



Formerly Known As: Shell Hydrau HM

Shell Hydraulic S1 M 46

Industrial Hydraulic Fluid

Shell Hydraulic S1 M 32/46/68 is a quality anti-wear hydraulic fluid which provides cost effective and reliable protection and performance in most industrial and mobile applications.

- *Reliable Protection*
- *Industrial Applications*
- *Anti Wear*

DESIGNED TO MEET CHALLENGES

Performance, Features & Benefits

- **Oxidation resistant**

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

- **Good anti-wear performance**

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.

- **Good air release and anti-foam properties**

Good surface properties to ensure quick air release while ensuring foam control in the system.

- **Good water separation**

Good demulsibility to resist formation of water-in-oil emulsions and prevent consequent damage to pump and hydraulic system cleanliness: Meets cleanliness requirement of ISO 4406 class 21/19/16.

Main Applications



- **Industrial hydraulic systems**

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

- **Mobile hydraulic fluid power transmission systems**

Shell Hydraulic S1 M fluids can be used in mobile hydraulic power applications such as excavators and cranes.

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

- 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.

Specifications, Approvals & Recommendations

- ISO 11158 HM Fluid

- DIN 51524-2 HLP

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

Compatibility & Miscibility

- **Compatibility**

Shell Hydraulic S1 M fluids are suitable for use with most hydraulic pumps. However, please consult your Shell Representative before using in pumps containing silver plated components.

- **Fluid Compatibility**

Shell Hydraulic S1 M fluids are 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).

- **Seal & Paint Compatibility**

Shell Hydraulic S1 M fluids are compatible with seal materials and paints normally specified for use with mineral oils.

Typical Physical Characteristics

Properties			Method	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

Shell Hydraulic S1 M 46 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

