

HIPER 1513

Technical data (Typical)

Appearance	Light Reddish Clear Liquid
Specific Gravity@ 29.5 °C (ASTM D 7042)	0.955 g/cc
Viscosity, 40 °C (ASTM D 7042)	127 cSt
Flash Point, COC (ASTM D 92)	>130°C
Elemental Analysis	
Sulphur (ASTM D 5185)	Min. 7.2%
Nitrogen (ASTM D 3228)	Min. 3.5%
Phosphorous (ASTM D 5185)	Min. 0.5%

Application

HIPER 1513 is an ashless multi functional oxidation and rust inhibitive additive package suitable for formulating a wide range of products meeting various specifications as follows:

For R & O oils, hydraulic fluids HL, gear oils CL according to:
DIN 51524, Part 1[HL]; DIN 51517, Part 2 [CL]; AFNOR NF E 48-603[HL];Cincinnati –Machine P-38[HL-32], P-55[HL-46] , P-54[HL-68],P-57[HL-150],P-62[FC-10]

For Turbine Oils according to:

DIN 51515, part 1[L-TD], part 2 [L-TG]; Siemens TLV 9013 04/01; British Standard BS 489; General Electric GEK 32568 A/C; MIL-L-17672 D; CEGB standard 207001; Brown Boveri HTGD 90117; U.S.Steel 120; Westinghouse Electric Corp.turbine Oil spec.;

Alstom HTGD 90 117 V0001 S.

For compressor oils according to:

DIN 515506 [VBL,VCL,VDL]; ISO/DP 6521 [DAA, DAB,DAH,DAG].

HIPER 1513 exhibits excellent solubility in Grp I, Grp II and Grp III base oils. It can also be used in PAOs.

Suggested Applications:

R & O OILS

HYDRAULIC FLUIDS HL

TURBINE OILS

GEAR OILS CL

COMPRESSOR OILS

GREASES

Formulation:

Base Oil :ISO VG 32

Additive : HIPER 1513 0.3% b.w.or 0.6% b.w.

Thermo-Oxidative Stability

Test Method	Unit	Test Results	
		0.3% b.w HIPER 1513	0.6% b.w. HIPER 1513
Formulation		0.3% b.w HIPER 1513	0.6% b.w. HIPER 1513
TOST[ASTM D 4310] [95°C, H ₂ O,O ₂ ,Fe and Cu catalyst] after 1000 h: Sludge TAN	mg mgKOH/gm	24 0.06	11.0 0.06
TOST [ASTM D 943] [95°C, H ₂ O,O ₂ ,Fe and Cu catalyst] Time to TAN 2 mgKOH/g	Hours	> 7000	> 14000
RBOT [ASTM D 2272] [150°C,H ₂ O,O ₂ ,Cu catalyst] Life time	minutes	870	1410
Cigre [IP 280] [164 h /120°C/soluble Fe and Cu cat. /1 /O ₂ per hour] TOP [Total oxidation products] Precipitate [Sludge]	% %	0.05 0.03	0.05 0.04
Cincinnati Milacron [Procedure A] [168 h /135°C/ Fe and Cu cat.] Viscosity, change Neutralization number, change Sludge Copper rod appearance Iron rod appearance	% % mg/100 ml rating rating	n.d.	<5 -9 10.1 3.0 1

Hydrolytic Stability:

Beverage Bottle Method [ASTM D 2619] Copper loss Acidity of water layer TAN in oil: 0 h/ 48 h Insoluble content Appearance of copper strip [acc. To ASTM D 130]	mg/cm ² mgKOH/25g mgKOH/g % rating	0 1.1 0.07/ 0.065 None 1b	0 0.95 0.07 / 0.05 None 1b
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Surface Characteristics:

Air release properties / 50 °C [DIN 51381]	Minutes	2.5	3.0
Water Separation ability after stream treatment [DIN 51589 p.1]	S	120	135
Demulsibility capacity / 54°C [ASTM D 1401] Oil-water emulsion Separation time	MI minutes	42-38-0 5	41-39-0 5
Foaming behaviour Surface foam [ASTM D 1401] Sequence I 25°C Sequence II 95°C Sequence III 25°C	ml/s ml/s ml/s	0/0 0/0 0/0	0/0 0/0 0/0

Corrosion Protection:

Test Method	Unit	Test results	
Formulation		0.3% b.w. HIPER 1513	0.6% HIPER 1513
Copper corrosion [ASTM D 130] 3h/100°C 24 h / 100°C	Rating rating	1a 1b – 2a	1a 1b – 2a
Steel corrosion [ASTM D 665] Procedure A [distilled water] Procedure A [synthetic sea water]	Rating rating	Pass 0 Pass 0	Pass 0 Pass 0

EP /AW – Properties:

Formulation		0.4% b.w. HIPER 1513	0.6% b.w. HIPER 1513
Aw – Four ball test [DIN 51350, part 3; ASTM D 4172] Scar diameter [1500 rpm / 1 h / 300 N] [1800 rpm / 1 h / 200 N]	mm mm	0.50 0.37	0.47 0.31
FZG gear test A 8.3 /90 [visual] [DIN 51354, part 2] Damage-load stage	Rating	10[0.5%]	10

Handling

Please refer to the corresponding material safety data sheet for handling and blending precautions and maximum recommended temperatures.