987.0 ± 0.8 | 330.00 | 963.1 ± 1.7 |
| 290.00 | 993.1 ± 0.9 | 310.00 | 978.1 ± 0.9 | | |

1-(3-Methylphenyl)-1-(4-methylphenyl)- ethane [500036-64-6] C₁₆H₁₈ MW =210.32 186

Table 1. Fit with estimated *B* coefficient for 2 accepted points. Deviation $\sigma_w = 0.200$.

| Coefficient | $\rho = A + BT$ |
|-------------|-----------------|
| <i>A</i> | 1188.67 |
| <i>B</i> | -0.720 |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--|----------------------|
| 273.15 | 991.8 ± 1.0 | -0.20 | 63-bes |
| 323.15 | 956.2 ± 1.0 | 0.20 | 63-bes |
| 422.95 | 884.6 ± 2.0 | 0.46 | 63-bes ¹⁾ |

¹⁾ Not included in calculation of linear coefficients.**Table 3.** Recommended values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|----------------------|--|----------------------|--|----------------------|--|
| 270.00 | 994.3 ± 1.5 | 293.15 | 977.6 ± 0.9 | 320.00 | 958.3 ± 1.3 |
| 280.00 | 987.1 ± 1.1 | 298.15 | 974.0 ± 0.8 | 330.00 | 951.1 ± 1.7 |
| 290.00 | 979.9 ± 0.9 | 310.00 | 965.5 ± 1.1 | | |

2-(3-Methylphenyl)-3-phenylbutane [500036-59-9] C₁₆H₁₈ MW =210.32 187

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--------------|
| 288.15 | 987.0 ± 2.0 | 1890-kra/spi |

1-(Phenylmethyl)-2-methyl-4-ethylbenzene [500036-61-3] C₁₆H₁₈ MW =210.32 188

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--------|
| 284.15 | 1014.1 ± 2.0 | 24-mai |

Phenyl(4-propylphenyl)methane [62155-41-3] C₁₆H₁₈ MW = 210.32 189

Table 1. Experimental and recommended values with uncertainties.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------------------|
| 291.15 | 973.7 ± 4.0 | 26-fus-1 ¹⁾ |
| 293.15 | 966.1 ± 2.0 | 54-lam/hip |
| 293.15 | 966.1 ± 2.0 | 54-lam/wis-2 |
| 293.15 | 966.2 ± 2.0 | Recommended |

¹⁾ Not included in calculation of recommended value.

Phenyl(2,3,5-trimethylphenyl)methane [500036-62-4] C₁₆H₁₈ MW =210.32 190

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--------------|
| 291.15 | 1015.1 ± 2.0 | 1898-kla/all |

1,2-Bis(4-methylphenyl)-propane [500010-88-8] C₁₇H₂₀ MW = 224.35 191

Table 1. Experimental and recommended values with uncertainties.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--------------------------|
| 293.15 | 972.6 ± 1.0 | 43-hen/kur |
| 298.15 | 968.0 ± 1.5 | 48-bac/hel ¹⁾ |
| 298.15 | 972.6 ± 1.0 | Recommended |

¹⁾ Not included in calculation of recommended value.

(2-Butylphenyl)phenylmethane [500038-77-7] C₁₇H₂₀ MW =224.35 192

Table 1. Experimental values with uncertainties.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|--------------|
| 293.15 | 966.8 ± 1.0 | 54-lam/hip |
| 293.15 | 966.8 ± 1.0 | 54-lam/wis-2 |

(4-Butylphenyl)phenylmethane [500038-78-8] C₁₇H₂₀ MW =224.35 193

Table 1. Experimental values with uncertainties.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|--------------|
| 293.15 | 956.9 ± 1.0 | 54-lam/hip |
| 293.15 | 956.9 ± 1.0 | 54-lam/wis-2 |

1,1-Diphenyl-3-methylbutane [26466-27-3] C₁₇H₂₀ MW =224.35 194

Table 1. Experimental values with uncertainties.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|--------------|
| 273.15 | 975.4 ± 3.0 | 13-sab/mur-2 |
| 294.15 | 963.9 ± 3.0 | 15-sab/mur |

(+)-1,2-Diphenyl-2-methylbutane [500038-76-6] C₁₇H₂₀ MW =224.35 195

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 298.15 | 971.8 ± 3.0 | 57-cra/all |

1,2-Diphenyl-3-methylbutane [500039-18-9] C₁₇H₂₀ MW =224.35 196

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 293.15 | 966.0 ± 3.0 | 54-ree/smi |

1,1-Diphenylpentane [1726-12-1] C₁₇H₂₀ MW =224.35 197

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|--------------|
| 293.15 | 965.9 ± 1.0 | 51-ser/wis-1 |

1,2-Diphenylpentane [110826-49-8] C₁₇H₂₀ MW =224.35 198

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 293.15 | 964.9 ± 2.0 | 47-tuo/guy |

1,5-Diphenylpentane [1718-50-9] C₁₇H₂₀ MW = 224.35 199

Table 1. Experimental and recommended values with uncertainties.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--------------------------|----------------------|--|----------------------|
| 292.15 | 981.3 ± 5.0 | 15-sab/mur ¹⁾ | 298.15 | 960.1 ± 3.0 | 38-rie ¹⁾ |
| 273.15 | 992.2 ± 5.0 | 15-sab/mur ¹⁾ | 293.15 | 960.8 ± 2.0 | 51-ser/wis-1 |
| 286.15 | 985.0 ± 5.0 | 25-vor/wal ¹⁾ | 293.15 | 960.8 ± 2.0 | Recommended |
| 293.15 | 977.2 ± 5.0 | 28-ipa/orl ¹⁾ | | | |

¹⁾ Not included in calculation of recommended value.

[2-Methyl-5-(1-methylethyl)]-phenylmethane [500036-65-7] C₁₇H₂₀ MW =224.35 200

Table 1. Experimental values with uncertainties.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 273.15 | 987.0 ± 6.0 | 1878-maz |
| 288.15 | 969.0 ± 2.0 | 07-kla |
| 293.15 | 962.8 ± 2.0 | 14-rup/tom |

[2-(1-Methylpropyl)phenyl]-phenylmethane [500038-79-0] C₁₇H₂₀ MW =224.35 201

Table 1. Experimental values with uncertainties.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--------------|
| 293.15 | 969.2 ± 1.0 | 54-lam/hip |
| 293.15 | 969.2 ± 1.0 | 54-lam/wis-2 |

[4-(1-Methylpropyl)phenyl]-phenylmethane [500038-80-2] C₁₇H₂₀ MW =224.35 202

Table 1. Experimental values with uncertainties.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--------------|
| 293.15 | 959.1 ± 1.0 | 54-lam/hip |
| 293.15 | 959.1 ± 1.0 | 54-lam/wis-2 |

1-Phenyl-2-(phenylmethyl)butane [1520-45-2] C₁₇H₂₀ MW =224.35 203

Table 1. Experimental values with uncertainties.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 294.15 | 973.4 ± 3.0 | 15-sab/mur |
| 273.15 | 985.3 ± 3.0 | 15-sab/mur |
| 293.15 | 964.6 ± 2.0 | 54-cav/mcl |

1,1-Bis(4-ethylphenyl)ethane [10224-91-6] C₁₈H₂₂ MW =238.37 204

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 293.15 | 964.6 ± 2.0 | 58-ria/vai |

1,2-Bis(4-methylphenyl)butane [500010-90-2] C₁₈H₂₂ MW =238.37 205

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 298.15 | 958.0 ± 1.5 | 48-bac/hel |

2,2-Bis(4-methylphenyl)butane [900000-05-7] C₁₈H₂₂ MW =238.37 206

Table 1. Fit with estimated *B* coefficient for 2 accepted points. Deviation $\sigma_w = 0.200$.

| Coefficient | $\rho = A + BT$ |
|-------------|-----------------|
| <i>A</i> | 1173.74 |
| <i>B</i> | -0.680 |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|--|----------------------|
| 273.15 | 988.2 ± 1.0 | 0.20 | 63-bes |
| 323.15 | 953.8 ± 1.0 | -0.20 | 63-bes |
| 422.95 | 887.4 ± 2.0 | 1.26 | 63-bes ¹⁾ |

¹⁾ Not included in calculation of linear coefficients.

Table 3. Recommended values.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|---------------|--|---------------|--|---------------|--|
| 270.00 | 990.1 ± 1.5 | 293.15 | 974.4 ± 0.9 | 320.00 | 956.1 ± 1.3 |
| 280.00 | 983.3 ± 1.1 | 298.15 | 971.0 ± 1.0 | 330.00 | 949.3 ± 1.7 |
| 290.00 | 976.5 ± 0.9 | 310.00 | 962.9 ± 1.1 | | |

1-(2,4-Dimethylphenyl)-1-(4-methylphenyl)propane [500037-29-6] C₁₉H₂₄ MW =252.40 207

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 298.15 | 960.0 ± 2.0 | 53-rog/bro |

1,1-Diphenylhexane [1530-04-7] C₁₈H₂₂ MW =238.37 208

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--------------|
| 293.15 | 956.4 ± 0.3 | 51-ser/wis-1 |

1,2-Diphenylhexane [10479-26-2] C₁₈H₂₂ MW =238.37 209

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 293.15 | 951.2 ± 1.0 | 50-zie/eim |

1,4-Diphenylhexane [500036-66-8] C₁₈H₂₂ MW =238.37 210

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 293.15 | 964.4 ± 2.0 | 32-gil/har |

1,6-Diphenylhexane [1087-49-6] C₁₈H₂₂ MW =238.37 211

Table 1. Experimental values with uncertainties.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--------------|
| 298.15 | 952.8 ± 3.0 | 38-rie |
| 293.15 | 952.3 ± 2.0 | 51-ser/wis-1 |

2,5-Diphenylhexane [3548-85-4] C₁₈H₂₂ MW =238.37 212

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|----------|
| 288.15 | 963.4 ± 2.0 | 13-dup-2 |

3,4-Diphenylhexane**[5789-31-1]****C₁₈H₂₂****MW =238.37****213****Table 1.** Fit with estimated *B* coefficient for 2 accepted points. Deviation $\sigma_w = 0.150$.

| Coefficient | $\rho = A + BT$ |
|-------------|-----------------|
| <i>A</i> | 1176.18 |
| <i>B</i> | -0.740 |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|--|------------|
| 293.15 | 959.1 ± 2.0 | -0.15 | 15-lep/rei |
| 273.15 | 974.2 ± 2.0 | 0.15 | 15-lep/rei |

Table 3. Recommended values.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|---------------|--|
| 270.00 | 976.4 ± 2.2 |
| 280.00 | 969.0 ± 1.8 |
| 290.00 | 961.6 ± 1.9 |
| 293.15 | 959.2 ± 2.1 |
| 298.15 | 955.6 ± 2.3 |

1,3-Diphenyl-2-propylpropane**[500038-81-3]****C₁₈H₂₂****MW =238.37****214****Table 1.** Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 293.15 | 953.5 ± 1.0 | 54-cav/mcl |

1-(4-Ethylphenyl)-3-phenylbutane**[500040-11-9]****C₁₈H₂₂****MW =238.37****215****Table 1.** Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|--------|
| 293.15 | 972.0 ± 2.0 | 57-lag |

2-(2-Methylphenyl)-2-(4-methylphenyl)-butane**[900000-06-8]****C₁₈H₂₂****MW =238.37****216****Table 1.** Fit with estimated *B* coefficient for 3 accepted points. Deviation $\sigma_w = 0.396$.

| Coefficient | $\rho = A + BT$ |
|-------------|-----------------|
| <i>A</i> | 1176.14 |
| <i>B</i> | -0.690 |

cont.

2-(2-Methylphenyl)-2-(4-methylphenyl)-butane (cont.)**Table 2.** Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--|--------|
| 273.15 | 987.8 ± 1.0 | 0.14 | 63-bes |
| 323.15 | 952.8 ± 1.0 | -0.36 | 63-bes |
| 422.95 | 885.2 ± 2.0 | 0.90 | 63-bes |

Table 3. Recommended values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|----------------------|--|----------------------|--|----------------------|--|
| 270.00 | 989.8 ± 2.4 | 320.00 | 955.3 ± 1.3 | 380.00 | 913.9 ± 3.6 |
| 280.00 | 982.9 ± 2.0 | 330.00 | 948.4 ± 1.5 | 390.00 | 907.0 ± 4.1 |
| 290.00 | 976.0 ± 1.7 | 340.00 | 941.5 ± 1.9 | 400.00 | 900.1 ± 4.6 |
| 293.15 | 973.9 ± 1.6 | 350.00 | 934.6 ± 2.3 | 410.00 | 893.2 ± 5.1 |
| 298.15 | 970.4 ± 1.4 | 360.00 | 927.7 ± 2.7 | 420.00 | 886.3 ± 5.5 |
| 310.00 | 962.2 ± 1.3 | 370.00 | 920.8 ± 3.2 | 430.00 | 879.4 ± 6.0 |

1-(4-Methylphenyl)-1-(p-propylphenyl)-ethane [900000-04-6] C₁₈H₂₂ MW =238.37 217**Table 1.** Fit with estimated *B* coefficient for 2 accepted points. Deviation $\sigma_w = 0.100$.

| Coefficient | $\rho = A + BT$ |
|-------------|-----------------|
| <i>A</i> | 1159.47 |
| <i>B</i> | -0.690 |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--|----------------------|
| 273.15 | 971.1 ± 1.0 | 0.10 | 63-bes |
| 323.15 | 936.4 ± 1.0 | -0.10 | 63-bes |
| 422.95 | 866.5 ± 2.0 | -1.14 | 63-bes ¹⁾ |

¹⁾ Not included in calculation of linear coefficients.**Table 3.** Recommended values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|----------------------|--|----------------------|--|----------------------|--|
| 270.00 | 973.2 ± 1.5 | 293.15 | 957.2 ± 0.9 | 320.00 | 938.7 ± 1.2 |
| 280.00 | 966.3 ± 1.1 | 298.15 | 953.8 ± 0.9 | 330.00 | 931.8 ± 1.7 |
| 290.00 | 959.4 ± 1.0 | 310.00 | 945.6 ± 1.1 | | |

2.4.2 Phenyl Groups on Saturated Carbon Chains, C₁₉ - C₃₅

Triphenylmethane

[519-73-3]

C₁₉H₁₆

MW = 244.34

218

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction):

$\sigma_{c,w} = 2.0548$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 6.8470 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

| Coefficient | T = 368.15 to 453.15 K $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|---|
| A | $1.29220 \cdot 10^3$ |
| B | $-7.46620 \cdot 10^{-1}$ |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|----------------|--|--|-------------------------|---------------|--|--|-------------------------|
| <i>crystal</i> | | | | 368.15 | 1019.10 ± 3.00 | 1.77 | 15-kur/kro-1(◆) |
| 286.00 | 1121.0 ± 5.0 | | 12-blo | 373.15 | 1019.50 ± 3.00 | 5.90 | 15-kur/kro-1(◆) |
| 295.19 | 1116.9 ± 5.0 | | 12-blo | 372.15 | 1014.05 ± 2.00 | -0.30 | 29-von/ber(Δ) |
| 310.49 | 1110.6 ± 5.0 | | 12-blo | 373.65 | 1015.50 ± 2.00 | 2.27 | 29-von/ber(Δ) |
| 298.15 | 1014.0 ± 2.0 | | 79-ste | 373.15 | 1009.00 ± 2.00 | -4.60 | 31-sal(∇) |
| <i>liquid</i> | | | | 393.15 | 996.00 ± 2.00 | -2.67 | 31-sal(∇) |
| 379.65 | 1008.10 ± 2.00 | -0.65 | 1893-eyk-1(○) | 413.15 | 983.00 ± 2.00 | -0.74 | 31-sal(∇) |
| 368.15 | 1016.65 ± 2.00 | -0.68 | 1896-per(□) | 433.15 | 969.00 ± 2.00 | 0.20 | 31-sal(∇) |
| 372.15 | 1014.05 ± 2.00 | -0.30 | 1896-per(□) | 453.15 | 954.00 ± 2.00 | 0.13 | 31-sal(∇) |
| 373.15 | 1013.28 ± 2.00 | -0.32 | 1896-per(□) | | | | |

Table 3. Recommended values (fit to the reliable experimental values according to the equations

$$\rho = A + BT + CT^2 + DT^3 + \dots \text{ or } \rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$$

| $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|---------------|--|---------------|--|---------------|--|
| 360.00 | 1023.42 ± 2.81 | 400.00 | 993.55 ± 1.91 | 440.00 | 963.69 ± 2.36 |
| 370.00 | 1015.95 ± 2.34 | 410.00 | 986.09 ± 1.99 | 450.00 | 956.22 ± 2.41 |
| 380.00 | 1008.49 ± 2.05 | 420.00 | 978.62 ± 2.12 | 460.00 | 948.76 ± 2.39 |
| 390.00 | 1001.02 ± 1.92 | 430.00 | 971.16 ± 2.25 | | |

cont.

Triphenylmethane (cont.)

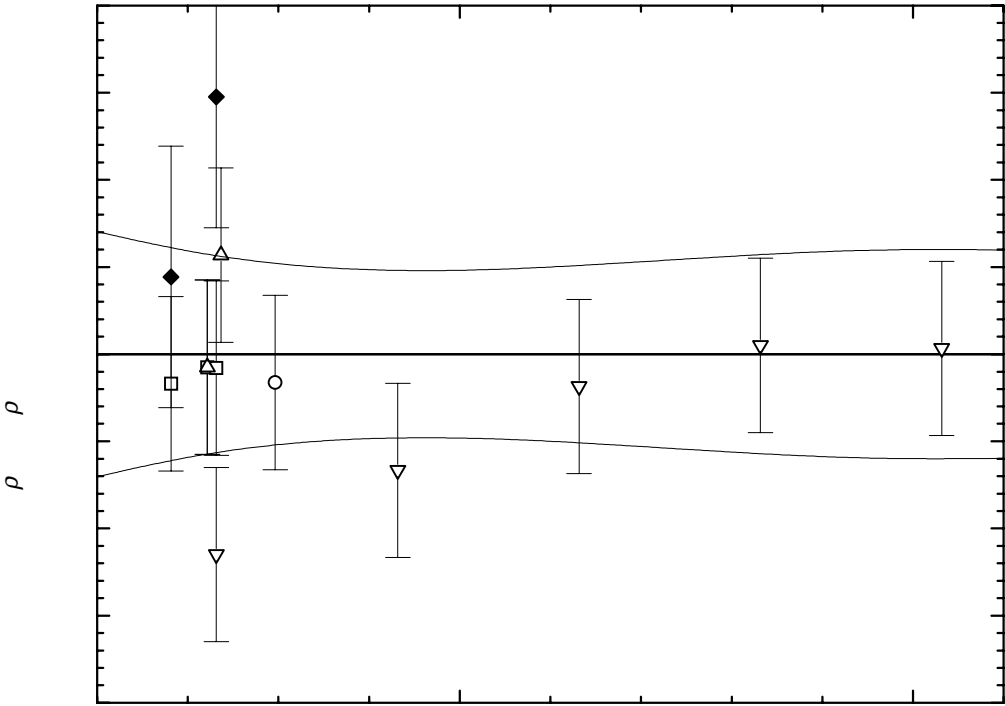


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

1,2-Bis(3,4-dimethylphenyl)propane [500010-91-3] C₁₉H₂₄ MW =252.40 219

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 298.15 | 969.0 ± 1.5 | 48-bac/hel |

2,2-Dimethyl-1,1-bis(4-methylphenyl)-propane [500037-24-1] C₁₉H₂₄ MW =252.40 220

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 298.15 | 959.0 ± 2.0 | 53-rog/bro |

2,2-Dimethyl-5,5-diphenylpentane [500036-67-9] C₁₉H₂₄ MW = 252.40 221

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 293.15 | 952.0 ± 2.0 | 32-alt/mar |

1,1-Diphenylheptane [1530-05-8] C₁₉H₂₄ MW = 252.40 222

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{\text{c,w}} = 1.9567 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{\text{c,uw}} = 5.3870 \cdot 10^{-2}$ (combined temperature ranges, unweighted).

| Coefficient | T = 273.15 to 408.15 K $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|---|
| A | $1.15920 \cdot 10^3$ |
| B | $-7.13146 \cdot 10^{-1}$ |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|----------------------|--|--|-------------------------|----------------------|--|--|-------------------------|
| 273.15 | 964.70 ± 0.50 | 0.29 | 47-sch(□) | 372.04 | 893.90 ± 0.70 | 0.02 | 53-ano-7(Δ) |
| 293.15 | 949.80 ± 0.50 | -0.34 | 47-sch(□) | 408.15 | 868.40 ± 0.70 | 0.27 | 53-ano-7(Δ) |
| 310.93 | 937.50 ± 0.50 | 0.04 | 47-sch(□) | 273.15 | 964.70 ± 0.50 | 0.29 | 68-ano-1(O) |
| 333.15 | 921.50 ± 0.50 | -0.12 | 47-sch(□) | 293.15 | 949.80 ± 0.50 | -0.34 | 68-ano-1(O) |
| 372.04 | 893.90 ± 0.70 | 0.02 | 47-sch(□) | 310.95 | 937.50 ± 0.50 | 0.05 | 68-ano-1(O) |
| 310.93 | 937.50 ± 0.50 | 0.04 | 53-ano-7(Δ) | 333.15 | 921.50 ± 0.50 | -0.12 | 68-ano-1(O) |
| 333.15 | 921.50 ± 0.50 | -0.12 | 53-ano-7(Δ) | 372.05 | 893.90 ± 0.70 | 0.02 | 68-ano-1(O) |

Table 3. Recommended values (fit to the reliable experimental values according to the equations

$$\rho = A + BT + CT^2 + DT^3 + \dots \text{ or } \rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4].$$

| $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|----------------------|--|----------------------|--|----------------------|--|
| 270.00 | 966.65 ± 0.58 | 310.00 | 938.13 ± 0.49 | 370.00 | 895.34 ± 0.69 |
| 280.00 | 959.52 ± 0.53 | 320.00 | 931.00 ± 0.50 | 380.00 | 888.21 ± 0.73 |
| 290.00 | 952.39 ± 0.50 | 330.00 | 923.86 ± 0.53 | 390.00 | 881.07 ± 0.76 |
| 293.15 | 950.14 ± 0.49 | 340.00 | 916.73 ± 0.57 | 400.00 | 873.94 ± 0.78 |
| 298.15 | 946.58 ± 0.49 | 350.00 | 909.60 ± 0.61 | 410.00 | 866.81 ± 0.79 |
| 300.00 | 945.26 ± 0.48 | 360.00 | 902.47 ± 0.65 | 420.00 | 859.68 ± 0.78 |

cont.

1,1-Diphenylheptane (cont.)

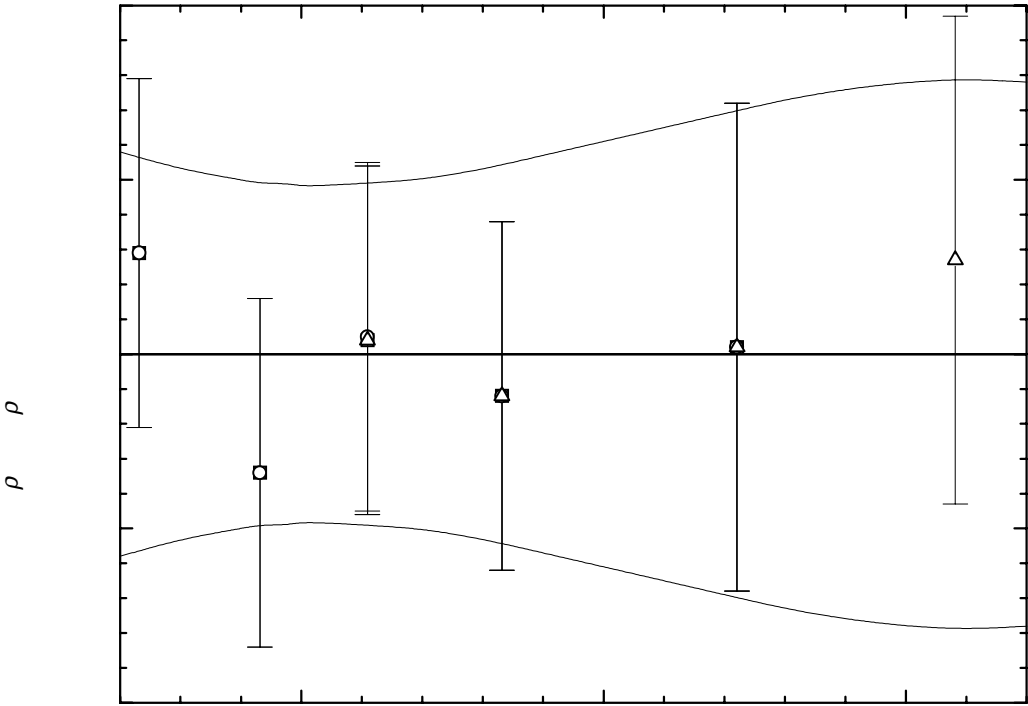


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

1,3-Bis(phenylmethyl)benzene [15180-20-8] C₂₀H₁₈ MW =258.36 223

Table 1. Experimental values with uncertainties.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--------|
| 273.15 | 1066.1 ± 2.0 | 14-rub |
| 293.15 | 1053.3 ± 2.0 | 14-rub |

1-(Diphenylmethyl)-3-methylbenzene [603-26-9] C₂₀H₁₈ MW =258.36 224

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 363.15 | 1007.2 ± 1.0 | 37-bra/gab |

1,1-Bis[4-(1-methylethyl)phenyl]ethane [600012-02-2] C₂₀H₂₆ MW =266.43 225

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 293.15 | 965.5 ± 1.0 | 57-vai/ria |

3-Methyl-3,5-diphenylheptane [102166-56-3] C₂₀H₂₆ MW =266.43 226

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 293.15 | 966.5 ± 1.0 | 58-ove/pea |

1,1-Diphenyloctane [1530-06-9] C₂₀H₂₆ MW =266.43 227

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 293.15 | 944.4 ± 1.0 | 41-sch/har |

1,8-Diphenyloctane [35511-91-2] C₂₀H₂₆ MW =266.43 228

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--------|
| 298.15 | 936.4 ± 1.0 | 38-rie |

2-(4-Methylphenyl)-2-(4-propylphenyl)-butane [94686-24-5] C₂₀H₂₆ MW =266.43 229

Table 1. Fit with estimated *B* coefficient for 2 accepted points. Deviation $\sigma_w = 0.016$.

| Coefficient | $\rho = A + BT$ |
|-------------|-----------------|
| <i>A</i> | 1164.20 |
| <i>B</i> | -0.700 |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--|--------|
| 323.15 | 938.0 ± 1.0 | 0.01 | 63-bes |
| 422.95 | 868.1 ± 2.0 | -0.03 | 63-bes |

cont.

2-(4-Methylphenyl)-2-(4-propylphenyl)butane (cont.)**Table 3.** Recommended values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|----------------------|--|----------------------|--|----------------------|--|
| 320.00 | 940.2 ± 1.8 | 360.00 | 912.2 ± 1.6 | 400.00 | 884.2 ± 3.1 |
| 330.00 | 933.2 ± 1.5 | 370.00 | 905.2 ± 1.9 | 410.00 | 877.2 ± 3.6 |
| 340.00 | 926.2 ± 1.4 | 380.00 | 898.2 ± 2.3 | 420.00 | 870.2 ± 4.1 |
| 350.00 | 919.2 ± 1.4 | 390.00 | 891.2 ± 2.7 | 430.00 | 863.2 ± 4.5 |

2-(Phenylmethyl)-1-phenylheptane [500036-68-0] C₂₀H₂₆ MW =266.43 230

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--------|
| 293.15 | 904.5 ± 1.0 | 40-gri |

1,2,3-Triphenylpropane [500037-43-4] C₂₁H₂₀ MW =272.39 231

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|----------|
| 291.15 | 1048.2 ± 2.0 | 26-fus-1 |

1,2-Bis[4-(1-methylethyl)phenyl]-propane [500010-92-4] C₂₁H₂₈ MW =280.45 232

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 298.15 | 977.0 ± 2.0 | 48-bac/hel |

2-(Phenylmethyl)-1-phenyloctane [500020-96-2] C₂₁H₂₈ MW =280.45 233

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--------|
| 293.15 | 904.5 ± 1.0 | 40-gri |

2,3-Bis(4-ethylphenyl)-2,3-dimethyl-butane [500039-97-4] C₂₂H₃₀ MW =294.48 234

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 293.15 | 947.6 ± 2.0 | 66-mes/erz |

1,2-Bis(2-methyl-5-isopropylphenyl)-ethane [500037-26-3] C₂₂H₃₀ MW =294.48 235

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--------|
| 293.15 | 936.3 ± 1.0 | 40-tur |

1,10-Diphenyldecane [35511-93-4] C₂₂H₃₀ MW =294.48 236

Table 1. Experimental values with uncertainties.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 313.15 | 918.0 ± 2.0 | 42-sch/gro |
| 303.15 | 923.2 ± 2.0 | 42-sch/gro |

1,3,5-Triphenylpentane [1520-41-8] C₂₃H₂₄ MW =300.44 237

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--------|
| 298.15 | 1018.0 ± 1.0 | 38-rie |

1,1-Diphenyldodecane [1603-53-8] C₂₄H₃₄ MW =322.53 238

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 296.15 | 925.7 ± 2.0 | 51-ben/eli |

1,4,7-Triphenylheptane [115915-27-0] C₂₅H₂₈ MW =328.50 239

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 293.15 | 1001.3 ± 2.0 | 60-che/pet |

Tris(2-phenylethyl)methane [66374-88-7] C₂₅H₂₈ MW = 328.50 240

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction):

$\sigma_{\text{c,w}} = 2.4319 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{\text{c,uw}} = 8.5352 \cdot 10^{-2}$ (combined temperature ranges, unweighted).

| Coefficient | $T = 273.15 \text{ to } 372.05 \text{ K}$ $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|--|
| A | $1.20921 \cdot 10^3$ |
| B | $-6.87217 \cdot 10^{-1}$ |

cont.

Tris(2-phenylethyl)methane (cont.)

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|----------------------|--|--|----------------------------|----------------------|--|--|----------------------------|
| 293.15 | 1007.60 ± 0.50 | -0.15 | 43-sch/cia-1(Δ) | 372.04 | 953.70 ± 0.70 | 0.17 | 47-ano(\square) |
| 310.95 | 995.20 ± 0.50 | -0.32 | 43-sch/cia-1(Δ) | 293.15 | 1008.70 ± 1.00 | 0.95 | 49-foe/fen(V) |
| 333.15 | 980.10 ± 0.50 | -0.16 | 43-sch/cia-1(Δ) | 273.15 | 1021.70 ± 0.50 | 0.21 | 68-ano-1(O) |
| 372.05 | 953.70 ± 0.70 | 0.17 | 43-sch/cia-1(Δ) | 293.15 | 1007.60 ± 0.50 | -0.15 | 68-ano-1(O) |
| 273.15 | 1021.70 ± 0.50 | 0.21 | 47-ano(\square) | 310.95 | 995.20 ± 0.50 | -0.32 | 68-ano-1(O) |
| 293.15 | 1007.60 ± 0.50 | -0.15 | 47-ano(\square) | 333.15 | 980.10 ± 0.50 | -0.16 | 68-ano-1(O) |
| 310.93 | 995.20 ± 0.50 | -0.33 | 47-ano(\square) | 372.05 | 953.70 ± 0.70 | 0.17 | 68-ano-1(O) |
| 333.15 | 980.10 ± 0.50 | -0.16 | 47-ano(\square) | | | | |

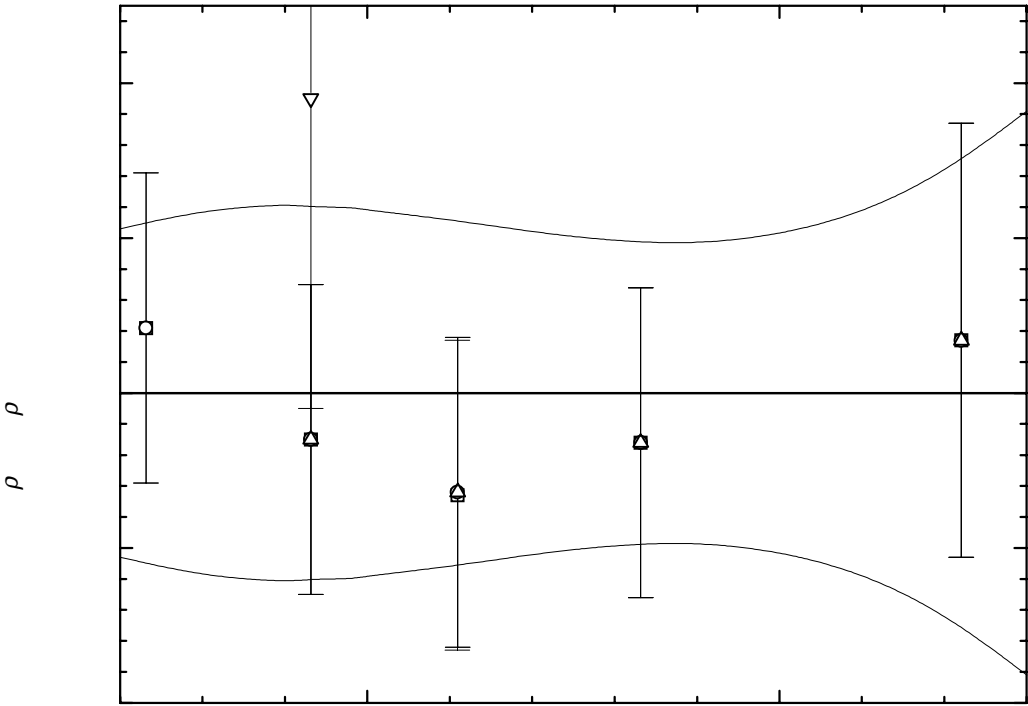


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

cont.

Table 3. Recommended values (fit to the reliable experimental values according to the equations

$$\rho = A + BT + CT^2 + DT^3 + \dots \text{ or } \rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$$

| $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|----------------------|--|----------------------|--|----------------------|--|
| 270.00 | 1023.66 ± 0.53 | 300.00 | 1003.04 ± 0.59 | 350.00 | 968.68 ± 0.51 |
| 280.00 | 1016.78 ± 0.59 | 310.00 | 996.17 ± 0.56 | 360.00 | 961.81 ± 0.58 |
| 290.00 | 1009.91 ± 0.61 | 320.00 | 989.30 ± 0.52 | 370.00 | 954.94 ± 0.71 |
| 293.15 | 1007.75 ± 0.60 | 330.00 | 982.42 ± 0.49 | 380.00 | 948.06 ± 0.91 |
| 298.15 | 1004.31 ± 0.60 | 340.00 | 975.55 ± 0.48 | | |

1,7-Diphenyl-4-hexylheptane**[500040-00-6]****C₂₅H₂₈****MW = 328.50****241****Table 1.** Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 293.15 | 914.8 ± 2.0 | 60-che/pet |

1-Phenyl-3-(2-phenylethyl)undecane**[7225-70-9]****C₂₅H₃₆****MW = 336.56****242****Table 1.** Coefficients of the polynomial expansion equation. Standard deviations (see introduction):

$\sigma_{\text{c,w}} = 5.7993 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{\text{c,uw}} = 1.3982 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

| Coefficient | T = 273.15 to 408.15 K $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|---|
| A | $1.11475 \cdot 10^3$ |
| B | $-6.59925 \cdot 10^{-1}$ |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|----------------------|--|--|-------------------------|----------------------|--|--|-------------------------|
| 273.15 | 935.60 ± 0.50 | 1.11 | 42-sch/cos-1(○) | 372.04 | 869.00 ± 0.70 | -0.23 | 53-ano-7(∇) |
| 293.15 | 921.10 ± 0.50 | -0.19 | 42-sch/cos-1(○) | 388.15 | 858.50 ± 0.70 | -0.10 | 53-ano-7(∇) |
| 310.95 | 909.30 ± 0.50 | -0.24 | 42-sch/cos-1(○) | 408.15 | 845.20 ± 0.70 | -0.20 | 53-ano-7(∇) |
| 333.15 | 894.80 ± 0.50 | -0.09 | 42-sch/cos-1(○) | 273.15 | 934.30 ± 0.50 | -0.19 | 68-ano-1(□) |
| 372.05 | 868.90 ± 0.70 | -0.32 | 42-sch/cos-1(○) | 293.15 | 921.20 ± 0.50 | -0.09 | 68-ano-1(□) |
| 293.15 | 921.10 ± 0.60 | -0.19 | 49-foe/fen(Δ) | 310.15 | 909.40 ± 0.50 | -0.67 | 68-ano-1(□) |
| 310.93 | 909.40 ± 0.50 | -0.16 | 53-ano-7(∇) | 333.15 | 894.90 ± 0.50 | 0.01 | 68-ano-1(□) |
| 333.15 | 894.90 ± 0.50 | 0.01 | 53-ano-7(∇) | 372.05 | 869.00 ± 0.70 | -0.22 | 68-ano-1(□) |
| 354.93 | 882.30 ± 0.50 | 1.78 | 53-ano-7(∇) | | | | |

cont.

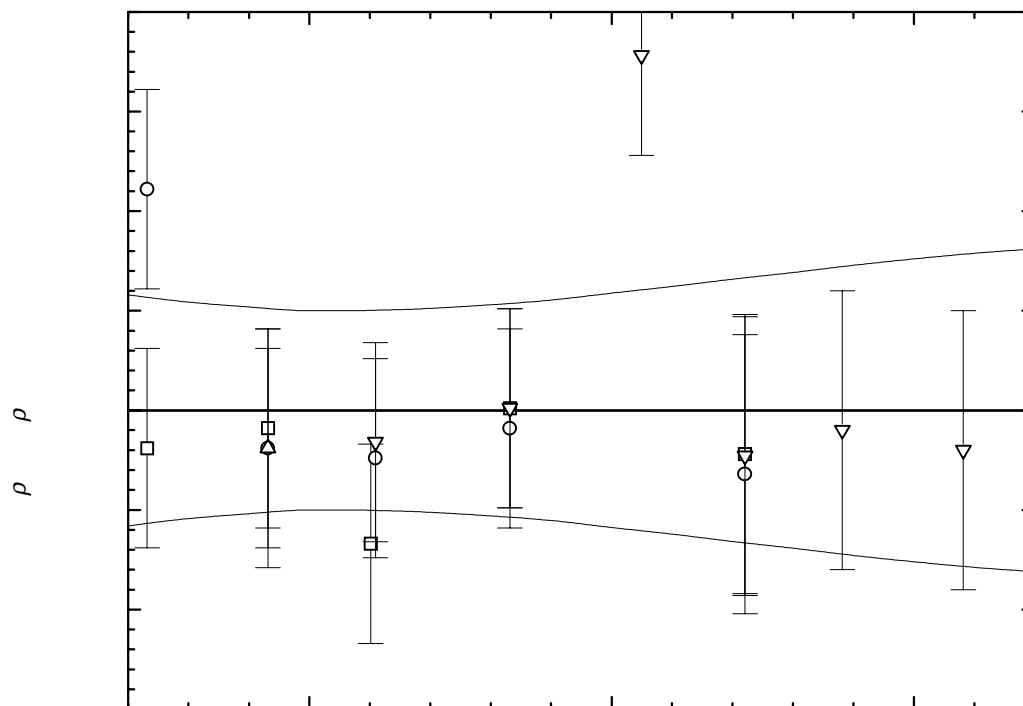
1-Phenyl-3-(2-phenylethyl)undecane (cont.)

Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

Table 3. Recommended values (fit to the reliable experimental values according to the equations $\rho = A + BT + CT^2 + DT^3 + \dots$ or $\rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$).

| $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|---------------|--|---------------|--|---------------|--|
| 270.00 | 936.57 ± 0.58 | 310.00 | 910.17 ± 0.50 | 370.00 | 870.58 ± 0.66 |
| 280.00 | 929.97 ± 0.54 | 320.00 | 903.57 ± 0.51 | 380.00 | 863.98 ± 0.69 |
| 290.00 | 923.37 ± 0.52 | 330.00 | 896.97 ± 0.53 | 390.00 | 857.38 ± 0.73 |
| 293.15 | 921.29 ± 0.51 | 340.00 | 890.37 ± 0.55 | 400.00 | 850.78 ± 0.76 |
| 298.15 | 917.99 ± 0.50 | 350.00 | 883.77 ± 0.59 | 410.00 | 844.18 ± 0.79 |
| 300.00 | 916.77 ± 0.50 | 360.00 | 877.17 ± 0.62 | 420.00 | 837.58 ± 0.81 |

1,1,2,2-Tetraphenylethane [632-50-8] C₂₆H₂₂ MW =334.46 243

Table 1. Experimental value with uncertainty.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ kg · m ⁻³ | Ref. |
|----------|--|------------|
| 273.15 | 1170.0 ± 2.0 | 29-zie/dit |

1,4-Bis(4-phenylbutyl)benzene [500036-50-0] C₂₆H₃₀ MW =342.52 244

Table 1. Fit with estimated B coefficient for 2 accepted points. Deviation $\sigma_w = 0.112$.

| Coefficient | $\rho = A + BT$ |
|-------------|-----------------|
| A | 1188.93 |
| B | -0.670 |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ kg · m ⁻³ | $\rho_{\text{exp}} - \rho_{\text{calc}}$ kg · m ⁻³ | Ref. |
|----------|--|--|----------|
| 333.15 | 965.8 ± 0.5 | 0.08 | 68-ano-1 |
| 372.05 | 939.5 ± 0.7 | -0.16 | 68-ano-1 |

Table 3. Recommended values.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ kg · m ⁻³ |
|----------|--|
| 330.00 | 967.8 ± 1.0 |
| 340.00 | 961.1 ± 0.6 |
| 350.00 | 954.4 ± 0.6 |
| 360.00 | 947.7 ± 0.9 |
| 370.00 | 941.0 ± 1.3 |
| 380.00 | 934.3 ± 1.8 |

1,1-Bis(4-methylphenyl)dodecane [55268-62-7] C₂₆H₃₈ MW = 350.59 245

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{c,w} = 7.7162 \cdot 10^{-2}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 2.7841 \cdot 10^{-2}$ (combined temperature ranges, unweighted).

| Coefficient | $T = 273.15 \text{ to } 372.05 \text{ K}$ $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|--|
| A | $1.11010 \cdot 10^3$ |
| B | $-6.61253 \cdot 10^{-1}$ |

cont.

1,1-Bis(4-methylphenyl)dodecane (cont.)

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|----------------------|--|--|-------------------------|----------------------|--|--|-------------------------|
| 273.15 | 929.50 ± 0.50 | 0.02 | 47-sch(□) | 273.15 | 929.50 ± 0.50 | 0.02 | 68-ano-1(✕) |
| 293.15 | 916.30 ± 0.50 | 0.05 | 47-sch(□) | 293.15 | 916.30 ± 0.50 | 0.05 | 68-ano-1(✕) |
| 310.93 | 904.40 ± 0.50 | -0.09 | 47-sch(□) | 310.95 | 904.40 ± 0.50 | -0.08 | 68-ano-1(✕) |
| 333.15 | 889.70 ± 0.50 | -0.10 | 47-sch(□) | 333.15 | 889.70 ± 0.50 | -0.10 | 68-ano-1(✕) |
| 372.04 | 864.20 ± 0.70 | 0.11 | 47-sch(□) | 372.05 | 864.20 ± 0.70 | 0.12 | 68-ano-1(✕) |

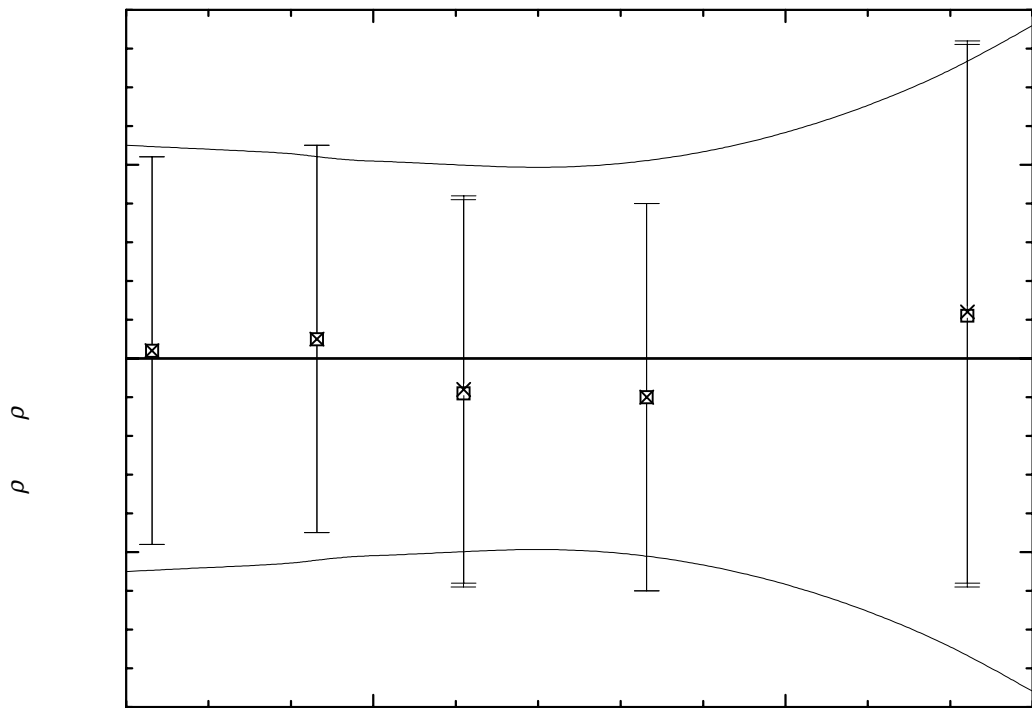


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

cont.

Table 3. Recommended values (fit to the reliable experimental values according to the equations

$$\rho = A + BT + CT^2 + DT^3 + \dots \text{ or } \rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$$

| $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|----------------------|--|----------------------|--|----------------------|--|
| 270.00 | 931.56 ± 0.55 | 300.00 | 911.72 ± 0.51 | 350.00 | 878.66 ± 0.58 |
| 280.00 | 924.95 ± 0.54 | 310.00 | 905.11 ± 0.50 | 360.00 | 872.05 ± 0.65 |
| 290.00 | 918.33 ± 0.53 | 320.00 | 898.50 ± 0.49 | 370.00 | 865.43 ± 0.74 |
| 293.15 | 916.25 ± 0.52 | 330.00 | 891.88 ± 0.50 | 380.00 | 858.82 ± 0.86 |
| 298.15 | 912.95 ± 0.51 | 340.00 | 885.27 ± 0.53 | | |

1,1-Diphenyltetradecane

[55268-63-8]

C₂₆H₃₈

MW = 350.59

246

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction):

$\sigma_{c,w} = 2.1763 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 6.1595 \cdot 10^{-2}$ (combined temperature ranges, unweighted).

| Coefficient | T = 293.15 to 408.15 K $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|---|
| A | $1.10752 \cdot 10^3$ |
| B | $-6.26763 \cdot 10^{-1}$ |
| C | $-5.97208 \cdot 10^{-5}$ |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|----------------------|--|--|-------------------------|----------------------|--|--|-------------------------|
| 293.15 | 918.60 ± 0.50 | -0.05 | 41-cos/sut-1(Δ) | 310.93 | 906.90 ± 0.50 | 0.04 | 53-ano-7(∇) |
| 310.93 | 906.80 ± 0.50 | -0.06 | 41-cos/sut-1(Δ) | 333.15 | 892.30 ± 0.50 | 0.22 | 53-ano-7(∇) |
| 333.15 | 891.60 ± 0.50 | -0.48 | 41-cos/sut-1(Δ) | 372.04 | 866.50 ± 0.70 | 0.43 | 53-ano-7(∇) |
| 372.04 | 865.90 ± 0.70 | -0.17 | 41-cos/sut-1(Δ) | 408.15 | 841.50 ± 0.70 | -0.26 | 53-ano-7(∇) |
| 293.15 | 918.70 ± 0.50 | 0.05 | 47-sch(□) | 293.15 | 918.70 ± 0.50 | 0.05 | 68-ano-1(○) |
| 310.93 | 906.90 ± 0.50 | 0.04 | 47-sch(□) | 310.95 | 906.90 ± 0.50 | 0.05 | 68-ano-1(○) |
| 333.15 | 891.70 ± 0.50 | -0.38 | 47-sch(□) | 333.15 | 892.30 ± 0.50 | 0.22 | 68-ano-1(○) |
| 372.04 | 866.00 ± 0.60 | -0.07 | 47-sch(□) | 372.05 | 866.50 ± 0.70 | 0.44 | 68-ano-1(○) |
| 293.15 | 918.60 ± 0.60 | -0.05 | 49-foe/fen(◆) | | | | |

cont.

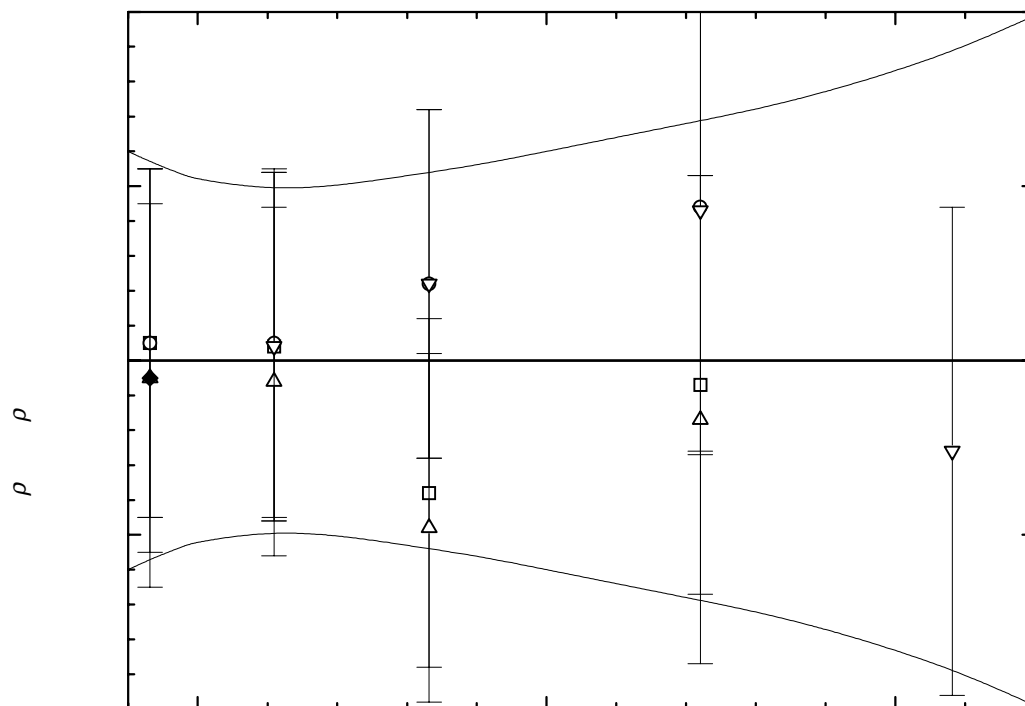
1,1-Diphenyltetradecane (cont.)

Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

Table 3. Recommended values (fit to the reliable experimental values according to the equations $\rho = A + BT + CT^2 + DT^3 + \dots$ or $\rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$).

| $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|---------------|--|---------------|--|---------------|--|
| 290.00 | 920.73 ± 0.60 | 330.00 | 894.18 ± 0.53 | 390.00 | 854.00 ± 0.77 |
| 293.15 | 918.65 ± 0.57 | 340.00 | 887.51 ± 0.56 | 400.00 | 847.26 ± 0.83 |
| 298.15 | 915.34 ± 0.53 | 350.00 | 880.83 ± 0.60 | 410.00 | 840.51 ± 0.90 |
| 300.00 | 914.11 ± 0.52 | 360.00 | 874.14 ± 0.64 | 420.00 | 833.74 ± 0.99 |
| 310.00 | 907.48 ± 0.49 | 370.00 | 867.44 ± 0.68 | | |
| 320.00 | 900.84 ± 0.50 | 380.00 | 860.72 ± 0.72 | | |

3-Ethyl-1,1,1-triphenylheptane [500036-93-1] C₂₇H₃₂ MW = 356.55 247

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 313.15 | 1005.0 ± 3.0 | 57-che/pet |

1,5,9-Triphenylnonane [500037-46-7] C₂₇H₃₂ MW = 356.55 248

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--------|
| 298.15 | 995.5 ± 2.0 | 38-rie |

1,7-Diphenyl-4-(3-phenylpropyl)heptane [55282-64-9] C₂₈H₃₄ MW = 370.58 249

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction):

$\sigma_{\text{c,w}} = 5.7717 \cdot 10^{-2}$ (combined temperature ranges, weighted), $\sigma_{\text{c,uw}} = 1.9929 \cdot 10^{-2}$ (combined temperature ranges, unweighted).

| Coefficient | T = 273.15 to 372.05 K $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|---|
| A | $1.17768 \cdot 10^3$ |
| B | $-6.65367 \cdot 10^{-1}$ |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|----------------------|--|--|-------------------------|----------------------|--|--|-------------------------|
| 273.15 | 996.00 ± 0.50 | 0.06 | 48-ano(□) | 273.15 | 996.00 ± 0.50 | 0.06 | 68-ano-1(×) |
| 293.15 | 982.60 ± 0.50 | -0.03 | 48-ano(□) | 293.15 | 982.60 ± 0.50 | -0.03 | 68-ano-1(×) |
| 310.93 | 970.70 ± 0.50 | -0.10 | 48-ano(□) | 310.95 | 970.70 ± 0.50 | -0.08 | 68-ano-1(×) |
| 333.15 | 956.00 ± 0.50 | -0.01 | 48-ano(□) | 333.15 | 956.00 ± 0.50 | -0.01 | 68-ano-1(×) |
| 372.04 | 930.20 ± 0.70 | 0.06 | 48-ano(□) | 372.05 | 930.20 ± 0.70 | 0.07 | 68-ano-1(×) |

Table 3. Recommended values (fit to the reliable experimental values according to the equations

$$\rho = A + BT + CT^2 + DT^3 + \dots \text{ or } \rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$$

| $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|----------------------|--|----------------------|--|----------------------|--|
| 270.00 | 998.03 ± 0.55 | 300.00 | 978.07 ± 0.51 | 350.00 | 944.80 ± 0.58 |
| 280.00 | 991.38 ± 0.54 | 310.00 | 971.42 ± 0.50 | 360.00 | 938.15 ± 0.65 |
| 290.00 | 984.72 ± 0.53 | 320.00 | 964.76 ± 0.49 | 370.00 | 931.49 ± 0.74 |
| 293.15 | 982.63 ± 0.52 | 330.00 | 958.11 ± 0.50 | 380.00 | 924.84 ± 0.86 |
| 298.15 | 979.30 ± 0.51 | 340.00 | 951.46 ± 0.53 | | |

cont.

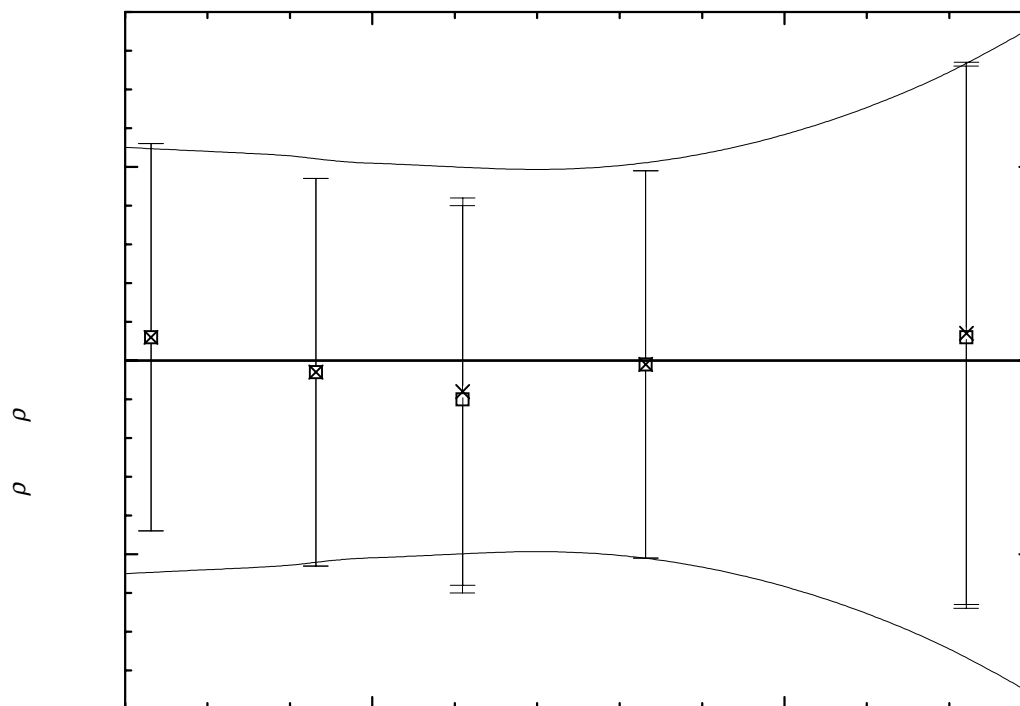
1,7-Diphenyl-4-(3-phenylpropyl)heptane (cont.)

Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

1,1-Diphenylhexadecane**[13456-23-0]****C₂₈H₄₂****MW = 378.64****250**

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction):

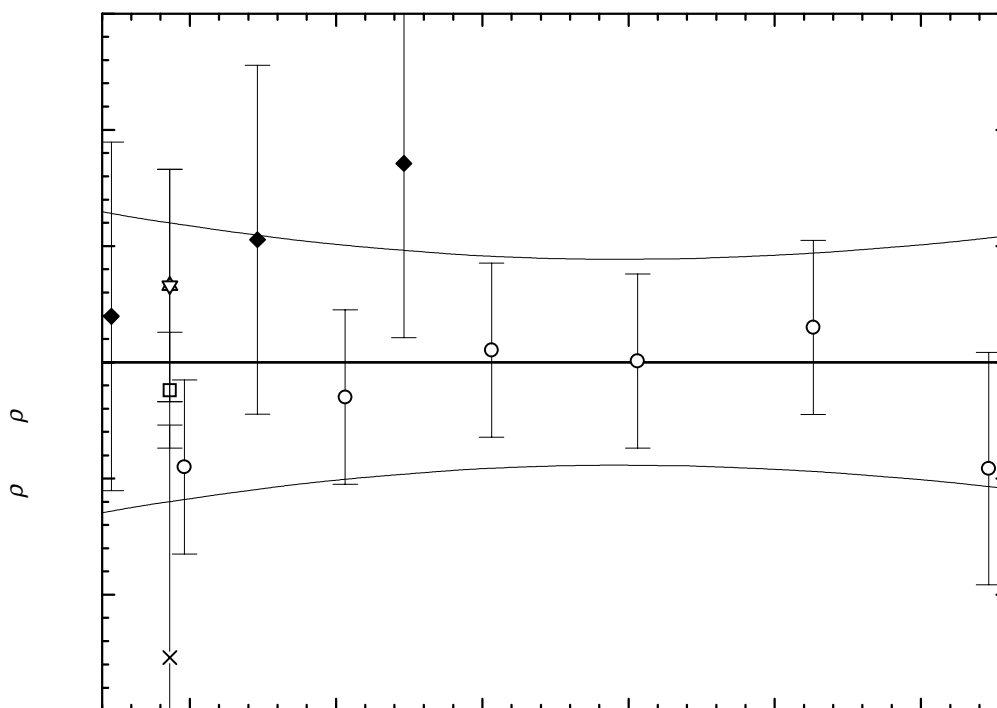
$\sigma_{c,w} = 1.7452$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 5.8637 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

| Coefficient | T = 273.15 to 573.15 K |
|-------------|---------------------------------------|
| | $\rho = A + BT + CT^2 + DT^3 + \dots$ |
| A | $1.11043 \cdot 10^3$ |
| B | $-6.76263 \cdot 10^{-1}$ |

cont.

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|----------------------|--|--|-----------------------------|----------------------|--|--|-------------------------|
| 293.15 | 913.50 ± 2.00 | 1.32 | 34-lan/cec(Δ) | 298.15 | 907.00 ± 1.50 | -1.80 | 50-boe/ned(O) |
| 293.15 | 913.50 ± 2.00 | 1.32 | 35-ros(V) | 353.15 | 871.00 ± 1.50 | -0.60 | 50-boe/ned(O) |
| 273.15 | 926.50 ± 3.00 | 0.79 | 38-eva-2(\blacklozenge) | 403.15 | 838.00 ± 1.50 | 0.21 | 50-boe/ned(O) |
| 323.15 | 894.00 ± 3.00 | 2.11 | 38-eva-2(\blacklozenge) | 453.15 | 804.00 ± 1.50 | 0.02 | 50-boe/ned(O) |
| 373.15 | 861.50 ± 3.00 | 3.42 | 38-eva-2(\blacklozenge) | 513.15 | 764.00 ± 1.50 | 0.60 | 50-boe/ned(O) |
| 293.15 | 911.70 ± 1.00 | -0.48 | 41-sch/har(\square) | 573.15 | 721.00 ± 2.00 | -1.83 | 50-boe/ned(O) |
| 293.15 | 907.10 ± 4.00 | -5.08 | 43-wib/ove(\times) | | | | |

**Fig. 1.** The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

cont.

1,1-Diphenylhexadecane (cont.)**Table 3.** Recommended values (fit to the reliable experimental values according to the equations

$$\rho = A + BT + CT^2 + DT^3 + \dots \text{ or } \rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$$

| $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|----------------------|--|----------------------|--|----------------------|--|
| 270.00 | 927.84 ± 2.59 | 370.00 | 860.21 ± 1.94 | 490.00 | 779.06 ± 1.82 |
| 280.00 | 921.07 ± 2.50 | 380.00 | 853.45 ± 1.90 | 500.00 | 772.30 ± 1.84 |
| 290.00 | 914.31 ± 2.42 | 390.00 | 846.68 ± 1.86 | 510.00 | 765.53 ± 1.87 |
| 293.15 | 912.18 ± 2.40 | 400.00 | 839.92 ± 1.83 | 520.00 | 758.77 ± 1.90 |
| 298.15 | 908.80 ± 2.36 | 410.00 | 833.16 ± 1.81 | 530.00 | 752.01 ± 1.94 |
| 300.00 | 907.55 ± 2.35 | 420.00 | 826.40 ± 1.79 | 540.00 | 745.24 ± 1.98 |
| 310.00 | 900.79 ± 2.27 | 430.00 | 819.63 ± 1.78 | 550.00 | 738.48 ± 2.02 |
| 320.00 | 894.02 ± 2.21 | 440.00 | 812.87 ± 1.77 | 560.00 | 731.72 ± 2.07 |
| 330.00 | 887.26 ± 2.14 | 450.00 | 806.11 ± 1.77 | 570.00 | 724.96 ± 2.12 |
| 340.00 | 880.50 ± 2.08 | 460.00 | 799.35 ± 1.78 | 580.00 | 718.19 ± 2.18 |
| 350.00 | 873.73 ± 2.03 | 470.00 | 792.58 ± 1.78 | | |
| 360.00 | 866.97 ± 1.98 | 480.00 | 785.82 ± 1.80 | | |

5,14-Diphenyloctadecane

[97084-95-2]

C₃₀H₄₆

MW =406.70

251

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--------|
| 298.15 | 905.1 ± 1.0 | 36-mik |

2-(Phenylmethyl)-1-phenylheptadecane [13456-24-1]C₃₀H₄₆

MW =406.70

252

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation $\sigma_w = 0.982$.

| Coefficient | $\rho = A + BT$ |
|-------------|-----------------|
| <i>A</i> | 1116.44 |
| <i>B</i> | -0.680 |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--|--------------------------|
| 293.15 | 916.5 ± 2.0 | -0.60 | 34-lan/cec |
| 373.15 | 864.2 ± 2.0 | 1.50 | 38-eva-2 |
| 323.15 | 896.9 ± 2.0 | 0.20 | 38-eva-2 |
| 273.15 | 929.6 ± 2.0 | -1.10 | 38-eva-2 |
| 293.15 | 906.0 ± 6.0 | -11.10 | 43-wib/ove ¹⁾ |

¹⁾ Not included in calculation of linear coefficients.

cont.

Table 3. Recommended values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|----------------------|--|----------------------|--|----------------------|--|
| 270.00 | 932.8 ± 4.9 | 310.00 | 905.6 ± 1.8 | 350.00 | 878.4 ± 3.8 |
| 280.00 | 926.0 ± 4.0 | 320.00 | 898.8 ± 1.8 | 360.00 | 871.6 ± 4.8 |
| 290.00 | 919.2 ± 3.1 | 330.00 | 892.0 ± 2.3 | 370.00 | 864.8 ± 5.7 |
| 293.15 | 917.1 ± 2.8 | 340.00 | 885.2 ± 3.0 | 380.00 | 858.0 ± 6.7 |
| 298.15 | 913.7 ± 2.5 | | | | |

1,3,5,7-Tetraphenylheptane**[40339-18-2]****C₃₁H₃₂****MW = 404.60****253****Table 1.** Experimental values with uncertainties.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 298.15 | 1045.2 ± 3.0 | 38-rie |
| 293.15 | 1021.5 ± 3.0 | 43-wib/ove |

1-Phenyl-3-(2-phenylethyl)heneicosane**[500026-19-7]****C₃₅H₅₆****MW = 476.83****254****Table 1.** Coefficients of the polynomial expansion equation. Standard deviations (see introduction):

$\sigma_{\text{c,w}} = 1.3883 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{\text{c,uw}} = 6.0540 \cdot 10^{-2}$ (combined temperature ranges, unweighted).

| Coefficient | $T = 310.95 \text{ to } 408.15 \text{ K}$ $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|--|
| <i>A</i> | $1.11519 \cdot 10^3$ |
| <i>B</i> | $-6.61309 \cdot 10^{-1}$ |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|----------------------|--|--|-------------------------|----------------------|--|--|-------------------------|
| 310.95 | 909.42 ± 0.50 | -0.13 | 58-cut/mcm(□) | 372.05 | 869.04 ± 0.70 | -0.11 | 58-cut/mcm(□) |
| 333.15 | 894.93 ± 0.50 | 0.06 | 58-cut/mcm(□) | 388.15 | 858.52 ± 0.70 | 0.02 | 58-cut/mcm(□) |
| 352.55 | 882.30 ± 0.50 | 0.26 | 58-cut/mcm(□) | 408.15 | 845.17 ± 0.70 | -0.10 | 58-cut/mcm(□) |

Table 3. Recommended values (fit to the reliable experimental values according to the equations

$$\rho = A + BT + CT^2 + DT^3 + \dots \text{ or } \rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$$

| $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|----------------------|--|----------------------|--|----------------------|--|
| 310.00 | 910.18 ± 0.72 | 350.00 | 883.73 ± 0.50 | 390.00 | 857.28 ± 0.73 |
| 320.00 | 903.57 ± 0.66 | 360.00 | 877.11 ± 0.50 | 400.00 | 850.66 ± 0.91 |
| 330.00 | 896.95 ± 0.60 | 370.00 | 870.50 ± 0.53 | 410.00 | 844.05 ± 1.14 |
| 340.00 | 890.34 ± 0.54 | 380.00 | 863.89 ± 0.61 | 420.00 | 837.44 ± 1.45 |

cont.

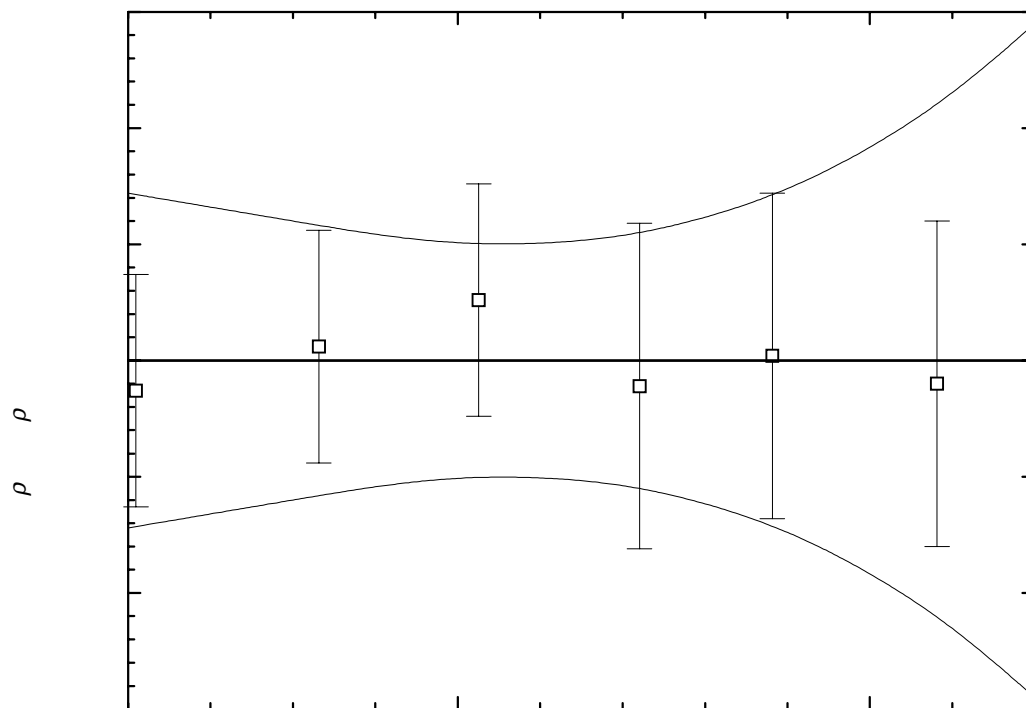
1-Phenyl-3-(2-phenylethyl)heneicosane (cont.)

Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

2.5 Phenyl Groups on Unsaturated Carbon Chains

1,2-Diphenylethyne [501-65-5] $\text{C}_{14}\text{H}_{10}$ MW =178.23 255

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 372.95 | 965.7 ± 2.0 | 29-von/ber |

1,1-Diphenylethene [530-48-3] $\text{C}_{14}\text{H}_{12}$ MW = 180.25 256

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction):

$\sigma_{\text{c,w}} = 5.8079 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{\text{c,uw}} = 2.1437 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

| Coefficient | $T = 273.15 \text{ to } 372.05 \text{ K}$ $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|--|
| A | $1.25691 \cdot 10^3$ |
| B | $-7.94865 \cdot 10^{-1}$ |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|----------------------|--|--|-------------------------|----------------------|--|--|-------------------------|
| 273.15 | 1041.50 ± 2.00 | 1.71 | 1890-red(◆) | 333.15 | 991.90 ± 1.00 | -0.20 | 52-ano(∇) |
| 288.15 | 1027.80 ± 1.00 | -0.07 | 1890-red(◆) | 372.05 | 960.70 ± 1.50 | -0.48 | 52-ano(∇) |
| 293.15 | 1023.20 ± 0.60 | -0.69 | 11-von/eis(□) | 293.15 | 1026.00 ± 3.00 | 2.11 | 54-tsu/yul(✕) |
| 289.15 | 1028.00 ± 2.00 | 0.93 | 47-ric/mir(✕) | 273.15 | 1039.40 ± 1.00 | -0.39 | 68-ano-1(Δ) |
| 293.15 | 1024.30 ± 1.00 | 0.41 | 51-ser/wis(○) | 293.15 | 1023.50 ± 1.00 | -0.39 | 68-ano-1(Δ) |
| 273.15 | 1039.20 ± 1.00 | -0.59 | 52-ano(∇) | 310.95 | 1009.30 ± 1.00 | -0.44 | 68-ano-1(Δ) |
| 293.15 | 1023.30 ± 1.00 | -0.59 | 52-ano(∇) | 333.15 | 991.90 ± 1.00 | -0.20 | 68-ano-1(Δ) |
| 310.95 | 1009.10 ± 1.00 | -0.64 | 52-ano(∇) | 372.05 | 960.70 ± 1.50 | -0.48 | 68-ano-1(Δ) |

Table 3. Recommended values (fit to the reliable experimental values according to the equations

$$\rho = A + BT + CT^2 + DT^3 + \dots \text{ or } \rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$$

| $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|----------------------|--|----------------------|--|----------------------|--|
| 270.00 | 1042.29 ± 1.38 | 300.00 | 1018.45 ± 1.27 | 350.00 | 978.70 ± 1.07 |
| 280.00 | 1034.34 ± 1.41 | 310.00 | 1010.50 ± 1.15 | 360.00 | 970.76 ± 1.26 |
| 290.00 | 1026.40 ± 1.36 | 320.00 | 1002.55 ± 1.05 | 370.00 | 962.81 ± 1.58 |
| 293.15 | 1023.89 ± 1.34 | 330.00 | 994.60 ± 0.98 | 380.00 | 954.86 ± 2.04 |
| 298.15 | 1019.92 ± 1.29 | 340.00 | 986.65 ± 0.98 | | |

cont.

1,1-Diphenylethene (cont.)

Further references: [02-kla-4, 04-kla/hei, 06-kau, 15-sab/mur].

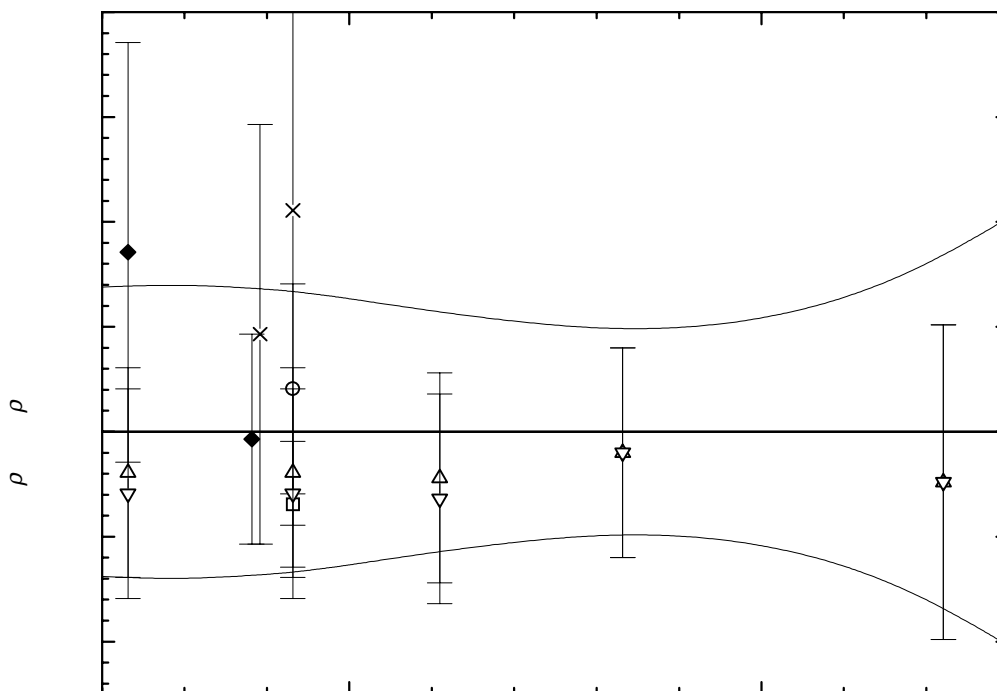


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

cis-1,2-Diphenylethene**[645-49-8]****C₁₄H₁₂****MW =180.25****257**

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation $\sigma_w = 0.322$.

| Coefficient | $\rho = A + BT$ |
|-------------|-----------------|
| <i>A</i> | 1236.97 |
| <i>B</i> | -0.760 |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. | $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|--|------------------------|---------------|--|--|------------|
| 297.15 | 1014.0 ± 3.0 | 2.86 | 29-bou-1 ¹⁾ | 289.05 | 1018.3 ± 2.0 | 1.01 | 32-von |
| 289.15 | 1020.0 ± 3.0 | 2.78 | 29-bou-1 ¹⁾ | 293.15 | 1014.0 ± 1.0 | -0.18 | 35-von-1 |
| 286.15 | 1023.0 ± 3.0 | 3.50 | 29-bou-1 ¹⁾ | 293.15 | 1014.3 ± 1.0 | 0.12 | 39-cam/oco |
| 289.05 | 1017.1 ± 1.0 | -0.19 | 32-von | | | | |

¹⁾ Not included in calculation of linear coefficients.

cont.

Table 3. Recommended values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|----------------------|--|
| 280.00 | 1024.2 ± 1.4 |
| 290.00 | 1016.6 ± 0.9 |
| 293.15 | 1014.2 ± 0.9 |
| 298.15 | 1010.4 ± 1.0 |

trans-1,2-Diphenylethene

[103-30-0]

 $\text{C}_{14}\text{H}_{12}$

MW =180.25

258

Table 1. Experimental values with uncertainties.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|----------------------|--|----------|
| <i>crystal</i> | | | 293.15 | 1039.0 ± 1.0 | 35-von-1 |
| 294.85 | 1088.3 ± 5.0 | 25-von/kra | <i>liquid</i> | | |
| 293.05 | 1088.8 ± 4.0 | 25-von/kra | 398.15 | 970.3 ± 20.0 | 04-bec |
| 273.15 | 1164.0 ± 3.0 | 29-zie/dit | 398.15 | 970.7 ± 20.0 | 04-bec |
| 293.15 | 1155.0 ± 4.0 | 33-muk | 398.15 | 954.4 ± 10.0 | 13-van-2 |

1,1-Diphenyl-1-propene

[778-66-5]

 $\text{C}_{15}\text{H}_{14}$

MW =194.28

259

Table 1. Fit with estimated B coefficient for 3 accepted points. Deviation $\sigma_w = 1.511$.

| Coefficient | $\rho = A + BT$ |
|-------------|-----------------|
| A | 1221.69 |
| B | -0.720 |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--|----------------------|
| 333.15 | 984.1 ± 2.0 | 2.27 | 04-kla/hei |
| 336.65 | 981.3 ± 2.0 | 1.99 | 11-von/eis |
| 296.15 | 1007.6 ± 1.0 | -1.07 | 15-sab/mur |
| 351.35 | 971.0 ± 3.0 | 2.28 | 29-von ¹⁾ |

¹⁾ Not included in calculation of linear coefficients.**Table 3.** Recommended values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|----------------------|--|----------------------|--|----------------------|--|
| 290.00 | 1012.9 ± 2.7 | 310.00 | 998.5 ± 1.9 | 330.00 | 984.1 ± 2.8 |
| 293.15 | 1010.6 ± 2.5 | 320.00 | 991.3 ± 2.2 | 340.00 | 976.9 ± 3.6 |
| 298.15 | 1007.0 ± 2.2 | | | | |

1,2-Diphenyl-1-propene [779-51-1] $C_{15}H_{14}$ MW =194.28 260

Table 1. Experimental values with uncertainties.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 290.15 | 985.7 ± 2.0 | 04-kla/hei |
| 373.05 | 956.5 ± 20.0 | 25-von/kra |

1,3-Diphenyl-1-propene [5209-18-7] $C_{15}H_{14}$ MW = 194.28 261

Table 1. Experimental and recommended values with uncertainties.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|--------------------------|
| 290.15 | 1000.3 ± 3.0 | 29-boe/els ¹⁾ |
| 292.65 | 1012.0 ± 5.0 | 32-fis/sto ¹⁾ |
| 293.15 | 1006.1 ± 2.0 | 51-ser/wis |
| 293.15 | 1001.9 ± 2.0 | 55-hil/sim |
| 293.15 | 1004.0 ± 2.5 | Recommended |

¹⁾ Not included in calculation of recommended value.

2,3-Diphenyl-1-propene [948-97-0] $C_{15}H_{14}$ MW =194.28 262

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 293.15 | 1101.4 ± 2.0 | 22-von/see |

3,3-Diphenyl-1-propene [3542-14-1] $C_{15}H_{14}$ MW =194.28 263

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 297.15 | 1003.6 ± 2.0 | 15-sab/mur |

(4-Ethenylphenyl)phenylmethane [15866-31-6] $C_{15}H_{14}$ MW =194.28 264

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 293.15 | 1001.1 ± 2.0 | 48-mar/hei |

1-(4-Methylphenyl)-2-phenylethene [28495-59-2] $C_{15}H_{14}$ MW =194.28 265

Table 1. Experimental values with uncertainties.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 333.65 | 989.1 ± 3.0 | 21-von/fru |
| 293.15 | 1026.0 ± 3.0 | 23-kro-1 |

1,4-Diphenyl-1,3-butadiyne [886-66-8] $C_{16}H_{10}$ MW =202.26 266

Table 1. Experimental values with uncertainties.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|--------|
| 293.15 | 886.7 ± 3.0 | 06-mou |
| 286.15 | 905.6 ± 3.0 | 06-mou |

1,1-Diphenyl-1,3-butadiene [500033-90-9] $C_{16}H_{14}$ MW =206.29 267

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|--------------|
| 290.65 | 1019.0 ± 2.0 | 56-nor/mai-1 |

cis,cis-1,4-Diphenyl-1,3-butadiene [5807-76-1] $C_{16}H_{14}$ MW =206.29 268

Table 1. Experimental values with uncertainties.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|----------|
| 373.75 | 969.7 ± 2.0 | 32-von-1 |
| 372.65 | 970.7 ± 2.0 | 32-von-1 |

trans,cis-1,4-Diphenyl-1,3-butadiene [5808-05-9] $C_{16}H_{14}$ MW =206.29 269

Table 1. Experimental values with uncertainties.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|----------|
| 293.15 | 1007.0 ± 2.0 | 32-von-1 |
| 292.85 | 1007.2 ± 2.0 | 32-von-1 |

2,3-Diphenyl-1,3-butadiene [2548-47-2] $C_{16}H_{14}$ MW =206.29 270

Table 1. Experimental values with uncertainties.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|--------|
| 339.05 | 984.2 ± 2.0 | 32-von |
| 338.95 | 982.9 ± 2.0 | 32-von |

1,2-Bis(3-methylphenyl)ethene [500037-27-4] $C_{16}H_{16}$ MW =208.30 271

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 293.15 | 1000.3 ± 1.0 | 38-mar/nic |

1,1-Diphenyl-1-butene [1726-14-3] $C_{16}H_{16}$ MW =208.30 272

Table 1. Experimental and recommended values with uncertainties.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. | $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|--------------------------|---------------|--|-------------|
| 291.15 | 1030.0 ± 20.0 | 04-kla/hei ¹⁾ | 293.15 | 993.7 ± 1.0 | 41-sch/har |
| 289.15 | 1003.8 ± 6.0 | 13-sab/mur ¹⁾ | 293.15 | 993.9 ± 1.0 | 52-ser/wis |
| 289.15 | 1003.7 ± 6.0 | 15-sab/mur ¹⁾ | 293.15 | 993.8 ± 1.0 | Recommended |

¹⁾ Not included in calculation of recommended value.

cis-1,2-Diphenyl-1-butene [20218-42-2] $C_{16}H_{16}$ MW =208.30 273

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 291.15 | 1012.2 ± 3.0 | 15-sab/mur |

1,3-Diphenyl-2-butene [17342-56-2] $C_{16}H_{16}$ MW =208.30 274

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 293.75 | 1014.9 ± 1.0 | 28-sto/koo |

1,4-Diphenyl-1-butene [14213-84-4] $C_{16}H_{16}$ MW =208.30 275

Table 1. Experimental values with uncertainties.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|--------------|
| 288.15 | 1016.0 ± 3.0 | 1883-fit/erd |
| 273.15 | 1027.0 ± 3.0 | 1883-fit/erd |
| 293.15 | 1033.0 ± 6.0 | 47-tuo/guy |
| 293.15 | 1017.2 ± 2.0 | 55-hil/sim |

cis-2,3-Diphenyl-2-butene [782-05-8] $C_{16}H_{16}$ MW =208.30 276

Table 1. Experimental values with uncertainties.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|----------|
| 350.95 | 953.7 ± 3.0 | 32-von |
| 293.15 | 1004.0 ± 2.0 | 35-von-1 |

***trans*-2,3-Diphenyl-2-butene** [782-06-9] $C_{16}H_{16}$ MW =208.30 277

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|----------|
| 293.15 | 987.0 ± 2.0 | 35-von-1 |

1,1-Diphenyl-2-methyl-1-propene [500037-09-2] $C_{16}H_{16}$ MW =208.30 278

Table 1. Experimental values with uncertainties.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 289.15 | 1023.8 ± 20.0 | 15-sab/mur |
| 273.15 | 1010.0 ± 4.0 | 21-lev |
| 290.75 | 1002.1 ± 3.0 | 29-von |
| 293.15 | 1000.0 ± 2.0 | 29-von |

1,3-Diphenyl-2-methyl-1-propene [500037-10-5] $C_{16}H_{16}$ MW =208.30 279

Table 1. Experimental values with uncertainties.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 289.15 | 1017.9 ± 3.0 | 15-sab/mur |
| 273.15 | 1037.0 ± 3.0 | 31-lev/tab |

1,1-Diphenyl-3-methyl-1-butene [500037-17-2] $C_{17}H_{18}$ MW =222.33 280

Table 1. Fit with estimated B coefficient for 4 accepted points. Deviation $\sigma_w = 0.686$.

| Coefficient | $\rho = A + BT$ |
|-------------|-----------------|
| A | 1198.96 |
| B | -0.750 |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|--|------------|
| 294.15 | 979.0 ± 2.0 | 0.65 | 15-sab/mur |
| 273.15 | 994.6 ± 2.0 | 0.50 | 27-lag |
| 293.15 | 978.0 ± 2.0 | -1.10 | 29-von |
| 290.15 | 981.3 ± 2.0 | -0.05 | 29-von |

cont.

1,1-Diphenyl-3-methyl-1-butene (cont.)**Table 3.** Recommended values.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ |
|----------|---|
| 270.00 | 996.5 ± 2.6 |
| 280.00 | 989.0 ± 2.1 |
| 290.00 | 981.5 ± 1.9 |
| 293.15 | 979.1 ± 2.0 |
| 298.15 | 975.4 ± 2.2 |

3,3-Diphenyl-2-methyl-1-butene [1860-16-8] $\text{C}_{17}\text{H}_{18}$ MW =222.33 281

Table 1. Experimental value with uncertainty.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|------------|
| 293.15 | 1006.0 ± 2.0 | 27-bat/mar |

1,1-Diphenyl-1-pentene [1530-11-6] $\text{C}_{17}\text{H}_{18}$ MW =222.33 282

Table 1. Experimental values with uncertainties.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|--------------|
| 273.15 | 1013.9 ± 4.0 | 27-lag |
| 293.15 | 981.3 ± 2.0 | 51-ser/wis-1 |

1,5-Diphenyl-2-pentene [40939-59-1] $\text{C}_{17}\text{H}_{18}$ MW =222.33 283

Table 1. Experimental value with uncertainty.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|--------------|
| 293.15 | 976.8 ± 1.0 | 51-ser/wis-1 |

2,3-Diphenyl-2-pentene [500037-11-6] $\text{C}_{17}\text{H}_{18}$ MW =222.33 284

Table 1. Experimental value with uncertainty.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|--------|
| 273.15 | 1040.0 ± 2.0 | 21-lev |

1-Phenyl-2-(phenylmethyl)-1-butene [93436-34-1] $\text{C}_{17}\text{H}_{18}$ MW =222.33 285

Table 1. Experimental values with uncertainties.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|--------------|
| 294.15 | 973.4 ± 3.0 | 13-sab/mur-2 |
| 273.15 | 985.3 ± 3.0 | 13-sab/mur-2 |
| 273.15 | 1012.0 ± 3.0 | 31-lev/tab |

1,6-Diphenyl-1,3,5-hexatriene [1720-32-7] $C_{18}H_{16}$ MW =232.33 286

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 293.15 | 1139.0 ± 2.0 | 30-hen/kuh |

1,6-Diphenyl-1,5-hexadiene [4439-45-6] $C_{18}H_{18}$ MW =234.34 287

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|------------|
| 293.15 | 990.2 ± 1.0 | 32-gil/har |

1,1-Diphenyl-1-hexene [1530-19-4] $C_{18}H_{20}$ MW =236.36 288

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|--------------|
| 293.15 | 971.1 ± 1.0 | 51-ser/wis-1 |

1,4-Diphenyl-1-hexene [500037-12-7] $C_{18}H_{20}$ MW = 236.36 289

Table 1. Experimental and recommended values with uncertainties.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|----------------------------|
| 294.95 | 989.2 ± 1.5 | 11-von/eis-1 ¹⁾ |
| 293.15 | 991.5 ± 1.0 | 10-rup/bur |
| 293.15 | 991.5 ± 1.0 | 10-von/eis |
| 293.15 | 991.5 ± 1.0 | Recommended |

¹⁾ Not included in calculation of recommended value.

1,6-Diphenyl-3-hexene [23055-11-0] $C_{18}H_{20}$ MW =236.36 290

Table 1. Experimental value with uncertainty.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|---------------|--|--------------|
| 293.15 | 967.6 ± 1.0 | 51-ser/wis-1 |

2,5-Diphenyl-2-hexene [52161-54-3] $C_{18}H_{20}$ MW = 236.36 291

Table 1. Experimental and recommended values with uncertainties.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|------------------------|
| 294.15 | 972.4 ± 3.0 | 02-kla-1 ¹⁾ |
| 273.15 | 1012.0 ± 20.0 | 07-tif ¹⁾ |
| 293.15 | 979.0 ± 1.0 | 50-pet/shv |
| 293.15 | 979.0 ± 1.0 | 51-pet/shv |
| 293.15 | 979.0 ± 1.0 | Recommended |

¹⁾ Not included in calculation of recommended value.

1,1-Diphenyl-4-methyl-1-pentene [700002-97-7] $C_{18}H_{20}$ MW = 236.36 292

Table 1. Fit with estimated B coefficient for 2 accepted points. Deviation $\sigma_w = 0.100$.

| Coefficient | $\rho = A + BT$ |
|-------------|-----------------|
| A | 1187.27 |
| B | -0.720 |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | $\rho_{\text{exp}} - \rho_{\text{calc}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|---|--------|
| 298.15 | 972.5 ± 2.0 | -0.10 | 08-sho |
| 273.15 | 990.7 ± 2.0 | 0.10 | 08-sho |

Table 3. Recommended values.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ |
|----------|---|
| 270.00 | 992.9 ± 2.4 |
| 280.00 | 985.7 ± 1.9 |
| 290.00 | 978.5 ± 1.8 |
| 293.15 | 976.2 ± 1.9 |
| 298.15 | 972.6 ± 2.2 |

1-Phenyl-1-2-(phenylmethyl)-1-pentene [5729-52-2] $C_{18}H_{20}$ MW = 236.36 293

Table 1. Experimental value with uncertainty.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|------------|
| 293.15 | 977.5 ± 1.0 | 31-lev/tab |

**4,4-Dimethyl-1,1-diphenyl-
1,2-pentadiene****[500037-21-8]****C₁₉H₂₀****MW = 248.37****294****Table 1.** Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 293.15 | 966.1 \pm 1.0 | 31-sta/mar |

1,1-Diphenyl-1-heptene**[1530-20-7]****C₁₉H₂₂****MW = 250.38****295****Table 1.** Coefficients of the polynomial expansion equation. Standard deviations (see introduction):

$\sigma_{\text{c,w}} = 4.3936 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{\text{c,uw}} = 2.5859 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

| Coefficient | T = 273.15 to 372.05 K $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|---|
| A | $1.17920 \cdot 10^3$ |
| B | $-7.37191 \cdot 10^{-1}$ |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|----------------------|--|--|-------------------------|----------------------|--|--|-------------------------|
| 291.15 | 967.30 \pm 3.00 | 2.74 | 04-kla/hei(V) | 372.05 | 904.60 \pm 1.50 | -0.33 | 52-ano(O) |
| 293.15 | 963.60 \pm 1.00 | 0.51 | 49-foe/fen(□) | 273.15 | 977.40 \pm 1.00 | -0.43 | 68-ano-1(Δ) |
| 273.15 | 977.40 \pm 1.00 | -0.43 | 52-ano(O) | 293.15 | 962.80 \pm 1.00 | -0.29 | 68-ano-1(Δ) |
| 293.15 | 962.80 \pm 1.00 | -0.29 | 52-ano(O) | 310.95 | 949.70 \pm 1.00 | -0.27 | 68-ano-1(Δ) |
| 310.95 | 949.70 \pm 1.00 | -0.27 | 52-ano(O) | 333.15 | 933.30 \pm 1.00 | -0.30 | 68-ano-1(Δ) |
| 333.15 | 933.30 \pm 1.00 | -0.30 | 52-ano(O) | 372.05 | 904.60 \pm 1.50 | -0.33 | 68-ano-1(Δ) |

Table 3. Recommended values (fit to the reliable experimental values according to the equations

$$\rho = A + BT + CT^2 + DT^3 + \dots \text{ or } \rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$$

| $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|----------------------|--|----------------------|--|----------------------|--|
| 270.00 | 980.16 \pm 1.08 | 300.00 | 958.04 \pm 1.37 | 350.00 | 921.18 \pm 0.93 |
| 280.00 | 972.78 \pm 1.33 | 310.00 | 950.67 \pm 1.24 | 360.00 | 913.81 \pm 1.14 |
| 290.00 | 965.41 \pm 1.41 | 320.00 | 943.30 \pm 1.08 | 370.00 | 906.44 \pm 1.54 |
| 293.15 | 963.09 \pm 1.41 | 330.00 | 935.93 \pm 0.94 | 380.00 | 899.07 \pm 2.19 |
| 298.15 | 959.40 \pm 1.39 | 340.00 | 928.55 \pm 0.87 | | |

cont.

1,1-Diphenyl-1-heptene (cont.)

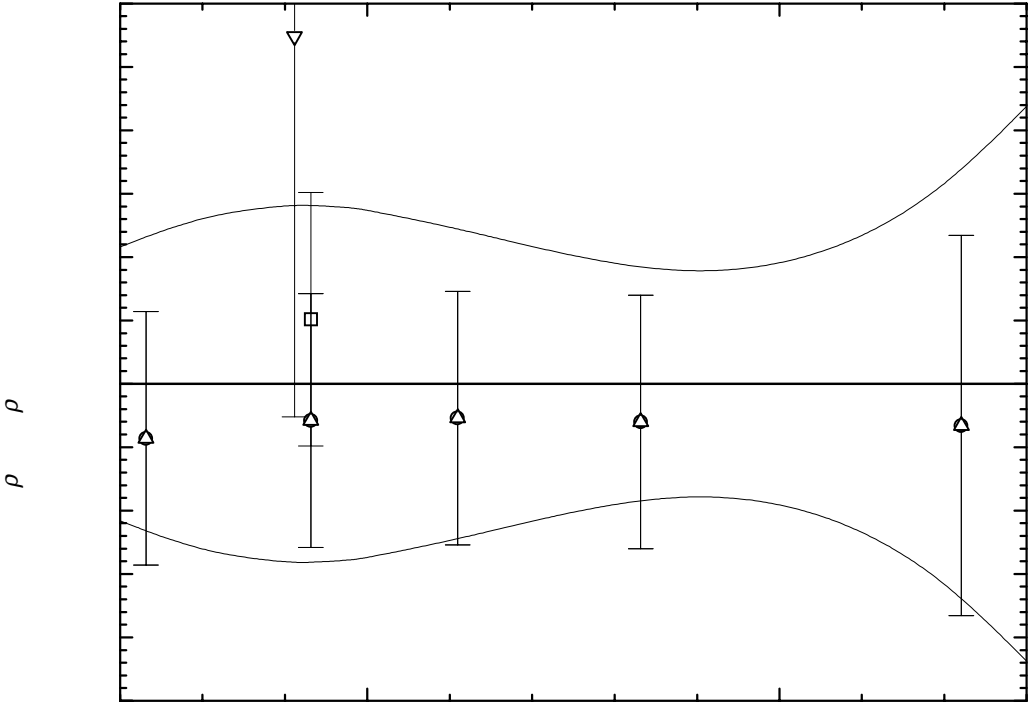


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

1,6-Diphenyl-3-methylenehexane [500037-13-8] C₁₉H₂₂ MW =250.38 296

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 291.15 | 915.0 ± 2.0 | 29-von/teu |

1-(2,4-Dimethylphenyl)-1-(4-methylphenyl)-2-methyl-1-propene [500037-28-5] C₁₉H₂₂ MW =250.38 297

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 298.15 | 965.0 ± 2.0 | 53-rog/bro |

Triphenylethene**[58-72-0]****C₂₀H₁₆****MW = 256.35****298****Table 1.** Coefficients of the polynomial expansion equation. Standard deviations (see introduction):

$\sigma_{c,w} = 4.0410 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 1.4072 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

| Coefficient | T = 285.15 to 351.55 K $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|---|
| A | $1.27095 \cdot 10^3$ |
| B | $-6.66512 \cdot 10^{-1}$ |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{K}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|---------------|--|--|-------------------------|---------------|--|--|-------------------------|
| 285.15 | 1081.30 ± 1.50 | 0.40 | 28-ley/kir(□) | 298.15 | 1071.90 ± 1.50 | -0.33 | 28-ley/kir(□) |
| 288.15 | 1079.30 ± 1.50 | 0.40 | 28-ley/kir(□) | 299.15 | 1071.20 ± 1.50 | -0.37 | 28-ley/kir(□) |
| 292.15 | 1076.50 ± 1.50 | 0.27 | 28-ley/kir(□) | 303.15 | 1068.40 ± 1.50 | -0.50 | 28-ley/kir(□) |
| 294.15 | 1075.00 ± 1.50 | 0.10 | 28-ley/kir(□) | 308.15 | 1064.90 ± 1.50 | -0.67 | 28-ley/kir(□) |
| 297.65 | 1072.60 ± 1.50 | 0.03 | 28-ley/kir(□) | 351.55 | 1037.30 ± 2.00 | 0.66 | 29-von(O) |

Table 3. Recommended values (fit to the reliable experimental values according to the equations

$$\rho = A + BT + CT^2 + DT^3 + \dots \text{ or } \rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$$

| $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|---------------|--|---------------|--|---------------|--|
| 280.00 | 1084.33 ± 1.65 | 300.00 | 1071.00 ± 1.50 | 340.00 | 1044.34 ± 2.15 |
| 290.00 | 1077.66 ± 1.55 | 310.00 | 1064.33 ± 1.53 | 350.00 | 1037.67 ± 2.52 |
| 293.15 | 1075.57 ± 1.53 | 320.00 | 1057.67 ± 1.65 | 360.00 | 1031.01 ± 2.97 |
| 298.15 | 1072.23 ± 1.50 | 330.00 | 1051.00 ± 1.85 | | |

cont.

Triphenylethene (cont.)

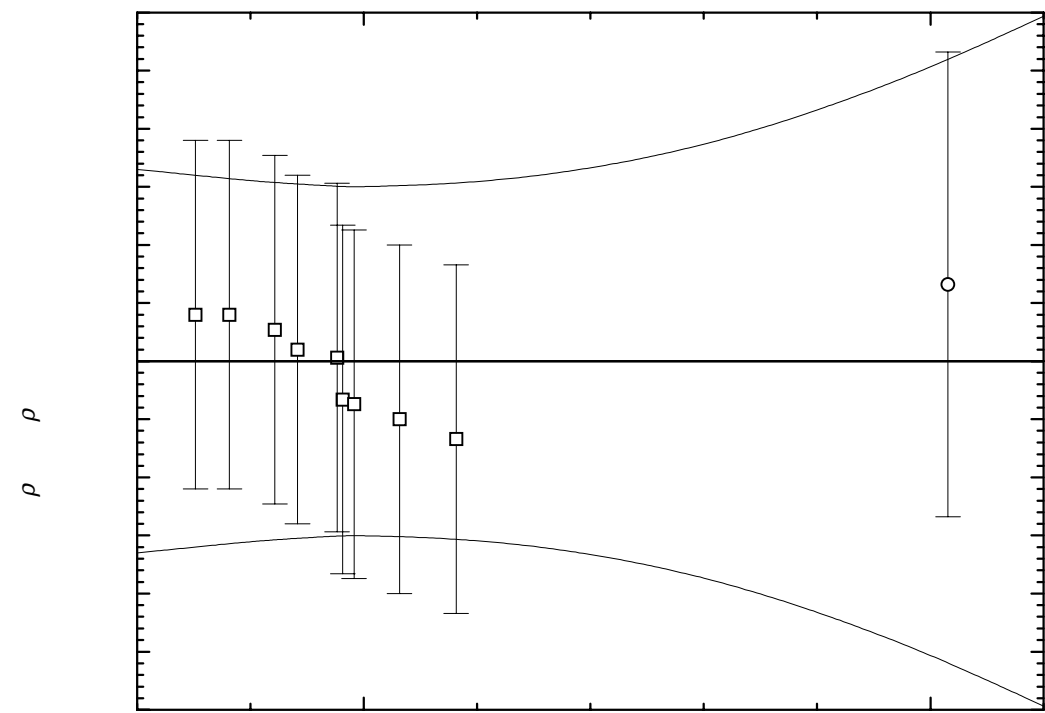


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

1,8-Diphenyl-1,3,5,7-octatetraene **[3029-40-1]** **C₂₀H₁₈** **MW =258.36** **299**

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 293.15 | 1144.0 ± 1.0 | 30-hen/kuh |

1,1-Diphenyl-1-octene **[1530-21-8]** **C₂₀H₂₄** **MW =264.41** **300**

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 293.15 | 993.7 ± 1.0 | 41-sch/har |

5-Methyl-3,5-diphenyl-2-heptene [500012-05-5] $C_{20}H_{24}$ MW =264.41 301

Table 1. Experimental value with uncertainty.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|------------|
| 293.15 | 988.4 ± 1.0 | 58-ove/pea |

1,1,2-Triphenylpropene [3677-70-1] $C_{21}H_{18}$ MW =270.37 302

Table 1. Experimental value with uncertainty.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|--------|
| 373.35 | 995.6 ± 2.0 | 29-von |

1,1-Diphenyl-1-dodecene [1530-29-6] $C_{24}H_{32}$ MW =320.52 303

Table 1. Experimental values with uncertainties.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|------------|
| 293.15 | 933.4 ± 1.0 | 41-sch/har |
| 296.15 | 936.0 ± 4.0 | 51-ben/eli |

1,5-Diphenyl-3-(2-phenylethyl)-2-pentene [55334-57-1] $C_{25}H_{26}$ MW = 326.48 304

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction):

$\sigma_{c,w} = 3.5505 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 9.4261 \cdot 10^{-2}$ (combined temperature ranges, unweighted).

| Coefficient | $T = 273.15 \text{ to } 372.05 \text{ K}$ $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|--|
| A | $1.22144 \cdot 10^3$ |
| B | $-7.00764 \cdot 10^{-1}$ |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | $\rho_{\text{exp}} - \rho_{\text{calc}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. (Symbol in Fig. 1) | T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | $\rho_{\text{exp}} - \rho_{\text{calc}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. (Symbol in Fig. 1) |
|----------|---|---|----------------------------|----------|---|---|----------------------------|
| 273.15 | 1030.40 ± 1.00 | 0.38 | 43-sch/cia-1(Δ) | 333.15 | 988.00 ± 1.00 | 0.02 | 47-sch(\bigcirc) |
| 293.15 | 1015.90 ± 1.00 | -0.11 | 43-sch/cia-1(Δ) | 372.04 | 961.10 ± 1.50 | 0.38 | 47-sch(\bigcirc) |
| 310.95 | 1002.90 ± 1.00 | -0.63 | 43-sch/cia-1(Δ) | 293.15 | 1015.90 ± 1.00 | -0.11 | 49-foe/fen(\square) |
| 333.15 | 988.00 ± 1.00 | 0.02 | 43-sch/cia-1(Δ) | 273.15 | 1030.40 ± 1.00 | 0.38 | 68-ano-1(∇) |
| 372.05 | 961.10 ± 1.50 | 0.38 | 43-sch/cia-1(Δ) | 293.15 | 1015.90 ± 1.00 | -0.11 | 68-ano-1(∇) |
| 273.15 | 1030.40 ± 1.00 | 0.38 | 47-sch(\bigcirc) | 310.95 | 1002.90 ± 1.00 | -0.63 | 68-ano-1(∇) |
| 293.15 | 1015.90 ± 1.00 | -0.11 | 47-sch(\bigcirc) | 333.15 | 988.00 ± 1.00 | 0.02 | 68-ano-1(∇) |
| 310.93 | 1002.90 ± 1.00 | -0.65 | 47-sch(\bigcirc) | 372.05 | 961.10 ± 1.50 | 0.38 | 68-ano-1(∇) |

cont.

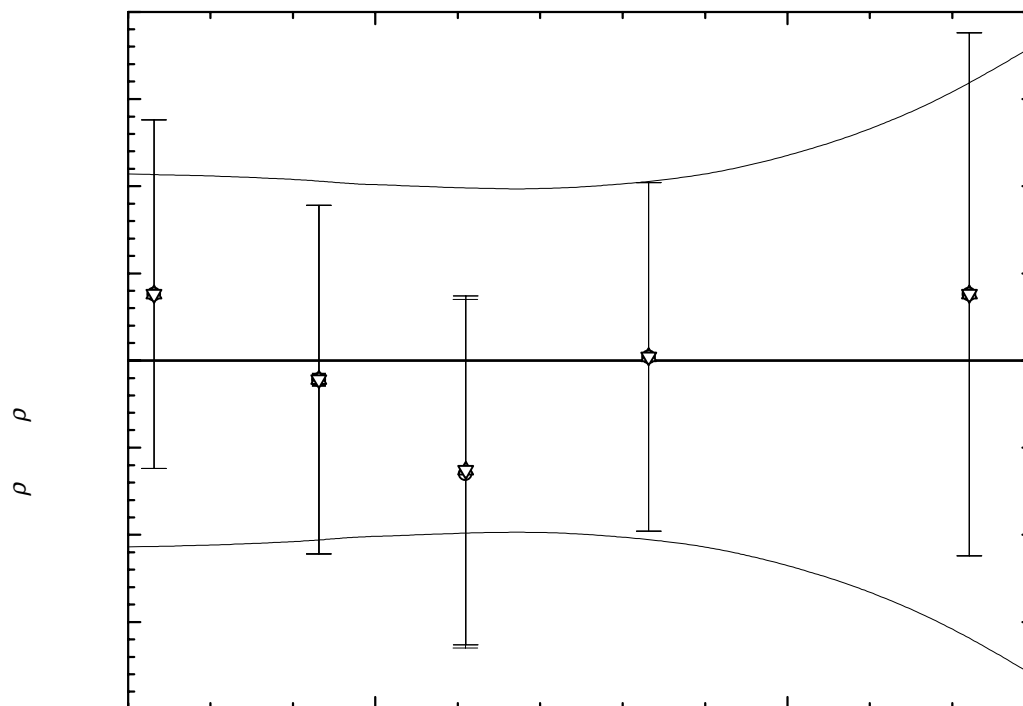
1,5-Diphenyl-3-(2-phenylethyl)-2-pentene (cont.)

Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

Table 3. Recommended values (fit to the reliable experimental values according to the equations $\rho = A + BT + CT^2 + DT^3 + \dots$ or $\rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$).

| $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|---------------|--|---------------|--|---------------|--|
| 270.00 | 1032.23 ± 1.07 | 300.00 | 1011.21 ± 1.01 | 350.00 | 976.17 ± 1.17 |
| 280.00 | 1025.22 ± 1.06 | 310.00 | 1004.20 ± 0.99 | 360.00 | 969.16 ± 1.32 |
| 290.00 | 1018.21 ± 1.04 | 320.00 | 997.19 ± 0.98 | 370.00 | 962.15 ± 1.53 |
| 293.15 | 1016.01 ± 1.03 | 330.00 | 990.18 ± 1.01 | 380.00 | 955.15 ± 1.81 |
| 298.15 | 1012.50 ± 1.01 | 340.00 | 983.18 ± 1.06 | | |

Tetraphenylethylene [632-51-9] $C_{26}H_{20}$ MW =332.44 305

Table 1. Experimental value with uncertainty.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|------------|
| 273.15 | 1155.0 ± 2.0 | 29-zie/dit |

4,7-Bis(phenylmethylene)-2,9-dimethyl-5-decyne [500037-23-0] $C_{26}H_{30}$ MW =342.52 306

Table 1. Experimental value with uncertainty.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|------------|
| 293.15 | 995.1 ± 1.0 | 37-pin/mar |

1-(2,4-Dimethylphenyl)-2-(phenylmethyl)-3-phenyl-1-pentene [500037-47-8] $C_{26}H_{30}$ MW =342.52 307

Table 1. Experimental value with uncertainty.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|----------|
| 297.15 | 1028.0 ± 1.0 | 36-har-2 |

1,1-Diphenyl-1-tetradecene [62155-38-8] $C_{26}H_{36}$ MW =348.57 308

Table 1. Fit with estimated B coefficient for 18 accepted points. Deviation $\sigma_w = 0.343$.

| Coefficient | $\rho = A + BT$ |
|-------------|-----------------|
| A | 1132.07 |
| B | -0.700 |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | $\rho_{\text{exp}} - \rho_{\text{calc}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. | T K | $\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$ | $\rho_{\text{exp}} - \rho_{\text{calc}}$ $\text{kg} \cdot \text{m}^{-3}$ | Ref. |
|----------|---|---|--------------|----------|---|---|------------|
| 293.15 | 926.7 ± 1.0 | -0.17 | 43-sch/cla-1 | 372.05 | 872.6 ± 1.5 | 0.96 | 46-sch/her |
| 293.15 | 926.7 ± 1.0 | -0.17 | 49-foe/fen | 293.15 | 926.7 ± 1.0 | -0.17 | 47-sch |
| 293.15 | 926.7 ± 1.0 | -0.17 | 41-cos/sut-1 | 310.95 | 914.4 ± 1.0 | -0.01 | 47-sch |
| 310.95 | 914.3 ± 1.0 | -0.11 | 41-cos/sut-1 | 333.15 | 898.7 ± 1.0 | -0.17 | 47-sch |
| 333.15 | 898.6 ± 1.0 | -0.27 | 41-cos/sut-1 | 372.05 | 872.6 ± 1.5 | 0.96 | 47-sch |
| 372.05 | 872.5 ± 1.5 | 0.86 | 41-cos/sut-1 | 293.15 | 926.8 ± 1.0 | -0.07 | 68-ano-1 |
| 293.15 | 926.8 ± 1.0 | -0.07 | 46-sch/her | 310.95 | 914.4 ± 1.0 | -0.01 | 68-ano-1 |
| 310.95 | 914.4 ± 1.0 | -0.01 | 46-sch/her | 333.15 | 898.7 ± 1.0 | -0.17 | 68-ano-1 |
| 333.15 | 898.7 ± 1.0 | -0.17 | 46-sch/her | 372.05 | 872.6 ± 1.5 | 0.96 | 68-ano-1 |

cont.

1,1-Diphenyl-1-tetradecene (cont.)**Table 3.** Recommended values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|----------------------|--|----------------------|--|----------------------|--|
| 290.00 | 929.1 \pm 1.7 | 320.00 | 908.1 \pm 1.1 | 360.00 | 880.1 \pm 2.4 |
| 293.15 | 926.9 \pm 1.6 | 330.00 | 901.1 \pm 1.2 | 370.00 | 873.1 \pm 2.9 |
| 298.15 | 923.4 \pm 1.4 | 340.00 | 894.1 \pm 1.6 | 380.00 | 866.1 \pm 3.3 |
| 310.00 | 915.1 \pm 1.1 | 350.00 | 887.1 \pm 2.0 | | |

1,1,3,3-Tetraphenylpropene

[500037-50-3]

 $\text{C}_{27}\text{H}_{22}$

MW = 346.47

309

Table 1. Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| <i>crystal</i> | | |
| 273.15 | 1135.0 \pm 2.0 | 29-zie/dit |

1,7-Diphenyl-4-(3-phenylpropyl)-3-heptene

[55282-03-6]

 $\text{C}_{28}\text{H}_{32}$

MW = 368.56

310

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{\text{c,w}} = 9.5629 \cdot 10^{-2}$ (combined temperature ranges, weighted), $\sigma_{\text{c,uw}} = 3.1380 \cdot 10^{-2}$ (combined temperature ranges, unweighted).

| Coefficient | $T = 273.15 \text{ to } 372.05 \text{ K}$ $\rho = A + BT + CT^2 + DT^3 + \dots$ |
|-------------|--|
| <i>A</i> | $1.18982 \cdot 10^3$ |
| <i>B</i> | $-6.73785 \cdot 10^{-1}$ |

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. (Symbol in Fig. 1) |
|----------------------|--|--|-------------------------|----------------------|--|--|-------------------------|
| 273.15 | 1005.90 \pm 1.00 | 0.12 | 48-ano(\square) | 273.15 | 1005.90 \pm 1.00 | 0.12 | 68-ano-1(\times) |
| 293.15 | 992.20 \pm 1.00 | -0.10 | 48-ano(\square) | 293.15 | 992.20 \pm 1.00 | -0.10 | 68-ano-1(\times) |
| 310.93 | 980.20 \pm 1.00 | -0.12 | 48-ano(\square) | 310.95 | 980.20 \pm 1.00 | -0.11 | 68-ano-1(\times) |
| 333.15 | 965.40 \pm 1.00 | 0.05 | 48-ano(\square) | 333.15 | 965.40 \pm 1.00 | 0.05 | 68-ano-1(\times) |
| 372.04 | 939.20 \pm 1.50 | 0.05 | 48-ano(\square) | 372.05 | 939.20 \pm 1.50 | 0.06 | 68-ano-1(\times) |

cont.

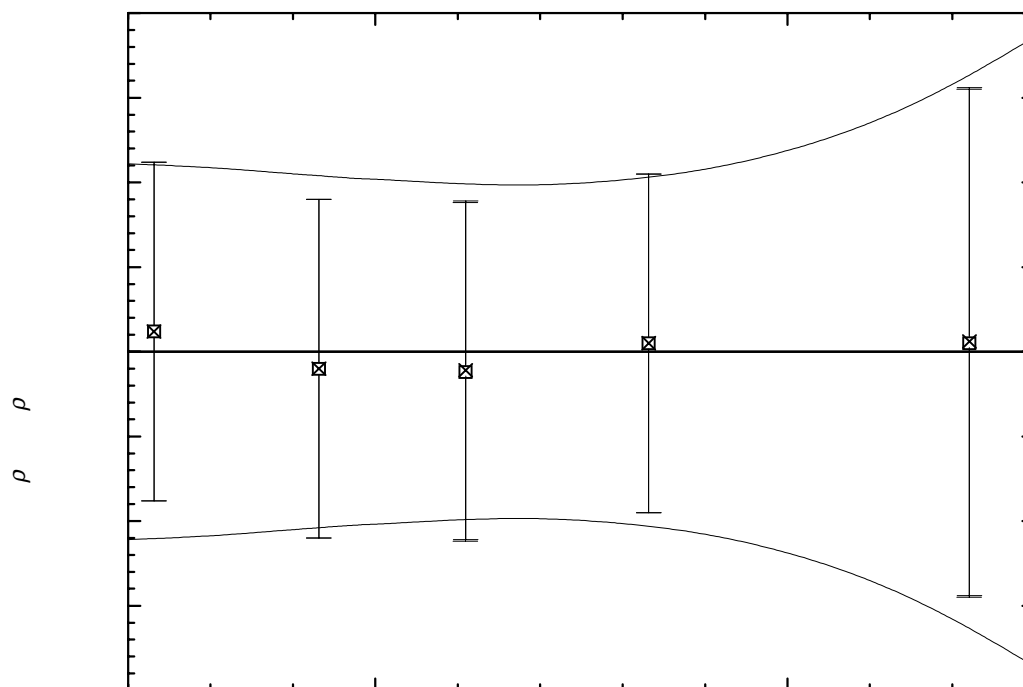


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

Table 3. Recommended values (fit to the reliable experimental values according to the equations $\rho = A + BT + CT^2 + DT^3 + \dots$ or $\rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$).

| $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{K}$ | $\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|---------------|--|---------------|--|---------------|--|
| 270.00 | 1007.90 ± 1.11 | 300.00 | 987.69 ± 1.02 | 350.00 | 954.00 ± 1.18 |
| 280.00 | 1001.16 ± 1.09 | 310.00 | 980.95 ± 0.99 | 360.00 | 947.26 ± 1.34 |
| 290.00 | 994.43 ± 1.05 | 320.00 | 974.21 ± 0.98 | 370.00 | 940.52 ± 1.57 |
| 293.15 | 992.30 ± 1.04 | 330.00 | 967.48 ± 1.01 | 380.00 | 933.79 ± 1.86 |
| 298.15 | 988.94 ± 1.02 | 340.00 | 960.74 ± 1.07 | | |

1,1-Diphenyl-1-hexadecene

[13456-25-2]

$\text{C}_{28}\text{H}_{40}$

MW =376.63

311

Table 1. Fit with estimated B coefficient for 5 accepted points. Deviation $\sigma_w = 0.601$.

| Coefficient | $\rho = A + BT$ |
|-------------|-----------------|
| A | 1115.36 |
| B | -0.670 |

cont.

1,1-Diphenyl-1-hexadecene (cont.)**Table 2.** Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--|------------|
| 293.15 | 918.6 ± 1.5 | -0.35 | 34-lan/cec |
| 373.15 | 866.6 ± 2.0 | 1.25 | 38-eva-2 |
| 323.15 | 899.1 ± 1.5 | 0.25 | 38-eva-2 |
| 273.15 | 931.6 ± 1.5 | -0.75 | 38-eva-2 |
| 293.15 | 919.1 ± 1.5 | 0.15 | 41-sch/har |

Table 3. Recommended values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|----------------------|--|----------------------|--|----------------------|--|
| 270.00 | 934.5 ± 3.8 | 310.00 | 907.7 ± 1.6 | 350.00 | 880.9 ± 4.7 |
| 280.00 | 927.8 ± 3.0 | 320.00 | 901.0 ± 2.1 | 360.00 | 874.2 ± 5.7 |
| 290.00 | 921.1 ± 2.2 | 330.00 | 894.3 ± 2.9 | 370.00 | 867.5 ± 6.7 |
| 293.15 | 919.0 ± 2.0 | 340.00 | 887.6 ± 3.8 | 380.00 | 860.8 ± 7.6 |
| 298.15 | 915.6 ± 1.7 | | | | |

5,14-Diphenyl-5,13-octadiene**[500037-22-9]****C₃₀H₄₂****MW =402.66****312****Table 1.** Experimental value with uncertainty.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--------|
| 298.15 | 930.6 ± 1.0 | 36-mik |

1,1-Diphenyl-1-octadecene**[500037-14-9]****C₃₀H₄₄****MW =404.68****313****Table 1.** Experimental values with uncertainties.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|------------|
| 298.15 | 917.0 ± 2.0 | 36-mik |
| 293.15 | 918.6 ± 2.0 | 41-sch/har |

2-Benzyl-1-phenyl-2-heptadecene**[13287-18-8]****C₃₀H₄₄****MW =404.68****314****Table 1.** Fit with estimated *B* coefficient for 4 accepted points. Deviation $\sigma_w = 0.753$.

| Coefficient | $\rho = A + BT$ |
|-------------|-----------------|
| <i>A</i> | 1120.56 |
| <i>B</i> | -0.670 |

cont.

Table 2. Experimental values with uncertainties and deviation from calculated values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$ | Ref. |
|----------------------|--|--|------------|
| 293.15 | 923.7 ± 1.5 | -0.45 | 34-lan/cec |
| 373.15 | 871.7 ± 1.5 | 1.15 | 38-eva-2 |
| 323.15 | 904.2 ± 1.5 | 0.15 | 38-eva-2 |
| 273.15 | 936.7 ± 1.5 | -0.85 | 38-eva-2 |

Table 3. Recommended values.

| $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ | $\frac{T}{\text{K}}$ | $\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$ |
|----------------------|--|----------------------|--|----------------------|--|
| 270.00 | 939.7 ± 4.8 | 310.00 | 912.9 ± 1.6 | 350.00 | 886.1 ± 3.8 |
| 280.00 | 933.0 ± 3.9 | 320.00 | 906.2 ± 1.6 | 360.00 | 879.4 ± 4.7 |
| 290.00 | 926.3 ± 3.0 | 330.00 | 899.5 ± 2.1 | 370.00 | 872.7 ± 5.6 |
| 293.15 | 924.2 ± 2.7 | 340.00 | 892.8 ± 2.9 | 380.00 | 866.0 ± 6.6 |
| 298.15 | 920.8 ± 2.3 | | | | |