MATERIAL SAFETY DATA SHEET

HYDRO FLUID AW 220

Date of the previous version: 2018-02-08 **Revision Date:** 2018-02-08 **Version** 1

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Product name	**HYDRO FLUID AW 220**
Pure substance/mixture	Mixture

1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended Use	Hydraulic oil.

1.3. Details of the supplier of the safety data sheet

Supplier	S-OIL CORPORATION 192, Baekbeom-ro, Mapo-gu, Seoul 121-805, Korea

For further information, please contact:

1.4. Emergency telephone number

Korea	**+ 82 2 3772-5733**

2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

GHS Classification

2.2. Label elements

GHS label elements, including precautionary statements

Symbol(s)	Not Classified
Signal Words	Not Classified

2.3. GHS Harzard Statements

Not Classified

2.4. GHS Precautionary Statements

Prevention	Not Classified
Response	Not Classified
Storage	Not Classified
Disposal	Not Classified

2.5. Other hazards

Physical-Chemical Properties	Contaminated surfaces will be extremely slippery.
Environmental properties	Should not be released into the environment

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3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Mixture

Chemical Name	CAS-No	EC-No	Weight %
Severely hydrogenated heavy paraffinic distillate	64742-54-7	265-157-1	40.0 ~ 50.0
Residual oils (Petroleum), hydrotreated	64742-57-0	-	50.0 ~ 60.0
Antiwear hydraulic oil additive	Trade secret	-	< 1.0
Pour point depressant	Trade secret	-	< 0.5
Antifoam agent / Defoamer	Trade secret	-	< 0.1

Additional information Product containing mineral oil with less than 3% DMSO extract as measured by IP 346

4. FIRST AID MEASURES

4.1. Description of first-aid measures

General advice IN CASE OF SERIOUS OR PERSISTENT CONDITIONS, CALL A DOCTOR OR EMERGENCY MEDICAL CARE.

Eye contact Rinse thoroughly with plenty of water, also under the eyelids.

Skin contact Remove contaminated clothing and shoes. Wash skin with soap and water. Wash contaminated clothing before reuse. High pressure jets may cause skin damage. In this case, the casualty should be sent immediately to hospital.

Inhalation Move to fresh air.

Ingestion Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Call a physician or Poison Control Center immediately.

4.2. Most important symptoms and effects, both acute and delayed

Eye contact Not classified.

Skin contact Not classified. High pressure injection of the products under the skin may have very serious consequences even though no symptom or injury may be apparent.

Inhalation Not classified. Inhalation of vapors in high concentration may cause irritation of respiratory system.

Ingestion Not classified. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

4.3. Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician Treat symptomatically.

5. FIRE-FIGHTING MEASURES

5.1. Extinguishing media

Suitable extinguishing media	CO2, dry chemical, dry sand, alcohol-resistant foam.
Unsuitable extinguishing media	No information available

5.2. Special hazards arising from the substance or mixture

Special Hazard	Incomplete combustion and thermolysis may produce gases of varying toxicity such as carbon monoxide, carbon dioxide, various hydrocarbons, aldehydes and soot. These maybe highly dangerous if inhaled in confined spaces or at high concentration.

5.3. Advice for fire-fighters

Special protective equipment for fire-fighters	Wear self-contained breathing apparatus and protective suit.
Other information	Cool containers / tanks with water spray. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

General Information	Do not touch or walk through spilled material. Contaminated surfaces will be extremely slippery. Use personal protective equipment. Ensure adequate ventilation. Remove all sources of ignition.

6.2. Environmental precautions

General Information	Do not allow material to contaminate ground water system. Try to prevent the material from entering drains or water courses. Local authorities should be advise cannot be contained.

6.3. Methods and material for containment and cleaning up

Methods for containment	Dam up. Contain spillage, and then collect with non-combustible absorbent material, (e.g.sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Keep in suitable, closed containers for disposal.

6.4. Reference to other sections

Personal Protective Equipment	See Section 8 for more detail.
Waste treatment	See section 13.

7. HANDLING AND STORAGE

7.1. Precautions for safe handling

Advice on safe handling	When using, do not eat, drink or smoke. For personal protection see section 8. Use only in well-ventilated areas. Do not breathe vapors or spray mist. Avoid contact with skin, eyes and clothing.
Prevention of fire and explosion	Take precautionary measures against static discharges. Ground/bond containers, tanks and transfer/receiving equipment.

Hygiene measures	Ensure the application of strict rules of hygiene by the personnel exposed to the risk of contact with the product. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product. Do not use abrasives, solvents or fuels. Do not dry hands with rags that have been contaminated with product. Do not put product contaminated rags into workwear pockets.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures/Storage conditions	Keep away from food, drink and animal feedingstuffs. Keep in a bunded area. Keep container tightly closed. Keep preferably in the original container. Otherwise reproduce all indication of the regulation label on the new container. Do not remove the hazard labels of the containers (even if they are empty). Design the installations in order to avoid accidental emissions of product (due to seal breakage, for example) onto hot casings or electrical contacts. Protect from frost, heat and sunlight. Protect from moisture.
Materials to Avoid	Strong oxidizing agents.

7.3. Specific end uses

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Exposure limits	oil mist : 10mg/m_3, for 15 minutes; oil mist : 5mg/m_3, for 8 hours
Legend	See section 16.

8.2. Exposure controls

Occupational Exposure Controls

Engineering Measures	Apply technical measures to comply with the occupational exposure limits. When working in confined spaces (tanks, containers, etc.), ensure that there is a supply of air suitable for breathing and wear the recommended equipment.

Personal Protective Equipment

General Information	If the product is used in mixtures, it is recommended that you contact the appropriate protective equipment suppliers. These recommendations apply to the product as supplied.
Respiratory protection	When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Respirator with combination filter for vapour/particulate (EN 14387). The use of breathing apparatus must comply strictly with the manufacturer's instructions and the regulations governing their choices and uses.
Eye Protection	If splashes are likely to occur, wear:. Safety glasses with side-shields.
Skin and body protection	Wear suitable protective clothing. Protective shoes or boots. Long sleeved clothing.
Hand Protection	Hydrocarbon-proof gloves. Fluorinated rubber. Nitrile rubber. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion. If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the EC approved gloves.

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Environmental exposure controls

General Information The product should not be allowed to enter drains, water courses or the soil.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Color		Clear and Brigth	
Physical State @20°C		liquid	
Odor		Characteristic	
Property	**Values**	**Remarks**	**Method**
pH		Not applicable	
Boiling point/boiling range		Not applicable	
Flash point	**266 °C**		Cleveland Open Cup (COC)
	511 °F		Cleveland Open Cup (COC)
Evaporation rate		No information available	
Flammability Limits in Air		No information available	
Vapor Pressure		No information available	
Vapor density		No information available	
Density	887 kg/m^3	@ 15 °C	
Water solubility	Negligible	Insoluble	
Solubility in other solvents		No information available	
logPow		No information available	
Autoignition temperature	> 250 °C		
Viscosity, kinematic	19.20mm^2/s	@ 100 °C	
	219.8 mm^2/s	@ 40 °C	
Explosive properties	Not explosive		
Oxidizing Properties	Not applicable		
Possibility of hazardous reactions	Not applicable		

9.2. Other information

10. STABILITY AND REACTIVITY

10.1. Reactivity

General Information No information available.

10.2. Chemical stability

Stability Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

Hazardous Reactions None under normal processing.

10.4. Conditions to Avoid

Conditions to Avoid Heat (temperatures above flash point), sparks, ignition points, flames, static electricity.

10.5. Incompatible Materials

Materials to Avoid Strong oxidizing agents.

10.6. Hazardous Decomposition Products

Hazardous Decomposition Product None under normal use.

11. TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Acute toxicity Local effects Product Information

Skin contact . Not classified. High pressure injection of the products under the skin may have very serious consequences even though no symptom or injury may be apparent.
LD50 > 200mg/kg (Rat, Dermal), Practically non-toxic.

Eye contact . Not classified.

Inhalation . Not classified. Inhalation of vapors in high concentration may cause irritation of respiratory system.

Ingestion . LD50 > 5000mg/kg (Rat, Oral), Practically non-toxic.

Acute toxicity - Component Information

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Severely hydrogenated heavy paraffinic distillate	LD50 > 5000mg/kg (Rat)	LD50 > 5000mg/kg (Rabbit)	-
Antiwear hydraulic oil additive	LD50 > 2000 ~ 5000mg/kg (Rat)	LD50 > 5000mg/kg (Rabbit)	-

Sensitization

Sensitization Not classified as a sensitizer.

Specific effects

Carcinogenicity This product is not classified carcinogenic.
Mutagenicity This product is not classified as mutagenic.
Reproductive toxicity This product does not present any known or suspected reproductive hazards.

Repeated Dose Toxicity

Subchronic toxicity No information available.

Target Organ Effects (STOT)

Target Organ Effects (STOT) No information available.

Other information

Other adverse effects Characteristic skin lesions (pimples) may develop following prolonged and repeated exposures (contact with contaminated clothing).

12. ECOLOGICAL INFORMATION

12.1. Toxicity

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Chemical Name	Toxicity to algae	Toxicity to daphnia and other aquatic invertebrates.	Toxicity to fish
Severely hydrogenated heavy paraffinic distillate	EL50 > 100mg/L (48hr, Pseudokirchnerella subcapitata - OECD 201)	EL50 > 10000mg/L (48hr, Daphnia magna - OECD 202)	LL50 > 100mg/L (96hr, Oncorhynchus mykiss - OECD 203)
Antiwear hydraulic oil additive	EC50 10 ~ 100mg/L (Acute)	EC50 1 ~ 10mg/L (Acute) < 1mg/L (Chronic)	LC50 1 ~ 10mg/L (Acute, Freshwater) LC50 10 ~ 100mg/L (Acute, Saltwater)

Effects on terrestrial organisms No information available.

12.2. Persistence and degradability

General Information No information available.

Chemical Name	Biodegradation
Antiwear hydraulic oil additive	At least 25% of the components in this product show limited biodegradation based on OECD 301-type test data. At least 25% of the components in this product show moderate biodegradation based on OECD 302-type test data.

12.3. Bioaccumulative potential

Product Information No information available.

logPow No information available

Component Information

Chemical Name	Bioaccumulation
Antiwear hydraulic oil additive	10 - 25% of the components bioconcentrate in aquatic organisms.

12.4. Mobility in soil

Soil Given its physical and chemical characteristics, the product generally shows low soil mobility.

Air Loss by evaporation is limited.

Water Insoluble. The product spreads on the surface of the water.

12.5. Results of PBT and vPvB assessment

PBT and vPvB assessment No information available.

12.6. Other adverse effects

General Information No information available

13. DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste from Residues / Unused Products Should not be released into the environment. Dispose of in accordance with the European Directives on waste and hazardous waste. Dispose of in accordance with local regulations.

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal.

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EWC Waste Disposal No. The following Waste Codes are only suggestions:. 13 01 10. According to the European Waste Catalogue, Waste Codes are not product specific, but application specific. Waste codes should be assigned by the user based on the application for which the product was used.

14. TRANSPORT INFORMATION

ADR/RID Not regulated

IMDG/IMO Not regulated

ICAO/IATA Not regulated

ADN Not regulated

15. REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

International Inventories

EINECS/ELINCS
TSCA
KECL

Legend

EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
KECL - Korean Existing and Evaluated Chemical Substances

Further information

15.2. Chemical Safety Assessment

Chemical Safety Assessment No information available

16. OTHER INFORMATION

Abbreviations, acronyms

Legend Section 8

+	Sensitizer	*	Skin designation
**	Hazard Designation	C:	Carcinogen
M:	Mutagen	R:	Toxic to reproduction

Revision Date: 2018-02-08
Revision Note *** Indicates updated section.

This safety data sheet serves to complete but not to replace the technical product sheets. The information contained herein is given in good faith and is accurate to the best of knowledge at the date indicated above.It is understood by theuser that any use of the product for purposes other than those for which it was designed entails potential risk.The information given herein in no way dispenses the user from knowing and applying all provisions regulating his activity.The user bears sole liability for the precautions required when using the product.The regulatory texts indicated herein are intended to aid the user to fulfil his obligations. This list is not to be considered complete and exhaustive.It is the user's responsibility to ensure that he is subject to no other obligations than those mentioned.

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End of the safety data sheet