

# Shell Turbo Fluid DR 46

*Fire resistant hydraulic and lubricating fluid for turbines*



Shell Turbo Fluid DR 46 is a fire-resistant hydraulic and lubricating fluid based on Tri-Aryl Phosphates manufactured from carefully selected raw materials.

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## Applications

- **Lubrication of steam- and gas turbines**  
Shell Turbo Fluid DR 46 can be used as lubrication oil for main bearings in steam- and gas turbines, generators and cooling pumps.
- **Hydraulic fluid**  
It can be used as hydraulic fluid in electrohydraulic governor control systems in steam and gas turbines.

Advice on applications not covered in this leaflet may be obtained from your Shell Representative.

## Performance Features and Advantages

- **Excellent fire resistant**  
Turbo DR 46 is inherently fire-resistant, offering high flash point, high fire point and high auto ignition temperature. It eliminates the risk of fire, potentially caused by mineral oil products.
- **Good oxidation stability**  
To provide long service life under normal operating conditions.
- **Good hydrolytic stability**  
Turbo DR 46 is to a great extent able to withstand rapid decomposition of the Ester 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.
- **Good air release**  
Rapid air-release minimises air entrapment 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.

## Specification and Approvals

Shell Turbo DR 46 is approved by relevant original equipment manufacturers, e.g. ABB, GEC, Siemens, Westinghouse.

Shell Turbo DR 46 appears in the FM Approvals Guide against project identification number 3024866 as an approved fire resistant hydraulic fluid for turbine applications

## Compatibility's

### Packing, seals and hoses

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

### Paintings

Attention must be paid to painted surfaces. Epoxy paints can be seen as resistant to DR46.

## Fluid conditioning

In order to ensure a long fluid life it is essential to keep the fluid clean and dry and to maintain a low level of acidity. Special advice for the treatment of the product in service can be requested from your supplier.

## Health and Safety

Guidance on Health and Safety are available on the appropriate Material Safety Data Sheet which can be obtained from your Shell representative.

## Protect the environment

Take used oil to an authorised collection point. Do not discharge into drains, soil or water.

## Typical Physical Characteristics

<b>Turbo DR</b>			<b>46</b>
ISO Viscosity grade		ISO 3448	46
Kinematic viscosity		ISO 3104	
at 40°C	mm <sup>2</sup> /s		43.4
at 100°C	mm <sup>2</sup> /s		5
Density at 15°C	kg/m <sup>3</sup>	ISO 3675	1130
Flash point COC	min. °C	ISO 2592	254
Fire point COC	min. °C	ISO 2592	368
Auto ignition temperature	°C	IEC 79/4	575
Pour point	°C	ISO 3016	-20
Neutralisation number	mg KOH/g	ISO 6619	0.04
Water separability at 54°C	min	ASTM D1401	40/40/0
Water content	m-%	ISO 6296	0.06
Cleanliness		ISO 4406	-/15/12
Air release at 50°C	min	ISO 9120	1

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