

Shell Clavus Oil R

Synthetic Refrigerator Compressor Lubricant



Shell Clavus Oils R are synthetic refrigerator lubricants with a polyolester base fluid. These lubricants have been developed for use with R134a and other environmentally acceptable HFC refrigerants.

Applications

- **Refrigerator compressors**
Shell Clavus R is recommended for use in open, semi-open and hermetic compressors operating with refrigerants such as R 134a, R 23, R 404A, R407C, R 507 and other blends of HFC-refrigerants.
- **Refrigerator plant design**
For all applications of refrigeration and air-conditioning such as: industrial refrigeration, refrigeration systems for food storage, mobile and stationary air-conditioning.
When switching to new refrigerants and refrigerator oils the requirements of the refrigeration system manufacturer have to be followed.

Advice on applications not covered in this leaflet may be obtained from your Shell Representative.

Performance Features and Advantages

- **Fully synthetic formulation**
Shell Clavus R is a high-tech synthetic refrigerator oil based on polyol ester fluids.
- **Excellent stability**
Shell Clavus R has excellent thermal and oxidation stability. This results in a high performance level of the oil over a long period of time.
- **Very good solubility**
Very good solubility, particularly with R134a, R23 and comparable refrigerants, as well as with blends of those refrigerants.

- **Good anti-wear properties**
Minimise wear in bearings and pistons, the most critical parts of a reciprocating type compressor.
- **Good compatibility**
Shell Clavus R is compatible with elastomers commonly used in refrigeration systems.

Specification and Approvals

Shell Clavus Oil R meets the requirements of DIN 51503 KD.

Product handling

- However, the hygroscopic nature of the base fluid has to be taken into consideration and it is recommended that, when filling the system, air contact should be avoided as much as possible. Once an oil pack has been opened it must be sealed carefully after use and the remaining contents should be used within a few days.

Health and Safety

Guidance on Health and Safety are available on the appropriate Material Safety Data Sheet which can be obtained from your Shell representative.

Protect the environment

Take used oil to an authorised collection point. Do not discharge into drains, soil or water.

Typical Physical Characteristics

Shell Clavus R							
Viscosity grade		ISO 3448	22	32	46	68	100
Refrigerator oil group		DIN 51503	KD				
Kinematic viscosity		ASTM D445					
at 40°C	mm ² /s		22	31	42	66	94
at 100°C	mm ² /s		4,6	6	6,2	8,8	10,7
Density at 15°C	kg/m ³	ASTM D1298	1018	1018	973	991	984
Flash point (COC)	°C	DIN ISO 2592	>220	>220	>230	>230	>230
Pour point	°C	DIN ISO 3016	-57	-54	-48	-42	-42
TAN (pH = 11,0)	mg KOH/g	ASTM-D 664-97mod.	<0,06	<0,06	<0,06	<0,06	<0,06
Floc-point with R 134	°C	DIN 51351	<-50	<-50	<-30	<-30	<-15
Floc-point with R 13	°C	DIN 51351	<-50	<-50	<-50	<-50	<-51
Refrigerant stability (250°C)		DIN 51593					
with R 134a	h		>96	>96	>96	>96	>96
with R 14	h		>96	>96	>96	>96	>96
Miscibility with R 134a							
2 % oil	°C		<-60/>+100	<-60/>+100	<-60/>+100	-54 / 98	-52/ 97
20 % oil	°C		<-60/>+100	-54/>+100	+25**/>+100	-34/ 94	-12**/ +85
Miscibility with R 12	°C		<-60/>+100	<-60/>+100	<-60/>+100	<-60/>+100	<-60/>+100

*) No floc-point before phase : **) Maximum of the miscibility gap

These characteristics are typical of current production. Whilst future production will conform to Shell's specification, variations in these characteristics may occur.