



## Ecoterra® HVI Hydraulic Oil

Ecoterra HVI Hydraulic Oil is a high-quality, high viscosity index, zinc-free antiwear hydraulic oil developed for use in mobile equipment operating over a wide temperature range. It is particularly recommended for use in off-road equipment manufactured by Hitachi, John Deere and others. It has a high viscosity index and low pour point for use over a wider temperature range than conventional antiwear hydraulic oils.

Ecoterra HVI Hydraulic Oil is formulated with an ashless (zinc-free) antiwear additive package to provide excellent wear protection for hydraulic pumps and motors, and to protect hydraulic system components against rust and corrosion. It has excellent oxidation resistance and thermal stability at high temperatures to minimize deposit formation and provide long service life. It also has excellent low-temperature properties for cold start-ups. It has excellent water-separating properties to minimize the formation of emulsions, and is resistant to excessive foam buildup that can cause poor or sluggish hydraulic system response.

Ecoterra HVI Hydraulic Oil meets the performance requirements of all major hydraulic pump manufacturers, and is recommended for use in all types of high-pressure, high-speed hydraulic pumps. It also meets the performance requirements of Hitachi Advanced Hydraulic Oil, and is fully compatible with the Hitachi fluid and with Hitachi seals and hoses.

### **Applications**

- Hitachi excavators with 4,000-hour service intervals
- Off-road mobile construction and forestry equipment, such as backhoes, bulldozers, crawlers, excavators, skid-steer loaders and motor graders, where the manufacturer recommends an ashless, zinc-free hydraulic oil

Ecoterra HVI Hydraulic Oil meets the requirements of the following industry and OEM specifications:

- Bosch Rexroth RE 90 220
- Denison Hydraulics HF-0, HF-1, HF-2
- DIN 51524 Part 3, Antiwear Hydraulic Oils, Type HVLP
- German Steel Industry SEB 181222

**High VI, Zinc-Free  
Antiwear Hydraulic  
Oil For Off-Road  
Equipment;  
Separates From  
Water**

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Customer Service  
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- Hitachi Advanced Hydraulic Oil (for use in dry hydraulic systems only)
- ISO 11158:1997, Family H (Hydraulic Systems), Type HV
- U.S. Steel 127
- Vickers (Eaton) M-2950-S, I-286-S

### **Features/Benefits**

- Zinc-free formulation
- Excellent wear protection for hydraulic pumps and motors
- Excellent oxidation resistance
- Protects against rust and corrosion
- Excellent water-separating properties
- Good filterability
- Good foam resistance
- Suitable for year-round use

**Note:** *Ecoterra HVI Hydraulic Oil is **not** compatible with either Ecoterra HVI-E Hydraulic Oil or zinc-containing antiwear hydraulic oils. Topping off with such fluids may cause residue, gelling or filter plugging.*

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Typical properties are average values only and do not constitute a specification. Minor variations that do not affect product performance are to be expected during normal manufacture, and at different blending locations. Product formulations are subject to change without notification.

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## Ecoterra® HVI Hydraulic Oil

### Typical Properties

| ISO Grade   | 46        |
|---|-----------|
| Specific Gravity @ 60°F                           | 0.866     |
| Density, lbs/gal @ 60°F                           | 7.21      |
| Color, ASTM D1500                                 | 0.5       |
| Flash Point (COC), °C (°F)                        | 231 (448) |
| Pour Point, °C (°F)                               | -45 (-49) |
| Viscosity,  |           |
| cSt @ 40°C  | 45.8      |
| cSt @ 100°C                                       | 7.5       |
| SUS @ 100°F                                       | 235       |
| SUS @ 210°F                                       | 51.3      |
| Viscosity Index                                   | 128       |
| Acid Number, ASTM D974, mg KOH/g                  | 0.16      |
| Copper Corrosion, ASTM D130                       | 1a        |
| Demulsibility, ASTM D1401, minutes to pass        | 15        |
| Dielectric Strength, ASTM D877, kv <sup>(1)</sup> | 35        |
| Foam Test, ASTM D892                              | Pass      |
| FZG Scuffing Test, ASTM D5182, Failure Load Stage | 12        |
| Oxidation Stability, RPVOT, ASTM D2272, minutes   | >600      |
| Rust Test, ASTM D665 A&B                          | Pass      |

<sup>(1)</sup>At the point of manufacture

### Health and Safety Information

For recommendations on safe handling and use of this product, please refer to the Material Safety Data Sheet via <http://w3.conocophillips.com/NetMSDS>.

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