

Shell Tivela S

Advanced synthetic industrial gear oils



Shell Tivela S is an advanced synthetic heavy duty industrial gear oil formulated using specially selected polyalkylene glycol base fluids and additives. It offers outstanding lubrication performance under severe operating conditions, including improved energy efficiency, long service life and high resistance to micro-pitting.

Applications

- **Enclosed industrial reduction gear systems operating under severe operating conditions, such as high load, very low or elevated temperatures and wide temperature variations**
- **Worm gears**
- **Particularly recommended for certain 'lubricated-for-life' systems**
- **Bearing and circulation systems such as calendars, where high bulk oil temperatures are found**
- **Plain and rolling element bearings**
- **Longer service intervals**
Extended component and lubricant life offers the opportunity to extend service intervals and to reduce maintenance and disposal costs.
- **Excellent rust and corrosion protection of all metal surfaces**

Shell Tivela S is not recommended for the lubrication of worm gears manufactured from aluminium containing bronze alloys. Advice on applications not covered in this leaflet may be obtained from your Shell representative.

Performance Features and Benefits

- **Excellent load carrying capacity and micro-pitting performance**
Provides high levels of load carrying capacity even under shock loading conditions, along with high resistance to micro-pitting (grey staining). These features provide benefits over mineral oil-based products in terms of gear and bearing component life.
- **Superior lubricant performance improving gear efficiency**
Tivela S offers improved energy efficiency and lower operating temperatures in worm gear applications. Rig testing has shown efficiency improvements of up to 15% in comparison with mineral oil-based products and 11% over other synthetic hydrocarbon-based lubricants. These results have been confirmed by OEM testing and field experience.
- **Excellent oxidation and thermal stability extending lubricant life**
Resists the formation of harmful oxidation products at high operating temperatures, improving system cleanliness and therefore reliability of the equipment. Tivela S is formally approved by Flender AG as providing a lifetime of at least 20,000 hours or four years at bulk operating temperatures of up to 80°C.

Specifications and Approvals

Meet the David Brown Type G specification.
Fully approved by Flender AG.

Seal and paint compatibility

High quality epoxy paints are recommended, as polyalkylene glycols will tend to attack certain conventional paints. Tivela S has been found to be satisfactory with nitrile and Viton seal materials, although Viton seals are preferred.

Change over procedure

Tivela S contains polyalkylene glycols and is not compatible with mineral oils or most other synthetic lubricant types. Care should therefore be taken when changing from such products to Tivela S. The system should be flushed with the minimum quantity of Tivela S, operating under no load and draining whilst warm. Ideally, seals exposed to mineral oils should also be replaced. Inspect the lubricant after a few days use.

It is also advisable to ensure that oil systems are clean and free from contamination.

Tivela S is also not miscible with some other polyalkylene glycols, so caution is needed when topping-up. Generally the preference is to avoid mixtures by draining and refilling. Further advice can be obtained from your local Shell representative.

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 authorized collection point.
Do not discharge into drains, soil or water.

Typical Physical Characteristics

Tivela S		150	220	320
ISO Viscosity Grade	ISO 3448	150	220	320
Kinematic Viscosity	ISO 3104			
at 40°C	mm ² /s	136	220	320
at 100°C	mm ² /s	20.9	34.4	52.7
Viscosity Index	ISO 2909	179	203	230
Flash Point COC	°C	302	298	286
Pour Point	°C	-42	-39	-39
Density at 15°C	kg/m ³	1076	1074	1069
FZG Load Carrying Test	DIN 51354-2			
Failure load stage	A/8.3/90	>12	>12	>12

Tivela S		460	680	1000
ISO Viscosity Grade	ISO 3448	460	680	1000
Kinematic Viscosity	ISO 3104			
at 40°C	mm ² /s	460	680	1000
at 100°C	mm ² /s	73.2	107	170
Viscosity Index	ISO 2909	239	259	284
Flash Point COC	°C	308	296	294
Pour Point	°C	-36	-39	-36
Density at 15°C	kg/m ³	1072	1070	1068
FZG Load Carrying Test	DIN 51354-2			
Failure load stage	A/8.3/90	>12	>12	>12

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