# Safety Data Sheet



Revision date 10	/18/2016
1 Identification	
Product identifier	
Product name: n-Undecane	
Stock number: A11747 CAS Number:	
1120-21-4 EC number:	
214-300-6 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 Manufacturer/Supplier:	
Alfa Aesar Thermo Fisher Scientific Chemicals, Inc.	
30 Bond Street Ward Hill, MA 01835-8099	
Tel: 800-343-0660	
Tel: 800-343-0660 Fax: 800-322-4757 Email: tech@alfa.com	
www.alfa.com	
Information Department: Health, Safety and Environmental Department 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. 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) Hazard pictograms	
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GHS02 GHS07 GHS08	
Signal word Danger Hazard statements	
Hazard statements H226 Flammable liquid and vapour.	
H315 Causes skin irritation.	
H319 Causes serious eye irritation. H335 May cause respiratory irritation.	
H304 May be fatal if swallowed and enters airways. Precautionary statements	
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.	
P261 Avoid breathing dust/fume/gas/mist/vapours/spray. P280 Wear protective clothing. P301+P330+P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.	
P315 Get immediate medical advice/attention.	
WHMIS classification B3 - Combustible liquid	
D2B - Toxic material causing other toxic effects	
Classification system	
HMIS ratings (scale 0-4) (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 PBT: Not applicable.	
vPvB: Not applicable.	
3 Composition/information on ingredients	
Chemical characterization: Substances	
CAS# Description: 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 General Information	emical properties
Appearance: Form:	Liquid
Odor:	Ald
Odor threshold:	Not determined.
pH-value:	Not determined.
Change in condition Melting point/Melting range: Boiling point/Boiling range: Sublimation temperature / start:	-26 °C (-15 °F) 196 °C (385 °F) Not determined
Flash point: Flammability (solid, gaseous) Ignition temperature: Decomposition temperature: Auto igniting:	60 °C (140 °F) Not determined. 220 °C (428 °F) Not determined Not determined.
Danger of explosion:	Not determined.
Explosion limits: 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: 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 DOT, IMDG, IATA       UN2330         UN proper shipping name DOT       Undecane 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: Recommendation: Disposal must be made according to official regul</th> <th>(Contd. of page</th>	Uncleaned packagings: Recommendation: Disposal must be made according to official regul	(Contd. of page
UN-Number     UN2330       UN2530     Underson       UN2530     Underson <th></th> <th></th>		
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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		
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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.
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National regulations All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory. 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. California Proposition 65 Prop 65 - Obevelopmental toxicity, Substance is not listed. Prop 65 - Developmental toxicity, female Substance is not listed. Prop 65 - Developmental toxicity, female Substance is not listed. Prop 65 - Developmental toxicity, mela Substance is not listed. Prop 65 - Developmental toxicity, mela Substance is not listed. Information about limitation of use: For use only by technically qualified individuals. Other regulations, limitations and prohibitive regulations Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006. Substance is not listed. 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 market and use must be observed. Substance is not listed. Annex XVI of the REACH Regulations (requiring Authorisation for use) Substance is not listed. Chemical safety assessment: A Chemical Safety Assessment has not been carried out.         6 Other information 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. Department issuing SDS: Global Marketing Department Date of preparation I last revision 10/19/2016 / - Abbreviations Department of Insur	5 Regulatory information Safety, health and environmental regulations/legislation specific GHS label elements The product is classified and labeled in accordan Hazard pictograms	UN2330, Undecane, 3, III
Prop 65 - Developmental toxicity Substance is not listed. Prop 65 - Developmental toxicity, female Substance is not listed. Prop 65 - Developmental toxicity, male Substance is not listed. Information about limitations and prohibitive regulations Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006. Substance is not listed. 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 market and use must be observed. Substance is not listed. Annex XIV of the REACH Regulations (requiring Authorisation for use) Substance is not listed. Chemical safety assessment: A Chemical Safety Assessment has not been carried out. 6 Other information 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. Department issuing SDS: Global Marketing Department Date of preparation / last revision 10/19/2016 /- ADR: Accord européen sure Ir teransport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road) 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 for the substance or mixture 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. Department issuing SDS: Global Marketing Department Date of preparation / last revision 10/19/2016 / - Abbreviations and acronyms: ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road) INDE: International Maritime Code for Dangerous Goods 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 for the substance or mixture nce with 29 CFR 1910 (OSHA HCS) miting. otection Agency Toxic Substances Control Act Chemical substance Inventory. ubstances List (DSL).
IMDG: International Maritime Code for Dangerous Goods DOT: US Department of Transportation	Safety, health and environmental regulations/legislation specific GHS label elements The product is classified and labeled in accordat Hazard pictograms	UN2330, Undecane, 3, III for the substance or mixture nce with 29 CFR 1910 (OSHA HCS) miting. potection Agency Toxic Substances Control Act Chemical substance Inventory. ubstances List (DSL). not listed. 1. Iffied individuals. 1 Regulations (EC) No. 1907/2006. Substance is not listed. XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on t r use) Substance is not listed.
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### 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