



Formerly Known As: Shell Tellus DO

Shell Tellus S2 MA 46

Industrial Detergent Hydraulic Fluid

- Extra Protection
- Water Tolerant

Shell Tellus S2 MA fluids are high performance detergent based hydraulic fluids for use where emulsifiable fluids are preferred. Using proven ashless anti-wear technology they provide reliable performance in applications where contamination by aqueous fluids, such as cutting fluids, or where cleanliness or control of solid contaminants is important.

DESIGNED TO MEET CHALLENGES

Performance, Features & Benefits

- **Protection in severe environments**

The established detergent and modern ashless anti-wear technology in Shell Tellus S2 MA fluids provides extra protection in challenging environments by:

Preventing water accumulation

Dispersing solid contaminants

Preventing corrosion in presence of water

Providing low-friction anti-wear performance

Outstanding anti-wear and load-carrying properties in hydraulic and geared systems, especially under high load and low speed boundary lubrication conditions are demonstrated by the high Brugger and FZG load values.

- **Fluid life – Maintenance saving**

Shell Tellus S2 MA fluids have good resistance to thermal and chemical breakdown to ensure consistent performance and protection throughout the fluid drain interval.

- **Maintaining system efficiency**

Superior cleanliness in severe environments helps keep the hydraulic system functioning efficiently. This is supported by excellent air release and anti-foam characteristics.

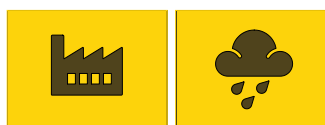
In addition, Shell Tellus S2 MA provides excellent filterability allowing the use of fine filters for extra protection and long equipment life.

Smooth operation of the hydraulic system is supported by the low-friction additive system that helps reduce stick-slip behaviour under high loads or poorly lubricated contacts.

Shell Tellus S2 MA has a minimum cleanliness of max ISO 4406 21/19/16 class (ex Shell filling lines) as defined by DIN 51524 specification for extra equipment and filter protection.

As recognised by DIN 51524 specification, the oil is exposed to various influences with transport and storage that could effect the cleanliness level.

Main Applications



- **Industrial hydraulic systems**

Industrial and manufacturing applications including:

Injection moulding machines

Electronically controlled hydraulic equipment

Mobile equipment

Headstocks and hydraulic controls in automatic lathes (when a synthetic or semi-synthetic water-extendible metal working fluid is used).

All hydraulic systems for which an HLPD oil is specified

Where low start up and high service temperatures are encountered the use of Shell Tellus S2 VA 46 is recommended.

Specifications, Approvals & Recommendations

- Arburg (ISO 46)
- Mueller Weingarten (ISO 46)
- ISO 11158 (HM fluids)*
- ASTM D6158-05 (HM fluids)
- DIN 51524-2 (HLP fluids)*

- * Meets DIN and ISO specification, except for demulsibility which is not applicable for high detergency hydraulic oil
- For a full listing of equipment approvals and recommendations, please consult your local Shell Technical Helpdesk.

Compatibility & Miscibility

- Compatibility**
Shell Tellus S2 MA fluids are suitable for use with most hydraulic pumps.

- Fluid Compatibility**

Shell Tellus S2 MA 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 Tellus S2 MA fluids are compatible with seal materials and paints normally specified for use with mineral oils.

Typical Physical Characteristics

Properties	Method	Tellus S2 MA 46
ISO Viscosity Grade	ISO 3448	46
ISO Fluid Type		L-HM
Kinematic Viscosity @40°C cSt	ASTM D445	46
Kinematic Viscosity @100°C cSt	ASTM D445	7
Viscosity Index	ISO 2909	107
Density @15°C kg/m ³	ISO 12185	877
Flash Point (COC) °C	ISO 2592	223
Pour Point °C	ISO 3016	-24

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 Tellus S2 MA 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 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 Shell Tellus S2 MA

