



Formerly Known As: **EcoSafe EHC 46**

Shell EcoSafe EHC S3 DU 46

- Enhanced protection
- Non-sludge or varnish forming
- Readily biodegradable

Fire Resistant (HFDU) and Readily Biodegradable Hydraulic Fluid

Shell EcoSafe EHC S3 DU 46 is a synthetic fluid formulated for electro-hydraulic control (EHC) valve service in steam and gas turbines and other applications within fossil fuel power station operations, including high-pressure systems and systems with servo valves. Formulated with high VI, polyalkylene glycol (PAG) base stocks, coupled with a proven ashless additive package, Shell EcoSafe EHC S3 DU 46 provides the properties demanded by today's high-performance hydraulic systems. With proper flushing and condition monitoring, systems can be easily converted to Shell EcoSafe EHC S3 DU 46 from phosphate ester and polyol ester-based fluids.

DESIGNED TO MEET CHALLENGES

Performance, Features & Benefits

• **Excellent Fire Resistance**

Shell EcoSafe EHC S3 DU 46 is inherently fire-resistant, offering high flash point, high fire point and high auto-ignition temperature. It minimizes the risk of fire, which could potentially be caused by mineral oil products.

• **Enhance System Protection**

Shell EcoSafe EHC S3 DU 46 offers excellent lubricity, for outstanding pump life under the most severe conditions. The fluid meets or exceeds the pump performance even at 5,500 psi (380 bar) operating pressure. Shear stability is excellent. Shell EcoSafe EHC S3 DU 46 achieved a 12-stage rating in the FZG Gear Test demonstrating a high level of protection against wear and scuffing. In addition, the high dielectric properties of Shell EcoSafe EHC S3 DU 46 eliminate electro-chemical erosion of EHC servo-valves.

• **Good Hydrolytic Stability**

Shell EcoSafe EHC S3 DU 46 is hydrolytic stable that minimizes fluid degradation and acid formation which can damage and eventually destroy hydraulic pumps. No acid removal/ion exchange filters are required.

• **Excellent Oxidation and Varnish Control**

Shell EcoSafe EHC S3 DU 46 is resistant to oxidative and thermal degradation and will not degrade to form varnish or sludge, contributing to long-term system cleanliness while extending maintenance intervals and overall service life.

• **Excellent Compatibility**

While Shell EcoSafe EHC S3 DU 46 is compatible with many different types of fluids, to ensure proper system performance, it is recommended to properly clean and flush hydraulic systems during conversions. Shell EcoSafe EHC S3 DU 46 is compatible with commonly used seals, hoses and metals.

Detailed flushing procedures and compatibility data are available upon request.

Main Applications



- Shell EcoSafe EHC S3 DU 46 can be used as the hydraulic fluid in electrohydraulic governor control systems in steam and gas turbines.

Specifications, Approvals & Recommendations

- FM Global
- Shell EcoSafe EHC S3 DU 46 is classified as FM Approved industrial fluids by Factory Mutual and is readily biodegradable with biodegradability of over 60% after 28 days in the OECD 301 B carbon dioxide evolution test.

For a full listing of equipment approvals and recommendations, please consult your local representative.

Typical Physical Characteristics

Properties			Method	Shell EcoSafe EHC S3 DU 46
ISO Viscosity Grade				46
Kinematic Viscosity	@40°C	mm ² /s	ASTM D445	50.0
Kinematic Viscosity	@100°C	mm ² /s	ASTM D445	9.5
Viscosity Index			ISO 2909	176
Density	@15°C	kg/m ³	ASTM D4052	990
Flash Point		°C	ASTM D92	275
Fire Point (COC)		°C	ASTM D92	315
Autoignition temperature		°C	ASTM E659	388
Pour Point		°C	ASTM D97	-45
FZG (A/8,3/90)		Fail Stage	ISO 14635-1	12

These characteristics are typical of current production, variations in these characteristics in future production 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

- For EHC systems that are under OEM warranty, it is suggested that Shell Turbo S5 DR should be used.
- Advice on applications not covered here may be obtained from your Shell Representative.