

JET-LUBE, INC.

MATERIAL SAFETY DATA SHEET

Product Name: KOPR-KOTE®, JET-LUBE 21®, JLS® Chemical Family: Petroleum based lubricating grease Use: Drill string compound and anti-seize lubricant	Manufacturer/Supplier: JET-LUBE, INC. Address: 4849 Homestead Rd., Ste. #200 Houston, TX, 77028 USA Phone: 713-674-7617 Emergency Phone: 713-674-7617 Fax: 713-678-4604 Chemtrec 24 hours (USA): 800-424-9300
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Hazardous Components	CAS No.	Wt%	OSHA PEL	ACGIH TLV	Other Limits of Exposure
Petroleum oil	64742014/64742525	60-100	Oil mist	N/A	STEL: 10mg/M ³
	64742536		TWA-5mg/M ³		
Metallic Copper	7440508	2-10	N/A	1mg/M ³	STEL: 2mg/M ³
Nonhazardous Blend	82980549/7620771	30-60	UN	UN	STEL: UN
	7782435/1317335				
	14807966/1317653				

Main Hazards—Health Effects
Eyes: May cause irritation. **Inhalation:** Viscous nature may block breathing passages if inhaled. **Ingestion:** May cause diarrhea.
Skin: For hypersensitive persons, may irritate the skin after prolonged periods of contact.

Eyes: Flush with water until all residual material is gone. If irritation persists, seek medical help. **Inhalation:** Clear air passage. If respiratory difficulty continues, seek medical help. **Ingestion:** Wash out mouth immediately. Consult physician. **Skin:** Wash thoroughly with hand cleanser, followed by soap & water. Contaminated clothing should be dry cleaned before reuse.

Extinguishing Media: Foam, dry powder, Halon®, carbon dioxide, sand, earth & water mist. **Unsuitable Extinguishing Media:** Water jet.
Protective Equipment for Fire fighting: Self-contained breathing apparatus.

Personal Precautions: Wear gloves & protective overalls. **Environmental Precautions:** Do not allow it to enter drains. **Spillage:** Scrape up bulk, then wipe up remainder with cloth. To prevent walking hazard, pick up remaining residue with diatomaceous earth.

Handling: No special handling precautions necessary. **Storage:** Do not store at elevated temperatures.

Respiratory Protection: None needed. **Hand Protection:** Protective gloves for hypersensitive persons. **Eye Protection:** Glasses, if applied to parts in motion. **Body Protection:** Overalls.

Physical State: Semisolid gel **Color:** Copper to Dark Bronze **Odor:** Petroleum **pH:** Neutral **Boiling Range/Point °F (°C):** <600 (316)
Melting Point °F (°C): >450 (232) **Flash Point (COC) °F (°C):** >430 (221) **Autoignition Temperature °F (°C):** >500 (260)
Explosive Properties: LEL: 0.9% UEL: 7% **Evaporation Rate (Butyl Acetate):** <0.01 **Partition Coefficient (Log Pow):** N/A
Vapor Pressure (kPa): <0.01 **Percent Volatiles:** Nil **Density (g/cm³):** KK 1.15, JL21 1.09, JLS 1.09
Flammability: Not flammable at ambient temp. **OAR Value:** N/A **Oxidizing Properties:** None **Water Solubility:** Nil **Vapor Density:** >5

Stability: Chemically stable under normal conditions. No photoreactive agents. **Conditions to Avoid:** Powerful sources of ignition & extreme temps.
Materials to Avoid: Strong inorganic & organic acids, oxidizing & copper reactive agents. **Hazardous Decomposition Products:** Burning generates smoke, airborne soot, hydrocarbons & oxides of carbon, sulfur & nitrogen. Residue mainly comprised of soot, mineral & metal oxides.

Acute Toxicity: Not known. **Irritancy—Skin:** Very mild. **Skin Sensitization:** Not known. **Subacute/Sub-chronic Toxicity:** Not known.
Genotoxicity: None known. **Chronic Toxicity:** None known. **California Prop 65:** N/A **Carcinogen:** NTP: No IARC: No OSHA: No
EC Classification (67/548/EEC): No **Allergens:** None known. **LC-50:** 1.98g/l—actual test data (Mysidopsis bahia). **LD-50:** N/A


Possible Effects: In extreme cases, may generate oil fractions that could act as a marine pollutant. Occurrences of this nature are highly unlikely.
Behavior: Relatively well behaved. Bioaccumulation potential nil.
Environmental Fate: Highly unlikely to cause widespread contamination. Heavier than water.

Product Disposal: Do not incinerate. Contact waste disposal company or local authority for advice.
Container Disposal: Pails without liner—see Product Disposal section above. Pails with plastic liner—pail may only be disposed of via standard waste disposal services, recycled or reused. Liner—see Product Disposal section above.

Not classified as hazardous for transport. **D.O.T.:** Nonhazardous **UN No.:** Nonhazardous **Air Transport (ICAO & IATA):** Nonhazardous
Sea Transport (IMO & IMDG): Nonhazardous **Road & Rail Transport (ADR/RID):** Nonhazardous

Labeling Information: None needed **EC Annex 1 Classification:** Not Applicable. **R Phrases:** R22—harmful if swallowed.
S Phrases: N/A, as known. **Ozone Depleting Chemicals:** N/A **TSCA:** All components are listed. **SARA 311/312:** None
WHMIS (Canada): Not controlled. **Canadian DSL:** All components listed. **TSCA 12B Components:** None
40 CFR Part 372 (SARA Section 313): This product contains copper. **CERCLA:** Nonhazardous **RCRA Hazard Class:** Nonhazardous

SDS first issued. SDS data revised. **New Jersey Right To Know:** See Section II

Signature: 
Prepared by: Donald A. Oldiges
Date Issued: December 16, 2005

As of issue date, the information contained herein is accurate and reliable to the best of JET-LUBE'S knowledge. JET-LUBE® does not warrant or guarantee its accuracy or reliability and shall not be liable for any loss or damage arising out of the use thereof. It is the user's responsibility to satisfy itself that the information offered for its consideration is suitable for its particular use.

LEGEND	
I.	IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY
II.	COMPOSITION INFORMATION ON INGREDIENTS
III.	HAZARDS IDENTIFICATION
IV.	FIRST AID MEASURES
V.	FIRE FIGHTING MEASURES
VI.	ACCIDENTAL RELEASE MEASURES
VII.	HANDLING AND STORAGE
VIII.	EXPOSURE CONTROL/PERSONAL PROTECTION
IX.	PHYSICAL AND CHEMICAL PROPERTIES
X.	STABILITY AND REACTIVITY
XI.	TOXICOLOGICAL INFORMATION
XII.	ECOLOGICAL INFORMATION
XIII.	WASTE DISPOSAL
XIV.	TRANSPORT INFORMATION
XV.	REGULATORY INFORMATION
XVI.	OTHER INFORMATION

HMIS SYMBOL

HEALTH	1
FLAMMABILITY	1
REACTIVITY	1
PPI	B

NFPA SYMBOL

FIRE		
1	1	1
1	B	1
TOXICITY	PERSONAL PROTECTION INDEX	REACTIVITY

KOPR-KOTE® • JET-LUBE 21® • JLS®

WATERWELL COPPER DRILL PIPE COMPOUNDS

DESCRIPTION

JET-LUBE's performance proven, lead free water well drill pipe compounds provide maximum drill string protection against seizing, galling and downhole makeup over the entire range of drilling conditions.

KOPR-KOTE® - Premium, heavy duty formulation for use in demanding drilling conditions such as rotary and percussion and hard formations where other compounds fail. The all-purpose choice of today's drillers. *Available in arctic grade upon request.*

JET-LUBE 21® - Developed for moderate and intermediate drilling conditions in softer formations. *Available in arctic grade upon request.*

JLS® (JET-LUBE Special) - Formulated for light to moderate drilling conditions in sandy formations.

ATTRIBUTES

- Non-plating
- Nontoxic in Marine Environment
- Elevated temperature stability
- Brushable over a wide temperature range
- Water displacing, sticks to wet joints
- Will not run, drip or settle out
- Extended tool life
- Nonhazardous
- **KOPR-KOTE** (water well) is NSF Registered, File #120923
- **KOPR-KOTE (water well) is not classified as marine pollutant - DOT Approval CA2004080025**

APPLICATIONS

KOPR-KOTE, JET-LUBE 21 and **JLS** are recommended for drill string connections where consistent control of make-up and breakout are desirable and protection against galling and seizure is required.

PRODUCT CHARACTERISTICS

Thickener	Aluminum Complex
Fluid Type	Petroleum
Color/Appearance	Copper/Bronze/ Dark Bronze
Dropping Point (ASTM D-2265)	>450°F (232°C)
Specific Gravity KK, 21, JLS	1.15, 1.09, 1.09
Density (lb/gal) KK, 21, JLS	9.6, 9.1, 9.1
Penetration (ASTM D-217) mm x 10 ⁻¹ , 77°F	300 - 330
Oil Separation (ASTM D-6184) Wt. % Loss @ 212°F (100°C)	<5.0
Flash Point (ASTM D-92)	>430°F (221°C)
NLGI Grade	1
Copper Strip Corrosion (ASTM D-4048)	1A
Shell 4-Ball (ASTM D-2596) Weld Point, kgf (KK, 21, JLS)	800, 620, 620
Recommended Torque	Per API RP 7G

PACKAGING

	Code No.	Container Size	Shipping Wt.
KK	10023	1 gal.	11 lbs.
	10012	2 gal.	21 lbs.
	10015	5 gal.	52 lbs.
JL21	10923	1 gal.	10 lbs.
	10912	2 gal.	20 lbs.
	10915	5 gal.	49 lbs.
JLS	11923	1 gal.	10 lbs.
	11912	2 gal.	20 lbs.
	11915	5 gal.	50 lbs.

LIMITED WARRANTY

Jet-Lube, Inc. makes the Limited Express Warranty that at the date of delivery, this product shall be free from defects in Jet-Lube, Inc. materials and workmanship.

This Limited Express Warranty is expressly in lieu of any other express or implied warranties, including any implied warranty of merchantability or fitness for a particular purpose, and of any other obligation on the part of Jet-Lube, Inc.

The sole remedy for breach of the Limited Express Warranty shall be the refund of the purchase price. All other liability is negated and disclaimed, and Jet-Lube, Inc. shall not be liable for incidental or consequential damages.

CORPORATE LOCATIONS

Houston, Texas—World Headquarters

Maidenhead, England

Edmonton, Canada

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