



Formerly Known As: **Shell Naturelle S2 Hydraulic Fluid, Shell Naturelle HF-E**

Shell PANOLIN S2 Hydraulic DU EAL 68

- EU Ecolabel Certified
- USA EPA VGP compliant
- Versatile Applications
- Biodegradability Profile: See Specifications and Approvals

Environmentally Acceptable Synthetic Ester (HEES) Hydraulic Fluid



Shell PANOLIN is our range of high-performance lubricants and greases tested for high biodegradability and lower environmental impact in aquatic environments. Shell PANOLIN S2 Hydraulic DU EAL 68 is formulated with fully synthetic esters and advanced ashless additives, delivering an optimal balance of lubrication performance and environmental acceptability. Biodegradable as per the requirements of EU Ecolabel. Designed for applications requiring EU Ecolabel or US EPA VGP-compliant environmentally acceptable lubricants.

DESIGNED TO MEET CHALLENGES

Performance, Features & Benefits

- **Good wear protection**

Advanced ashless (zinc-free) anti-wear additives provide protection over a wide range of conditions – proven protection in tough industry standard tests such as the Eaton Vickers 35VQ25 vane pump and Komatsu HPV35+35 high pressure piston pump. The excellent anti-wear properties and high viscosity index (VI) of mean that it can often be used where ISO 11158 (HM/HV) and DIN 51524 Part 2 or Part 3 (HLP/HVLP) mineral oil hydraulic fluids are specified. However, bulk fluid operating temperatures should not be allowed to exceed 90°C.

- **Maintaining system efficiency**

Excellent viscosity/temperature characteristics can minimize the changes of viscosity with variation in operation temperature, giving true 'multigrade' characteristics. Outstanding cleanliness and filterability, coupled with excellent water separation, air release and antifoam characteristics, all help contribute to maintaining or enhancing the efficiency of hydraulic systems.

- **Lower Environmental Impact**

An 'Environmentally Acceptable Lubricant' as defined by the United States Environmental Protection Agency's (EPA) 2013 Vessel General Permit (VGP)

Offers reduced impact of leaks or accidental spillage into aquatic and marine environments compared to conventional mineral hydraulic oils thanks to their higher biodegradability. (Publication EPA 800-R-11-002).

Biodegradability profile:

Biodegradable as per the requirements of EU Ecolabel (EEL).

At least 97% by mass of this lubricant's components are readily biodegradable, achieving a passing result of ≥60% according to OECD 301B.

Meets the requirements of EN 17181:2019, a modified OECD 301B-based test method for determining the aerobic biodegradation of fully formulated lubricants.

Low ecotoxicity:

Classified as 'not harmful' to algae, freshwater invertebrates and fish meeting the requirements of EU Ecolabel (EEL) for acute toxicity tests.

Classified 'not harmful' to bacteria when tested according to OECD test guidelines 209 meeting the requirements of ISO 15380 > 100mg/L.

Designed for applications requiring EU Ecolabel or US EPA VGP-compliant environmentally acceptable lubricants.

- **Very high renewables content**

A mean biobased content of 82% (ASTM D 6866).

- **Fire-Resistant**

HF DU Fire-Resistance hydraulic fluid with a high flash point.

Main Applications



Specifications, Approvals & Recommendations

- Biodegradable as per the requirements of EU Ecolabel
- Meets requirements of EN 17181:2019
- Meets requirements of ISO 15380:2023 HEES
- Meets USDA Bio-preferred programme
- EU Ecolabel certified NL/027/019
- Meets requirements of US EPA 2013 VGP
- Swedish Standard SS 15 54 34 SP
- Sperry Marine
- Quantum Marine Engineering

Typical Physical Characteristics

Properties			Method	Shell PANOLIN S2 Hydraulic DU EAL 68
ISO Viscosity Grade			ISO 3448	68
ISO Fluid Type			ISO 6743-4	HEES
Kinematic Viscosity	@-20°C	cSt	ASTM D445	2 640
Kinematic Viscosity	@40°C	mm²/s	ASTM D445	67.7
Kinematic Viscosity	@100°C	mm²/s	ASTM D445	12.3
Viscosity Index			ISO 2909	183
Density	@15°C	kg/m³	ASTM D4052	924
Flash Point		°C	ASTM D92	320
Pour Point		°C	ASTM D97	-39

These characteristics are typical of current production. Whilst future production will conform to Shell's specification, variations in these characteristics may occur.

- Rolls Royce Marine
- Meets requirements of ISO 12922:2012 HFDU
- FM Approved
- MSHA (Mine Safety and Health Administration) Approved

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

Compatibility & Miscibility

Fluid Compatibility

Shell PANOLIN Fluids are miscible with mineral oils. However, in order to ensure that the environmental properties and performance of Shell PANOLIN Fluids are maintained, the system should be drained and flushed thoroughly when changing fluids.

Seal & Paint Compatibility

Compatible with fluoroelastomers (FPM/FKM) such as Viton. Other seal materials and system components such as paints may be adversely affected and advice should be sought from the respective manufacturers.

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 <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.

Bulk operating temperatures should not be allowed to exceed 90°C.

- **Additional Technical Advice**

The information and guidance offered for use of Shell PANOLIN products is based on experience and understanding gained through the development and manufacturing of lubricants. The performance of the products can be influenced by a number of variables, not limited to, contamination, operating temperature, equipment application, external environment and material type. It is recommended that you discuss application and fluid recommendations with both your OEM and local Shell technical representative before the product is used. Advice given is non binding and Shell will not be held liable for any consequence as a result of or through misuse of the fluid.