Shell Hydraulic *S1 M 46*

Technical Data Sheet

- Reliable Protection
- Anti Wear
- Industrial Applications

Industrial Hydraulic Fluid

A quality hydraulic fluid which provides cost effective and reliable protection and performance in most industrial and mobile applications.

DESIGNED TO MEET CHALLENGES

Performance, Features & Benefits

- **Oil life**

  Resists oxidation in presence of air, water and copper therefore offering good oil life and deposit control in hydraulic systems.

- **Wear protection**

  Formulated with proven anti-wear technology to be effective throughout the range of operating conditions, including low and severe duty high load conditions to protect components like pumps etc.

- **System efficiency**

  Good surface properties to ensure quick air release as well as foam control in the system. Shows good demulsibility to resist formation of water-in-oil emulsions and prevent consequent damage to pump and hydraulic system cleanliness.

Main Applications

- **Industrial hydraulic systems**

  Suitable for a wide range of hydraulic power applications found in industrial environments.

- **Mobile hydraulic fluid power transmission systems**

  Can be used in mobile hydraulic power applications such as excavators and cranes.

  For more demanding and specialized applications, the Shell Tellus range of fluids provide superior performance for systems where the stress on the fluid is high and ultra-fine filtration and sophisticated control valves are employed.

  Operating under moderate duty cycles, except where significant ambient temperature variations are encountered.

Specifications, Approvals & Recommendations

- ISO 11158 (HM fluids)
- DIN 51524 Part 2 HLP type
- GB 11118.1-2011 L-HM General

  For a full listing of equipment approvals and recommendations, please consult your local Shell Technical Helpdesk.

Compatibility & Miscibility

Compatible with most other mineral oil based hydraulic fluids. However, mineral oil hydraulic fluids should not be mixed with other fluid types (e.g. environmentally acceptable or fire resistant fluids).

- Compatibility

  Suitable for use with most hydraulic pumps. However, please consult your Shell representative before using in pumps containing silver plated components.

- Seal & Paint Compatibility

  Compatible with seal materials and paints normally specified for use with mineral oils.

Typical Physical Characteristics

Properties			Method	Shell Hydraulic S1 M 46
ISO Viscosity Grade			ISO 3448	46
ISO Fluid Type				HM
Kinematic Viscosity	@40°C	cSt	ASTM D445	46
Kinematic Viscosity	@100°C	cSt	ASTM D445	6.7
Viscosity Index			ISO 2909	97
Density	@15°C	kg/l	ISO 12185	0.873
Flash Point (COC)		°C	ISO 2592	230
Pour Point		°C	ISO 3016	-15

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

Health and Safety

This product is unlikely to present any significant health or safety hazard when properly used in the recommended application and good standards of personal hygiene are maintained

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

Guidance on Health and Safety is available on the appropriate Safety Data Sheet, which can be obtained from https://www.epc.shell.com

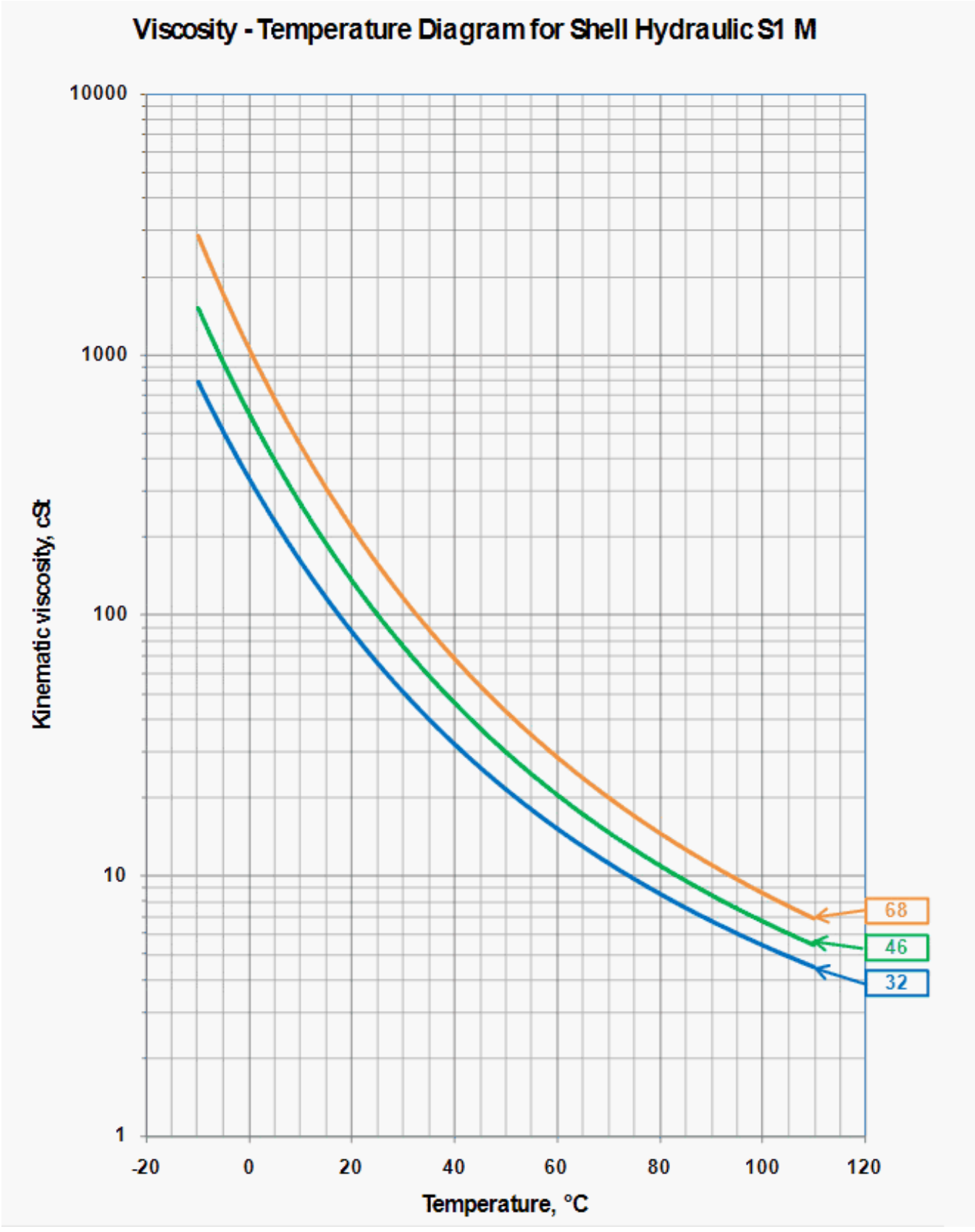
Protect the Environment

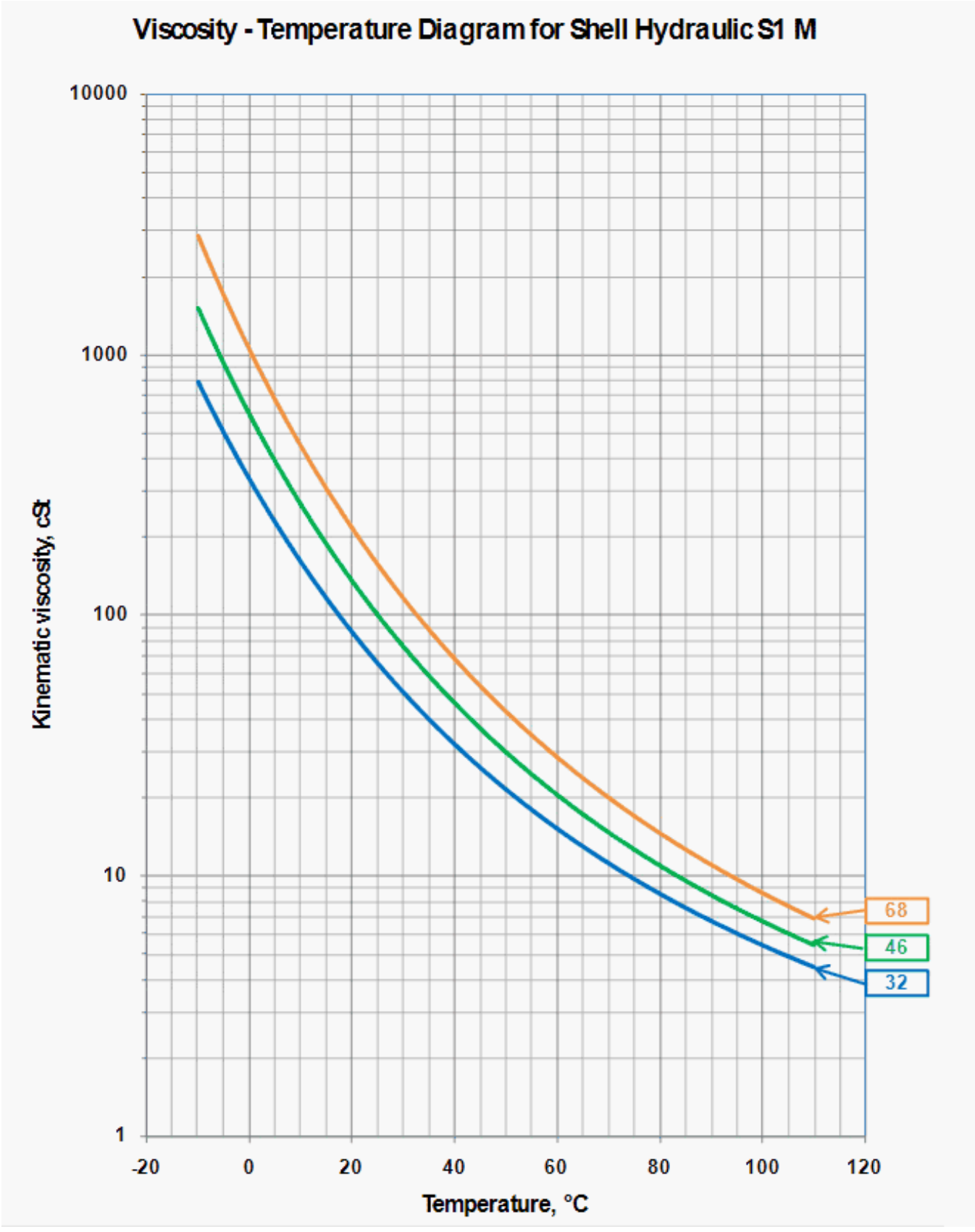
Take used oil to an authorised collection point. Do not discharge into drains, soil or water.

Additional Information

- **Advice**

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


Viscosity - Temperature Diagram for Shell Hydraulic S1 M
10000
1000
100
10
1
Kinematic viscosity, cSt
-20
0
20
40
60
80
100
120
Temperature, °C
68
46
32


Viscosity - Temperature Diagram for Shell Hydraulic S1 M
10000
1000
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10
1
Kinematic viscosity, cSt
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0
20
40
60
80
100
120
Temperature, °C
68
46
32