

# Shell NATURELLE® Oil HF-M

## *Biodegradable hydraulic fluid*

Shell NATURELLE® Oil HF-M is a biodegradable anti-wear hydraulic fluid developed for use in hydraulic systems working either in or out of doors. It is a mixture of synthetic ester and vegetable oil blended with anti-wear additives and rust and oxidation inhibitors. It contains a significant amount of renewable resource.

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### Performance Features and Benefits

- **High degree of biodegradability**  
Exceeds the normal requirement of 60% biodegradation in the OECD 301B test after 28 days.
- **Stable viscosity at -20°C**  
Careful selection of base fluids and additives overcomes the '72-hour' low temperature gelling problem normally associated with biodegradable fluids based on vegetable oil alone.
- **Reduced tendency to form sticky deposits when accidentally spilled**  
Incorporation of synthetic ester overcomes the 'sticky deposit' problem normally associated with vegetable oil.

### Main Applications

Shell NATURELLE® Oil HF-M can be used in hydraulic systems where biodegradable fluids are preferred for environmental reasons

Advice on applications not covered in this handbook may be obtained from your Shell representative.

### Specifications, Approvals, and Recommendations

Shell NATURELLE® Oil HF-M fulfills the requirements of the Swedish Standard and is designated SS 15 54 34 BV environmentally acceptable.

Shell NATURELLE® Oil HF-M has the following approvals:

Eaton (Vickers) M-2950 S

Eaton (Vickers) I-286 S

### Compatibility and Miscibility

The biodegradability and performance of Shell NATURELLE® Oil HF-M may be compromised if it is mixed with other oils. It is recommended that contamination with engine oil is restricted to less than 1% and contamination with other hydraulic oils is restricted to less than 2%.

### Additional Information

The recommended operating temperature range is -25°C to +70°C. Continuous operation at temperatures in excess of 70°C may shorten the fluid life.

### Handling and Safety Information

For information on the safe handling, storage, or use of this product, refer to its Material Safety Data Sheet at <http://www.epc.shell.com/>. If you are a Shell Distributor, please call 1+800-332-6457 for all of your service needs. All other customers please call 1+800-237-8645 for all of your service needs.

### Protect the Environment

Do not discharge into drains, soil, or water.

## Typical Physical Characteristics

<b>Shell NATURELLE® Oil HF-M</b>			<b>46</b>
<b>Color</b>			Red
<b>Kinematic Viscosity</b> after 72 hours	@ -20°C	cSt	1080
	@ 40°C	cSt	42
	@ 100°C	cSt	9.5
<b>Viscosity Index</b>			220
<b>Density</b>	@ 15°C	kg/L	0.924
<b>Shear Stability</b> Taper Roller Bearing Vk @ 100°C, after 20h			cSt 8.2
<b>Flash Point (COC)</b>			°F 493
<b>Rust Protection</b>			Pass
<b>Copper Corrosion</b>			Pass
<b>Pour Point</b>			°F -44
<b>Air Release Value</b>	@ 50°C	mins	6
<b>Compatibility with Elastomers</b> Nitrile Rubber, 1000 h @ 80°C Shore hardness change % volume change			-6 10
<b>Load Carrying Capacity</b> FZG Vickers V104C weight loss ring and vanes, Vickers 35VQ25 weight loss ring and vanes,			failure load stage >12 mg Pass mg Pass

*These characteristics are typical of current production. While future production will conform to Shell specifications, variation in these characteristics may occur.*