



New-generation antiwear, ashless hydraulic oils.

### DESCRIPTION

«New generation» **TOTAL AZOLLA AF** oils are antiwear hydraulic fluids. They are more environmentally-friendly (no heavy metals, zinc-free) and able to achieve exceptional performances in all areas. Formulated from carefully selected base oils and the latest additivation technology originating in our research centre, **TOTAL AZOLLA AF** guarantee maximum efficiency as regards hydraulic equipment, an unequalled lifetime service oil and a marked reduction in maintenance costs. Developed in partnership with the leading hydraulic equipment manufacturers, « New Generation » **TOTAL AZOLLA AF** can meet the severest demands imposed by today's hydraulic circuits.

### APPLICATIONS

- Hydraulic systems operating under high pressure and/or temperature conditions.
- High-pressure vane, piston or gear pumps.
- Sensitive hydraulic circuits requiring absolute filterability of the fluid (very fine servo valve play) : plastic moulding machines.
- Any hydraulic system where the risk of contamination of the environment and waters exists.
- Any application where an antiwear, high-performance oil is necessary : various movements, plain bearings and rolling bearings, reducers under low load, etc.
- Lubrication of circuits in which the presence of water is accidental : machine tools, farm and food products industries, paper mills, steel making, etc.

### SPECIFICATIONS

#### International specifications

- ISO 6743/4 HM
- DIN 51524 P2 HLP
- AFNOR NFE 48603 HM
- US steel 136, 127
- SEB 181222

#### Manufacturers

- SAE MS 1004
- BOSCH REXROTH RE 90 220
- Eaton Vickers I-286-S (Industrial), M-2950-S (Mobile)
- Cincinnati Lamb P 68, P 69, P 70
- DENISON HF0, HF1, HF2 (approval of T6H20C pump).

## ADVANTAGES

- Excellent antiwear properties ensuring protection of machine parts.
- Exceptional oxidation and ageing stability : greater service oil life and lengthening of oil change intervals.
- Environmentally-friendly formulation.
- Prevents formation of deposits in the circuit thanks to remarkable thermal stability : cleaner circuits, less clogging of the filters, reduced maintenance costs.
- Excellent filterability with or without presence of water.
- Remarkable resistance to hydrolysis and good demulsification properties.
- Good antirust and anticorrosion properties for optimal protection of circuit components.
- Reacts very well to air : rapid air release and low foaming tendency.

TYPICAL CHARACTERISTICS	METHODS	UNITS	AZOLLA AF				
			22	32	46	68	100
Appearance	Visual	-	Clear Liquid				
Density at 15 °C	ASTM D4052	-	0.865	0.873	0.878	0.883	0.888
Kinematic viscosity at 40 °C	ASTM D445	mm <sup>2</sup> /s	22.5	32.1	46.1	69.0	102.9
at 100 °C			4.4	5.4	6.8	8.7	11.4
Viscosity index	ASTM D2270	-	104	100	100	97	98
Acid number	ASTM D664	mgKOH/g	0.16	0.18	0.17	0.17	0.15
Cleveland VO flash point	ASTM D92	°C	215	227	238	247	263
Pour point	ASTM D97	°C	- 27	- 27	- 27	- 21	- 21
Antirust properties	ASTM D665 A & B	-	Pass				
FZG test (A/8, 3/90), damage level	DIN 51354,p2	-		12	12	> 12	> 12
Foaming Sequence <sup>1</sup>	DIN 51566	ml/ml	40/0	40/0	0/0	0/0	0/0
AFNOR filterability (0.8 micron), IF	NFE 48-690	-	1.03	1.07	1.12	1.1	1.1

Above characteristics are mean values given as an information.

## HANDLING - HEALTH - SAFETY

**TOTAL AZOLLA AF** oils are formulated from carefully selected additives and mineral bases. They satisfy the strictest criteria in regard to health and safety with a view to optimal protection of users. Their formulation is ashless and comprises no heavy metals or zinc salts for a more environmentally-friendly approach. The Material Data Safety Sheets are completely label-free. **TOTAL AZOLLA AF** oils possess no Ethylated Nonyl Phenols and are categorized WGK 1 « weakly dangerous for waters » in accordance with the German classification « WasserGefährdungKlassen ».

For further information consult the Material Data Safety Sheets of products available on <http://www.quick-fds.com>.