



*The Ultimate Lubricant*

# 646

## **DESCRIPTION:**

Omega 646 is a fluid lubricant engineered exclusively for chains. It employs the high technology originally derived from the space age in which a super micronized solid lubricant – moly – is used to complement a high-grade, refined paraffinic oil in the lubrication of chains.

## **MULTITUDE OF MAINTENANCE**

### **USES:**

Omega 646 Fluid Lubricant for Chains is versatile. It promotes chain and parts life.

## **PREVENTS METAL-TO-METAL**

### **CONTACT:**

Omega 646 absolutely prevents any metal-to-metal contact in the absence of hydrodynamic film. Under load, the micronized platelets present in Omega 646's moly, slide easily upon one another to prevent metal contact. No other conventional lubricant can do so. Omega 646's specialized moly will keep lubricating up to an approximately limit of 750°F (400°C). Therefore Omega 646 can be used in the most demanding, tough and high temperature chains without breakdown or deterioration.

## **CHAIN LUBRICATION PROBLEMS:**

Conventional chain oils and greases lubricate by separating the load surfaces with a hydrodynamic film. This film cannot always be achieved in actual "in use" situations. Formation of this film is a function of many variables such as lubricant viscosity, surface speed and applied load. When speeds are too low, loads are too high, or there is an improper match of lubricant to viscosity to speed and load; and a plethora of other variables, metal-to-metal contact occurs to increase friction and subsequent excessive wear.

These conditions are not uncommon. They exist in normal operation such as during machinery start up, shutdown, during running-in of a replaced part and all through the operation of many heavily-loaded, slow-moving parts prevalent in chain driven machinery. A phenomena known as "chatter" or "stick slip" occurs and there is no lubrication between the chain and gear wheels!

## **RUNNING IN:**

Every new metal surface under a microscope is actually a series of valleys and peaks. When two such surfaces come into contact, only the peaks meet. Therefore these very small areas bear the entire load. These peaks "cold weld" together, then shear apart when movement occurs. Omega 646 -when applied to new parts before operating -can prevent actual contact between the peaks and prevent galling, scoring and catastrophic parts failure.

The moly in Omega 646 permits the surfaces to conform to each other by plastic deformation rather than potentially destructive welding and shearing. Omega 646 permits optimum run-in lubrication for new machine parts.

## **SLOW-MOVING PARTS:**

Ordinary lubricants fail to achieve a hydrodynamic film between slow moving parts under high load. Omega 646 will separate such surfaces even at rest and its low coefficient of friction prevents chatter and stick-slip operation.

## PREVENTING FRETTING CORROSION:

In limited motion machinery, vibration prevents the forming of hydro-dynamic lubricant film between parts. Conventional lubricants literally vibrate off or migrate away. Omega 646's moly remains in place, reducing metal-to-metal contact and fretting corrosion.

## ANTI-FRICTION BEARINGS:

When bearings overheat, ordinary grease components thin out excessively. Omega 646's moly will continue to protect such surfaces.

## SUPERIOR FOR CHAIN LUBRICATION

Omega 646 is formulated from the ground up with expensive, high-performance constituents. The base suspension lubricant is a high quality, refined paraffinic which displays superior lubrication action and anti-oxidation qualities.

Special viscosity improvers give Omega 646 a stability to temperature fluctuations for lubrication superior to all conventional chain lubricants. It will markedly improve chain lubricity and lower drag on all machinery components dramatically to save operating costs.

## APPLICATION:

Omega 646 can be applied directly onto chains and machine parts by either dipping, using a brush or bath or by drip feed. Any fling-off that may be encountered in certain high-speed chains immediately after application can be ignored as the moly in Omega 646 will hold tenaciously onto the applied surfaces where lubrication is most critical. Omega 646 is used for superior lubrication of all types of chains -conveyors, gear drives, pulleys, etc. and will withstand the punishing high temperature conditions found in dryers and stenters.

## TYPICAL DATA:

TEST	ASTM TEST METHOD	TEST RESULT		
		SAE 40	SAE 50	SAE 90
ISO Viscosity Grade	D-2422	68	150	220
Appearance	Visual	Black Opaque, Tacky		
Density, Kg/L @ 15°C	D-1298	0.875	0.890	0.893
Viscosity, cSt @ 40°C	D-445	76	150	220
Viscosity, cSt @ 100°C	D-445	14.0	19.1	21.3
Viscosity Index	D-2270	191	183	115
Flash Point, COC, °C(°F)	D-92	204(399)	218(424)	264(507)
Pour Point °C(°F)	D-97	-30(-22)	-25(-13)	-22(-8)
Total Base Number, mg KOH/g	D-2896	11.6	11.6	8.2
Foaming Characteristics -				
All Sequences, After Settling	D-892	Nil	Nil	Nil
Rust-Preventing Characteristics, 48 hours saltwater	D-665	Pass	Pass	Pass
Molybdenum Disulphide, % Mass*	Gravimetric	1.0	1.0	1.0

\* MoS<sub>2</sub> contribution 0.9

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## SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

### 1.1. Product identifier

Product name: Omega 646  
Omega 646 VG 68  
Omega 646 VG 150  
Omega 646 VG 220  
Omega 646 VG 460

Container size: 5 l, 20 l

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

Application: Chain oil.

### 1.3. Details of the supplier of the safety data sheet

Supplier: GB importer: Sovereign Lubricants (UK) Ltd, Crowtrees Lane,  
Rastrick, West Yorkshire, HD6 3LZ  
Manufacturer: ITW PP & F Korea Limited T: 01484 718674 - F: 01484 400164  
13th Fl., Unit B, PAX Tower enquiries@sovereign-omega.co.uk  
609 Eonju-ro, Gangnam-Gu www.sovereign-omega.co.uk  
Seoul, Korea 06108  
Tel: +82-2-2088-3560  
Fax: +82-2-513-3567  
magna@magnagroup.com  
www.magnagroup.com

Further information can be obtained from: magna@magnagroup.com

### 1.4. Emergency telephone number

Emergency telephone: NHS: 111

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## SECTION 2: HAZARDS IDENTIFICATION

### 2.1. Classification of the substance or mixture

CLP: The product is classified: Aquatic Chronic 3;H412

### 2.2. Label elements

H412 Harmful to aquatic life with long lasting effects.  
P273 Avoid release to the environment.  
P501 Dispose of contents/container in accordance with local regulations.

### 2.3. Other hazards

PBT/vPvB: This product does not contain any PBT or vPvB substances.

Other: Prolonged or repeated contact with skin may cause redness, itching, irritation, eczema, skin cracking and oil acne. Degreasing to skin. The harmful effects may increase in used oil.

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

### 3.2. Mixtures

The product contains: mineral oil (DMSO < 3% (IP 346)) and additives.

CLP:

<u>%:</u>	<u>CAS-No.:</u>	<u>EC No.:</u>	<u>REACH Reg. No.:</u>	<u>Chemical name:</u>	<u>Hazard classification:</u>	<u>Notes:</u>
0.1-1	68937-40-6	273-065-8	-	Phenol, isobutyleneated, phosphate (3:1)	Aquatic Acute 1;H400 Aquatic Chronic 1;H410	
0.1-1	128-39-2	204-884-0	-	2,6-Di-tert-butylphenol	Skin Irrit. 2;H315 Aquatic Acute 1;H400 Aquatic Chronic 1;H410	#

<u>Chemical name:</u>	<u>SCL</u>	<u>M (ac)</u>	<u>M (chr)</u>	<u>ATE(o)</u> (mg/kg bw)	<u>ATE(d)</u> (mg/kg bw)	<u>ATE(i)</u> (vapour, mg/L)
Phenol, isobutyleneated, phosphate (3:1)		1	1	-	-	-
2,6-Di-tert-butylphenol		1	1	-	-	-

Notes:

#: The substance has been assigned an exposure limit.

References: The full text for all hazard statements is displayed in section 16.

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## SECTION 4: FIRST AID MEASURES

### **4.1. Description of first aid measures**

Inhalation: Move into fresh air and keep at rest. In case of persistent throat irritation or coughing: Seek medical attention and bring these instructions.

Skin contact: Remove contaminated clothing immediately and wash skin with soap and water.

Eye contact: Immediately flush with plenty of water for at least 15 minutes. Remove any contact lenses and open eyelids widely. If irritation persists: Seek medical attention and bring along these instructions.

Ingestion: Immediately rinse mouth and drink 1-2 glasses of water. Keep person under observation. If uncomfortable: Transportation to hospital. Bring along these instructions.

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

Symptoms/effects: See section 11 for more detailed information on health effects and symptoms.

### **4.3. Indication of any immediate medical attention and special treatment needed**

Medical attention/treatments: Treat symptomatically.

## SECTION 5: FIREFIGHTING MEASURES

### **5.1. Extinguishing media**

Extinguishing media: Small fires: Extinguish with carbon dioxide or dry powder.  
Larger fires: Extinguish with foam, carbon dioxide or dry powder.  
Do not use water jet as an extinguisher, as this will spread the fire.

### **5.2. Special hazards arising from the substance or mixture**

Specific hazards: During fire, gases hazardous to health may be formed.

### **5.3. Advice for firefighters**

Protective equipment for fire-fighters: Selection of respiratory protection for fire fighting: follow the general fire precautions indicated in the workplace.

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## SECTION 6: ACCIDENTAL RELEASE MEASURES

### **6.1. Personal precautions, protective equipment and emergency procedures**

Personal precautions: Avoid inhalation of oil mist and contact with skin and eyes. Follow precautions for safe handling described in this safety data sheet.

### **6.2. Environmental precautions**

Environmental precautions: Do not discharge into drains, water courses or onto the ground.

### **6.3. Methods and material for containment and cleaning up**

Methods for cleaning up: Absorb spillage with oil-absorbing material. Clean contaminated area with oil-removing material.

### **6.4. Reference to other sections**

References: For personal protection, see section 8.  
For waste disposal, see section 13.

## SECTION 7: HANDLING AND STORAGE

### **7.1. Precautions for safe handling**

Safe handling advice: Observe good chemical hygiene practices. Avoid prolonged and repeated contact with oil, particularly used oil. Always remove oil with soap and water or skin cleaning agent, never use organic solvents. Do not use oil-contaminated clothing or shoes, and do not put rags moistened with oil into pockets.

Technical measures: Use work methods which minimise oil mist production.

Technical precautions: When working with heated oil, mechanical ventilation may be required.

### **7.2. Conditions for safe storage, including any incompatibilities**

Technical measures for safe storage: No special precautions.

Storage conditions: Store in tightly closed original container.

### **7.3. Specific end use(s)**

Specific use(s): Not relevant.

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## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### **8.1. Control parameters**

No occupational exposure limit assigned.

### **8.2. Exposure controls**

Engineering measures: Provide adequate ventilation and minimise the risk of inhalation of vapours and oil mist. Provide access to washing facilities incl. soap, skin cleanser and fatty cream.

Personal protection: Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.

Respiratory equipment: In case of inadequate ventilation or risk of inhalation of oil mist, suitable respiratory equipment with combination filter (type A2/P3) can be used.

Hand protection: Wear protective gloves.  
Nitrile gloves are recommended.  
Thickness: >0.3 mm; Breakthrough time: >240 min.  
The most suitable glove must be chosen in consultation with the gloves supplier, who can inform about the breakthrough time of the glove material.

Eye protection: Risk of contact: Wear goggles/face shield.

Hygiene measures: Wash hands after handling. Wash contaminated clothing before reuse.

Environmental Exposure Controls: Not available.

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## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

### 9.1. Information on basic physical and chemical properties

Physical state: Liquid.  
Colour: Not available.  
Odour: Not available.  
Odour threshold: Not available.  
pH: Not available.  
Melting point / freezing point: Not available.  
Boiling point: Not available.  
Flash point: Not available.  
Evaporation rate: Not available.  
Explosive limits Not available.  
Vapour pressure: Not available.  
Vapour density: Not available.  
Relative density: ~0.9  
Solubility: Not available.  
Partition coefficient (n-octanol/water): Not available.  
Auto-ignition temperature (°C): Not available.  
Decomposition temperature (°C): Not available.  
Viscosity: 68 / 150 / 220 / 460 mm<sup>2</sup>/s (40°C)  
Oxidising properties: Not available.

### 9.2. Other information

Other data: Not available.

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## SECTION 10: STABILITY AND REACTIVITY

### **10.1. Reactivity**

Reactivity: Not reactive.

### **10.2. Chemical stability**

Stability: Stable under normal temperature conditions.

### **10.3. Possibility of hazardous reactions**

Hazardous Reactions: None known.

### **10.4. Conditions to avoid**

Conditions to avoid Heat, sparks, flames.

### **10.5. Incompatible materials**

Incompatible materials: Strong oxidising substances.

### **10.6. Hazardous decomposition products**

Hazardous decomposition products: None in particular.

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## SECTION 11: TOXICOLOGICAL INFORMATION

### 11.1. Information on toxicological effects

The harmful effects may increase in used oil.

Acute Toxicity (Oral): Based on available data, the classification criteria are not met.

Acute Toxicity (Dermal): Based on available data, the classification criteria are not met.

Acute Toxicity (Inhalation): Based on available data, the classification criteria are not met.

Skin Corrosion/Irritation: Based on available data, the classification criteria are not met.

Serious eye damage/irritation: Based on available data, the classification criteria are not met.

Respiratory or skin sensitisation: Based on available data, the classification criteria are not met.

Germ cell mutagenicity: Based on available data, the classification criteria are not met.

Carcinogenicity: Based on available data, the classification criteria are not met.

Reproductive Toxicity: Based on available data, the classification criteria are not met.

STOT - Single exposure: Based on available data, the classification criteria are not met.

STOT - Repeated exposure: Based on available data, the classification criteria are not met.

Aspiration hazard: Based on available data, the classification criteria are not met.

Inhalation: Inhalation of oil mist or vapours formed during heating of the product will irritate the respiratory system and provoke coughing.

Skin contact: Degreasing. Prolonged or frequent contact may cause redness, itching, irritation, eczema, skin cracking and oil acne.

Eye contact: Splashes may irritate.

Ingestion: May irritate and cause malaise.

Specific effects: Prolonged or repeated contact with used oil may cause serious skin diseases, such as dermatitis and skin cancer.

### 11.2. Information on other hazards

Endocrine disrupting properties: The product does not contain any substance identified as having endocrine disrupting properties.

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## SECTION 12: ECOLOGICAL INFORMATION

### **12.1. Toxicity**

Ecotoxicity: Harmful to aquatic life with long lasting effects.  
2,6-Di-tert-butylphenol:  
M(ac) = 1  
M(chr) = 1  
Phenol, isobutylenated, phosphate (3:1):  
M(ac) = 1  
M(chr) = 1

### **12.2. Persistence and degradability**

Degradability: The product is expected to be slowly biodegradable.

### **12.3. Bioaccumulative potential**

Bioaccumulative potential: No data available on bioaccumulation.

### **12.4. Mobility in soil**

Mobility: No data available.

### **12.5. Results of PBT and vPvB assessment**

PBT/vPvB: This product does not contain any PBT or vPvB substances.

### **12.6. Endocrine disrupting properties**

Endocrine disrupting properties: The product does not contain any substance identified as having endocrine disrupting properties.

### **12.7. Other adverse effects**

Other adverse effects: None known.

## SECTION 13: DISPOSAL CONSIDERATIONS

### **13.1. Waste treatment methods**

Dispose of waste and residues in accordance with local authority requirements. Waste is classified as hazardous waste.

Waste from residues: EWC-code: 13 02 05

Contaminated packaging: Dispose of contaminated packings as residue.

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## SECTION 14: TRANSPORT INFORMATION

The product is not covered by international regulation on the transport of dangerous goods (IMDG, IATA, ADR/AND/RID).

### **14.1. UN number**

UN-No: -

### **14.2. UN proper shipping name**

Proper Shipping Name: -

### **14.3. Transport hazard class(es)**

Class: -

### **14.4. Packing group**

PG: -

### **14.5. Environmental hazards**

Marine pollutant: -

Environmentally Hazardous -

substance:

### **14.6. Special precautions for user**

Special precautions: Not relevant.

### **14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code**

Transport in bulk: Not relevant.

## SECTION 15: REGULATORY INFORMATION

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

National regulation: UK Statutory Instruments, 2021 No. 904, CONSUMER PROTECTION ENVIRONMENTAL PROTECTION HEALTH AND SAFETY. The REACH etc. (Amendment) Regulations 2021.  
Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 with amendments.  
The Control of Substances Hazardous to Health Regulations 2002 (S.I. 2002 No. 2677) with amendments.  
The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use) (Amendment etc.) (EU Exit) Regulations 2019 (SI 2019 No. 720), as amended.  
EH40/2005, Workplace exposure limits 2005, with amendments.  
The List of Wastes (England) (Amendment) Regulations 2005. (SI 2005 No. 895).

### **15.2. Chemical Safety Assessment**

CSA status: No chemical safety assessment has been carried out.

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## SECTION 16: OTHER INFORMATION

The user must be instructed in the proper work procedure and be familiar with the contents of these instructions.

### Handling of used oils:

Protect health - avoid prolonged and repeated skin contact. Wash with soap and water. Protect the environment - do not pollute drains, water courses or the soil. Contact your local authority for any used oil disposal instructions.

The following sections contain revisions or new statements: 1, 2, 3, 4, 7, 8, 11, 12, 13, 15, 16.

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### Abbreviations and acronyms used in the safety data sheet:

CSA= Chemical Safety Assessment.  
M(ac) = M-factor acute toxicity.  
M(chr) = M-factor chronic toxicity.  
PBT = Persistent, Bioaccumulative and Toxic.  
vPvB = very Persistent and very Bioaccumulative.

Additional information: All components of this product are listed or exempt from listing on the TSCA inventory. Classification according to Regulation (EC) No. 1272/2008: Calculation method.

### Wording of H-statements:

H315	Causes skin irritation.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.

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The information on this data sheet represents our current data and is reliable provided that the product is used under the prescribed conditions and in accordance with the application specified on the packaging and/or in the technical guidance literature. Any other use of the product which involves using the product in combination with any other product or any other process is the responsibility of the user.

Made by DHI - Environment and Toxicology, Agern Allé 5, DK-2970 Hørsholm, Denmark.  
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