

Pump Oils

Booster Pump Oils



Diffusion Pump Oils



Greases and Thread Lubricants



Booster Pump Oils

Mineral Oils

Page 17-3

Perfluorinated Polyether (PFPE)

Page 17-4

Diffusion Pump Oils

Silicone Oils

Page 17-5

Mineral Oils and Perfluorinated Polyether (PFPE)

Page 17-6

Greases and Thread Lubricant

Greases

Page 17-7

Thread Lubricant

Page 17-7

Booster Pump Oils

Mineral Oils



- Mineral oils are distillation and refining products extracted from petroleum.
- They are a complex mixture of non-defined compounds, whose use is defined by the pre-treatment and the composition itself.
- VACOM offers two types of mineral oil, which are described in the following table:

Technical data

	Inland 19	Inland TW
Oil type	highly refined mineral oil; molecularly distilled	highly refined mineral oil; twice distilled; without unsaturated aromatic hydrocarbons
Order code for 1 l 5 l 19 l	Inland 19-1 Inland 19-5 Inland 19-19	Inland TW - -
Examples for applications	- non-corrosive applications - low vapour pressure - reduced oil backstreaming	- suitable for reactive gases - low vapour pressure
Vapour pressure (25 °C)	3×10^{-5} torr	$< 1 \times 10^{-8}$ torr
Boiling point (0.01 Torr)	112 °C	158 °C
Viscosity (40 °C)	54 cst	56 cst
Viscosity (100 °C)	8,1 cst	8,9 cst
Pour point	-15 °C	-12 °C
Flashpoint	213 °C	243 °C
Auto ignition temperature	244 °C	270 °C
Density	0,86 g/cm ³	0.86 g/cm ³
Replaces and can be mixed with oils of the following manufacturers	Alcatel 100, 119 and 120; Edwards Ultragrade 19 and Supergrade A; Leybold 175, N-62 and Protelen; Balzers P3; Atlantic 19; Beckmann 19; Fisherbrand 19; PE Xpress; PRC; Precision B+; Savant SPO-1; Stokes V-LubeJ; Varian GP; VSS MP-19; VWR19; Cenco 93055; CVC 70/19; Dubois MP030; Gast 19; Gast Sae A02; Kinney Type A; KJL (Lesker) TKO 19; Mobil DTE 24; Super X; Ulvac 100; Veeco 107; Velch Duoseal; Voekl 93050-002	KJL (Lesker) TKO W/7; CVC TW 7; Stokes V Lube B/F; Veeco T.W.

Perfluorinated Polyethers (PFPE)



- Perfluorinated polyethers consist of carbon, fluorine and oxygen atoms.
- The existing CO and CF compounds are very stable and therefore almost inert towards chemical and corrosive effects. PFPE does not polymerise also under the effect of energetic radiation.
- We offer Fomblin as PFPE oil.
- **Attention!** Fomblin can not be mixed with mineral oils!

Technical data

	Fomblin 25/6	Fomblin 14/6	Fomblin R *
Oil type	PFPE		PFPE regenerated
Order code for 1 kg	Fomblin 25/6	Fomblin 14/6	Fomblin R
Examples for applications	for processes with strong oxidants like oxygen O ₂ , ozone O ₃ , nitric oxides NO _x , sulphur oxides SO _x , halogens e.g. F ₂ and Cl ₂ , hydrogen halides e.g. HF, HCl and HBr, uranium hexafluoride UF ₆		
Vapour pressure at 25 °C	4 x 10 ⁻⁸ mbar	2 x 10 ⁻⁷ mbar	*
Viscosity	276 cst	148 cst	*
Flashpoint	not applicable	not applicable	*
Density at 20 °C	1.9 g/cm ³	1.89 g/cm ³	*
Can be mixed with oils of the following manufacturers	Alcatel 113; Dupont/Krytox 1525; KJL (Lesker) 25/6; Aflunox 2507; Leybold NC1/14		

* Depending on the present reclaim (25/6; 14/6; 6/6).

We take back Fomblin of every kind for disposal, besides radioactive or biological contaminated material.

Diffusion Pump Oils

Silicone Oils



- Silicone oils are defined chemical compounds, which are very resistant.
- Because of the low vapour pressure, they are ideal as a propellant for diffusion pumps.
- Silicone oils do not show any aging problems or detectable chemical changes even after a large number of inrushes of air.

Technical data

	DC702	DC704	DC705
Oil type	silicone oil	silicone oil with increased concentration of phenyl groups	silicone oil
Order code for 500 ml	DC702	DC704	DC705
Examples of applications	general use in pumps in accelerators and for large gas volumes	general use	- radiation resistant - UHV generation - very clean vacuum
Pressure interval (mbar)	10^{-5} to 10^{-7}	10^{-6} to 10^{-8}	to 10^{-10} , with additional trap to 10^{-11}
Final pressures without trap (mbar)	10^{-6}	10^{-7} to 10^{-8}	10^{-9} to 10^{-10}
Final pressures with trap (mbar)	-	10^{-11}	10^{-11}
Extrapolished vapour pressure, 25 °C (mbar)	1.3×10^{-6}	2.6×10^{-8}	4×10^{-10}
Density at 25 °C / 10.6 °C	1,07	1,07	1.09
Viscosity at 25 °C (mm ² /s)	45	44	175
Flashpoint (°C) within the opened tank	193	221	243
Boiling point at 0.5 torr (°C)	180	215	245
Boiling temperature (°C)	190	220	250 u to 270
Surface tension (µN/cm)	300	373	365
Evaporation heat (J/g mol, °C)	90.8 / 190	106.7 / 200	117.0 / 250
Chemical composition	phenyl methyl dimethyl-cyclosiloxan mixture	tetramethyl tetraphenyl trisiloxan and pentaphenyl trimethyl trisiloxan	pentaphenyl trimethyl trisiloxan
Molecular weight	530	484	546
Vapour pressure equation $\log_{10} P = A - B/T$ (P = vapour pressure [torr]; T = absolute temperature [K])	A = 10,3 B = 4820	A = 11.025 B = 5570	A = 12.31 B = 6490
Replaces and can be mixed with oils of the following manufacturers	-	Alcatel 214; ultra; CVC 704; KJL (Lesker) DC 704; RP Rhodorsil 763; Veeco 74-SI; Edwards Rhodorsil 763; Leybold AN-140 und Diffelen	-

Mineral Oils and Perfluorinated Polyether (PFPE)



Mineral Oil

- INVOIL 20 is a high-grade mineral oil, which is ideal for diffusion pumps because of its high thermal stability.
- It can also be used for mechanical pumps.



PFPE

- Fomblin consists of carbon, fluoride and oxygen atoms.
- The existing CO and CF compounds are very stable and therefore almost inert towards chemical and corrosive action.
- The Fomblin offered by VACOM has an extremely low vapour pressure. Therefore it is ideal for UHV applications.

Technical data

	INVOIL 20	Fomblin 140/13
Oil type	mineral oil	PFPE
Order code for 1 l 5 l 19 l	INVOIL 20-1 INVOIL 20-5 INVOIL 20-19	Fomblin 140/13 (Attention! Packaging Unit 1 kg)
Vapour pressure at 25 °C	4×10^{-6} mbar	7×10^{-13} mbar
Density	0.86 g/cm ³	1.92 g/cm ³
Boiling point	127 °C	not specified
Viscosity (40 °C)	58 cst	1508 cst bei 20 °C
Viscosity (100 °C)	8.5 cst	not specified
Flashpoint	224 °C	not applicable

Fats and Thread Lubrication

Greases



- Vacuum greases support the sealings during mechanical motion and minimise the abrasion of the sealing materials.
- Furthermore, they can be used as a support for the seal effect of elastomer sealings.
- They are suitable for fore-vacuum applications due to their low vapour pressure.
- We offer three vacuum greases, which fundamentally differ in their basic material.

	Apiezon L	Dow Corning	Fomblin
Order code	Apiezon L	DC976	Fomblin VAC 3
Packaging unit	50 g	50 g	100 g
Grease type	mineral grease	silicone grease	perfluorinated polyether grease
Properties and examples of applications	high vacuum systems and laboratory applications; greasing of glass and metal tap inside the vacuum; sealing of polished and cut glass and metal surfaces	high vacuum application at pressures up to 10^{-6} mbar; usable within temperature range from -40 °C to $+200$ °C	for sliding elastomer seals; ideal for chemically aggressive and corrosive processes; radiation resistant
Fusion point	47 °C	-	-
Radiation resistance	yes	-	yes
Vapour pressure at 20 °C	$< 10^{-10}$ mbar	$< 10^{-6}$ mbar	$< 10^{-7}$ mbar

Thread Lubricant



- Our thread lubricant TL100 (Molykote 1000) prevents the cold welding of screw fittings, made of stainless steel, even at very high temperatures.
- The high temperature screw paste is applicable within the temperature range from -30 °C to $+1100$ °C.
- Molykote consist of mineral oil, solid lubricants, thickener and metal powder.
- It ensures consistent prestressing even during repeated dismantling and tightening.

Order code	Packaging size
TL100	100 g

Attention! This thread lubricant can not be used within vacuum.