



## **Gulf Harmony ZF-HVI Plus**

*Supreme quality, ashless high viscosity index hydraulic oil  
for extreme temperature ranges*

### **Product Description**

**Gulf Harmony ZF-HVI Plus** series are supreme quality ashless anti-wear hydraulic oils specially developed for applications subjected to wide range of temperature or where small viscosity change with fluctuating temperature is needed. They are formulated with severely hydroprocessed Group II base oils, a highly shear stable polymer and an advanced ash-less additive system to provide reduced environmental impact in case of an accidental spillage. Their outstanding thermo-oxidative stability and low & high temperature performance allows for extended service life. They provide excellent anti-wear property, rust & corrosion protection, water separation & air-release properties and hydrolytic stability to reduce breakdowns and help improve production capacity. They exceed the performance requirements of global industry standards viz. DIN 51524 Part 3 HVLP, AFNOR NFE 48-603 (HV) & ISO 11158 HV and majority of the international OEMs viz. Poclain, Hitachi, MAG IAS LLC, Eaton & Denison

### **Features & Benefits**

- Outstanding thermo-oxidative stability reduces deposit formation, improves pump performance and gives extended oil & filter change intervals
- Extremely high viscosity index assures equipment protection at cold start-up temperatures as well as at high operating temperatures
- Excellent shear stability minimises viscosity loss over time and exhibits “stay-in-grade” performance under high shear conditions
- Excellent demulsibility helps in faster separation of water from oil and resists formation of emulsions
- Special rust & corrosion inhibitors protect multi-metallurgy components against negative effects of moisture presence in the system
- Rapid air release property minimises chances of pump cavitation and thus prevents component damage, reduces vibration and maintains efficiency especially in modern hydraulic systems where sump sizes are becoming smaller
- Offers long term hydrolytic stability and yellow metal compatibility in presence of water
- Compatible with multi-metals & most sealing materials used in hydraulic systems

### **Applications**

- Hydraulic and power transmission systems subjected to a wide range of ambient & operating temperatures even in environmentally sensitive applications
- Applications requiring extended oil change intervals
- Critical hydraulic systems such as high accuracy numerically controlled machine tools and those employing close clearance servo valves
- Hydraulic systems of excavators, cranes and hydrostatic drives subjected to most severe outdoor operating conditions
- Hydraulic systems operating under high pressures and requiring high degree of load carrying capability and anti-wear protection

Properties mentioned above are typical only and minor variations, which do not affect the product performances, are to be expected in normal manufacturing. The above information is based on past history of the grade only and must not be construed as a guarantee of performance. Follow equipment manufacturer's recommendations for performance level and viscosity grade. The Material Safety Data Sheet for this product is available from your nearest Gulf Distributor.

#### **Gulf Oil International**

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## Specifications, Approvals & Typical Properties

ISO Viscosity grades	15	32	46	68	100	
<b>Meet the following Specifications</b>						
DIN 51524 Part 3 HVLP	X	X	X	X	X	
AFNOR NFE 48-603 (HV)	X	X	X	X	X	
ISO 11158 HV	X	X	X	X	X	
Denison HF-0, HF-1, HF-2		X	X	X		
MAG IAS, LLC (formerly Cincinnati Lamb)		P-68	P-70	P-69		
Eaton (Vickers) M-2950-S		X	X	X		
Eaton (Vickers) I-286-S		X	X	X		
Poclain				X	X	
Hitachi			X			
<b>Typical Properties</b>						
Test Parameters	ASTM Method	Test Values				
Viscosity @ 40 °C, cSt	D 445	15.1	31.5	46.7	68.6	99.4
Viscosity Index	D 2270	148	147	145	148	145
Flash Point, °C	D 92	201	214	222	232	242
Pour Point, °C	D 97	-42	-39	-33	-30	-27
Density @ 15°C, Kg/l	D 1298	0.853	0.853	0.855	0.858	0.861
Rust Test	D 665A/B	Pass	Pass	Pass	Pass	Pass
Emulsion Test 30 minutes max	D 1401	@ 54 °C	Pass	Pass	Pass	Pass
		@ 82 °C	-	-	-	-
Foam Test, foam after 10 minutes of settling for all sequences	D 892	Nil	Nil	Nil	Nil	Nil
Turbine Oil Stability Test, hrs	D 943	-	-	6500+	6000+	5000+
FZG, fail load stage, minimum	DIN 51354 Part II	-	-	11	11	11

September 2013

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