

Atom AC-1208

Ashless Multifunctional R & O Package

AC-1208 is used to formulate general purpose turbine and circulating oils, including:

R&O oils, hydraulic fluids HL, gear oils CL according to:

Cincinnati Lamb: P-38 (HL-32), P-55 (HL-46), P-54 (HL-68), P-57 (HL-150),
P-62 (FC-10), DIN 51524 part 1 (HL), DIN 51517 part 2 (CL), AFNOR NF E 48-603 (HL)

Turbine oils according to:

Siemens TLV 9013 04/01, British Standard BS 489, General Electric GEK 32568 A/C, MIL-L-17672 D, CEEB Standard 207001, Brown Boveri HTGD 90117, U.S. Steel 120, Westinghouse Electric Corp. Turbine Oil Spec., Alstom HTGD 90 117 V0001 S, DIN 51515 part 1 (L-TD) & part 2 (L-TG)

Compressor oils according to:

ISO / DP 6521 (DAA, DAB, DAH, DAG), DIN 51506 (VBL, VCL, VDL)

The table below demonstrates the performance of **AC-1208** at 0.7 % in typical Group I, II, III and IV base oils. Most of the test results are similar across the four oils except oxidation stability, which increases with the degree of refinement of the base oils.

Tests	Base Oil	ISO VG 46 Group I	ISO VG 46 Group II	ISO VG 46 Group III	PAO 6 cSt Group IV	Most Severe Requirement
Treat Level of AC-1208, %		0.70	0.70	0.70	0.70	
Steel Corrosion (ASTM D 665 – 24hours, 60°C) Procedure B		Pass	Pass	Pass	Pass	Siemens TLV Pass
Copper Corrosion (ASTM D 130) 3 hours, 100°C 24 hours, 100°C		1b 3a	1b 3a	1b 2a	1b 3a	GEK, ISO/DP 1b max.
Demulsibility (ASTM D 1401) @ 54°C Oil-Water-Emulsion (ml) Time (minutes)		42-38-0 20	41-39-0 15	41-39-0 25	41-39-0 15	Siemens TLV 40-40-0 min. 20 max.
FZG A/8.3/90 (ASTM D 5182, DIN 51 354 Part 2) Damage Load Stage		n/d*	9	n/d*	n/d*	Alstom HTGD 9 min.
Four Ball Wear (ASTM D 4172), 1200 rpm 40 kgf, Ambient, 1hour (mm) 40 kgf, 75°C, 1hour (mm) 30 kgf, 75°C, 1hour (mm) 15 kgf, 75°C, 1hour (mm)		0.50 0.50 0.42 0.32	0.40 0.44 0.38 0.27	0.50 0.49 0.39 0.29	0.50 0.53 0.41 0.31	

continued)

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Tests	Base Oil	ISO VG 46 Group I	ISO VG 46 Group II	ISO VG 46 Group III	PAO 6 cSt Group IV	Most Severe Requirement
Treat Level of NA-LUBE BL-1208, %		0.70	0.70	0.70	0.70	
Hydrolytic Stability (ASTM D 2619)						Industry Desired
Copper Loss (mg/cm ²)	0.00	0.00	0.01	0.02		0.2 max. (HF-0)
TAN of Water Layer (mg KOH)	3.81	3.53	3.09	3.93		4 max. (HF-0)
Copper Appearance (ASTM D 130)	2a	2b	2e	3a		3 max
CM Thermal Stability (ASTM D 2070)						Cincinnati Lamb
Viscosity Change (%)	4.66	3.53	2.59	-2.11		5 max.
Acid Number Change (mg KOH/g)	0.11	0.03	0.07	0.01		±50% max.
Condition of Steel Rod: Color	1.5	1.5	1.5	1.5		1.5 max
Steel Rod Deposit / Metal Loss (mg)	0.9/0.0	1.0/0.1	0.7/0.5	0.4/0.0		1.0 max loss
Condition of Copper Rod: Color	5	4	3	4		5 max
Copper Rod Deposit / Metal Loss (mg)	2.4/0.9	0.6/0.0	0.6/0.1	0.7/0.0		10 max loss
Total Sludge (mg/100 ml)	32.25	22.30	23.55	28.5		25 max.
Whatman Precipitate (mg/100 ml)	19.05	6.80	3.56	4.15		
Millipore Precipitate (mg/100 ml)	12.00	15.20	19.60	24.00		
RPVOT (ASTM D 2272)						DIN 51515-2
Lifetime (minutes)	598	1586	1740	2207		800 min.
RPVOT Modified (GEK-32568 A)						GEK
Lifetime (minutes)	587	1551	1704	2146		
Decrease from unmodified test (%)	1.8	-2.2	-2.1	-2.8		-20 max.
Filtration, Wet						
AFNOR E 68691, IF (index)	1.14	1.35	1.10	1.03		
ISO 13357-1, IF ₁₁ (index)	86.7	90.5	85.4	82.6		
Air Release (ASTM D 3427)						Brown Boveri, DIN,
50°C (minutes)	4	4	4	4		BS 489: 5 max.
Turbine Oil Sludge (ASTM D 4310)						Brown Boveri
1000-hour sludge (g)	0.12	0.03	0.02	0.02		0.1 max.
Cu in Oil / Water layers (ppm, X-ray)	0 / 0	0 / 0	0 / 0	0 / 0		
TOST (ASTM D 943)						DIN 51515-2
95°C, O ₂ , Fe, and Cu Catalyst						
Hours to TAN 2 mg KOH/g	3600	>10,000	> 12000	> 12000		3000 min.
Oxidation Stability (IP-280)						
Volatile Acid (mg KOH/g)	0.07	0.06	0.05	0.05		
Soluble Acid (mg KOH/g)	0.20	0.17	0.13	0.11		
Sludge (%)	0.098	0.044	0.050	0.037		
Total Oxidation Products (%)	0.19	0.118	0.11	0.09		

* n/d = Not determined. The FZG Gear Test performance was determined for the Group II oil. Experience suggests that the result will be similar for the other three oils of the same viscosity. If increasing performance in the FZG test is desired, addition of 0.1% of **H-8001** is expected to increase the damage load stage to >12.

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(see next page)

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In another example, **AC-1208** at 0.7% in an ISO VG 32 Group II base oil provides good Antiwear, antirust and Demulsibility with outstanding RPVOT performance. Increased RPVOT values can be obtained with increased treat levels without adversely affecting the other properties.

Tests	Product	AC-1208		
		0.7	0.85	1.0
Base Oil		ISO VG 32 Group II		
Steel Corrosion (ASTM D 665 B – 24hours, 60°C) Procedure B		Pass	Pass	Pass
RPVOT (ASTM D 2272) Lifetime (minutes)		1625	1780	1950
Four Ball Wear (ASTM D 4172) 1 hour, Ambient, 1200 rpm, 40 kgf Scar Diameter (mm)		0.50	0.50	0.50
Demulsibility (ASTM D 1401) @ 54°C Oil-Water-Emulsion (ml) Time (minutes)		41-39-0 15	41-39-0 15	41-39-0 15

The results shown reflect data generated by Atom Chemicals UK' Technical Service Laboratory. Actual results may vary depending on the additive package, base oil, and test equipment design.

For Samples or Technical Service, contact Atom Chemicals UK

HANDLING INFORMATION

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

STORAGE HANDLING

60-80°C (140-176°F) 80-90°C (176-194°F)

SAFETY INFORMATION

For more extensive information on the safe handling and use of this product, see the Safety Data Sheet.

SHIPPING INFORMATION

Tank Cars, Tank Trucks and non-returnable 55-gallon steel drums.



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