



Conforms to OSHA HCS 2012 (29 CFR 1910.1200)

SAFETY DATA SHEET

ARTIKOOL™ SYNTHETIC REFRIGERATION OIL SUPPLEMENT

Part No. 57400-5g, 57400-54g, 57400-275g, 57400-330-g

SECTION 1. PREPARATION INFORMATION

Date : March 18, 2015

GHS Product identifier: ArtiKool Synthetic Refrigeration Oil Supplement
SDS ID: 57400-5g, 57400-54g, 57400-275g & 57400-330g

Product Description : Synthetic Base Stocks and Additives.

CAS Number : Not Applicable for mixtures.

Synonyms : None.

Generic Chemical Name : Mixture.

Applications include the Following : Refrigeration Compressor Supplement.

Manufactured for : Energy Design Services
8 Bronte Drive
Taft, Tennessee 38488-6006

Contact Information : 931/438-8782 - Phone
info@artikool.com
Emergency Health and Safety Number:
CHEMTREC: 800.424.9300 (24 Hours)
International: +1-703-527-3887

BALANCE OF PAGE INTENTIONALLY LEFT BLANK

SECTION 2. HAZARDOUS IDENTIFICATION

OSHA/HCS Status : While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.

Classification of the substance or mixture : Not Classified.

GHS labile elements

Signal Word : No signal word.

Hazard statement : High-pressure injection under skin may cause serious damage. Excessive exposure may result in eye, skin, or respiratory irritation.

NFPA Hazard ID : Health: 0 Flammability: 1 Reactivity: 0

HMIS Hazard ID : Health: 0 Flammability: 1 Reactivity: 0

Precautionary statements

Prevention : Not applicable.

Response : Not applicable.

Storage : Not applicable.

Disposal : Not applicable.

Hazards not otherwise classified : None known.

NOTE: This material should not be used for any other purpose than the intended use in Section 1 and on the Technical Data Sheet without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance/mixture : Mixture

Other means of identification : Not applicable.

CAS Number/other identifiers

CAS number : Not applicable.

Product code : 57400-5g, 57400-54g, 57400-275g & 57400-330g

BALANCE OF PAGE INTENTIONALLY LEFT BLANK

SECTION 4. FIRST AID MEASURES

Description of necessary first aid measures

- Eye contact** : Immediately flush eyes with plenty of water (for 30 minutes), occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
- Inhalation** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation. Get medical attention if symptoms occur. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medicate assistance.
- Skin contact** : Flush contaminated skin with plenty of soap and water. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury. Remove contaminated clothing and shoes. Launder contaminated clothing before reuse.
- Ingestion** : Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do NOT INDUCE VOMITING unless directed to do so by medical personnel. Get medical attention if symptoms occur.

SECTION 5. FIRE-FIGHTING MEASURES

NFPA 704 Hazard Class

Health: 0 Flammability: 1 Instability: 0



- 0 (Minimal)
- 1 (Slight)
- 2 (Moderate)
- 3 (Serious)
- 4 (Severe)

Extinguishing media

- Suitable extinguishing media** : Use water fog, foam, dry chemicals or carbon dioxide (CO₂) to extinguish flames.
- Unsuitable extinguishing media** : Straight Streams of Water.

SECTION 5. FIRE-FIGHTING MEASURES, Cont.

Fire Fighting

- Fire Fighting Instructions** : Evacuate area. Prevent runoff from the control or dilution from entering streams, sewers, or drinking water supply. Firefighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials: Oxides of carbon, Incomplete combustion products, Aldehydes, Sulfur oxides, Smoke, Fumes.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate equipment and self-contained breathing apparatus (SCBA) with full face-piece operated in positive pressure mode.

FLAMMABILITY PROPERTIES:

- Flash Point [Method]** : 424°F (218°C). [ASTM D-92]
Flammable Limits
(Approximate volume % in air) : LEL: 0.9 UEL: 7.0
Autoignition Temperature : Not determined.

SECTION 6. ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES

- : In the event of a spill or accidental release, notify relevant authorities with all applicable regulations. US regulations require reporting releases of this material to the environment which exceed the applicable reportable quantity or oil spills which could reach any waterway including intermittent dry creeks. The National Response Center can be reached at (800)-424-8802.

PROTECTIVE MEASURES

- : Avoid contact with spilled material. See Section 5 for fire fighting information. See Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for advice on the minimum requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders.

SECTION 6. ACCIDENTAL RELEASE MEASURES, Cont.

NOTIFICATION PROCEDURES, Cont.

SPILL MANAGEMENT

- Land Spill : Stop leak if you can do it without risk. Recover by pumping or with suitable absorbent.
- Water Spill : Stop leak if you can do it without risk. Confine the spill immediately with booms. Warn other shipping. Remove from the surface by skimming or with suitable absorbents. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

- : Large Spills: Dike far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.
absorbed on inert material.

SECTION 7. HANDLING AND STORAGE

HANDLING

- : This material is Not intended for use in air compressors for breathing applications. Prevent small spills and leaks to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source). When the material is handled in bulk, an electrical spark could ignite any flammable vapors from liquids or residues that may be present (e.g., during switch-loading operations). Use proper bonding and/or ground procedures. However, bonding and grounding may not eliminate the hazard from static accumulation. Consult local applicable standards for guidance. Additional references include American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practice on Static Electricity) or CENELEC CLC/TR 50404 (Electrostatics - Code of practice for the avoidance of hazards due to static electricity).

Static Accumulator

- : This material is a static accumulator.

STORAGE

- : The container choice, for example storage vessel, may effect static accumulation and dissipation. Do not store in open or unlabelled containers. Keep away from incompatible materials.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limits/standards for materials that can be formed when handling this product:

- : Under conditions which may generate mists/aerosols, the following additional exposure limits are recommended: 5 mg/m³ - ACGIH TLV (inhalable fraction), 5 mg/m³; OSHA PEL.

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

No Biological limits allocated.

ENGINEERING CONTROLS

The level of protection and type of controls necessary will vary depending upon potential exposure conditions.

Control measures to consider: No special requirements under ordinary conditions of use and with adequate ventilation.

PERSONAL PROTECTION

Personal protective selection vary based on the potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection : If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:
No special requirements under ordinary conditions of use and with adequate ventilation.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if purifying filter capacity/rating may be exceeded.

Hand Protection : Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacture for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damage gloves. The type of gloves to be considered for this material include:

No protective is ordinarily required under normal conditions of use.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION, Cont.

PERSONAL PROTECTION, Cont.

- Eye Protection** : If contact is likely, safety glasses with side shields are recommended.
- Skin and Body Protection** : Any specific clothing information provided is based on published literature or manufacturer data. The type of clothing to be considered for this material include:
No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precaution should be taken to avoid skin contact.
- Specific Hygiene Measures** : Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

ENVIRONMENT CONTROLS

- : Comply with applicable environmental regulations limiting discharge to air, water and soil. Protect the environment by applying appropriate control measures to prevent or limit emissions.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

GENERAL INFORMATION

- Physical State** : Liquid.
- Color** : Pale Yellow.
- Odor** : Characteristic.
- Odor threshold** : Not Determined.

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

- Relative density** : (at 15.6°C): 0.834
- Flammability** : Not Available.
(Solid, gas)
- Flash point** : 424°F (218°C). [Cleveland]
- Flammable Limits** : LEL: 0.9 UEL: 7.0
(Approximate volume % in air)
- Autoignition Temperature** : Not Determined.
- Boiling point** : Not Determined.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES, Cont.

GENERAL INFORMATION, Cont.

Decomposition Temperature	:	Not Determined.
Vapor Density	:	(Air = 1): >2 at 101 kPa [Estimated].
Vapor pressure	:	<0.013 kPa (0.1 mm Hg) at 20°C. [Estimated]
Evaporation rate	:	Not Determined.
pH	:	Not Available.
Log Pow (n-Octanol/Water Partition Coefficient)	:	Not Determined.
Solubility in Water	:	Negligible.
Viscosity	:	68 cSt (68 mm ² /sec) at 40°C 10.4 cSt (10.4 mm ² /sec) at 100°C.
Oxidizing Properties	:	See Hazards Identification Section.

OTHER INFORMATION

Freezing Point	:	Not Determined.
Melting Point	:	Not Determined.
Pour Point	:	-38°F (-39°C).

SECTION 10. STABILITY AND REACTIVITY

REACTIVITY	:	See sub-sections below.
STABILITY	:	Material is stable under normal conditions.
CONDITIONS TO AVOID	:	Excessive heat. High energy sources of ignition.
MATERIALS TO AVOID	:	Strong oxidizers.
HAZARDOUS DECOMPOSITION PRODUCTS	:	Material does not decompose at ambient temperatures.
POSSIBILITY OF HAZARDOUS REACTIONS	:	Hazardous polymerization will not occur.

BALANCE OF PAGE INTENTIONALLY LEFT BLANK

SECTION 11. TOXICOLOGICAL INFORMATION

INFORMATION ON TOXICOLOGICAL EFFECTS

Hazard Class	Conclusion / Remarks
Inhalation	
Acute Toxicity: No end point data for material.	: Minimally toxic. Based on assessment of the materials.
Irritation: No end point data for material.	: Negligible hazard at ambient/normal handling temperatures.
Ingestion	
Acute Toxicity: No end point data for material.	: Minimally toxic. Based on assessment of the materials.
Skin	
Acute Toxicity: No end point data for material.	: Minimally toxic. Based on assessment of the materials.
Skin Corrosion/Irritation: No end point data for material.	: Negligible irritation to skin at ambient temperatures. Based on assessment of the materials.
Eye	
Serious Eye Damage/Irritation: No end point data for material.	: May cause mild, short-lasting discomfort to eyes. Based on assessment of the components.
Sensitization	
Respiratory Sensitization: No end point data for material.	: Not expected to be a respiratory sensitizer.
Skin Sensitization: No end point data for material.	: Not expected to be a skin sensitization. Based on assessment of the components.
Aspiration: Data available	: Not expected to be an aspiration hazard. Based on physico-chemical properties of the material.
Germ Cell Mutagenicity : No end point data for material	: Not expected to be a germ cell mutagen. Based on assessment of the components.
Carcinogenicity : No end point data for material.	: Not expected to cause cancer. Based on assessment of the components.

SECTION 11. TOXICOLOGICAL INFORMATION, Cont.

INFORMATION ON TOXICOLOGICAL EFFECTS, Cont.

Reproductive Toxicity : Not expected to be a reproductive toxicant. Based on assessment of the
No end point data for material. components.

Lactation : No end point data : Not expected to cause harm to breast-fed children.
for material.

Specific Target Organ Toxicity (STOT)

Single Exposure: No end : Not expected to cause organ damage from a single exposure. Based
point data for material. on assessment of the components.

Repeated Exposure: No : Not expected to cause organ damage from prolonged or repeated
point data for material. exposure. Based on assessment of the components.

OTHER INFORMATION :

For the product itself:

Contains:

Synthetic base oils: Not expected to cause significant health effects under conditions of normal use, based on laboratory studies with the same or similar materials. Not mutagenic or genotoxic. Not sensitizing in tests animals and humans.

OTHER INFORMATION, Cont.

The following ingredients are cited on the lists below: None.

--REGULATORY LISTS SEARCHED--

1 = NTP CARC

3 = IARC 1

5 = IARC 2B

2 = NTP SUS

4 = IARC 2A

6 = OSHA CARC

SECTION 12. ECOLOGICAL INFORMATION

The information given is based on data available for the material, the components of the material, and similar materials.

ECOTOXICITY

Material - Not expected to be harmful to aquatic organisms.

MOBILITY

Base oil component -- Low solubility and floats and is expected to migrate from water to land.

Expected to partition to sediment and wastewater solids.

SECTION 13. DISPOSAL CONSIDERATION

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products. Protect the environment. Disposal of used oil at designated sites. Minimize skin contact. Do not mix used oil with solvents, brake fluids or coolants.

REGULATORY DISPOSAL INFORMATION

RCRA Information: The unused product, in our opinion, is not specifically listed by the EPA as a hazardous waste (40CFR, Part 261D), nor is it formulated to contain materials which are listed as hazardous wastes. It does not exhibit the hazardous characteristics of ignitability, corrosivity or reactivity and is not formulated with contaminants as determined by the Toxicity Characteristic Leaching Procedure (TCLP). However, used product may be regulated.

Empty Container Warning Empty Container Warning (where applicable): Empty container may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. **DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARK, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.**

SECTION 14. TRANSPORTATION INFORMATION

LAND DOT	:	Not Regulated for Land Transport.
LAND (TDG)	:	Not Regulated for Land Transport.
SEA (IMDG)	:	Not Regulated for Sea Transport according to IMDG-Code.
Marine Pollutant	:	No.
AIR (IATA)	:	Not Regulated for Air Transport.

SECTION 15. REGULATORY INFORMATION

OSHA HAZARD COMMUNICATION STANDARD: This material is not considered hazardous in accordance with OSHA HazCom 2012, 29 CFR 1910.1200.

Listed or exempt from listing/notification on the following chemical inventories: AICS, DSL, IECSC, KECI, PICCS, TSCA.

SECTION 15. REGULATORY INFORMATION, Cont.

Special Cases:

Inventory	Status
ENCS	Restrictions Apply

PRODUCT REGISTRATION STATUS: USA.

EPCRA SECTION 302 : This material contains no extremely hazardous substance.

SARA (311/312) REPORTABLE HAZARD CATEGORIES: None.

SARA (313) TOXIC RELEASE INVENTORY: This material contains no chemicals subject to the supplier notification requirements of the SARA 313 Toxic Release Program.

The following ingredients are cited on the lists below: None.

--REGULATORY LISTS SEARCHED--

- | | | | |
|---------------|------------------|-------------------|-------------|
| 1 = ACGIH ALL | 6 = TSCA 5a2 | 11 = CA P65 REPRO | 16 = MN RTK |
| 2 = ACGIH A1 | 7 = TSCA 5e | 12 = CA RTK | 17 = NJ RTK |
| 3 = ACGIH A2 | 8 = TSCA 6 | 13 = IL RTK | 18 = PA RTK |
| 4 = OSHA Z | 9 = TSCA 12b | 14 = LA RTK | 19 = RI RTK |
| 5 = TSCA 4 | 10 = CA P65 CARC | 15 = MI 293 | |

Code key: CARC = Carcinogen; REPRO = Reproductive.

SECTION 16. OTHER INFORMATION



Refer to NFPA 654, Standard for the Prevention of Fire and Dust Explosion from the Manufacturing, Processing, and Handling of Combustible Particulate Solids, for safe handling.

KEY TO THE H-CODES CONTAINED IN SECTION 3 OF THIS DOCUMENT (for information only):
None.

BALANCE OF PAGE INTENTIONALLY LEFT BLANK

SECTION 16. OTHER INFORMATION, Cont.

Revision Date: 18-March-2015
Updated to Format.

Key to Abbreviations :

ACGIH = American Conference of Government Industrial Hygienists; API = American Petroleum Institute; ATE = Acute Toxicity Estimate; BCF = Bioconcentration Factor; CAS/CASRN = Chemical Abstracts Service Registry Number, CEILING = Ceiling Limit (15 minutes); CERCLA = The Comprehensive Environmental Response, Compensation, and Liability Act; DOT = Department of Transportation (USA); EPA = Environmental Protection Agency; GHS = Globally Harmonization System; IARC = International Agency for Research for Cancer; IATA = International Air Transport Association; IBC = Intermediate Bulk Container; IMO/IMDG = International Maritime Dangerous Goods Code; INSHT = National Institute for Health and Safety at Work; IOPC = International Oil Pollution Compensation; LEL = Lower Explosive Limit; LogPow = Logarithm of the octanol/water partition coefficient; MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships; 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution); N/D = Not determined; NE = Not Established; NFPA = National Fire Protection Association; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; PEL = Permissible Exposure Limit (OSHA); SDS = Safety Data Sheet; SARA = Superfund Amendments and Reauthorization Act; STEL = Short Term Exposure Limit (15 minutes); TLV = Threshold Limit Value (ACGIH); TWA = Time Weight Average (8 hours); UEL = Upper Explosive Limit; UN = United Nations; WHMIS = Worker Hazardous Materials Information System (Canada).

Notice to reader:

THE INFORMATION IN THIS SAFETY DATA SHEET (SDS) WAS OBTAINED FROM SOURCES WHICH WE BELIEVE ARE RELIABLE. HOWEVER, THE INFORMATION IS PROVIDED WITHOUT ANY WARRANTY, EXPRESSED OR IMPLIED REGARDING ITS CORRECTNESS OR ACCURACY. SOME INFORMATION PRESENTED AND CONCLUSION DRAWN HEREIN ARE FROM SOURCES OTHER THAN DIRECT TEST DATA ON THE SUBSTANCE ITSELF. THIS SDS WAS PREPARED AND IS TO BE USED ONLY FOR THIS PRODUCT. IF THE PRODUCT IS USED AS A COMPONENT IN ANOTHER PRODUCT, THIS SDS INFORMATION MAY NOT BE APPLICABLE. USERS SHOULD MAKE THEIR OWN INVESTIGATIONS TO DETERMINE THE SUITABLE OF THE INFORMATION OR PRODUCTS FOR THEIR PARTICULAR PURPOSE OR APPLICATION.

THE CONDITIONS OR METHODS OF HANDLING, STORAGE, USE, AND/OR DISPOSAL OF THE PRODUCT ARE BEYOND OUR CONTROL AND MANY BE BEYOND OUR KNOWLEDGE. FOR THIS AND OTHER REASONS, WE DO NOT ASSUME RESPONSIBILITY AND EXPRESS DISCLAIM LIABILITY FOR ANY LOSS, DAMAGE OR EXPENSE ARISING OUT OF OR IN ANY WAY CONNECTED WITH HANDLING, STORAGE, USE OR DISPOSAL OF THIS PRODUCT.

No responsibility is assumed for any damage or injury resulting from abnormal use from any failure to adhere to recommended practices. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use. In addition, no authorization is given nor implied to practice any patented invention without a license.
