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Technical Data Sheet

Formerly Known As: **Shell Tellus DO**

Shell **Tellus** ***S2 MA 32***

- Extra Protection
- Water Tolerant

Industrial Detergent Hydraulic Fluid

Shell Tellus S2 MA fluids are high performance detergent based hydraulic fluids for use where emusifiable 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)
- Bosch Rexroth RD 90220-01 (2011), ISO 22-100
- 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 32
ISO Fluid Type				L-HM
ISO Viscosity Grade			ISO 3448	32
Kinematic Viscosity	@40°C	cSt	ASTM D445	32
Kinematic Viscosity	@100°C	cSt	ASTM D445	5.6
Viscosity Index			ISO 2909	108
Density	@15°C	kg/m^3	ISO 12185	872
Flash Point (COC)		°C	ISO 2592	210
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/

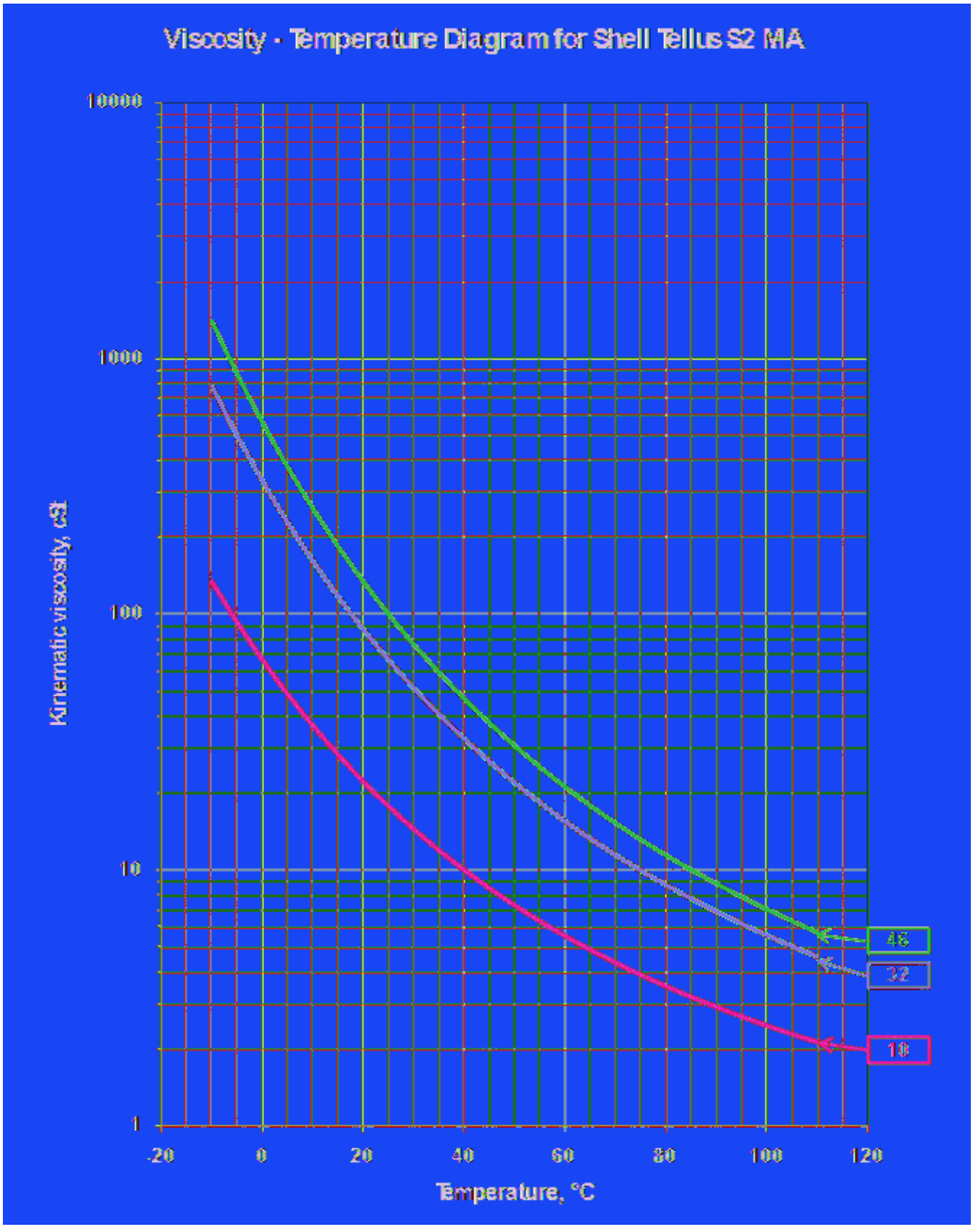
- **Protect the Environment**

  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
10000
1000
100
10
1
Kinematic viscosity, cSt
-20
0
20
40
60
80
100
120
Temperature, °C
46
32
10