

3.2 Unsaturated Monoethers of General Formula, C_nH_{2n}O

Ethenyl methyl ether

[107-25-5]

C₃H₆O

MW = 58.08

658

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	748.8 ± 1.0	1968-ano

Ethenyl ethyl ether

[109-92-2]

C₄H₈O

MW = 72.11

659

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	752.9 ± 2.0	1968-ano
313.15	730.0 ± 1.5	1977-bur/lee

Methyl 1-methylethenyl ether

[116-11-0]

C₄H₈O

MW = 72.11

660

Table 1. Fit with estimated *B* coefficient for 3 accepted points. Deviation σ_w = 0.330.

Coefficient	$\rho = A + BT$
<i>A</i>	1173.88
<i>B</i>	-1.400

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.
288.15	770.4 ± 0.3	-0.07	1988-bag/gur
293.15	763.9 ± 0.3	0.43	1988-bag/gur
298.15	756.1 ± 0.3	-0.37	1988-bag/gur

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	781.9 ± 0.7
290.00	767.9 ± 0.4
293.15	763.5 ± 0.4
298.15	756.5 ± 0.5

Methyl 2-propenyl ether

[627-40-7]

C₄H₈O

MW = 72.11

661

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	780.0 ± 2.0	1970-shi/sul

Ethyl 2-propenyl ether

[557-31-3]

C₅H₁₀O

MW = 86.13

662

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	765.1 ± 0.7	1880-bru-3

Methyl 1-methyl-2-propenyl ether

[500028-75-1]

C₅H₁₀O

MW = 86.13

663

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	753.0 ± 2.0	1952-wib

Methyl 2-methyl-2-propenyl ether

[22418-49-1]

C₅H₁₀O

MW = 86.13

664

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	777.2 ± 0.5	1947-ols/hip

Butyl ethenyl ether

[111-34-2]

C₆H₁₂O

MW = 100.16

665

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	774.2 ± 2.0	1947-rog
293.15	779.2 ± 2.0	1967-dei
298.15	769.0 ± 1.0	1996-ste/chi-1
536.00	340.8 ± 1.5	1996-ste/chi-1
539.90	283.9 ± 4.0	1996-ste/chi-1

Ethenyl 2-methylpropyl ether

[109-53-5]

C₆H₁₂O

MW = 100.16

666

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	764.5 ± 0.6	1947-rog

Butyl 1-methylethenyl ether

[22022-33-9]

C₇H₁₄O

MW = 114.19

667

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	789.1 ± 0.4	1953-ano-16

1,1-Dimethylethyl 1-propenyl ether

[500011-46-1]

C₇H₁₄O

MW = 114.19

668

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	880.0 ± 3.0	1958-hil/hay

2-Methyl-2-propenyl propyl ether

[53897-29-3]

C₇H₁₄O

MW = 114.19

669

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	774.2 ± 0.5	1947-ols/hip

(*E*)-1-Butenyl 2-methylpropyl ether

[22617-97-6]

C₈H₁₆O

MW = 128.21

670

Table 1. Fit with estimated *B* coefficient for 3 accepted points. Deviation σ_w = 0.998.

Coefficient	$\rho = A + BT$
<i>A</i>	1050.24
<i>B</i>	-0.880

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	792.0 ± 1.0	-0.27	1982-les/log
313.15	776.0 ± 1.0	1.33	1982-les/log
333.15	756.0 ± 1.0	-1.07	1982-les/log

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	795.0 ± 1.5	310.00	777.4 ± 1.3	330.00	759.8 ± 1.4
293.15	792.3 ± 1.5	320.00	768.6 ± 1.4	340.00	751.0 ± 1.6
298.15	787.9 ± 1.4				

(Z)-1-Butenyl 2-methylpropyl ether

[22617-96-5]

C₈H₁₆O

MW =128.21

671

Table 1. Fit with estimated *B* coefficient for 3 accepted points. Deviation σ_w = 0.327.

Coefficient	$\rho = A + BT$
<i>A</i>	1024.78
<i>B</i>	-0.820

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	784.0 ± 1.0	-0.40	1982-les/log
313.15	768.0 ± 1.0	-0.00	1982-les/log
333.15	752.0 ± 1.0	0.40	1982-les/log

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	787.0 ± 1.2	310.00	770.6 ± 1.0	330.00	754.2 ± 1.1
293.15	784.4 ± 1.1	320.00	762.4 ± 1.0	340.00	746.0 ± 1.2
298.15	780.3 ± 1.1				

1,1-Dimethylethyl 2-methyl-2-propenyl ether

[90200-66-1]

C₈H₁₆O

MW = 128.21

672

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	784.1 ± 0.5	1947-ols/hip

Ethenyl hexyl ether

[5363-64-4]

C₈H₁₆O

MW = 128.21

673

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	797.0 ± 1.0	1964-mik/mik

2-Methylpropenyl 2-methylpropyl ether

[6623-96-7]

C₈H₁₆O

MW = 128.21

674

Table 1. Fit with estimated *B* coefficient for 3 accepted points. Deviation σ_w = 1.414.

Coefficient	$\rho = A + BT$
<i>A</i>	1047.18
<i>B</i>	-0.850

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	797.0 ± 1.0	-1.00	1982-les/log
313.15	783.0 ± 1.0	2.00	1982-les/log
333.15	763.0 ± 1.0	-1.00	1982-les/log

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	800.7 ± 1.8	310.00	783.7 ± 1.7	330.00	766.7 ± 1.7
293.15	798.0 ± 1.8	320.00	775.2 ± 1.7	340.00	758.2 ± 1.9
298.15	793.7 ± 1.7				

Ethenyl heptyl ether [764-95-4] C₉H₁₈O MW = 142.24 675

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	802.1 ± 1.0	1964-mik/mik

1,1-Dimethyl-2-propenyl 3-methylbutyl ether [500004-58-0] C₁₀H₂₀O MW = 156.27 676

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	787.6 ± 1.0	1957-leb/mon

1,1-Dimethylpropyl 3-methyl-2-butenyl ether [500004-59-1] C₁₀H₂₀O MW = 156.27 677

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	814.0 ± 1.0	1957-leb/mon

Ethenyl 6-methylheptyl ether [10573-35-0] C₁₀H₂₀O MW = 156.27 678

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	800.4 ± 1.0	1964-mik/mik

Ethenyl octyl ether

[929-62-4]

C₁₀H₂₀O

MW = 156.27

679

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	802.8 ± 1.0	1964-mik/mik

3-Methyl-2-butenyl 3-methylbutyl ether

[500004-56-8]

C₁₀H₂₀O

MW = 156.27

680

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	804.6 ± 1.0	1957-leb/mon

Octyl 2-propenyl ether

[3295-97-4]

C₁₁H₂₂O

MW = 170.33

681

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	809.6 ± 0.6	1953-dev/pan

Ethenyl nonyl ether

[10160-48-2]

C₁₁H₂₂O

MW = 170.33

682

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	808.9 ± 1.0	1964-mik/mik

Decyl ethenyl ether

[765-05-9]

C₁₂H₂₄O

MW = 184.32

683

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	812.3 ± 1.5	1964-mik/mik

3.3 Unsaturated Monoethers of General Formula, C_nH_{2n-2}O

1,3-Butadienyl methyl ether

[3036-66-6]

C₅H₈O

MW = 84.12

684

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	831.1 ± 0.4	1957-ano-10

Ethenyl 2-propenyl ether

[3917-15-5]

C₅H₈O

MW = 84.12

685

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	804.0 ± 0.4	1954-ano-12

Ethyl 1-propynyl ether

[14273-06-4]

C₅H₈O

MW = 84.12

686

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	832.6 ± 1.5	1880-bru-3

Bis(2-propenyl) ether

[557-40-4]

C₆H₁₀O

MW = 98.14

687

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	829.1 ± 0.4	1960-wri
273.15	829.1 ± 0.5	1961-wri
293.00	815.9 ± 0.5	1985-pev

Bis(2-methyl-2-propenyl) ether

[628-56-8]

C₈H₁₄O

MW = 126.2

688

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	813.2 ± 0.5	1947-ols/hip