JET-LUBE 21®

DOUBLE DUTY DRILL COLLAR & TOOL JOINT COMPOUND

DESCRIPTION

JET-LUBE 21®, an environmentally-friendly, double-duty drill collar and tool joint compound, has been formulated to provide a superior level of performance for the increasing demands of today's oilfield market. The lead-free formulation contains copper flake as the only metallic component and is fortified by a unique blend of natural, inorganic, extreme-pressure, and anti-wear additives. **For invert or high-pH muds, a special base grease is available.**

- **Not classified as a marine pollutant - DOT Approval CA2006100003**
- Contains no lead or zinc.
- Formulated with a proprietary blend of copper, graphite, and other additives for protection and prevention of excessive circumferential makeup in hostile drilling environments.
- Inhibitors protect against rust and corrosion.
- Sticks to wet joints.
- Aluminum complex base for brushability and stability over a wide temperature range.
- Consistent rig floor makeup.
- Excellent resistance to makeup downhole.
- **Available in Arctic, Thermal, Biodegradable, and Specialty grades.**

JET-LUBE 21 has been designed to utilize the makeup charts in API RP7G. In the more severe drilling situations such as higher speeds, higher penetration rates, deviated holes, or harder formations, drill collars and other rotary shouldered connections should be made up at least 15% over the listed RP7G values.

APPLICATIONS

JET-LUBE 21 is recommended for the entire drill string in most drilling conditions. Typical applications would include geothermal wells, high angle holes, problem holes involving high temperature, whip stocks, and horizontal drilling applications. **JET-LUBE 21** prevents high stress in drill pipe connections which shortens their useful life.

PRODUCT CHARACTERISTICS

Thickener	Aluminum Complex
Fluid Type	Petroleum
Dropping Point (ASTM D-566)	450°F (232°C)
Specific Gravity	1.1
Density (lb/gal)	9.0
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
Penetration @77°F (ASTM D-217)	310 - 330
Copper Strip Corrosion (ASTM D-4048)	1A
Shell 4-Ball (ASTM D-2596)	
Weld Point, kgf	620
Friction Factor* (Relative to API RP 7G)	1.15 (standard service)
Service Rating	0°F (-18°C) to 450°F (232°C)

*** Many factors such as pipe size, thread geometry, drilling mud contamination, etc. affect the friction factor. this is a relative number and in all applications experience and prior knowledge should be used to adjust make-up torque accordingly.**

PACKAGING

Code No.	Container Size	Shipping Wt.
11023	1 gal.	10 lb.
11013	2½ gal.	26 lb.
11015	5 gal.	49 lb.
11017	5 gal. (metal)	49 lb.
11024	15 gal.	145 lb.
11029	50 gal.	489 lb.

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**

JET-LUBE, INC.
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HOUSTON, TX 77028

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sales@jetlube.com
www.jetlube.com

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JET-LUBE, INC.
MATERIAL SAFETY DATA SHEET

I

Product Name: **JET-LUBE 21®**
Chemical Family: Petroleum based lubricating grease
Use: Tool joint compound.

Manufacturer/Supplier: JET-LUBE, INC.
Address: 4849 Homestead Rd., Ste. #232
Houston, TX, 77028 USA **Phone:** 713-670-5700
Emergency Phone: 713-670-5700 **Fax:** 713-678-4604
Chemtrec 24 hours (USA): 800-424-9300
Outside the USA: 703-527-3887

II

Hazardous Components	CAS No.	Wt%	OSHA PEL	ACGIH TLV	Other Limits of Exposure
Petroleum oil	64742525/64742014	60-100	Oil mist TWA-5mg/M³	N/A	STEL: 10mg/M³
Metallic Copper	7440508	7	N/A	1mg/M³	STEL: 2mg/M³
Nonhazardous Blend	82980549/7620771 7782425/1317335 12003382/14807966/1317653	20-30	UN	UN	UN

III

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.

IV

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.

V

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.

VI

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.

VII

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

VIII

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

IX

Physical State: Semisolid paste **Color:** Brown to Black **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):** 1.10 **Flammability:** Not flammable at ambient temperature.
OAR Value: N/A **Oxidizing Properties:** None **Water Solubility:** Nil **Vapor Density:** >5

X

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 oxides.

XI

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:** >2000mg/l—actual test data (Oncorhynchus Mykiss. **LD-50:** N/A

XII

Possible Effects: In extreme cases, may gernerate 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. Nontoxic to marine or land organisms.

XIII

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.

XIV

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

XV

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. **40 CFR Part 372 (SARA Section 313):** This product contains copper. **CERCLA:** Nonhazardous **RCRA Hazard Class:** Nonhazardous **TSCA 12B Components:** None

XVI

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

Signature: Donald A. Oldiges
Prepared by: Donald A. Oldiges
Date Issued: August 1, 2009

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	0
PPI	B

NFPA SYMBOL