# Safety Data Sheet



| Revision date 10  | /18/2016  |
|---|-----------|
| 1 Identification  |           |
| Product identifier  |           |
| Product name: n-Undecane  |           |
| Stock number: A11747<br>CAS Number:   |           |
| 1120-21-4<br>EC number:   |           |
| 214-300-6<br>Relevant identified uses of the substance or mixture and uses advised against.   |           |
| Identified use: SU24 Scientific research and development  |           |
| Details of the supplier of the safety data sheet<br>Manufacturer/Supplier:  |           |
| Alfa Aesar<br>Thermo Fisher Scientific Chemicals, Inc.  |           |
| 30 Bond Street<br>Ward Hill, MA 01835-8099  |           |
| Tel: 800-343-0660   |           |
| Tel: 800-343-0660<br>Fax: 800-322-4757<br>Email: tech@alfa.com  |           |
| www.alfa.com  |           |
| Information Department: Health, Safety and Environmental Department<br>Emergency telephone number:  |           |
| During normal business hours (Monday-Friday, 8am-7pm EST), call (800) 343-0660. After normal business hours, call Carechem 24 at (866) 928-0789.              |           |
| 2 Hazard(s) identification  |           |
| Classification of the substance or mixture in accordance with 29 CFR 1910 (OSHA HCS)  |           |
|   |           |
| GHS02 Flame   |           |
| Flam. Liq. 3 H226 Flammable liquid and vapour.  |           |
| GHS08 Health hazard   |           |
| Asp. Tox. 1 H304 May be fatal if swallowed and enters airways.  |           |
| <b>(!)</b> GHS07  |           |
| Skin Irrit. 2 H315 Causes skin irritation.  |           |
| Eye Irrit. 2A H319 Causes serious eye irritation.   |           |
| STOT SE 3 H335 May cause respiratory irritation.<br>Hazards not otherwise classified No information known.  |           |
| Label elements  |           |
| GHS label elements The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)<br>Hazard pictograms                                       |           |
| $\wedge \wedge \wedge$  |           |
|   |           |
| GHS02 GHS07 GHS08   |           |
| Signal word Danger<br>Hazard statements   |           |
| Hazard statements<br>H226 Flammable liquid and vapour.  |           |
| H315 Causes skin irritation.  |           |
| H319 Causes serious eye irritation.<br>H335 May cause respiratory irritation.   |           |
| H304 May be fatal if swallowed and enters airways.<br>Precautionary statements  |           |
| P261 Avoid breathing dust/fume/gas/mist/vapours/spray.  |           |
| P261 Avoid breathing dust/fume/gas/mist/vapours/spray.<br>P280 Wear protective clothing.<br>P301+P330+P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting. |           |
| P315 Get immediate medical advice/attention.  |           |
| WHMIS classification<br>B3 - Combustible liquid   |           |
| D2B - Toxic material causing other toxic effects  |           |
|   |           |
|   |           |
| Classification system   |           |
| HMIS ratings (scale 0-4)<br>(Hazardous Materials Identification System)   |           |
| HEALTH 2 Health (acute effects) = 2   |           |
| HEALTH     2       FIRE     2       FIRE     2       REACTIVITY     1       Physical Hazard = 1   |           |
| Other hazards   |           |
| Results of PBT and vPvB assessment<br>PBT: Not applicable.  |           |
| vPvB: Not applicable.   |           |
| 3 Composition/information on ingredients  |           |
| Chemical characterization: Substances   |           |
| CAS# Description:<br>1120-21-4 n-Undecane   |           |
| (Contd. c   | on page 2 |
|   | - USA -   |

## Product name: n-Undecane

Identification number(s): EC number: 214-300-6

### 4 First-aid measures

Description of first aid measures

After inhalation Supply fresh air. If required, provide artificial respiration. Keep patient warm. Seek immediate medical advice. After skin contact Immediately wash with water and soap and rinse thoroughly. Seek immediate medical advice.

After eye contact Rinse opened eye for several minutes under running water. Then consult a doctor. After swallowing Seek medical treatment. Information for doctor

Information for doctor Most important symptoms and effects, both acute and delayed Causes skin irritation. Causes serious eye irritation. May cause respiratory irritation. May be fatal if swallowed and enters airways. Indication of any immediate medical attention and special treatment needed No further relevant information available.

### 5 Fire-fighting measures

### Extinguishing media

Suitable extinguishing agents Carbon dioxide, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam. Special hazards arising from the substance or mixture If this product is involved in a fire, the following can be released: Carbon monoxide and carbon dioxide Advice for firefighters Protective equipment: Wear self-contained respirator. Wear fully protective impervious suit.

6 Accidental release measures

**Personal precautions, protective equipment and emergency procedures** Wear protective equipment. Keep unprotected persons away. Ensure adequate ventilation **Environmental precautions:** Do not allow product to reach sewage system or any water course.

Methods and material for containment and cleaning up: Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust). Dispose of contaminated material as waste according to section 13. Ensure adequate ventilation.

Prevention of secondary hazards: No special measures required. Reference to other sections See Section 7 for information on safe handling See Section 8 for information on personal protection equipment. See Section 13 for disposal information.

### 7 Handling and storage

Handling Precautions for safe handling Keep container tightly sealed. Store in cool, dry place in tightly closed containers. Ensure good ventilation at the workplace. Information about protection against explosions and fires: Keep ignition sources away.

Conditions for safe storage, including any incompatibilities Storage

Requirements to be met by storerooms and receptacles: No special requirements. Information about storage in one common storage facility: Store away from oxidizing agents. Further information about storage conditions: Keep container tightly sealed. Store in cool, dry conditions in well sealed containers.

Specific end use(s) No further relevant information available.

### 8 Exposure controls/personal protection

Additional information about design of technical systems: Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

Control parameters Components with limit values that require monitoring at the workplace: The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

### Exposure controls

Exposure controls Personal protective equipment General protective and hygienic measures The usual precautionary measures for handling chemicals should be followed. Keep away from foodstuffs, beverages and feed. Remove all solied and contaminated clothing immediately. Wash hands before breaks and at the end of work. Avoid contact with the eyes and skin. Maintain an ergonomically appropriate working environment. Breathing equipment: Use suitable respirator when high concentrations are present. Recommended filter device for short term use: Use a respirator with multi-purpose combination (US) or type ABEK (EN 14387) as a backup to engineering controls. Risk assessment should be performed to determine if air-purifying respirators are appropriate. Only use equipment tested and approved under appropriate government standards such as NIOSH (USA) or CEN (EU). Protection of hands:

Protection of hands:

Protection of Inarias. Impervious gloves Check protective gloves prior to each use for their proper condition. The selection of suitable gloves not only depends on the material, but also on quality. Quality will vary from manufacturer to manufacturer. Material of gloves Nitrile rubber, NBR

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Product name: n-Undecane

enetration time of glove material (in minutes) 480 Glove thickness 0.4 mm Eye protection: Safety glasses Body protection: Protective work clothing.

### 9 Physical and chemical properties

| Information on basic physical and che<br>General Information  | emical properties   |
|---|---|
| Appearance:<br>Form:  | Liquid  |
| Odor:   | Ald   |
| Odor threshold:   | Not determined.   |
| pH-value:   | Not determined.   |
| Change in condition<br>Melting point/Melting range:<br>Boiling point/Boiling range:<br>Sublimation temperature / start: | -26 °C (-15 °F)<br>196 °C (385 °F)<br>Not determined                                      |
| Flash point:<br>Flammability (solid, gaseous)<br>Ignition temperature:<br>Decomposition temperature:<br>Auto igniting:  | 60 °C (140 °F)<br>Not determined.<br>220 °C (428 °F)<br>Not determined<br>Not determined. |
| Danger of explosion:  | Not determined.   |
| Explosion limits:<br>Lower:   | 0.6 Vol %   |
| Upper:  | 6.5 Vol %   |
| Vapor pressure at 20 °C (68 °F):  | 0.6 hPa   |
| Density at 20 °C (68 °F):   | 0.74 g/cm³ (6.175 lbs/gal)  |
| Relative density  | Not determined.   |
| Vapor density   | Not determined.   |
| Evaporation rate  | Not determined.   |
| Solubility in / Miscibility with  |   |
| Water:  | Not miscible or difficult to mix  |
| Partition coefficient (n-octanol/water):  | Not determined.   |
| Viscosity:<br>dynamic:  | Not determined.   |
| kinematic:  | Not determined.   |
| Other information   | No further relevant information available.  |
|   |   |
|   |   |

### 10 Stability and reactivity

Reactivity No information known. Chemical stability Stable under recommended storage conditions. Thermal decomposition / conditions to be avoided: Decomposition will not occur if used and stored according to specifications. Possibility of hazardous reactions Reacts with strong oxidizing agents Conditions to avoid No further relevant information available. Incompatible materials: Oxidizing agents Hazardous decomposition products: Carbon monoxide and carbon dioxide

### 11 Toxicological information

Information on toxicological effects Acute toxicity: The Registry of Toxic Effects of Chemical Substances (RTECS) contains acute toxicity data for this substance. LD/LC50 values that are relevant for classification: No data Skin irritation or corrosion: Causes skin irritation. Eye irritation or corrosion: Causes serious eye irritation. Sensitization: No sensitizing effects known. Germ cell mutagenicity: No effects known. Carcinogenicity: No classification data on carcinogenic properties of this material is available from the EPA\_LARC\_NTP\_OSH

Germ cell mutagenicity: No effects known. Carcinogenicity: No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH. Reproductive toxicity: No effects known. Specific target organ system toxicity - repeated exposure: No effects known. Specific target organ system toxicity - single exposure: May cause respiratory irritation. Aspiration hazard: May be fatal if swallowed and enters airways. Subacute to chronic toxicity: No effects known. Additional toxicological information: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

Carcinogenic categories OSHA-Ca (Occupational Safety & Health Administration) Substance is not listed.

### 12 Ecological information

Toxicity Aquatic toxicity: No further relevant information available. Persistence and degradability No further relevant information available. Bioaccumulative potential No further relevant information available. Mobility in soil No further relevant information available. Additional ecological information: Ceneral notes: General notes: Do not allow undiluted product or large quantities to reach ground water, water course or sewage system. Avoid transfer into the environment. Results of PBT and vPvB assessment **PBT:** Not applicable. **vPvB:** Not applicable

Other adverse effects No further relevant information available.

### 13 Disposal considerations

Waste treatment methods Recommendation Consult state, local or national regulations to ensure proper disposal.

(Contd. on page 4)

## Product name: **n-Undecane**

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| 4 Transport information         UN-Number<br>DOT, IMDG, IATA       UN2330         UN proper shipping name<br>DOT       Undecane<br>UNDECANE         Transport hazard class(es)       UNDECANE         DOT       INDECANE         Class       3         Label       3         Vince Class       3         Label       3         IMDG, IATA       3         Vince Class       3         Label       3         IMDG, IATA       3         Vince Class       3         Label       3         IMDG, IATA       10         Vince Class       10         Label       3         Packing group       Vinde Class         DOT, IMDG, IATA       10         Environmental hazards: </th <th>Uncleaned packagings:<br/>Recommendation: Disposal must be made according to official regul</th> <th>(Contd. of page</th>   | Uncleaned packagings:<br>Recommendation: Disposal must be made according to official regul  | (Contd. of page   |
|--|---|---|
| UN-Number     UN2330       UN2530     Underson       UN2530     Underson <th></th> <th></th>   |   |   |
| UP groep shipping name<br>UNDECANE       UNDECANE         Transport heard class(es)       UNDECANE         DOT       Image: Class (es)         OC       Image: Class (es)         Class       Image: Class (es)         OC       Image: Class (es)         Class       Image: Class (es)         OC   | UN-Number   | 1002200   |
| IMDG, IATA       UNDECANE         Transport hazard class(es)       O         OF       Image: Class   | UN proper shipping name   |   |
| Dot         Citizes       3         Citizes       3         MIDE       (F) Flammable liquids.         Citizes       3         MIDE       (F) Flammable liquids.         Citizes       3         File       3         MIDE       (ArA         See Label       3         File       3         Port       (Mide)         See Label       3         File       (Mide)         See Label       3         File       (Mide)         See Label       3         File       (Mide)         See Label       (Mide)         Wide       (Mide)         Wide       (Mide)         Wide       (Mide)         See Label       (Mide)         See Label       (Mide)         Wide       (Mide)         See Label       (Mide)         See Label       (Mide)         See Label <td< td=""><td></td><td></td></td<>  |   |   |
| Yes       Planmable liquids.         Yes       3         Yes       Yes         <   | ,   |   |
| Label       3/3 (F1) Flammable liquids         INDE       1         Feating group.       3         DOT, INDES, IATA       III         Feating group.       001         DOT, INDES, IATA       III         Eable       3         Environmental heards:       Not applicable.         Environmental heards:       Not applicable.         Transport In bulk according to Annex II of MARPOLT378 and the IBC Code Not applicable.       Transport In bulk according to Annex II of MARPOLT378 and the IBC Code Not applicable.         Transport In bulk according to Annex II of MARPOLT378 and the IBC Code Not applicable.       Transport In bulk according to Annex II of MARPOLT378 and the IBC Code Not applicable.         Transport In bulk according to Annex II of MARPOLT378 and the IBC Code Not applicable.       Transport In bulk according to Annex II of MARPOLT378 and the IBC Code Not applicable.         Transport In bulk according to Annex II of MARPOLT378 and the IBC Code Not applicable.       Transport III on III on IIII on IIIII on IIII on IIIII on IIII on IIIII on IIIIIII on IIIIIIII   |   |   |
| Label       3/3 (F1) Flammable liquids         INDE       1         Feating group.       3         DOT, INDES, IATA       III         Feating group.       001         DOT, INDES, IATA       III         Eable       3         Environmental heards:       Not applicable.         Environmental heards:       Not applicable.         Transport In bulk according to Annex II of MARPOLT378 and the IBC Code Not applicable.       Transport In bulk according to Annex II of MARPOLT378 and the IBC Code Not applicable.         Transport In bulk according to Annex II of MARPOLT378 and the IBC Code Not applicable.       Transport In bulk according to Annex II of MARPOLT378 and the IBC Code Not applicable.         Transport In bulk according to Annex II of MARPOLT378 and the IBC Code Not applicable.       Transport In bulk according to Annex II of MARPOLT378 and the IBC Code Not applicable.         Transport In bulk according to Annex II of MARPOLT378 and the IBC Code Not applicable.       Transport III on III on IIII on IIIII on IIII on IIIII on IIII on IIIII on IIIIIII on IIIIIIII   | - <del></del>   |   |
| Class       3/F1 / Flammable liquids         Original Control       3/F1 / Flammable liquids         Original Control       3/F1 / Flammable liquids         Pecking group       III         Environmental hazards:       Not applicable.         Special processitions for user       Warning: Flammable liquids         Feesting Flammable liquids       Feesting         Transport in bulk according to Annex II of MARPOLT3/T8 and the IBC Code Not applicable.       Transport Additional information:         Original Control       No       No         Out Model Regulation:       UN2330. Undecane, 3. III       No         Out Model Regulation:       UN2330. Undecane, 3. III       No         State of the product is classified and labeled in accordance with 20 CFR 1910 (OSHA HCS)       State of the product is classified and labeled in accordance with 20 CFR 1910 (OSHA HCS)         State of the product is classified and labeled in accordance with 20 CFR 1910 (OSHA HCS)       State of the product is classified and labeled in accordance with 20 CFR 1910 (OSHA HCS)         State of the product is classified and labeled in accordance with 20 CFR 1910 (OSHA HCS)       State of the product is classified and labeled in accordance with 20 CFR 1910 (OSHA HCS)         State of the product is classified and labeled in accordance with 20 CFR 1910 (OSHA HCS)       State of the product is classified and labeled in accordance.         State of the product is classified and   |   | 3 Flammable liquids.  |
| IMDC, IATA         Easi       3         Environmental hazards:       Not applicable.         Environmental hazards:       Not applicable.         Transport In bulk according to Annex II of MARPOLT378 and the IBC Code Not applicable.         Transport In bulk according to Annex II of MARPOLT378 and the IBC Code Not applicable.         Transport In bulk according to Annex II of MARPOLT378 and the IBC Code Not applicable.         Transport Additional information:         DOT       No         UN 'Model Regulation':       UN2330, Undecane, 3, III         Security health and ontroamantal regulationspace (for the substance or mixture offst babe learners the product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)         Hazard pictograms       X         View Code Secure registration       X <td>Class</td> <td>3<br/>3 (F1) Flammable liquids</td>  | Class   | 3<br>3 (F1) Flammable liquids   |
| Pocking group<br>DOT, MGC, IATA         III           Environmental hazards:         Not applicable.           Special processultons for user<br>EMS Number:         FE.3-E           Transport In bulk according to Annex II of MARPOLT378 and the IBC Code Not applicable.         FE.3-E           Transport In bulk according to Annex II of MARPOLT378 and the IBC Code Not applicable.         FE.3-E           OT         Marke Pollutant (DOT):         No           UN "Model Regulation":         UN2330, Undecane. 3, III           OT         Safety, health and environmental regulations/legislation specific for the substance or mixture<br>GetS babel elements The product is classified and labeled in accordance with 29 CFR 1910 (OSH4 HCS)           Faranzard pictograms         Feedulation (DOT):         No           Model Segulation (Date)         GetSi Segulation (Segulation (Segulation Specific for the substance or mixture<br>GetSi Segulation (Segulation (Segulation Specific for the substance or mixture<br>GetSi Segulation (Segulation (Segula  |   | 3   |
| Preking group<br>ODT, MGC, IATA         III           Environmental hazards:         Not applicable.           Special processitions for user<br>EMS Number:         FE.35E           Transport In bulk according to Annex II of MARPOLT3/78 and the IBC Code Not applicable.         FE.35E           Transport In bulk according to Annex II of MARPOLT3/78 and the IBC Code Not applicable.         FE.35E           OT         Mark according to Annex II of MARPOLT3/78 and the IBC Code Not applicable.           OT         Mark according to Annex II of MARPOLT3/78 and the IBC Code Not applicable.           OT         Mark according to Annex II of MARPOLT3/78 and the IBC Code Not applicable.           OT         Mark according to Annex II of MARPOLT3/78 and the IBC Code Not applicable.           OT         Mark according to Annex II of MARPOLT3/78 and the IBC Code Not applicable.           OT         Mark according to Annex II of MARPOLT3/78 and the IBC Code Not applicable.           OT         Mark and environmental regulation?:         UN2330, Undecane. 3, III           Otto State Action and the product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)         Has and pictograms           Mark Condition and the pictograms         Feegulatoric         Feegulatoric           Mark Condition and the Issue and the Issue and the Issue and Its State and and the Issue and Its State and Its State According to Annex II and  |   |   |
| Preking group<br>ODT, MGC, IATA         III           Environmental hazards:         Not applicable.           Special processitions for user<br>EMS Number:         FE.35E           Transport In bulk according to Annex II of MARPOLT3/78 and the IBC Code Not applicable.         FE.35E           Transport In bulk according to Annex II of MARPOLT3/78 and the IBC Code Not applicable.         FE.35E           OT         Mark according to Annex II of MARPOLT3/78 and the IBC Code Not applicable.           OT         Mark according to Annex II of MARPOLT3/78 and the IBC Code Not applicable.           OT         Mark according to Annex II of MARPOLT3/78 and the IBC Code Not applicable.           OT         Mark according to Annex II of MARPOLT3/78 and the IBC Code Not applicable.           OT         Mark according to Annex II of MARPOLT3/78 and the IBC Code Not applicable.           OT         Mark according to Annex II of MARPOLT3/78 and the IBC Code Not applicable.           OT         Mark and environmental regulation?:         UN2330, Undecane. 3, III           Otto State Action and the product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)         Has and pictograms           Mark Condition and the pictograms         Feegulatoric         Feegulatoric           Mark Condition and the Issue and the Issue and the Issue and Its State and and the Issue and Its State and Its State According to Annex II and  | Class   | 3 Flammable liquids.  |
| Environmental hazards:       Not applicable.         Special processions for user       Warning: Flammable liquids         Transport In bulk according to Annex II of MARPOLT3/78 and the IBC Code Not applicable.         Transport In bulk according to Annex II of MARPOLT3/78 and the IBC Code Not applicable.         OT         Marine Poliutant (DOT):       No         UN "Model Regulation":       UN2300, Undecane, 3, III         5 Regulatory Information       Step, health and environmental regulations/legislation specific for the substance or mixture of MS babe learnes for protocol is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)         6 Miss 20 ENSO CHSOT OFHORE       Signal word Danger         7266       Warming: Flammable liquid and vapour.         74316 Causes serious ery intrainin.       Histopie learnes         7430 May be fail if swallowed and enters airways.       Free cautionary statements         7430 May be fail if swallowed and enters airways.       Free cautionary statements         7430 May be fail if swallowed and enters airways.       Free cautionary statements         7430 May be fail if swallowed and net canading.       Free cautionary statements         7431 May be fail if swallowed and net canadina Domaski substances Control Act Chemical substance Inventory.       All components of this product are listed on the Canadian Domaski Substances Lig (DSL).         741 Causes serious aproduct are listed on the Canadian Domaski   | Label   | 3   |
| Special precautions for user         Warning: Flammable liquids           EMS Number:         FE3-E           Transport In bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable.           Transport In bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable.           Transport In bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable.           Transport In bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable.           Transport In bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable.           OT           Marine Pollutant (DOT):         No           UN "Model Regulation":         UN2330, Undecane, 3, III.           Steps Interview II of Market II of Marke  |   |   |
| Transport in bulk according to Annex II of MARPOL7378 and the IBC Code Not applicable.         Transport/Additional Information:         DOT<br>Marine Pollutant (DOT):         No         UN 'Model Regulation':         UN 'Model Regulation':         UN 'Model Regulation':         UN 'Model Regulation:         Step:         Step: <td></td> <td></td>  |   |   |
| Transport/Additional information:       DOT         Marker Pollutant (DOT):       No         UN "Model Regulation":       UN2330, Undecane, 3, III         5 Regulatory information       Safety, health and environmental regulations/legislation specific for the substance or mixture of the product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)         Image: Safety, health and environmental regulations/legislation specific for the substance or mixture of the product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)         Image: Safety, health and environmental regulations/legislation specific for the substance or mixture of the product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)         Image: Safety, health and environmental regulations/legislation specific for the substance or mixture of the product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)         Image: Safety Health Control       Image: Safety Health Control         Safety Health Control       Image: Safety Health Control         <  | EMS Number:   |   |
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| UN "Model Regulation":       UN2330, Undecane, 3, III         5 Regulatory information         Safety, health and environmental regulations/Registation specific for the substance or mixture         GHS label elements The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)         Hazard pictograms         Image: Comparison of the product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)         Hazard pictograms         Image: Comparison of the product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)         Hazard pictograms         Image: Comparison of the product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)         Hazard pictograms         Image: Comparison of the product is classified and vapour.         Hazard statements         Hazard  | DOT   |   |
| Selection       Safety, health and environmental regulations/legislation specific for the substance or mixture<br>GHS label elements. The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)<br>Heard pictograms         Work       Work       Work         Work       Work       Work         Signal word       Danage         Hard pictograms       Work         Signal word       Danage         High       Work         Signal word       Danage         High       Work         High       Work         High       Causes expiratory inflation.         High       Gauses serious eye inflation.         High       Gauses serious eye inflation.         High       Gauses serious eye inflation.         High       Cause reginatory inflationes         Precautions       Wear protective clothin         Precautions       Wear protective clothin         All components of this product are listed on the Canadian Domestic Substances Control Act Chemical substance Inventory.         All components of this product are listed on the Canadian Domestic Substances Is not listed.         Prop 63 - Developmental toxicity, male Substance is not listed.         Prop 63 - Developmental toxicity, male Substance is not listed.         Prop 63 - Developmental toxicity, male Substance is not listed.  |   |   |
| National regulations<br>All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.<br>All components of this product are listed on the Canadian Domestic Substances List (DSL).         SARA Section 313 (specific toxic chemical listings) Substance is not listed.<br>California Proposition 65<br>Prop 65 - Obevelopmental toxicity, Substance is not listed.<br>Prop 65 - Developmental toxicity, female Substance is not listed.<br>Prop 65 - Developmental toxicity, female Substance is not listed.<br>Prop 65 - Developmental toxicity, mela Substance is not listed.<br>Prop 65 - Developmental toxicity, mela Substance is not listed.<br>Information about limitation of use: For use only by technically qualified individuals.<br>Other regulations, limitations and prohibitive regulations<br>Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006. Substance is not listed.<br>The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the<br>market and use must be observed.<br>Substance is not listed.<br>Annex XVI of the REACH Regulations (requiring Authorisation for use) Substance is not listed.<br>Chemical safety assessment: A Chemical Safety Assessment has not been carried out.         6 Other information<br>Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this<br>information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in<br>conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.<br>Department issuing SDS: Global Marketing Department<br>Date of preparation I last revision 10/19/2016 / -<br>Abbreviations<br>Department of Insur | 5 Regulatory information<br>Safety, health and environmental regulations/legislation specific<br>GHS label elements The product is classified and labeled in accordan<br>Hazard pictograms  | UN2330, Undecane, 3, III  |
| Prop 65 - Developmental toxicity Substance is not listed.<br>Prop 65 - Developmental toxicity, female Substance is not listed.<br>Prop 65 - Developmental toxicity, male Substance is not listed.<br>Information about limitations and prohibitive regulations<br>Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006. Substance is not listed.<br>The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the<br>market and use must be observed.<br>Substance is not listed.<br>Annex XIV of the REACH Regulations (requiring Authorisation for use) Substance is not listed.<br>Chemical safety assessment: A Chemical Safety Assessment has not been carried out.<br>6 Other information<br>Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this<br>information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in<br>conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.<br>Department issuing SDS: Global Marketing Department<br>Date of preparation / last revision 10/19/2016 /-<br>ADR: Accord européen sure Ir teransport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)<br>MDD: Internation  | Safety, health and environmental regulations/legislation specific         GHS label elements       The product is classified and labeled in accordate         Hazard pictograms       Image: Constraint of the product is classified and labeled in accordate         Image: Constraint of the product is classified and labeled in accordate         Image: Constraint of the product is classified and labeled in accordate         Image: Constraint of the product is classified and labeled in accordate         Image: Constraint of the product is classified and labeled in accordate         Image: Constraint of the product is classified and labeled in accordate         Signal word Danger         Hazard statements         H226 Flammable liquid and vapour.         H319 Causes serious eye irritation.         H319 Causes serious eye irritation.         H335 May cause respiratory irritation.         H336 May be fatal if swallowed and enters airways.         Precautionary statements         P261       Avoid breathing dust/fume/gas/mist/vapours/spray.         P280       Wear protective clothing.         P301+P330+P331 IF SWALLOWED: rinse mouth. Do NOT induce volume  | UN2330, Undecane, 3, III<br>for the substance or mixture<br>nce with 29 CFR 1910 (OSHA HCS)   |
| Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.<br>Department issuing SDS: Global Marketing Department<br>Date of preparation / last revision 10/19/2016 / -<br>Abbreviations and acronyms:<br>ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)<br>INDE: International Maritime Code for Dangerous Goods<br>DOT: US Department of Transportation   | Safety, health and environmental regulations/legislation specific         GHS label elements       The product is classified and labeled in accordate         Hazard pictograms       Image: Constraint of the product is classified and labeled in accordate         With the product of the product is classified and labeled in accordate         Hazard pictograms         Image: Constraint of the product of the produ | UN2330, Undecane, 3, III<br>for the substance or mixture<br>nce with 29 CFR 1910 (OSHA HCS)<br>miting.<br>otection Agency Toxic Substances Control Act Chemical substance Inventory.<br>ubstances List (DSL).   |
| IMDG: International Maritime Code for Dangerous Goods<br>DOT: US Department of Transportation  | Safety, health and environmental regulations/legislation specific<br>GHS label elements The product is classified and labeled in accordat<br>Hazard pictograms  | UN2330, Undecane, 3, III<br>for the substance or mixture<br>nce with 29 CFR 1910 (OSHA HCS)<br>miting.<br>potection Agency Toxic Substances Control Act Chemical substance Inventory.<br>ubstances List (DSL).<br>not listed.<br>1.<br>Iffied individuals.<br>1 Regulations (EC) No. 1907/2006. Substance is not listed.<br>XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on t<br>r use) Substance is not listed.   |
|  | Safety, health and environmental regulations/legislation specific<br>GHS label elements The product is classified and labeled in accordat<br>Hazard pictograms  | UN2330, Undecane, 3, III for the substance or mixture nce with 29 CFR 1910 (OSHA HCS) mitting. mitting. potection Agency Toxic Substances Control Act Chemical substance Inventory. ubstances List (DSL). not listed. 1. lifted individuals. I Regulations (EC) No. 1907/2006. Substance is not listed. XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on to r use) Substance is not listed. not been carried out. Information gathered by them, and should make independent judgement of suitability of this employees. This information is furnished without warranty, and any use of the product not ir with any other product or process, is the responsibility of the user. |

### Product name: n-Undecane

- IATA: International Air Transport Association EINECS: European Inventory of Existing Commercial Chemical Substances CAS: Chemical Abstracts Service (division of the American Chemical Society) HMIS: Hazardous Materials Information System (USA) USA: Vorkplace Hazardous Materials Information System (Canada) LC50: Lethal concentration, 50 percent UPVB: very Persistent and very Bioaccumulative ACGIH: American Conference of Governmental Industrial Hygienists (USA) OSHA: Occupational Safety and Health Administration (USA) NTP: National Toxicology Program (USA) IARC: International Agency for Research on Cancer EPA: Environmental Protection Agency (USA) Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2 Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2 Syla: Secolitic Biol Category 1 Sys. Tox. 1: Aspiration hazard, Hazard Category 1

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USA