

# HFO

MINERAL HYDRAULIC OIL  
ISO GRADE HM

220063-220064-220065-220071-220072-220073-220171/01.24

Rev. 9

## DESCRIPTION & APPLICATIONS

HFO is a hydraulic oil, with stabilized zinc-based anti-wear additives.

HFO is suitable for all hydraulic systems for which an ISO Class HM is required.

Can also be used for the lubricating of medium loaded spur gear boxes as well as for compressor oil following ISO 6743 DAG/DAH and DIN 51506 VDL.

### Approvals

HFO 32,46, 68 => Denison HF0, HF1, HF2

## ADVANTAGES

- Thermal stability.
- Anti wear properties.
- Resistance to hydrolysis, due to the "stabilized zinc" additives.
- Filterability.
- Anti-foaming.

## PERFORMANCES

Satisfies to the following specifications:

CINCINNATI P38(ISO32)/P68(ISO32)/P55(ISO46)/P70(ISO46)/P54(ISO68)/P69(ISO68)

DENISON HF0/HF1/HF2

DIN 51506 VDL

DIN 51524 Teil 2 HLP

ISO 6743 DAG/DAH/HM

KOMATSU KES07.841.1

NFE 48600 HM

NFE 48603 HM

NFE 60200 HM

SWEDISH STANDARD SS 15 54 34 Class A

VICKERS I 286S

VICKERS M2952S

# HFO

## **ENVIRONMENT, HEALTH & SAFETY**

Please consult also the Safety Data Sheet about how to manipulate and to stock the product as well as to learn about the first aid measurements in case of accident.

Elimination after use must be made in conformity with the local rules in force about used oils disposal. When needed, Safety Data Sheet can be obtained upon request.

Conservation of the product: 3 year(s) in closed container and sheltered.

# HFO

## PROPERTIES

CHARACTERISTICS	UNITS	METHODS	TYPICAL DATA			
ISO VG	-	-	10	22	32	46
Density at 15°C	kg/m <sup>3</sup>	NFT 60101	899	861	873	874
Kinematic viscosity at 40°C	mm <sup>2</sup> /s (cSt)	NFT 60100	10	22	32,8	48
Kinematic viscosity at 100°C	mm <sup>2</sup> /s (cSt)	NFT 60100	2,7	4,4	5,6	7,1
Viscosity index	-	NFT 60136	110	109	108	106
Flash point	°C	NFT 60118	147	208	222	230
Pour point	°C	NFT 60105	-41	-27	-30	-30
TAN (TotalAcid Number)	mg KOH/g	ASTM D 664	0,28	0,21	0,33	0,33
Antiwear and EP characteristics	-	FZG test	10	10	10	10
Product number	-	-	220171	220071	220063	220064

CHARACTERISTICS	UNITS	METHODS	TYPICAL DATA		
ISO VG	-	-	68	100	150
Density at 15°C	kg/m <sup>3</sup>	NFT 60101	880	882	886
Kinematic viscosity at 40°C	mm <sup>2</sup> /s (cSt)	NFT 60100	70	103	139
Kinematic viscosity at 100°C	mm <sup>2</sup> /s (cSt)	NFT 60100	9	11,7	14,2
Viscosity index	-	NFT 60136	102	101	99
Flash point	°C	NFT 60118	240	245	250
Pour point	°C	NFT 60105	-24	-21	-12
TAN (TotalAcid Number)	mg KOH/g	ASTM D 664	0,33	0,23	0,20
Antiwear and EP characteristics	-	FZG test	11	11	11
Product number	-	-	220065	220072	220073

CHARACTERISTICS	UNITS	METHODS	TYPICAL DATA
Oxidation resistance (TOST)	hour	ASTM D943	2700
Copper corrosion	-	ASTM D 130	1a
Hydrolysis resistance	Copper loss in mg/cm <sup>2</sup>	ASTM D2619	0,1 (max. tolerated 0,2)
Filtrability	second	DENISON HF 0	390
4 Ball wear (1H, 40 Kg)	Ø mm	ASTM D2266	0,42 (max. tolerated 0,5)
Vane pump test	Weight loss in mg	VICKERS	17 (max. tolerated 90)
Test on plunger pump		DENISON	pass

The average values are given for information only.