



Shell Valvata Oil J

Compounded steam cylinder oils

Shell Valvata Oils J are quality refined high viscosity mineral oils compounded with a small percentage of fatty oils. They are used, primarily, for the lubrication of steam cylinders working under high temperature, high pressure conditions where low carbon formation and 'steam washing' are important considerations. They atomise more easily and with steam of moderate superheat, produce more tenacious lubricating films than 'straight' grades of the same viscosity.

Applications

- Steam cylinder lubrication
- Low speed enclosed gears
- Certain worm gears

Performance Features

- ***Good thermal resistance and oxidation stability***
Possess low volatility and a natural resistance to the formation of gummy or carbonaceous deposits in high temperature conditions
- ***Tenacious lubricating oil film***
Provides effective lubrication and corrosion protection even when subjected to heavy steam-washing conditions

Steam Engine Lubrication

In steam engines, the lubrication requirements of the cylinders and other parts exposed to steam differ from those of bearings and other external parts working under far less arduous conditions. The lubrication requirements of cylinders and bearings must be considered separately.

Steam Cylinder Lubrication

The function of a steam-cylinder lubricant is to form an oil film that will adequately lubricate the rubbing surfaces at high operating temperatures and also prevent leakage past valves, pistons and glands. Efficient atomisation, easy spreading over the working surfaces and the ability to resist scouring action of the steam (the washing effect of water) are other important properties.

Steam-cylinder oils are classified according to steam temperature and engine power. The higher the steam temperature and the more powerful the engine, the greater will be the required heat stability which is generally related to viscosity.

Compounded oils, such as Shell Valvata Oils J, have an advantage over 'straight' grades under environments of moderate superheat. However, fatty oils volatilise under high superheat conditions and show little advantage over 'straight' grades under these conditions. Because of their emulsification properties, compounded oils may be difficult to separate from water. Where water separation is important, a 'straight' grade, such as Shell Valvata Oil, should be used.

Bearing Lubrication of Steam Engines

There are two types of crankcase engines, the open and the enclosed type:

For open crankcase bearing lubrication ordinary machine oils, such as Shell Vitrea Oil, are suitable.

Enclosed crankcase engines have force-feed circulating systems where the oil is liable to be contaminated with water through steam leakage. The oil must, therefore, separate readily from the water so that it can be drained off from time to time. Shell Turbo Oils are recommended for this purpose.

Low Speed Enclosed Gears

Shell Valvata Oils J may be used to advantage in worm gears prone to suffer extensive wear and to reduce the bulk oil temperature. Typical examples are gears running at low speed under stop-start conditions

Typical Physical Characteristics

Shell Valvata Oil	J460	J680
ISO Viscosity Grade	460	680
Kinematic Viscosity @ 40°C mm ² /s 100°C mm ² /s (IP 71)	460 31.5	680 35.3
Viscosity Index (IP 226)	99	83
Density @ 15°C kg/l (IP 365)	0.903	0.929
Flash Point °C (Cleveland Open Cup) (IP 36)	270	332
Pour Point °C (IP 15)	-6	-9

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

Grade Selection

Lubricant Application	Shell Grade	Remarks
Cylinders Steam Temperature Up to 315°C Up to 300°C Saturated or wet steam up to 220°C Horsepower Up to 500 Up to 1500 Over 500	} Shell } Valvata Oils Shell Valvata Oils J*	*Compounded oil should not be used where separation from the condensate is important
Bearings Open crankcase engines Enclosed crankcase engines	Shell Vitrea Oils Shell Turbo Oils T#	# More viscous grades with more powerful engines

Health & Safety

Shell Valvata Oils J are unlikely to present any significant health or safety hazard when properly used in the recommended application, and good standards of industrial and personal hygiene are maintained.

Avoid contact with skin. Use impervious gloves with used oil. After skin contact, wash immediately with soap and water.

For further guidance on Product Health & Safety refer to the appropriate Shell Product Safety Data Sheet.

Protect the environment

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

Advice

Advice on applications not covered in this leaflet may be obtained from your Shell Representative. For contact details see page ii in the front of this binder.