The improved performance of hydraulic devices has led to their widespread use in many settings, including in the vicinity of flames and high-temperature materials. In such locations, there is a danger of fire due to leaks of hydraulic fluid or the spraying of fluid from ruptured equipment. A very effective method to eliminate such fire risks and to improve work safety is to adopt a fire-resistant hydraulic fluid.

Nippon Oil’s hydraulic fluid Hyrando FRP 46 is made entirely of phosphates, so it is extremely resistant to fire. And compared with other types of fire-resistant hydraulic fluids, Hyrando FRP 46 provides superior lubrication, chemical stability, and durability.

- **Special Features**
  1. **Outstanding Fire Resistance**
     Because Hyrando FRP 46 consists only of phosphates, it has the best fire resistance of any hydraulic fluid that does not contain water.
     The excellent fire resistance of Hyrando FRP 46 is due to its basic chemical composition, so it provides the same protection from fires throughout the entire operating life of the fluid. The excellent fire resistance of Hyrando FRP 46 has been proven in tests conducted under a broad range of realistic conditions.
  2. **Excellent Lubrication and Wear Resistance**
     Although fire-resistant hydraulic fluids are generally thought to offer less lubrication than mineral-oil-based fluids, Hyrando FRP 46 provides excellent lubrication, which is the most important feature of a hydraulic fluid.
     The lubricity of Hyrando FRP 46 is comparable to that of additive-enhanced mineral oils. It extends pump life by reducing wear to pump parts, so it can be used with confidence even with high-pressure pumps.
  3. **Long Life and Easy Maintenance**
     Hyrando FRP 46 is very stable both physically and chemically, so it shows no change in quality under normal conditions. When managed properly, Hyrando FRP 46 can be used for very long periods of time.
  4. **Good Shear Stability**
     Because Hyrando FRP 46 contains no polymer hydrocarbons, its viscosity will remain constant even when the fluid is exposed to shear for long periods in pumps or other devices.
  5. **Excellent Chemical Stability**
     Hyrando FRP 46 consists of chemically stable phosphates, so it can be used for long periods without oxidation.

- **Applications**
  1. Die cast machines, forging presses, hydraulic presses.
  2. Hydraulic devices in continuous casting machines and other steelmaking equipment.
  3. Hydraulic devices in electrical ovens, heating furnaces, etc.
  5. Other hydraulic devices located where there is a risk of fire.

- **Containers**
  200-liter drums and 18-liter NT cans.

- **Precautions for Use**
  1. **Materials**
     Hyrando FRP 46 has no effect on metals. However, it is slightly corrosive to magnesium, so it should not be used with magnesium.
  2. **Seal Materials**
     Choose the most appropriate seal materials from among fluorocarbon rubber, Teflon, and butyl rubber. The best seal material for use with both mineral oil and Hyrando FRP 46 is fluorocarbon rubber.
     Avoid using Hyrando FRP 46 with paint, because the fluid may soak into the paint.
## Typical Properties of Hyrando FRP 46

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Pale yellow</td>
</tr>
<tr>
<td>Density (15°C) g/cm³</td>
<td>1.151</td>
</tr>
<tr>
<td>Kinematic viscosity (40°C) mm²/s</td>
<td>41.0</td>
</tr>
<tr>
<td>Pour point °C</td>
<td>–20</td>
</tr>
<tr>
<td>Flash point (COC) °C</td>
<td>252</td>
</tr>
<tr>
<td>Fire point (COC) °C</td>
<td>368 (point of natural extinguishing without continued combustion)</td>
</tr>
<tr>
<td>Autoignition temperature °C</td>
<td>530</td>
</tr>
<tr>
<td>Acid number mgKOH/g</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Note: The typical properties may be changed without notice. (August 2002)

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### Handling Precautions

**Composition:** Trixylenyl phosphate, Tritolyl phosphate

**Precautionary:** Not applicable

**Signal word:** Warning

**Hazard Statement:** Causes eye irritation

**Precautionary Statements:**

**Prevention**
- Do not handle until all safety precautions have been read and understood.
- Wear protective gloves/protective clothing/eye protection/face protection.
- Do not allow the eyes to become exposed to the product. Do not swallow the product.
- Obtain special instructions before use.
- Wash hands thoroughly after handling.
- Do not eat, drink or smoke when using this product.

**Response**
- IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
- IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
- If the eyes are exposed to the product: Rinse the eyes with plenty of running water and immediately contact a physician.
- IF ON SKIN: Wash with plenty of soap and water.
- IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
- If eye irritation persists: Get medical advice/attention.

**Storage**
- The product must be stored in a cool, well-ventilated location where it will not be exposed to direct sunlight.
- Containers that have been opened must be tightly sealed.

**Disposal**
- Dispose of contents/container in accordance with local/regional/national/international regulations.
- If there are any doubts about proper methods of handling the product, contact the point of purchase before proceeding with usage.