



Shell Turbo S5 DR 46

Fire resistant hydraulic and lubricating fluid for turbines

Shell Turbo S5 DR 46 is a fire-resistant hydraulic and lubricating fluid made using Tri-Aryl Phosphates based on butylated phenol.

DESIGNED TO MEET CHALLENGES

Performance, Features & Benefits

• Excellent fire resistance

Shell Turbo S5 DR 46 is inherently fire-resistant, offering high flash point, high fire point and high auto ignition temperature. It minimises the risk of fire, which could potentially be caused by mineral oil products.

• Good oxidation stability

To provide long service life under normal operating conditions.

• Good hydrolytic stability

Shell Turbo S5 DR 46 is to a great extent able to withstand rapid decomposition of the base fluid under the influence of moisture and water in the oil system.

• Good demulsibility

To enable rapid separation from water for improved service intervals.

• Controlled air release

Good air-release minimises air entrainment in lubrication and governor control systems in order to ensure safe operation of the whole equipment.

• Low foaming

Minimal tendency for foaming to provide proper lubrication and heat transfer.

Main Applications

• Hydraulic fluid

It can be used as the hydraulic fluid in electrohydraulic governor control systems in steam and gas turbines.

• Lubrication of steam and gas turbines

Shell Turbo S5 DR 46 can also be used as the lubricating oil for main bearings in steam and gas turbines, generators and cooling pumps. As a precaution its compatibility with system components should be confirmed.

Specifications, Approvals & Recommendations

• Shell Turbo S5 DR 46 meets and exceeds the requirements of the major original equipment manufacturers such as GE, Siemens, and Alstom.

• Shell Turbo S5 DR 46 is approved by FM (Factory Mutual) Global against Standard 6930 for 'Less flammable hydraulic fluids'. It also meets the requirements of ISO Standard 12922 and ASTM 4293 for HFDR-type fire-resistant hydraulic fluids.

• For a full listing of equipment approvals and recommendations, please consult your local Shell Technical Help Desk.

Compatibility & Miscibility

• Compatibility - Packing, seals and hoses

The following materials are recommended for use with Shell Turbo S5 DR 46: Butyl rubbers, Nylon, PTFE, VITON rubber (depending on operation temperature range).

• Compatibility - Paints

Attention must be paid to painted surfaces. Cured epoxy paints are regarded as resistant to Shell Turbo S5 DR 46.

Typical Physical Characteristics

Properties			Method	Shell Turbo S5 DR 46
ISO Viscosity Grade			ISO 3448	46
Kinematic Viscosity	@40°C	mm ² /s	ISO 3104	44.5
Kinematic Viscosity	@100°C	mm ² /s	ISO 3104	5.4

Properties			Method	Shell Turbo S5 DR 46
Density	@20°C	kg/m ³	ISO 3675	1150
Flash Point (COC)		°C	ASTM D92	262
Fire Point (COC)		°C	ASTM D92	354
Auto ignition temperature		°C	ASTM E659	540
Pour Point		°C	ISO 3016	-24
Neutralisation Number		mg KOH/g	ISO 6619	0.05
Water Content		m-%	ISO 760	0.04
Cleanliness			ISO 4406	-/15/12
Air Release		minutes	ISO 9120	5.5

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 Turbo S5 DR 46 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 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.