



# 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.

### DESIGNED TO MEET CHALLENGES

#### Performance, Features & Benefits

- **Excellent fire resistance**  
Shell Turbo Fluid 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**  
Shell Turbo Fluid 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.

#### Main 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.

#### Specifications, Approvals & Recommendations

- Shell Turbo Fluid DR 46 is approved and/or exceeds the requirements of the major original equipment manufacturers such as General Electric (GE), Mitsubishi Hitachi Power Systems (MHPS), and Siemens, etc.
- Shell Turbo Fluid DR 46 appears in the FM Global (formally Factory Mutual) Approvals Guide against project identification number 3024866 as an approved fire resistant hydraulic fluid for turbine applications.
- For a full listing of equipment approvals and recommendations, please consult your local Shell Technical Helpdesk.

#### Compatibility & Miscibility

- **Compatibility - Packing, seals and hoses**  
The following materials are recommended for use with Shell Turbo Fluid DR 46: Butyl rubbers, Nylon, PTFE, VITON rubber (depending on operation temperature range).
- **Compatibility - Paintings**  
Attention must be paid to painted surfaces. Epoxy paints can be seen as resistant to Shell Turbo Fluid DR46.

#### Typical Physical Characteristics

Properties	Method	Shell Turbo Fluid DR 46
ISO Viscosity Grade	ISO 3448	46
Kinematic Viscosity	@40°C mm <sup>2</sup> /s	43.4

Properties			Method	Shell Turbo Fluid DR 46
Kinematic Viscosity	@100°C	mm <sup>2</sup> /s	ISO 3104	5
Density	@20°C	kg/m <sup>3</sup>	ISO 3675	1130
Flash Point (COC)		min. °C	ISO 2592	270
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	0.06
Water Content		m-%	ISO 6296	0.06
Cleanliness			ISO 4406	-/15/12
Air Release, Minutes		minutes	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.

- **Protect the Environment**

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

#### Additional Information

- **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.

- **Advice**

Advice on applications not covered here may be obtained from your Shell representative.