



SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

Product: Turbine RO Hydraulic Fluid ISO 15
 Turbine RO Hydraulic Fluid ISO 22
 Turbine RO Hydraulic Fluid ISO 32
 Turbine RO Hydraulic Fluid ISO 46
 Turbine RO Hydraulic Fluid ISO 68
 Turbine RO Hydraulic Fluid ISO 100
 Turbine RO Hydraulic Fluid ISO 150
 Turbine RO Hydraulic Fluid ISO 220
 Turbine RO Hydraulic Fluid ISO 320
 Turbine RO Hydraulic Fluid ISO 460

CAS Registry Number: Not applicable for mixtures

Synonyms: MVI Hydraulic Fluids, AW Hydraulic Oils, R&O Hydraulic Oils, Hydraulic Fluid, Turbine R&O Hydraulic Oils, Anti-wear , Rust and Oxidation Inhibited Hydraulic Oil, TurbineGard RO Hydraulic Oil

Generic/Chemical Name: Petroleum hydrocarbon fluid

Product Type: Industrial hydraulic fluid

Martin Lubricants;	Emergency:	ChemTrec 800-424-9300
A Division of Martin Operating Partnership L.P.		
484 East 6 th Street	Information:	870-881-8700
Smackover, AR 71762	Fax:	870-864-8656
USA		www.martinlubricants.com

SECTION 2 HAZARDS IDENTIFICATION

WARNING:	NONE REQUIRED		
	NPCA-HMIS	KEY	
HEALTH:	1	0 = Minimal	
FIRE:	1	1 = Slight	
REACTIVITY:	0	2 = Moderate	
SPECIFIC HAZARD:	N/A	3 = Serious	
PROTECTION INDEX:	B	4 = Severe	

Eye Contact: This product is not normally expected to cause eye irritation. Avoid prolonged contact with the eyes, which may cause mild eye discomfort, tearing or blurring of vision. Based on data from similar materials.

Skin Contact: This product is not expected to cause skin irritation. Prolonged or repeated contact may lead to an allergic skin sensitization in some people and dermatitis (dryness, chapping and reddening of skin). Based on component data and data from similar materials.

Inhalation: Overexposure by inhalation of hot material may cause nonspecific discomfort, such as nausea, headache or weakness. Caution should be taken to prevent forming aerosol or misting of this product without proper respiratory protection.

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Ingestion: Do not ingest. Due to the expected concentration of oil (70-100%) ingestion is expected to be relatively non-toxic unless lung aspiration occurs. Aspiration may lead to chemical pneumonitis, which is characterized by pulmonary edema and hemorrhage and may be fatal. Signs of lung involvement include increased respiratory rate, increased heart rate and a bluish discoloration of the skin. Coughing, choking and gagging are often noted at the time of aspiration. Gastrointestinal discomfort may develop, followed by vomiting with a further risk of aspiration. This product has laxative properties and may result in abdominal cramps and diarrhea.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

INGREDIENTS	CAS #	%	ACGIH TWA	OSHA PEL	OSHA STEL	SKIN
Hydro-treated paraffinic distillates	Mixture	85 - 95	5 mg/m ³ (oil mist)	5 mg/m ³ (oil mist)	10 mg/m ³ (oil mist)	NO
Proprietary additives	Mixture	0 - 5	5 mg/m ³ (oil mist)	5 mg/m ³ (oil mist)	10 mg/m ³ (oil mist)	NO

There are no additional ingredients present which the current knowledge and in concentration applicable, are classified as hazardous to health or environment and hence require reporting in this section.

ABBREVIATIONS:

NE: None Established NA: Not Applicable (1): NIOSH Guidelines (2) "Manufacturer Recommendation" Short Term Exposure Limit ND: Not Determined

SECTION 4 FIRST AID MEASURES

Eye Contact: Immediately flush eyes with large amounts of water and continue flushing until irritation subsides. If irritation persists call a physician. If material is hot, treat for thermal burns and take victim to hospital immediately.

Skin Contact: Remove contaminated clothing. Wash contaminated area thoroughly with soap and water. If redness or irritation occurs, seek medical attention. If material is hot, submerge injured area in cold water. If victim is severely burned, remove to a hospital immediately. Wash contaminated clothing before reuse.

Inhalation: If overcome by inhalation of hot vapors, remove to fresh air. Use oxygen if there is difficulty breathing or artificial respiration if breathing has stopped. Do not leave victim unattended. Seek immediate medical attention if necessary.

Ingestion: DO NOT INDUCE VOMITING. Do not induce vomiting due to aspiration hazard. Immediately give 2 glasses of water. Never give anything by mouth to an unconscious person. Should vomiting occur; lower head below knees to avoid aspiration. Seek immediate medical attention.

SECTION 5 FIRE FIGHTING MEASURES

Flash Point: by Cleveland Open Cup, ASTM D 92

<u>15</u>	<u>22</u>	<u>32</u>	<u>46</u>	<u>68</u>
198°C	214°C	222°C	216°C	268°C
388°F	417°F	432°F	421°F	514°F

<u>100</u>	<u>150</u>	<u>220</u>	<u>320</u>	<u>460</u>
220°C	280°C	256°C	250°C	248°C
428°F	536°F	493°F	482°F	478°F

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Upper Flammable Limit:	Not determined
Lower Flammable Limit:	Not determined
Extinguishing Media:	Use dry chemical, foam, water fog or carbon dioxide
Special Fire Fighting Procedures:	Water may be ineffective but can be used to cool containers exposed to heat or flame. Caution should be exercised when using water or foam as frothing may occur, especially if sprayed into containers of hot, burning liquid.
Unusual Fire and Explosion Hazards:	Dense smoke may be generated while burning. Toxic fumes, gases or vapors may evolve on burning. Heavy flammable vapors may settle along ground level and low spots to create an invisible fire hazard. The vapors may extend to sources of ignition and flash back.
By-products of Combustion:	Oxides of C, Ca, P, S and N. Additional byproducts include hydrogen sulfide, alkyl mercaptan and other sulfides
Auto-ignition Temperature:	Not determined
Explosion Data:	Not determined. Care should always be exercised in dust/mist areas.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Spill Procedures (Land):	Immediately turn off or isolate any source of ignition (pilot lights, electrical equipment, flames and heaters). Evacuate area and ventilate. Personnel wearing proper protective equipment should contain spill immediately with inert materials (sand, earth, chemical spill pads of cotton) by forming dikes. Dikes should be placed to contain spill in a manner that will prevent material from entering sewers and waterways. Large spill, once contained, may be picked up using explosion proof, non-sparking vacuum pumps, shovels or buckets and disposed of in suitable containers for disposal. If a large spill occurs notify appropriate authorities.
Spill Procedures (Water):	Remove from surface by skimming or with suitable adsorbents. If a large spill occurs notify appropriate authorities.
Waste Disposal Method:	All disposals must comply with federal, state and local regulations. The material, if spilled or discarded may be a regulated waste. Refer to state and local regulations. Department of Transportation regulations may apply for transporting this material when spilled. See Section 14. CAUTION - If spilled material is cleaned up using a regulated solvent, the resulting waste mixture may be regulated.

SECTION 7 HANDLING AND STORAGE

Handling Procedures:	Keep containers closed when not in use. Do not transfer to unmarked containers. Fire extinguishers should be kept readily available. See NFPA 30 and OSHA 1910.106 -- Flammable and Combustible Liquids. Empty containers retain product residue which may exhibit hazards of material, therefore do not pressurize, cut, glaze, weld or use for any other purposes. Return drums to reclamation centers for proper cleaning and reuse.
Storage Procedures:	Store containers away from heat, sparks, open flame or oxidizing materials.
Additional Information:	No additional information.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

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Personal Protection: Applicable mainly to persons in repeated contact situations such as packaging of product, service/maintenance and cleanup/spill control personnel.

Respiratory Protection: None required if airborne concentrations are maintained below threshold limits listed on page 1. Otherwise a respiratory protection program meeting OSHA 1910.134 and ANSI Z88.2 requirements must be followed. Where misting may occur, wear an MSHA/NIOSH approved (or equivalent) half-mask form dust/mist air- purifying respirator.

Eye Protection: Eye protection is always recommended. If material is handled such that it could be splashed into the eyes, wear safety glasses with side shields or vented/splash proof goggles (ANSI Z87.1 or approved equivalent).

Hand Protection: Impervious gloves such as neoprene or nitrile rubber to avoid skin sensitization and absorption.

Other Protection: Use of an apron and over-boots of chemically impervious materials such as neoprene or nitrile rubber is recommended to avoid skin sensitization. If handling hot material use insulated protective equipment. Launder soiled clothes. Properly dispose of contaminated leather articles and other materials, which cannot be decontaminated.

Local Control Measures: Use adequate ventilation when working with material in an enclosed area. Mechanical methods such as fume hoods or area fans may be used to reduce localized vapor/mist areas. If vapor or mist is generated when the material is heated or handled, adequate ventilation in accordance with good engineering practice must be provided to maintain concentrations below the specified exposure. Eyewash stations and showers should be available in areas where this material is used and stored.

Other: Consumption of food and drink should be avoided in work areas where product is present. Always wash hands and face with soap and water before eating, drinking or smoking.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Vapor Pressure: Negligible at STP (Standard Temperature and Pressure, 25°C at 1 ATM)

Gravity by ASTM D 1298:	<u>15</u>	<u>22</u>	<u>32</u>	<u>46</u>	<u>68</u>
API Gravity	34.1	33.8	32.2	31.1	30.2
Specific Gravity @ 15.6°C	0.8545	0.8560	0.8644	0.8702	0.8751
Density @ 15.6°C	7.127	7.128	7.197	7.262	7.287
	<u>100</u>	<u>150</u>	<u>220</u>	<u>320</u>	<u>460</u>
API Gravity	29.3	27.8	27.3	27.3	26.6
Specific Gravity @ 15.6°C	0.8800	0.8883	0.8911	0.8911	0.8950
Density @ 15.6°C	7.327	7.413	7.420	7.420	7.469

Solubility Negligible in water, soluble in hydrocarbon solvents

Percent Volatile: Negligible at STP

Vapor Density, Air = 1: >1 at STP

Evaporation Rate, n-Butyl Acetate = 1: Negligible at STP

Odor: Mild petroleum hydrocarbon odor

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Appearance:	Amber, clear fluid				
Viscosity by ASTM D 445:	<u>15</u>	<u>22</u>	<u>32</u>	<u>46</u>	<u>68</u>
cSt at 40°C (104°F)	15.00	25.78	32.45	44.70	61.72
cSt at 100°C (212°F)	3.39	4.84	5.55	6.74	8.51
	<u>100</u>	<u>150</u>	<u>220</u>	<u>320</u>	<u>460</u>
cSt at 40°C (104°F)	101.04	154.55	230.38	303.13	437.51
cSt at 100°C (212°F)	11.07	15.86	19.26	23.58	29.79
Boiling Point:	Expected to be > 260°C (500°F).				
Pour Point (°C):	<u>15</u>	<u>22</u>	<u>32</u>	<u>46</u>	<u>68</u>
by ASTM D 97	-28	-26	-26	-24	-26
	<u>100</u>	<u>150</u>	<u>220</u>	<u>320</u>	<u>460</u>
by ASTM D 97	-15	-26	-15	-12	-9
Molecular Weight:	Not determined				

SECTION 10 STABILITY AND REACTIVITY

Stability:	Material is stable at room temperature and pressure.
Conditions To Avoid:	Avoid high temperatures and product contamination.
Incompatibility With Other Materials:	Avoid contact with acids and oxidizing materials.
Decomposition Products:	Smoke, carbon monoxide and dioxide and other aldehydes of incomplete combustion. Oxides of C, Zn, Ca, P, S and N. Hydrogen sulfide and alkyl mercaptans and other sulfides may be released.
Hazardous Polymerization:	Will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

Oral Toxicity:	Not determined
Dermal Toxicity:	Not determined
Inhalation Toxicity:	On rare occasions, prolonged and repeated exposure to oil mist poses a risk of pulmonary disease such as chronic lung inflammation. This condition is usually asymptomatic as a result of repeated small aspirations. Shortness of breath and cough are the most common symptoms. Based on data from similar materials.
Dermal Sensitization:	Prolonged or repeated contact may make skin more sensitive to other skin sensitizers. Based on data from similar materials.
Chronic Toxicity:	Not determined
Carcinogenicity:	Not determined
Mutagenicity:	Not determined
Reproductive Toxicity:	Not determined
Teratogenicity:	Not determined

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Other: This product contains petroleum base oils, which may be refined by various processes including severe solvent extraction, severe hydro-cracking or severe hydro-treating. None of the oils require a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A) or possibly carcinogenic to humans (Group 2B).

SECTION 12 ECOLOGICAL INFORMATION

Environmental Toxicity: This material may be toxic to aquatic organisms and should be kept out of sewage and drainage systems and all bodies of water.

Environmental Fate: No data available.

SECTION 13 DISPOSAL CONSIDERATIONS

Waste Disposal: Under RCRA it is the responsibility of the user of the product to determine at the time of disposal whether the product meets RCRA criteria for hazardous waste. Waste management should be in full compliance with federal, state and local laws.

Disposal Consideration: Place used, contaminated or excess material into disposable containers and dispose of in a manner consistent with local and state regulations. Contact local environmental or health authorities for approved disposal of this material. Most used oil is reclaimed or incinerated.

SECTION 14 TRANSPORT INFORMATION

U.S. DOT Information

Bulk Shipping Description: Does not apply to bulk oil shipping.

Non-Bulk Shipping Description: Does not apply to non-bulk oil shipping.

Identification Number: Not applicable

Hazard Classification: Not applicable

Other: See 49 CFR for additional requirements for descriptions, allowed modes of transport and packaging. For more information concerning spills during transport, consult latest DOT Emergency Response Guidebook for Hazardous Materials Incidents, DOT P 5800.3.

IMDG Information This material is not classified as dangerous under IMDG regulations.

IATA Information This material is not classified as dangerous under IATA regulations.

SECTION 15 REGULATORY INFORMATION

Clean Water Act/Oil Pollution Act: Under Section 311 of the Clean Water Act (40 CFR 110) and the Oil Pollution Control Act of 1990, this material is considered an oil. Any spills or discharges that produce a visible sheen or film on surface of water or in waterways, ditches or sewers leading to surface water must be reported. Contact the National Response Center at 800-424-8802.

TSCA: All components of this material are listed in the U.S. TSCA Inventory.

Other TSCA: Not applicable

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SARA Title III:	Section 302/304	Extremely Hazardous Substances:	None
	Section 311/312	<u>Hazard Categorization:</u>	
		Acute (immediate health effects):	Yes
		Chronic (delayed health effects):	No
		Fire (hazard):	No
		Reactivity (hazard):	No
		Pressure (sudden release hazard):	No
	Section 313	Toxic Chemicals:	None
CERCLA:	For stationary sources - reportable quantity:		Not determined.
	Due to:		Not applicable.
	For moving sources - reportable quantity:		Not determined.
	Due to:		Not applicable.
		Recommend contacting the local authorities in the event of any type of spill to determine local reporting requirements and also to aid in the cleanup.	
California Prop. 65:		Not applicable.	

SECTION 16

OTHER INFORMATION

Glossary:

ACGIH – American Conference of Governmental Industrial Hygienists; **ANSI** – American National Standards Institute; **Canadian TDG** – Canadian Transportation of Dangerous Goods; **CAS** – Chemical Abstract Service; **Chemtrec** – Chemical Transportation Emergency Center (US); **CHIP** – Chemical Hazard Information and Packaging; **DSL** – Domestic Substances List; **EC** – Equivalent Concentration; **EH40 (UK)** – HSE Guidance Note EH40 Occupational Exposure Limits; **EPCRA** – Emergency Planning and Community Right-To-Know Act; **HMIS** – Hazardous Material Information Service; **LC** – Lethal Concentration; **LD** – Lethal Dose; **NFPA** – National Fire Protection Association; **OEL** – Occupational Exposure Limits; **OSHA** – Occupational Safety and Health Administration, US Department of Labor; **PEL** – Permissible Exposure Limit; **SARA (Title III)** – Superfund Amendments and Reauthorization Act; **SARA 313** – Superfund Amendments and Reauthorization Act, Section 313; **SCBA** – Self-Contained Breathing Apparatus; **STEL** – Short Term Exposure Limit; **TLV** – Threshold Limit Value; **TSCA** – Toxic Substances Control Act Public Law 94-469; **TWA** – Time Weighted Value; **US DOT** – US Department of Transportation; **WHMIS** – Workplace Hazardous Materials Information System.

Information provided in this Safety Data Sheet is considered accurate and reliable based on information issued from internal and outside sources to the best of Martin Operating Partnership's knowledge; however, martin operating partnership makes no representations, guarantees or warranties, expressed or implied, of merchantability or fitness for the particular purpose, regarding the accuracy of such information or the result to be obtained from the use thereof or as to the sufficiency of information herein presented. Martin Operating Partnership assumes no responsibility for injury to recipient or to third persons or for any damage to any property and recipient assumes all such risks.

This product may be formulated in part with components purchased from other companies. In many instances, especially when proprietary or trade secret materials are used, Martin Lubricants; A Division of Martin Operating Partnership L.P., must rely upon information provided by the material manufacturers or distributors.

Prepared by: David Collins
File: SDS – TurbineGard RO Hydraulic Fluid

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Safety Data Sheet conforms to ANSI Z400.1-2004 Standard - United States