Technical Data Sheet

Previous Name: **Shell Tivela S**

Shell Omala *S4 WE 320*

- *Extra Protection & Life*
- *Energy Saving*
- *Worm Drive Applications*

Advanced Synthetic Industrial Gear Oil

Shell Omala S4 WE is an advanced synthetic heavy duty industrial worm drive 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.

DESIGNED TO MEET CHALLENGES

Performance, Features & Benefits

- **Long oil life - maintenance saving**
  Shell Omala S4 WE is formulated to provide excellent oxidation and thermal stability, extending lubricant life and resisting the formation of harmful oxidation products at high operating temperatures. This helps maintain system cleanliness over extended maintenance intervals.
  Shell Omala S4 WE offers the potential to extend service intervals significantly compared to conventional industrial gear oils.
- **Excellent wear protection**
  Shell Omala S4 WE is formulated to have excellent load carrying capacity providing long component life even under shock loading conditions. It also has a high resistance to micro-pitting. These features provide benefits over mineral oil-based products in terms of gear and bearing component life.
- **Maintaining system efficiency**
  Shell Omala S4 WE 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.

Main Applications

- **Enclosed industrial worm gear systems**
  Recommended for industrial worm gear reduction systems operating under severe operating conditions, such as high load, very low or elevated temperatures and wide temperature variations.
- **Extended life systems**
  Shell Omala S4 WE is particularly recommended for certain systems where maintenance is infrequent or systems are inaccessible (eg yaw gears in wind turbine installations).
- **Other applications**
  Shell Omala S4 WE oils are suitable for lubrication of bearings and other components in circulating and splash-lubricated systems.
  Shell Omala S4 WE is not recommended for the lubrication of components manufactured from aluminium or aluminium alloys. For highly-loaded spur and helical gears the Shell Omala "G" series oils are recommended.
  For automotive hypoid gears, the appropriate Shell Spirax Oil should be used.

Specifications, Approvals & Recommendations

- DIN 51517-3 (CLP)
- Fully approved by Bonfiglioli
- For a full listing of equipment approvals and recommendations, please consult your local Shell Technical Helpdesk.

Compatibility & Miscibility

- **Seal & Paint Compatibility**

  High quality epoxy paints are recommended, as polyalkylene glycols will tend to attack certain conventional paints. Shell Omala S4 WE has been found to be satisfactory with nitrile and Viton seal materials, although Viton seals are preferred.

- **Change-over Procedure**

  Shell Omala S4 WE contains polyalkylene glycols and is not compatible with mineral oils or most other synthetic lubricant types. Care should be taken when changing from such products to Shell Omala S4 WE.

The system should be flushed with the minimum quantity of Shell Omala S4 WE, 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. Ensure that oil systems are clean and free from contamination.

Shell Omala S4 WE 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.

Typical Physical Characteristics

Properties			Method	S4 WE
Viscosity Grade			ISO 3448	320
Kinematic Viscosity	@40°C	mm^2/s		321
Kinematic Viscosity	@100°C	mm^2/s		52.7
Viscosity Index			ISO 2909	230
Flash Point		°C	ISO 2592 (COC)	270
Pour Point		°C	ISO 3016	-39
Density	@15°C	kg/m^3	ISO 12185	1069
FZG Load Carrying Test		failure load stage	DIN 51354-2 A/8.3/90	>12

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

Health, Safety & Environment

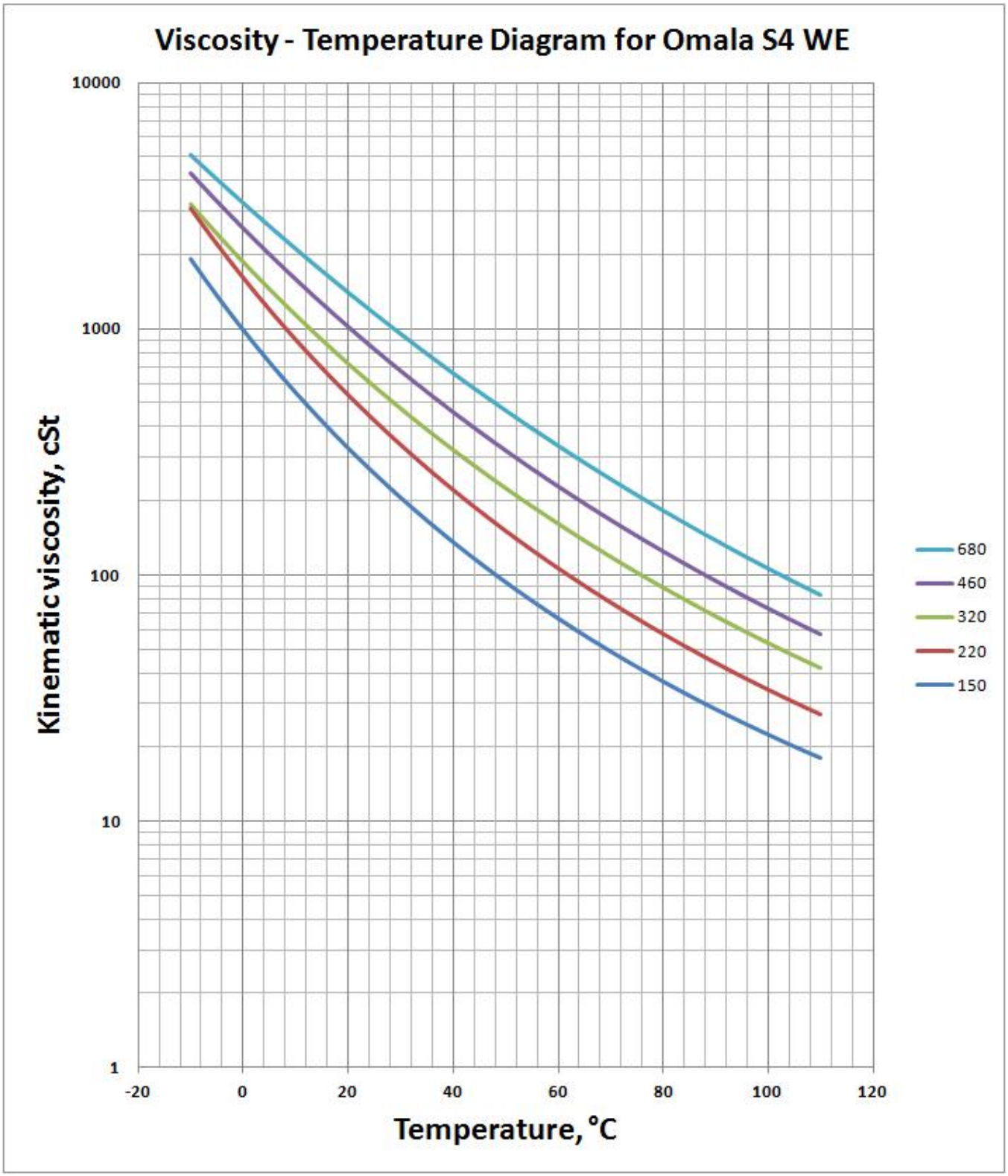
- Guidance on Health and Safety is available on the appropriate Material Safety Data Sheet, which can be obtained from http://www.epc.shell.com/
- **Protect the Environment**

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

Additional Information

- **Advice**

  Advice on applications not covered here may be obtained from your Shell representative.


Viscosity - Temperature Diagram for Omala S4 WE
10000
1000
100
10
1
Kinematic viscosity, cSt
-20
0
20
40
60
80
100
120
Temperature, °C
680
460
320
220
150