Technical Data Sheet

Shell Irus *C*

High performance HFC-type fire-resistant hydraulic fluid

Shell Irus Fluid C is an advanced water-glycol fire resistant hydraulic fluid containing powerful additives to enhance its anti-wear, anti-corrosion and anti-oxidation properties. The water content is approximately 40% by weight.

DESIGNED TO MEET CHALLENGES

Performance, Features & Benefits

- **Fire resistant for high risk installations**
  As demonstrated in the 7th Luxembourg Report fire resistance tests the product contributes significantly in reducing the fire risk both in presence of flames and hot surfaces.
- **Excellent components and fluid duration**
  This guarantees reliable operation especially compared with fluids of older technologies.
- **Improved wear performances against minimum industry standard**
  As demonstrated in the vane pump testing required by the 7th Lux. Report the product offers significantly better antiwear performances than the minimum required by the standard.
- **Fluid life**
  The life of Irus C is comparable to mineral oils in properly maintained systems. The exact life has to be determined by Fluid Condition Monitoring, please consult your Shell Representative for further advice.
- **Control of water content**
  Water content should be controlled within 35% to 45% by weight. Condensate or de-ionized water should be used for any additions, which should be made slowly whilst the fluid is circulating. Even better is to top up an amount of fresh fluid to bring the water content back within the limits.

  An approximate check of the water content can be made from the viscosity of the fluid or its density. Accurate determination of the water content can be made in a laboratory with the Karl Fisher method.
- **Lubrication and component life**
  In general, water-glycol fluids are less effective bearing lubricants than petroleum mineral hydraulic oils, but are entirely satisfactory in systems containing pumps with plain bearings or lightly loaded ball and roller bearings designed to operate with water glycol fluids. However, in common with other water-based fluids a reduction in bearing life can be expected. This will normally be included in the 'derating' made by the pump manufacturer.

  In order to increase the reliability of the system and reduce its maintenance costs it is important that all components are checked with their manufacturer to ascertain whether they are suitable/compatible with water glycol products.
- **Conversion from other type of fluids**
  Specific attention should be given when converting to Irus C systems that were previously using lubricants of different types than ISO HFC (eg. mineral oils or ISO HFDU type of products). In such a case it is suggested you seek advice from your Shell Representative about the change over procedure you should follow.

Main Applications

Irus Fluid C is particularly suitable for demanding hydraulic applications where there is a high fire risk, such as those found in the Metal and Mining industries.
In order to reduce the water evaporation Irus C, as for all the ISO HFC type of fluids, should be used below 55°C with a suggested max temperature of 45°C.

Specifications, Approvals & Recommendations

- ISO 6743-4 (1999) HFC Type Fluid
- ISO 12922 (1999) HFC Type Fluid
- DIN 51502 HFC 46
- Irus C is tested and approved by the UK Health and Safety Laboratory (Buxton) for fire resistance according to European legislative requirements.
- Resistance to flame (UK) test - Lux 7th 3.1.2
- Stabilised flame heat release test - Lux 7th 3.1.3
- Wick test - Lux 7th 3.2.2
- Irus C is compliant with the essential technological test criteria of the “Safety & Health Commission for the Mining & Other Extractive Industry 7th Edition 4746/10/91” also known as “7th report of Luxembourg”.

  For a full listing of equipment approvals and recommendations, please consult your local Shell Technical Helpdesk, or the OEM Approvals website.

Typical Physical Characteristics

Properties			Method	Shell Irus Fluid C
ISO Viscosity Grade			ISO 3448	46
ISO Fluid Type				HFC
Appearance			Visual	Transparent red
Kinematic Viscosity	@-20°C	mm^2/s	ASTM D 445	1875
Kinematic Viscosity	@0°C	mm^2/s	ASTM D 445	358
Kinematic Viscosity	@20°C	mm^2/s	ASTM D 445	112
Kinematic Viscosity	@40°C	mm^2/s	ASTM D 445	47
Density	@15°C	kg/m^3	ISO 12185	1059
Pour Point		°C	ISO 3016	-57

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

- 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.