

# SAFETY DATA SHEET



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## S-Synvac Series

Revision B

Effective Date: 11/01/2018

Regulation: 1907/2006/EC, In accordance with the provisions of Article 41, Industrial Safety & Health Act. OSHA Hazard Communication Standard (29 CFR 1910.1200).

## 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

### 1.1 PRODUCT IDENTIFIER

**Material Name:** S-Synvac 15, S-Synvac 22, S-Synvac 32, S-Synvac 46, S-Synvac 68, S-Synvac 100, S-Synvac 220

**Product Code :** 14915      14922      14932      14946      14968      14989      14998

### 1.2 RELEVANT IDENTIFIED USES OF THE SUBSTANCE OR MIXTURE AND USES ADVISED AGAINST

**Product Use** : Synthetic Vacuum Pump Fluid

**Uses Advised Against** : This product must not be used in applications other than those recommended in Section 1, without first seeking the advice of the supplier.

### 1.3 DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET

**Manufacturer/Supplier** : Sentinel Lubricants Inc.  
15755 NW 15<sup>th</sup> Ave  
Miami, FL 33169

**Telephone** : Marketing Technician Department  
1(800) 842-6400, (305) 625-6400

**Fax** : (305) 625-6565

**Email Contact for Safety Data Sheet** : [info@sentinelsynthetic.com](mailto:info@sentinelsynthetic.com)

**1.4 EMERGENCY TELEPHONE NUMBER** : INFOTRAC – 1.800.535.5053 Contract #107464  
International – 352.323.3500

## 2. HAZARDS IDENTIFICATION

### 2.1 CLASSIFICATION OF THE SUBSTANCE OR MIXTURE

1999/45/EC and OSHA 29 CFR 1910.1200	
Hazard Characteristics	R-phrased(s)
Not classified as dangerous under EC Criteria Hazard Not Otherwise Classified (HNOC)	

### 2.2 EC LABEL ELEMENTS

Labeling according to Directive 1999/45/EC

**EC Classification** : Not classified as dangerous substance.

**EC Symbols** : No Hazard Symbol required.

**EC Risk Phrases** : Not classified.

**EC Safety Phrases** : Not classified.

**Health Hazard** : Not expected to be a health hazard when used under normal conditions.

**Environmental Hazards** : Not classified as dangerous for the environment.

## 2.3 GHS LABEL ELEMENTS

**GHS Classification** : Not classified as dangerous substance.  
**GHS Symbol(s)** : No symbol.  
**GHS Signal Words** : No signal word.  
**Physical Hazards** : Not classified.  
**Health Hazards** : Not classified.  
**Environmental Hazards** : Not classified as dangerous for the environment.  
**GHS Precautionary Statements**  
    **Prevention** : No Precautionary phrases.  
    **Response** : No Precautionary phrases.  
    **Storage** : No Precautionary phrases.  
    **Disposal** : No Precautionary phrases.

## 2.4 OTHER HAZARDS

**Unclassified Hazards-Health** : Prolonged or repeated skin contact without proper cleaning can clog pores of skin resulting in disorders such as oil acne/folliculitis. High-pressure injection under the skin may cause serious damage. Used oil may contain harmful impurities.  
**Safety** : Not classified as flammable, but will burn.

# 3. COMPOSITION/INFORMATION ON INGREDIENTS

## 3.1 SUBSTANCE

**Material Name** : Not applicable.

## 3.2 MIXTURES

**Mixture Description** : A lubricating vacuum pump fluid consisting of synthetic mineral oils and additives.

Chemical Identity	Name	CAS		Hazard Class (Category)
Synthetic Hydrocarbon Base Oil	1-Decene, Homopolymer, Hydrogenated	68037014		None

**Additional Information** : This mixture does not contain any REACH registered substances that are assessed to be PBT or a vPvB.

As per paragraph (i) of 29 CFR 1910.1200, formulation is considered a trade secret and specific chemical identity and exact percentage of composition may have been withheld.

# 4. FIRST AID MEASURES

## 4.1 DESCRIPTION OF FIRST AID MEASURES

**General Information** : Not expected to be a health hazard when used under normal conditions.  
**Inhalation** : No treatment necessary under normal conditions of use. If coughing or respiratory discomfort occurs, obtain medical advice.  
**Skin Contact** : Remove contaminated clothing. Flush exposed area with waterless cleaner and follow by washing with soap and water if available. When using high pressure equipment, injection of product under the skin can occur. If high pressure injuries occur, the casualty should be sent immediately to a hospital. Do not wait for symptoms to develop. If persistent irritation occurs, obtain medical attention. Obtain medical attention even in absence of apparent wounds.  
**Eye Contact** : Remove contact lenses. Flush eye with copious quantities of water. If persistent irritation occurs, obtain medical attention.  
**Ingestion** : In general no treatment is necessary unless large quantities are swallowed; however, seek medical advice.

**Self-protection of the first aider** : When administering first aid, ensure that you are wearing the appropriate personal protective equipment according to the incident, injury and surroundings.

#### 4.2 MOST IMPORTANT SYMPTOMS AND EFFECTS

**Acute and Delayed** : Oil acne/folliculitis signs and symptoms may include formation of black pustules and spots on the skin of exposed areas. Ingestion may result in nausea, vomiting and/or diarrhea.

#### 4.3 INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED

**Note to Physician** : Treat symptomatically. High pressure injection injuries require prompt surgical intervention and possibly steroid therapy to minimize tissue damage and loss of function. Because entry wounds are small and do not reflect the seriousness of the underlying damage, surgical exploration to determine the extent of involvement may be necessary.

### 5. FIRE FIGHTING MEASURES

Clear fire area of all non-emergency personnel.

#### 5.1 EXTINGUISHING MEDIA:

Foam, water spray, or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only. Do not use water in a jet.

#### 5.2 SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE:

Hazardous combustion products may include: a complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide. Unidentified organic and inorganic compounds.

#### 5.3 ADVICE FOR FIREFIGHTERS:

Proper protective equipment including chemical resistant gloves are to be worn; chemical resistant suit is indicated if large contact with spilled product. Self-contained breathing apparatus must be worn when approaching a fire in a confined space. Select fire fighter's clothing approved to relevant standards (e.g. Europe: EN469).

### 6. ACCIDENTAL RELEASE MEASURES

Avoid contact with spilled or released material. For guidance on selection of personal protective equipment see Section 8 of this Safety Data Sheet. Observe the relevant local and international regulations.

#### 6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

**For non-emergency personnel** : Avoid contact with skin and eyes.

**For emergency responders** : Avoid contact with skin and eyes.

#### 6.2 ENVIRONMENTAL PRECAUTIONS:

Use appropriate containment to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth or other appropriate barriers.

#### 6.3 METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP:

Slippery when spilt. Avoid accidents, clean up immediately. Prevent from spreading by making a barrier with sand, earth or other containment material. Reclaim liquid directly or in an absorbent. Soak up residue with absorbent such as clay, sand or other suitable material and dispose of properly. Local authorities should be advised if significant spillages cannot be contained.

#### 6.4 REFERENCE TO OTHER SECTIONS:

For guidance on selection of personal protective equipment see Section 8 of this Safety Data Sheet. For guidance on disposal of spilled material see Section 13 of this Safety Data Sheet.

## 7. HANDLING AND STORAGE

### 7.1 GENERAL PRECAUTIONS:

Use local exhaust ventilation if there is risk of inhalation of vapors, mists or aerosols. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.

### 7.2 PRECAUTIONS FOR SAFE HANDLING:

Avoid prolonged or repeated contact with skin. Avoid inhaling vapors and/or mists. When handling product in drums, safety footwear should be worn and proper handling equipment should be used. Properly dispose of any contaminated rags or cleaning materials in order to prevent fires. Keep container tightly closed and in a cool, well-ventilated place. Use properly labeled and closeable containers.

### 7.3 CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

**Storage** : Store at ambient temperature.

**Recommended Materials** : For containers or container linings, use mild steel or high density polyethylene.

**Unsuitable Materials** : PVC.

Refer to Section 15 for any additional specific legislation covering the packaging and storage of this product.

**7.4 SPECIFIC END USE(S)** : Not applicable.

**Additional Information** : Polyethylene containers should not be exposed to high temperatures because of possible risk of distortion.

Refer to Section 15 for any additional specific legislation covering the packaging and storage of this product.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

If the American Conference of Governmental Industrial Hygienists (ACGIH) value is provided on this document, it is provided for information only.

### 8.1 CONTROL PARAMETERS

#### Occupational Exposure Limits

Material	Source	Type	PPM	mg/m <sup>3</sup>	Notation
Oil mist	ACGIH	TWA (Inhalable fraction)		5	
	OEL (BE)	TWA (Mist)		5	
	OEL (BE)	STEL (Mist)		10	
	OSHA	PEL		5	

**Biological Exposure Index (BEI)** : No biological limit allocated.

**PNEC Related Information** : Data not available.

**Monitoring Methods:** Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances, biological monitoring may also be appropriate. Validated exposure measurement methods should be applied by a competent person and samples analyzed by an accredited laboratory. Examples of sources of recommended exposure measurement methods are given below or contact the supplier. Further national methods may be available.

National Institute of Occupational Safety and Health (NIOSH), USA: Manual of Analytical Methods <a href="http://www.cdc.gov/niosh/">http://www.cdc.gov/niosh/</a>	Institut für Arbeitsschutz Deutschen Gesetzlichen Unfallversicherung (IFA), Germany <a href="http://www.dguv.de/inhalt/index.jsp">http://www.dguv.de/inhalt/index.jsp</a>
Occupational Safety and Health Administration (OSHA), USA: Sampling and Analytical Methods <a href="http://www.osha.gov/">http://www.osha.gov/</a>	L'Institut National de Recherche et de Sécurité, (INRS), France <a href="http://www.inrs.fr/accueil">http://www.inrs.fr/accueil</a>
Health and Safety Executive (HSE), UK: Methods for the	

Determination of Hazardous Substances <a href="http://hse.gov.uk/">http://hse.gov.uk/</a>	
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## 8.2 EXPOSURE CONTROLS

### General Information:

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include: Adequate ventilation to control airborne concentrations. Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated. Define procedures for safe handling and maintenance of controls. Educate and train workers in the hazards and control measures relevant to normal activities associated with this product. Ensure appropriate selection, testing and maintenance of equipment used to control exposure, e.g. personal protective equipment, local exhaust ventilation. Drain down system prior to equipment break-in or maintenance. Retain drain downs in sealed storage pending disposal or for subsequent recycle. Always observe good personal hygiene measures, such as washing hands 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.

### Occupational Exposure Controls

#### Personal Protective Equipment:

The provided information is made in consideration of the PPE directive (Council Directive 89686EEC) and the CEN European Committee for Standardization (CEN) standards. Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.

#### Eye Protection:

Wear safety glasses or full face shield if splashes are likely to occur. Approved to EU Standard EN166.

#### Hand Protection:

Where hand contact with the product may occur, the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739) made from the following materials may provide suitable chemical protection: PVC, neoprene or nitrile rubber gloves. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended. For continuous contact we recommend gloves with breakthrough time or more than 240 minutes with preference for > 480 minutes where suitable gloves can be identified. For short-term/splash protection we recommend the same, but recognize that suitable gloves offering this level of protection may not be available and in this case a lower breakthrough time may be acceptable so long as appropriate maintenance and replacement regimes are followed. Glove thickness is not a good predictor of glove resistance to a chemical as it is dependent on the exact composition of the glove material.

#### Body Protection:

Skin protection not ordinarily required beyond standard issue work clothes.

#### Respiratory Protection:

No respiratory protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid breathing of material. If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. Select a filter suitable for combined particulate/organic gases and vapors [boiling point > 65°C (149°F)] meeting EN14387.

#### Thermal Hazards

: Not applicable.

### Environmental Exposure Controls Measures:

Minimize release to the environment. An environment assessment must be made to ensure compliance with local environmental legislation. Information on accidental release measures are to be found in Section 6. If necessary, prevent material from being discharged to waste water. Waste water should be treated in a municipal or industrial waste water treatment plant before discharge to surface water. Local guidelines on emission limits for volatile substances must be observed for the discharge or exhaust air containing vapor.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

Physical Description : Clear, Fluid, Bland odor	N-Octanol/Water Partition : > 6 (based on information on similar products) Coefficient (log Pow)
pH : NDA	Upper/Lower Flam. : Typical 1-10% (V)
Boiling Point : N/A	Dynamic Viscosity : NDA
Dropping Point : None	Kinematic Viscosity : 5-20 cSt @ 100°C
Flash Point : 250-288°C (488-550°F) Min.	Vapor Density (Air = 1) : > 1 (estimated value)
Water Solubility : Insoluble	Evaporation Rate (nBuAc=1) : NA
Auto-Ignition Temp. : NDA	Decomposition : NDA
Vapor Pressure : N/A	Temperature Flammability : NDA
Relative Density : Typical 0.86-0.88 @ 15°C/59°F	Oxidizing Properties : NDA
Density : Typical 0.9 kg/m <sup>3</sup> @ 15°C/59°F	Explosive Properties : Not classified
Specific Gravity : 0.88-0.89 @ (15.6/15.6C)	

**10. STABILITY AND REACTIVITY**

- 10.1 REACTIVITY** : The product does not pose any further reactivity hazards in addition to those listed in the following sub-paragraph.
- 10.2 CHEMICAL STABILITY** : Stable
- 10.3 POSSIBILITY OF HAZARDOUS REACTIONS** : Reacts with strong oxidizing agents.
- 10.4 CONDITIONS TO AVOID** : Extremes of temperature and direct sunlight.
- 10.5 INCOMPATIBLE MATERIALS** : Strong oxidizing agents.
- 10.6 HAZARDOUS DECOMPOSITION PRODUCTS** : Hazardous decomposition products are not expected to form during normal storage.

**11. TOXICOLOGICAL INFORMATION**

**11.1 INFORMATION TOXICOLOGICAL EFFECTS**

- Basis for Assessment** : Information given is based on data on the components and the toxicology of similar products. Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).
- Likely Routes of Exposure** : Skin and eye contact are the primary routes of exposure although exposure may occur following accidental ingestion.
- Acute Oral Toxicity** : Expected to be of low toxicity: LD50 > 5000mg/kg, Rat.
- Acute Dermal Toxicity** : Expected to be of low toxicity: LD50 > 5000mg/kg, Rabbit.
- Acute Inhalation Toxicity** : Not considered to be an inhalation hazard under normal conditions of use.
- Skin Corrosion/Irritation** : Expected to be slightly irritating. Prolonged or repeated skin contact without proper cleaning can clog pores of the skin resulting in disorders such as oil acne/folliculitis.
- Serious Eye Damage/Irritation** : Expected to be slightly irritating.
- Respiratory Irritation** : Inhalation of vapors or mists may cause irritation.
- Respiratory/Skin Sensitization** : Not expected to be a sensitizer.
- Aspiration Hazard** : Not considered an aspiration hazard.
- Germ Cell Mutagenicity** : Not considered a mutagenic hazard.
- Carcinogenicity** : Not expected to be carcinogenic. Product contains mineral oils of types shown to be non-carcinogenic in animal skin-painting studies. Highly refined mineral oils are not classified as carcinogenic by the International Agency for Research on Cancer (IARC).

Material	Carcinogenicity Classification
PCA-Content (IP346 <3%)	ACGIH Group A4: Not classifiable as human carcinogen
PCA-Content (IP346 <3%)	IARC 3: Not classifiable as to carcinogenicity to humans
PCA- Content (IP346 <3%)	GHS/CLP: No carcinogenicity classification

**Reproductive & Developmental Toxicity** : Not expected to be a hazard.

**Summary on Evaluation of the CMR Properties:**

- Carcinogenicity** : This product does not meet the criteria for classification in categories 1A/1B.
- Mutagenicity** : This product does not meet the criteria for classification in categories 1A/1B.
- Reproductive Toxicity (fertility)** : This product does not meet the criteria for classification categories 1A/1B.
- Specific Target Organ (Single exposure)** : Not expected to be a hazard.
- Specific Target Organ (Repeated exposure)** : Not expected to be a hazard.

**Additional Information** : Used oils may contain harmful impurities that have accumulated during use. The concentration of such harmful impurities will depend on use and they may present risks to health and the environment on disposal. ALL used oil should be handled with caution and skin contact avoided as far as possible.

## 12. ECOLOGICAL INFORMATION

**Basis of Assessment** : Eco toxicological data have not been determined specifically for this product. Information given is based on knowledge of the components and the ecotoxicology of similar products. Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).

### 12.1 TOXICITY

**Acute Toxicity** : Poorly soluble mixture. May cause physical fouling of aquatic organisms. Expected to be practically nontoxic: LL/EL/IL50 > 100mg/l (to aquatic organisms) LL/EL50 expressed as the nominal amount of product required to prepare aqueous extract. Mineral oil is not expected to cause any chronic effects to aquatic organisms at concentrations less than 1mg/L.

**12.2 PERSISTENCE & DEGRADABILITY** : Expected to not be readily biodegradable. Major constituents are expected to be inherently biodegradable, but product contains components that may persist in the environment.

**12.3 BIO ACCUMULATIVE POTENTIAL** : Contains components with the potential to bioaccumulate.

**12.4 MOBILITY IN SOIL** : Liquid under most environmental conditions. If it enters soil, it will adsorb to soil particles and will not be mobile. Floats in water.

**12.5 RESULT OF PBT & vPvB ASSESSMENT** : This mixture does not contain any REACH registered substances that are assessed to be a PBT or a vPvB.

**12.6 OTHER ADVERSE EFFECTS** : Product is a mixture of non-volatile components, which are not expected to be released to air in any significant quantities. Not expected to have ozone depletion potential, photochemical ozone creation potential or global warming potential.

## 13. DISPOSAL CONSIDERATIONS

### 13.1 WASTE TREATMENT METHODS

**Material Disposal** : Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine to proper waste classification and disposal methods in compliance with applicable regulations. Do not dispose into the environment, in drains or in water courses.

**Container Disposal** : Dispose in accordance with prevailing regulations, preferably to a recognized collector or contractor. The competence of the collector or contractor should be established beforehand.

**Local Legislation** : Disposal should be in accordance with applicable regional, national, and local laws and regulations. EU Waste Disposal Code (EWC): 12 01 12 spent waxes and fats. Classification of water is always the responsibility of the end user.

## 14. TRANSPORTATION AND OSHA RELATED LABEL INFORMATION

### Land Transport (ADR/RID)

**ADR:** This product is not classified as dangerous for this mode of transport. Therefore REACH requirements of 14.1 UN Number, 14.2 UN Proper shipping name, 14.3 Transport hazard class(es), 14.4 Packing group, 14.5 Environmental hazards, and 14.6 Special precautions for use do not apply.

**RID:** This product is not classified as dangerous for this mode of transport. Therefore REACH requirements of 14.1 UN Number, 14.2 UN Proper shipping name, 14.3 Transport hazard class(es), 14.4 Packing group, 14.5 Environmental hazards, and 14.6 Special precautions for use do not apply.

**DOT:** Not regulated for land transportation.

**TDG:** Not regulated for land transportation.

### Inland Waterways Transport (AND):

This product is not classified as dangerous for this mode of transport. Therefore REACH requirements of 14.1 UN Number, 14.2 UN Proper Shipping name, 14.3 Transport hazard class(es), 14.4 Packing group, 14.5 Environmental hazards, and 14.6 Special precautions for use do not apply. CDNI Inland Water Waste: NST 3411 Greases Agreement.

### Sea Transport (IDMG CODE):

This product is not classified as dangerous for this mode of transport. Therefore REACH requirements of 14.1 UN Number, 14.2 UN Proper Shipping name, 14.3 Transport hazard class(es), 14.4 Packing group, 14.5 Environmental hazards, and 14.6 Special precautions for use do not apply.

### Air Transport (IATA):

This product is not classified as dangerous for this mode of transport. Therefore REACH requirements of 14.1 UN Number, 14.2 UN Proper shipping name, 14.3 Transport hazard class(es), 14.4 Packing group, 14.5 Environmental hazards, and 14.6 Special precautions for use do not apply.

### Transport in Bulk According to Annex II of MARPOL 73/78 and IBC Code

**Pollution Category** : N/A                      **Ship Type** : N/A

**Product Name** : N/A                              **Special Precaution** : N/A

**Additional Information** : MARPOL Annex 1 rules apply for bulk shipments by sea.

## 15. REGULATORY INFORMATION

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

### 15.1 SAFETY, HEALTH & ENVIRONMENTAL REGULATIONS/LEGISLATION SPECIFIC FOR THE SUBSTANCE OR MIXTURE

**Other Regulatory Information** : Product is not subject to Authorization under REACH.

#### Authorizations and/or Restrictions on Use

**Recommended Restrictions on Use (Advice Against)** : This product must not be used in applications other than those recommended in Section 1, without first seeking the advice of the supplier.

#### Chemical Inventory Status

**EINECS** : All components listed on polymer exempt.

**TSCA** : All components listed.

### 15.2 CHEMICAL SAFETY ASSESSMENT

**Industrial Safety Health Act** : N/A

**Toxic Chemical Control Act** : N/A

**Dangerous Goods Safe Control Act** : Non-Dangerous Goods (Avoid fire source)

**Waste Management Act** : Treat with article 4/5/24/25 of disposal considerations sections



## 16. OTHER INFORMATION

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

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

**Additional Information** : No Exposure Scenario annex is attached to this Safety Data Sheet as it is a non-classified mixture containing no hazardous substances.

**Abbreviations and Acronyms** : The standard abbreviations and acronyms used in this document can be looked up in reference literature (e.g., scientific dictionaries) and/or websites.

ACGIH = American Conference of Governmental Industrial Hygienists  
 AICS = Australian Inventory of Chemical Substances  
 BEL = Biological Exposure Limits  
 CAS = Chemical Abstract Service  
 CLP = Classification Packaging and Labeling  
 DIN = Deutsches Institut für Normung  
 DNEL = Derived No Effect Level  
 EC = European Commission  
 ECETOC = European Center on Ecotoxicology and Toxicology of Chemicals  
 EINECS = European Inventory of Existing Commercial Chemical Substances  
 ENCS = Japanese Existing and New Chemical Substances Inventory  
 GHS = Globally Harmonized System of Classification and Labeling of Chemicals  
 IATA = International Air Transport Association  
 IL50 = Inhibitory Level Fifty  
 INV = Chinese Chemicals Inventory  
 IP346 = Institute of Petroleum test method N°346 for the determination of polycyclic aromatics DMSO extractables  
 KECI = Korea Existing Chemicals Inventory  
 LD50 = Lethal Dose Fifty Percent  
 LL50 = Lethal Loading Fifty  
 NOEC/NOEL = No Observed Effect Concentration/ No Observed Effect Level  
 PBT = Persistent, Bio accumulative and Toxic  
 PNEC = Predicted No Effect Concentration  
 RID = Regulations Relating to International Carriage of Dangerous Goods by Rail  
 STEL = Short Term Exposure Limit  
 TSCA = US Toxic Substances Control Act  
 vPvB = very Persistent and very Bio accumulative

ADR = European Agreement concerning the International Carriage of Dangerous Goods by Road  
 ASTM = American Society for Testing and Materials  
 BTEX = Benzene, Toluene, Ethylbenzene, Xylenes  
 CEFIC = European Chemical Industrial Council  
 COC = Cleveland Open-Cup  
 DMEL = Derived Minimal Effect Level  
 DSL = Canada Domestic Substance List  
 EC50 = Effective Concentration Fifty  
 ECHA = European Chemicals Agency  
 EL50 = Effective Loading Fifty  
 EWC = European Waste Code  
 IARC = International Agency for Research on Cancer  
 IC50 = Inhibitory Concentration Fifty  
 IMDG = International Maritime Dangerous Goods

LC50 = Lethal Concentration Fifty  
 LL/EL/IL = Lethal Loading/Effective Loading/Inhibitory Loading  
 MARPOL = International Convention for the Prevention of Pollution from Ships  
 OE\_HP V = Occupational Exposure-High Pollution Volume  
 PICCS = Philippine Inventory of Chemicals and Chemical Substances  
 REACH = Registration Evaluation & Authorization of Chemicals  
 SKIN\_DES = Skin Designation  
 RA = Targeted Risk Assessment  
 TWA = Time Weighted Average

### **Additional Abbreviations and Acronyms:**

Acute Tox. = Acute Toxicity  
 Aquatic Acute = Acute hazards to the aquatic environment  
 Eye Dam. = Serious eye damage/eye irritation  
 Skin Corr. = Skin corrosion irritation  
 STOT Se = Specific target organ toxicity- single exposure

Asp Tox. = Aspiration Toxicity  
 Aquatic Chronic = Long-term hazard to the aquatic environment  
 Flam. Liq. = Flammable liquids  
 Skin Sens. = Skin sensitization  
 STOT Re = Specific target organ toxicity- repeated exposure

**SDS Distribution** : The information in this document should be made available to all who may handle the product.

**SDS Revision Number** : B

**SDS Effective Date** : 11/01/2018

**SDS Regulation** : Regulation 1907/2006/EC as amended by Regulation (EU) 453/2000. In accordance with the provisions of Article 41, Industrial Safety & Health Act and OSHA Hazard Communication Standard (29 CFR 1910.1200).

**Disclaimer** : The information is based on our current knowledge and is intended to describe the product for the purpose of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.