Technical Data Sheet

Formerly Known As: **FR WG 200-XP**

Shell **Water-Glycol S2 CX-INT *46***

- Fire Resistant
- Anti-wear Performance
- Corrosion Protection
- Shear Stability

High Performance HFC Fire-Resistant Hydraulic Fluid

FM APPROVED

Shell Water-Glycol S2 CX-INT 46 is a “FM Approved” fire-resistant hydraulic fluid. It was developed and designed specifically to operate at system pressures of = 2000 psi (vane) and = 4000 psi (piston) with fluid temperatures = 65^{0}C (150^{0}F). The formulation is designed to provide optimum fire resistance as well as excellent corrosion protection and lubrication.

DESIGNED TO MEET CHALLENGES

Performance, Features & Benefits

- **Fire Resistant**

  Fire-resistant hydraulic fluids are used in applications where the presence of ignition sources cannot be avoided including steel processing, automobile manufacture and aluminum die-casting. Pressurized hydraulic fluid spray from a ruptured hose in contact with an ignition source can result in the loss of property but more importantly the loss of life. Water glycol based fire-resistant hydraulic fluids are uniquely more difficult to ignite and do not propagate a flame from an ignition source because of the water content. Tested, recognized and listed by FM Approvals as “FM Approved” Shell Water-Glycol S2 CX-INT 46 significantly reduces the risk of fire in applications where ignition sources are unavoidable improving the safety of workers and equipment operation.

- **Heat Transfer Properties**

  Water based fluids such as Shell Water-Glycol S2 CX-INT 46 have excellent thermal conductivity. This property means that Shell Water-Glycol S2 CX-INT 46 hydraulic fluid has greater cooling capacity than mineral oils which can result in cooler running equipment extending fluid and potentially equipment life.

- **Low Pump Wear**

  Shell Water-Glycol S2 CX-INT 46 hydraulic fluid contains a friction modifier in addition to the boundary lubricant and PAG thickener which together provide excellent lubrication over all wear regimes. Tested according to the ASTM D 7043, typical total wear for Shell Water-Glycol S2 CX-INT 46 fluid is 10 to 15 milligrams.

- **Corrosion Protection**

  Shell Water-Glycol S2 CX-INT 46 provides excellent corrosion protection (liquid and vapor phase) to a wide variety of metals including aluminum, copper, brass, cast iron, steel and other metals commonly used in hydraulic circuitry.

- **Clean Running with Improved Fluid Life**

  When properly maintained as recommended by the supplier, Shell Water-Glycol S2 CX-INT 46 does not form sediment or sludge.

- **All Seasons Service**

  The low pour point and high viscosity index Shell Water-Glycol S2 CX-INT 46 hydraulic fluid means it can operate in all seasons and regions of the world.

- **Seal, O-Ring and Hose Compatibility**

  Shell Water-Glycol S2 CX-INT 46 can be used in systems that contain a wide variety of seal, gasket and hose materials. Elastomers such as natural rubber, Buna-N®, Buna-S®, Neoprene®, Viton® and Teflon® are compatible with the fluid.

Main Applications



- Die Casting Equipment
- Welding machines
- Molten metal handling devices
- Continuous casters
- Hot strip mills
- Slag granulators
- Hot metal presses

Specifications, Approvals & Recommendations

- FM Approved
- GB/T 21449

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

Compatibility & Miscibility

- **Fluid Maintenance**

  Shell Water-Glycol S2 CX-INT 46 will retain its optimum fire protection, impart excellent rust and corrosion protection and prolong the hydraulic system component life only with good maintenance. Maintaining the alkaline reserve gives maximum corrosion protection and proper filtration of dirt and sludge is essential for a well maintained fire-resistant water glycol hydraulic fluid.

- It is essential to maintain the correct amount of water in the Shell Water-Glycol S2 CX-INT 46. Viscosity measurements at 40C will provide information if water make up is required. If the viscosity is high, then water should be added to the system. Contact your Shell representative for guidance on water addition for viscosity correction and other specific maintenance practices.
- The water must be deionized, distilled, reverse osmosis or steam distillate and have a conductance of = 15 µS/cm.

Typical Physical Characteristics

Properties			Method	Shell Water-Glycol S2 CX-INT 46
Viscosity Index			ASTM D2270	195
Rust Prevention - Distilled Water		Pass	ASTM D665A	24 hrs
ISO Viscosity Grade			ISO 3448	46
Appearance				Clear to slightly hazy red fluid
Kinematic Viscosity	@40°C	mm^2/s	ASTM D445	44.82
Density	@15°C	kg/m^3	ASTM D4052	1 077
Water Content		%	ASTM D1123	45.2
Pour Point		°C	ASTM D97	-45
pH		Number	ASTM E70	9.9
Reserve Alkalinity		mL	ASTM D1121	13
Foaming Characteristics - Seq I Tendency Stability		ml/ml	ASTM D892	10/0
Foaming Characteristics - Seq II Tendency Stability		ml/ml	ASTM D892	10/0
Foaming Characteristics - Seq III Tendency Stability		ml/ml	ASTM D892	10/0

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**

  Care should be taken when converting from a mineral oil to a water-based or synthetic anhydrous fluid. Prior to converting, it is important to review the equipment OEM requirements to confirm compatibility of the fluid with system components (seals, hoses, filter materials, paints) and also on the need to de-rate pumps when using different fluids. Even when using compatible fluids, a small quantity of mineral oil can impair the fire resistance and stability of the new fluid. Advice on applications not covered here may be obtained from your Shell representative.