



# TECHNICAL DATA

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## #269 HYDRAULIC OIL H-1

Hydraulic Oil H-1 is a fully synthetic anti-wear, food grade oil that is specially formulated for use in the lubrication of food, feed and pharmaceutical processing and packaging equipment, especially those pieces of equipment that are subjected to high loads and high moisture conditions.

Hydraulic Oil H-1 meets the requirements for a USDA H-1 quality lubricant and the requirements of the United States Code of Federal Regulations 21CFR 178.3570, 178.3620(b), and 573.680 of the United States Food and Drug Administration's Regulations.

Hydraulic Oil H-1 can be used in the lubrication of all types of compressor applications including some types of refrigeration compressors, hydraulic, vacuum pump, pump, air line, chain, bearing, general oiling and heat transfer applications where there is a chance of incidental contact with food, foodstuffs, drinking water, potable water, or ground water may occur. Typically, these applications can be found in the following industries:

Meat and Poultry Processing Plants  
Fish and Seafood Processing Plants  
Soft Drink and Bottling Plants  
Cheese and Cheese Product Producers  
Snack Food Manufacturers  
Pet Food and Animal Feed Producers  
Pharmaceutical and Drug Manufacturers  
Food and Beverage Container Manufacturers  
Water Well Drillers

Egg Processing Plants  
Breweries and Wineries  
Vegetable and Fruit Processors  
Bakeries  
Pasta Manufacturers  
Oil Mills and Seed Cake Processors  
Cosmetic Manufacturers  
Paper and Paperboard Manufacturers  
Drinking and Potable Water Treatment Plants

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Hydraulic Oil H-1 is blended from the highest quality, highly refined, severely hydro-finished and purified non-toxic technical white polyalphaolefin (PAO) synthetic base fluids available. These technical white PAO synthetic base fluids provide Hydraulic Oil H-1 with the following advantages:

1. Excellent resistance to thermal degradation
2. Superior oxidative stability
3. Low Volatility – this results in less make-up requirements due to evaporation loss.
4. A high viscosity index – this results in a minimum change in viscosity with temperature.
5. Excellent cold temperature starting and pumpability
6. Greater hydrolytic stability and demulsibility characteristics
7. Excellent resistance to acidic compounds.
8. Non-toxic -- meets the United States Food and Drug Administration's requirements for synthetic technical white mineral oils.
9. Excellent operating temperature reduction
10. Compatibility with all types of seals and coatings
11. Extended drain intervals

Blended into the technical white PAO synthetic base fluids is a highly specialized non-toxic food grade approved additive package and a food grade antimicrobicide which provides the Hydraulic Oil H-1 with the following outstanding performance features.

1. Exceptional anti-wear and load carrying capabilities
2. Excellent rust and corrosion inhibition
3. Enhanced oxidation stability
4. Excellent anti-foam and air release properties
5. Enhanced oxidation stability
6. Protection against rancidity and build up due to bacterial and fungal growth.

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TYPICAL PROPERTIES

ISO Grade	32	46	68	100	150
AGMA Grade	----	1	2	3	4
Specific Gravity @15.5°C (60°F)	0.8625	0.83	0.87	0.86	0.835
Viscosity, SUS @ 38°C (100°F) ASTM D-445)	149-171.6	235-255.7	350.9-376.6	474-511.2	748.7-827.2
Viscosity @ 40°C cSt (ASTM D-445)	29.30-33.50	40.00-50.00	68.50-73.50	92.50-100	145-160
Viscosity @ 100°C cSt (ASTM D-445)	5.52-6.09	7.69-8.15	10.38-12.50	13.5-15.00	18.17-19.52
Brookfield Viscosity (ASTM D-2983)					
@ -18°C (0°F), cP	460	910	2,435	----	----
@-29°C (-20°), cP	1,735	4,360	10,750	----	----
Viscosity Index (ASTM D-2270)	130	135	138	153	140
Flash Point °F/°C (ASTM D-92)	435°/235°	460°/238°	495°/257°	505°/262°	530°/277°
Fire Point °F/°C (ASTM D-92)	529°/276°	535°/279°	530°/257°	540°/282°	560°/293°
Pour Point °F/°C (ASTM D-92)	-65°/-54°	-65°/-54°	-65°/-54°	-30°/-34°	-35°/-37°
Copper Strip Corrosion Test (ASTM D-130)	1a	1a	1a	1a	1a
Rust Test (ASTM D-665)					
Procedure A (Distilled Water)	Pass	Pass	Pass	Pass	Pass
Procedure B (Salt Water)	Pass	Pass	Pass	Pass	Pass
Demulsibility Test (ASTM D-1401)					
Oil-Water-Emulsion	40-40-0	40-40-0	40-40-0	40-40-0	40-40-0
Minutes	15	15	15	40-40-0	40-40-0
Oxidation Stability Test (ASTM D-943)					
Hours to TAN of 2	+10,000	+10,000	+10,000	+10,000	+10,000
Sludge Tendencies (ASTM D-4310)					
Total Sludge, mg	20	20	20	20	20
Four Ball Wear Test (ASTM D-4172)					
(1 hour/40kg/54°C (130°F)					
Wear Scar Diameter, mm	0.38	0.4	0.4	0.4	0.4

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Timken EP Test (ASTM D-2782)					
OK Load, lbs.	30	30	30	30	30
Conradson Carbon Residue (ASTM D-189)	0.02	0.02	0.02	0.02	0.02
Total Acid Number (ASTM D-664)	0.69	0.69	0.69	0.69	0.69
Vickers Pump Wear Test (ASTM D-2882)					
100 hours @ 1000psi @66°C (150°F)					
Weight Loss, mg					
Ring	10	10	10	10	10
Vane	1.5	1.5	1.5	1.5	1.5
Total Weight Loss	11.5	11.5	11.5	11.5	11.5
Vickers Pump Wear Test (ASTM D-2882)					
100 hours @ 1000psi @66°C (150°F)					
Weight Loss, mg					
Ring	15	15	15	15	15
Vane	5	5	5	5	5
Total Weight Loss	20	20	20	20	20
% Evaporation Loss @ 372°C (700°F) (ASTM D-2887)	2.6	2.6	2.6	3	3
Foam Test (ASTM D-892)					
Sequence I	0/0	0/0	0/0	0/0	0/0
Sequence II	0/0	0/0	0/0	0/0	0/0
Sequence III	0/0	0/0	0/0	0/0	0/0
FZG A/8.3/90 (ASTM D-5182)					
Load Failure Stage	11 <sup>th</sup>	11 <sup>th</sup>	11 <sup>th</sup>	11 <sup>th</sup>	11 <sup>th</sup>