Shell Naturelle HF-E 46

Environmentally Considerate, Fully Synthetic Hydraulic Fluid

Shell Naturelle Fluid HF-E is an advanced hydraulic fluid for use in hydraulic and power transmission systems. It is readily biodegradable with a low ecotoxicity, and is particularly suited for use in environmentally sensitive areas. Fully synthetic esters, blended with ashless additives, provide Shell Naturelle Fluid HF-E with a superior blend of lubrication performance and environmental acceptability.

Performance, Features & Benefits

- **Excellent wear protection**
  Advanced ashless (zinc-free) anti-wear additives provide protection over a wide range of conditions – proven protection in tough industry standard tests such as the Eaton Vickers 35VQ25 vane pump and Komatsu HPV35+35 high pressure piston pump.

- **Maintaining system efficiency**
  Superior cleanliness and filterability; coupled with excellent water separation, air release and anti-foam characteristics, all help to maintain or enhance hydraulic system efficiency. The filterability of Shell Naturelle Fluid HF-E is maintained, even when the fluid is contaminated with water.

- **Readily biodegradable**
  Shell Naturelle Fluid HF-E is biodegraded by over 60% after 28 days in the OECD 301 B carbon dioxide evolution test.

- **Low toxicity towards the environment**
  Shell Naturelle Fluid HF-E is classified as ‘not harmful’ to bacteria, algae, freshwater and marine invertebrates, and fish when tested as water-accommodated fractions (WAFs) according to OECD and EPA test guidelines.

- **Very high renewables content**
  Shell Naturelle Fluid HF-E has a mean biobased content of over 80% (ASTM D6866).

Main Applications

- **Mobile / exterior hydraulic applications**
  Hydraulic and fluid power transmission systems in exposed environments can be subject to wide variations in temperature.
  The naturally high, shear stable viscosity index (VI) of Shell Naturelle Fluid HF-E helps deliver responsive performance from cold start to full load, heavy duty operation.

- **General industrial control equipment and hydraulic systems**
  The excellent anti-wear properties and high viscosity index (VI) of Shell Naturelle Fluid HF-E, mean that it can often be used where ISO 11158 (HM/HV) and DIN 51524 Part 2 or Part 3 (HLP/HVLP) mineral oil hydraulic fluids are specified. However, bulk fluid operating temperatures should not be allowed to exceed 90°C.

- **Environmentally sensitive areas**
  Shell Naturelle Fluid HF-E is an ‘environmentally acceptable’ hydraulic fluid (ISO 15380 HEES), with ‘reduced harm for water and soil during use’ (European Union ecolabel). When compared to conventional mineral oil hydraulic fluids, it will have a reduced environmental impact in the event of a leak or accidental spillage. It is particularly suited for use in environmentally sensitive areas.

Specifications, Approvals & Recommendations

- Swedish Standard SS 15 54 34, SP listed.
- ISO 15380 HEES
- VDMA 24568 synthetic esters
- Dutch MIA/VAMIL Milieulijst
- German Positivliste Bioschmierstoffe
- USDA Bio-preferred program
- Sperry Marine
- Quantum Marine Engineering
Typical physical characteristics

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 Naturelle HF-E 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 http://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.