



Power Hydraulic AW

Power Hydraulic AW are advanced formula, long life, anti-wear fluids designed for high performance hydraulic systems to provide excellent operating and maintenance benefits for increased productivity.

Power Hydraulic AW fluids start with a purity process to produce 99.9% pure, crystal clear base oils. By removing the impurities that can hinder the performance of competitive conventional oils, and blending in our specialty additives, Power Hydraulic AW fluids retain its 'fresh oil' proper ties longer providing resistance to oxidative breakdown and outstanding wear protection.

FEATURES AND BENEFITS

- **Outstanding oxidation and thermal stability**
 - Longer oil life which helps extend drain intervals for reduced change-out costs and less reservoir exposure to external contaminants
 - Resists degradation (breakdown) in high temperatures reducing need for oil top up
 - Prevents varnish build up that can interfere with servo and directional valve operation
 - Minimizes harmful sludge build up in the reservoir that can lead to shortened oil life, more frequent filter changes, and equipment wear
- **Exceptional anti-wear protection**
 - Extends equipment life
 - Reduces maintenance and mechanical failure
 - Protects equipment being driven longer, harder and faster in tougher conditions
 - Improves operating reliability over a wide range of pressures
- **Improved rust and corrosion prevention**
 - Iron and other metal components are protected against water damage
- **Excellent water separability and hydrolytic stability allows oil to be reused**
 - Oil separates readily from water without loss of performance additive
- **Improved foam and air entrainment performance**
 - Prevents over flowing of reservoirs
 - Eliminates "sponginess" from hydraulic systems and helps prevent pump cavitation

APPLICATIONS

Power Hydraulic AW fluids are primarily recommended for heavy duty hydraulic systems that operate in industrial plants and outdoors in mobile equipment. Power Hydraulic AW fluids may be used in systems equipped with fine filters down to 3 microns without loss of additives or causing filter plugging.

Because of their wide applicability, long life, rust and foaming inhibiting features, Power Hydraulic AW fluids may also be used to lubricate anti-friction bearings and gears found in circulation, splash, bath and ring-oiled systems.

Power Hydraulic AW fluids meet the following hydraulic equipment manufacturers' specifications:

- Eaton E-FDGN-TB002-E (AW 22, 32, 46, 68, and 100)
- Denison HF-0 (AW 32, 46, 68)
- Fives Cincinnati P-68 (AW 32), P-69 (AW 68) and P-70 (AW 46)
- Successfully evaluated against Bosch Rexroth requirements and meets former RE 90220 specification
- Marlen Hydraulic Power Units (AW 68) Power Hydraulic AW 46 is approved for use in Engel injection moulding machines.

Power Hydraulic AW fluids are recommended for use in equipment manufactured by:

- Eaton Vickers
- Denison
- Komatsu
- Sauer-Danfoss
- Bosch-Rexroth
- Racine
- Oilgear
- Hydreco
- Dynex
- Raymond (Lift Trucks & Forklifts)

Power Hydraulic AW 46 is recommended for use in the following injection molding equipment:

- Husky
- Krauss-Maf fei
- Battenfeld
- Demag
- Soplar
- Netstal



Power Hydraulic AW (continued)

Power Hydraulic AW fluids are recommended per the following specifications:

- Voith 3625-006072, 3625-006073 and 3625-008426 (AW 32)
- Voith 3625-006208 and 3625-006209 (AW 46)
- AIST 126 & 127 (AW 32, 46, 68)
- JCMAS HK (AW 32, 46, 68)

Power Hydraulic AW fluids meet the following specifications:

- DIN 51524 Part 2 HLP (AW 22, 32, 46, 68, and 100)
- ISO 11158 HM (AW 22, 32, 46, 68, and 100)
- Komatsu HPV35+35 pump test (AW 46)
- ASTM D6158 HM (AW 22, 32, 46, 68, and 100)
- NSF H2 (no allowable food contact)

TYPICAL PERFORMANCE DATA

PROPERTIES	POWER HYDRAULIC AW		
	32	46	68
ISO Viscosity Grade	32	46	68
Flash Point, COC, °C / °F	206/403	236/457	242/468
Kinematic Viscosity, cSt @ 40°C	31.5	46.4	67.4
cSt @ 100°C	5.5	6.9	8.9
SUS @ 100°F	163	239	349
SUS @ 210°F	44	49	56
Viscosity Index	110	104	106
Pour Point, °C / °F	-43/-45	-39/-38	-33/-27
Rust Procedures A & B, 24 hr	Pass	Pass	Pass
Oxidation Stability, hours to 2.0 AN	6500+	6500+	6500+
Oxidation Stability ² , mg sludge	Pass	Pass	Pass
Hydrolytic Stability ² , copper loss,mg/cm ²	Pass	Pass	Pass
Dielectric Breakdown, kV	39	40	44
Four-Ball Wear Test, Scar Diam. (mm) 40 kg, 1200 rpm, 75°C, 1 hr	0.6	0.6	0.6
Water Separability, 54°C / 129°F oil-water-emulsion (minutes)	40-40-0 (5)	40-40-0 (15)	40-40-0 (10)

The values quoted above are typical of normal production. They do not constitute a specification.

¹ At 82°C (180°F)

² Pass is defined as meeting the requirement of the Denison HF-0 or Eaton E-FDGN-TB002-E specification. Oxidation Stability (D4310) 100 mg max sludge; Hydrolytic Stability (D2619) Copper Loss 0.2mg/cm² max.

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Power Hydraulic AW

SDS# 1004

Revision Date 01/10/2018

SECTION 1. PRODUCT IDENTIFIER

Product Name	Power Hydraulic AW fluids
ISO Viscosity Grades	32, 46, 68
Relevant Use	Hydraulic Oil
Company Identification	Valley Pacific Petroleum Services 152 Frank West Circle, Suite 100 Stockton, CA 95206-4098 1-800-266-3782
Emergency Contact	CHEMTREC: 1-800-424-9300; 703-527-3887

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview	Appearance: Viscous liquid Color: Pale, straw-yellow. Odor: Mild petroleum oil like.
Classifications	GHS Classification Not a hazardous substance or mixture. GHS label elements Not a hazardous substance or mixture.
Potential Health Effects	Primary Routes of Entry: Eye contact Ingestion Inhalation Skin contact Aggravated Medical Condition: None known.
Other hazards	None known.
IARC	No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
ACGIH	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

**Power Hydraulic AW**

SDS# 1004

Revision Date 01/10/2018

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture: Mixture

Chemical Name	CAS-No.	Concentration
lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based	72623-87-1	70 - 90 %
lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based	72623-86-0	40 - 60 %
distillates (petroleum), hydrotreated heavy paraffinic	64742-54-7	20 - 30 %

SECTION 4. FIRST AID MEASURES

If inhaled	Move to fresh air. Artificial respiration and/or oxygen may be necessary. Seek medical advice.
In case of skin contact	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash skin thoroughly with soap and water or use recognized skin cleanser. Wash clothing before reuse. Seek medical advice.
In case of eye contact	Remove contact lenses. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Obtain medical attention.
If swallowed	Rinse mouth with water. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Never give anything by mouth to an unconscious person. Seek medical advice.
Most important symptoms and effects, both acute and delayed	First aider needs to protect himself.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media	No information available.
Specific hazards during fire-fighting	Cool closed containers exposed to fire with water spray.
Hazardous combustion products	Carbon oxides (CO, CO ₂), nitrogen oxides (NO _x), sulphur oxides (SO _x), smoke and irritating vapors as products of incomplete combustion.
Further information	Prevent fire extinguishing water from contaminating surface water or the ground water system.



Power Hydraulic AW

SDS# 1004

Revision Date 01/10/2018

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	Use personal protective equipment. Ensure adequate ventilation. Evacuate personnel to safe areas. Material can create slippery conditions.
Environmental precautions	Do not allow uncontrolled discharge of product into the environment.
Methods and materials for containment and cleaning up	Prevent further leakage or spillage if safe to do so. Remove all sources of ignition. Soak up with inert absorbent material. Non-sparking tools should be used. Ensure adequate ventilation. Contact the proper local authorities.

SECTION 7. HANDLING AND STORAGE

Advice on safe handling	For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Use only with adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid contact with skin, eyes and clothing. Do not ingest. Keep away from heat and sources of ignition. Keep container closed when not in use.
Conditions for safe storage	Store in original container. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Keep in a dry, cool and well-ventilated place. Keep in properly labelled containers. To maintain product quality, do not store in heat or direct sunlight.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

COMPONENTS WITH WORKPLACE CONTROL PARAMETERS

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based	72623-87-1	TWA (Mist)	5 mg/m ³	CA AB OEL
		STEL (Mist)	10 mg/m ³	CA AB OEL
		TWAEV (Mist)	5 mg/m ³	CA QC OEL
		STEV (Mist)	10 mg/m ³	CA QC OEL
		TWA (Inhalable fraction)	5 mg/m ³	ACGIH
lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based	72623-86-0	TWA (Mist)	5 mg/m ³	CA AB OEL
		STEL (Mist)	10 mg/m ³	CA AB OEL
		TWAEV (Mist)	5 mg/m ³	CA QC OEL
		STEV (Mist)	10 mg/m ³	CA QC OEL
		TWA (Inhalable fraction)	5 mg/m ³	ACGIH



Power Hydraulic AW

SDS# 1004

Revision Date 01/10/2018

Engineering measures

No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

PERSONAL PROTECTIVE EQUIPMENT

Respiratory protection

Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Filter type

organic vapor filter

Hand protection material

neoprene, nitrile, polyvinyl alcohol (PVA), Viton(R).

Remarks

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Eye protection

Wear face-shield and protective suit for abnormal processing problems.

Skin and body protection

Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.

Protective measures

Wash contaminated clothing before re-use.

Hygiene measures

Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash face, hands and any exposed skin thoroughly after handling.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	viscous liquid
Color	Pale, straw-yellow.
Odor	Mild petroleum oil like.
Odor Threshold	No data available
pH	No data available
Pour point	-45 °C (-49 °F)
Boiling point/boiling range	No data available
Flash point	206 °C (403 °F) Method: Cleveland open cup
Fire Point	No data available
Auto-Ignition Temperature	No data available
Evaporation rate	No data available

**Power Hydraulic AW**

SDS# 1004

Revision Date 01/10/2018

Flammability	Low fire hazard. This material must be heated before ignition will occur.
Upper explosion limit	No data available
Lower explosion limit	No data available
Vapor pressure	No data available
Relative vapor density	No data available
Density	0.8591 kg/l (15 °C / 59 °F)
SOLUBILITY(IES)	
Water solubility	insoluble
Partition coefficient: n-octanol/water	No data available
VISCOSITY	
Viscosity, kinematic	31.5 cSt (40 °C / 104 °F) 5.48 cSt (100 °C / 212 °F)
Explosive properties	Do not pressurize, cut, weld, braze, solder, drill, grind or ex- pose containers to heat or sources of ignition.

SECTION 10. STABILITY AND REACTIVITY

Possibility of hazardous reactions	Hazardous polymerisation does not occur. Stable under normal conditions
Conditions to avoid	Can react with strong oxidizing agents, peroxides, alkaline products and strong acids. Contact with nitric and sulfuric acids will form nitroresols that can decompose violently.
Incompatible materials	Reactive with oxidizing agents and reducing agents.
Hazardous decomposition products	May release CO _x , H ₂ S, metal oxides, methacrylate monomers, smoke and irritating vapors when heated to decomposition.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure	Eye contact Ingestion Inhalation Skin contact
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Power Hydraulic AW

SDS# 1004

Revision Date 01/10/2018

ACUTE TOXICITY

Acute oral toxicity	Remarks: No data available
Acute inhalation toxicity	Remarks: No data available
Acute dermal toxicity	Assessment: The substance or mixture has no acute dermal toxicity Remarks: No data available

COMPONENTS

lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based:	Acute oral toxicity:	LD50 (Rat): > 5,000 mg/kg
	Acute inhalation toxicity:	LC50 (Rat): > 5.2 mg/l Exposure time: 4 h Test atmosphere: dust/mist
	Acute dermal toxicity:	LD50 (Rabbit): > 2,000 mg/kg

lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based:	Acute oral toxicity:	LD50 (Rat): > 5,000 mg/kg
	Acute inhalation toxicity:	LC50 (Rat): > 5.2 mg/l Exposure time: 4 h Test atmosphere: dust/mist
	Acute dermal toxicity:	LD50 (Rabbit): > 2,000 mg/kg

Skin corrosion/irritation	Product: Remarks: No data available
Serious eye damage/eye irritation	Product: Remarks: No data available

Respiratory or skin sensitization	No data available
Germ cell mutagenicity	No data available
Carcinogenicity	No data available
Reproductive toxicity	No data available
STOT - single exposure	No data available
STOT - repeated exposure	No data available



Power Hydraulic AW

SDS# 1004

Revision Date 01/10/2018

SECTION 12. ECOLOGICAL INFORMATION

ECOTOXICITY

Toxicity to fish	Remarks: No data available
Toxicity to daphnia and other aquatic invertebrates	Remarks: No data available
Toxicity to algae	Remarks: No data available
Toxicity to bacteria	Remarks: No data available

PERSISTENCE AND DEGRADABILITY

Product: Biodegradability	Remarks: No data available
Bioaccumulative potential	No data available
Mobility in soil	No data available
Other adverse effects	No data available

SECTION 13. DISPOSAL CONSIDERATIONS

DISPOSAL METHODS

Waste from residues	The product should not be allowed to enter drains, water courses or the soil. Offer surplus and non-recyclable solutions to a licensed disposal company. Waste must be classified and labelled prior to recycling or disposal. Send to a licensed waste management company. Dispose of product residue in accordance with the instructions of the person responsible for waste disposal.
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SECTION 14. TRANSPORT INFORMATION

INTERNATIONAL REGULATIONS

IATA-DGR	Not regulated as a dangerous good
IMDG-Code	Not regulated as a dangerous good
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable for product as supplied.

NATIONAL REGULATIONS

TDG	Not regulated as a dangerous good
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Power Hydraulic AW

SDS# 1004

Revision Date 01/10/2018

SECTION 15. REGULATORY INFORMATION

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

The components of this product are reported in the following inventories:

DSL	On the inventory, or in compliance with the inventory
TSCA	All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.
IECSC	On the inventory, or in compliance with the inventory
EINECS	On the inventory, or in compliance with the inventory

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