

Safety Data Sheet per OSHA HazCom 2012

| per OSHA HazCom 2012 | Printing date 11/23/2015 Reviewed on 04/03/2013 |
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| 1 Identification Product identifier Product name: Nepsilon-Benzyloxycarbonyl-Nalpha-Boc-L-lysine Stock number: H59537 CAS Number: 2389-45-9 EC number: | |
| 219-221-0 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 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) 028-0780 |
| 2 Hazard(s) identification Classification of the substance or mixture in accordance with 29 CFR 1910 (OSHA HCS) The substance is not classified according to the Globally Harmonized System (GHS). Hazards not otherwise classified No information known. | al (000) 920-0709. |
| Label elements GHS label elements Not applicable Hazard pictograms Not applicable Signal word Not applicable Hazard statements Not applicable WHMIS classification Not controlled Classification system HMIS ratings (scale 0-4) (Hazardous Materials Identification System) HEALTH I Health (acute effects) = 1 Flammability = 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: 2389-45-9 Nepsilon-Benzyloxycarbonyl-Nalpha-Boc-L-lysine Identification number(s): EC number: 219-221-0 | |
| 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 Most important symptoms and effects, both acute and delayed No further relevant information available. 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 re- 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 Nitrogen oxides (NOx) Advice for firefighters Protective equipment: Wear self-contained respirator. Wear fully protective impervious suit. | sistant foam. |
| 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 material to be released to the environment without proper governmental permits. Methods and material for containment and cleaning up: Pick up mechanically. | (Contd. on page 2) USA |

| Provention of secondary heards: No special measures required: See Second Providence and Application of providence optimized See Second Providence of the Application of the Application and Internet of the Application of t | | ····· | ewed on 04/03/2013 |
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| Provention of secondary heards: No special measures required: See Second Providence and Application of providence optimized See Second Providence of the Application of the Application and Internet of the Application of t | Product name: Nepsilon-Benzyloxy | carbonyl-Nalpha-Boc-L-lysine | |
| Handling are set and the group consistence both program from Non-Research States and Sta | See Section 7 for information on safe ha See Section 8 for information on person | andling al protection equipment. | (Contd. of page 1) |
| Conditions for safe storage, including any incompatibilities Property of the safe storage in one common storage field(by: Frideat form have storage to not ecommon storage field(by: Frideat form have storage to not ecommon storage field(by: Frideat form have storage to not ecommon storage field(by: Frideat form have storage to not ecommon storage field(by: Frideat form have storage to not ecommon storage field(by: Frideat form have storage to not ecommon storage field(by: Frideat form have storage to not ecommon storage field(by: Frideat form have storage to not have storage conditions: Keep conditions to field storage and having an average face velocity of at least 100 field par minute. Frideat form have storage to not have storage and these storage conditions in the storage storage face velocity of at least 100 field par minute. Frideat form have storage and these storage and these storage conditions in the storage | Handling | ontainar tidhtly saalad | |
| Requirements to be multiplication of common Strange Rectify: Province in the common strange Rectify: Strange and the common strange Rectify: Strange Rectify: Strange Rectify: Additional Information about design of technical systems: Control parameters: Control parameters: < | Conditions for safe storage, including | | |
| 8 Exposure controls/personal protection Additional information about design of technical systems: Control personal production about design of technical systems: Control personal production about design of the concentrals and having an average face velocity of at least 100 feet per minute. Control personal production about design of the concentrals with infur values that require monitoring at the workplace: The product desonal control and production about desonal about de followed. Argenarie controls Personal productive equipment General productive equipment: Mathemation and productive equipment for across fragmentation. Brackland of abadit The solution of abadit Control personal productive equipment for across for across and productive equipment for across and productive equipment for across and productite equipment for across and productive equipment for | Requirements to be met by storeroon Information about storage in one con Protect from heat. | nmon storage facility: | |
| Additional information about design of technical systems: Property operating chemical lumbe hold designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute. Property operating chemical lumbe hold designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute. Property operating chemical lump entities with oritical values that have to be monitored at the workplace. Additional information: No data Exposure controls Property controls Property operations of means for hazardous and the oritical values that have to be monitored at the workplace. Additional information: No data Exposure controls Property operations of the original properties for hazardous and the followed. Additional information of salable globes of their proper condition. The selection of salable globes of hazardous and their difference of hards: Protection of salable globes of horizand the original work in the followed. Additional information of salable globes of horizand the net difference of hards: Protection of salable globes of hazardous and properties Protection of salable globes of horizand on the material, but also on quality. Quality will vary from manufacturer to manufacturer. Protection of salable globes of colorida and on the material, but also on quality. Quality will vary from manufacturer to manufacturer. Protection of salable globes of colorida and on the material, but also on quality. Quality will vary from manufacturer to manufacturer. Protection of colorida plobes of colorida and chemical properties Mageerance: Protection of salable globes of colorida and chemical properties Mageerance: Protection of the salable globes of colorida and chemical properties Mageerance: Protection of salable globes of colorida and chemical properties Mageerance: Mageerance: Mageerance: Mageerance: Mageerance: Mageerance: Mageerance: Mageerance: Mageerance: Mageerance: Mageerance: Mageerance: Mageerance: Mageerance: Mageerance: Magee | Further information about storage co Specific end use(s) No further relevant | nditions: Keep container tightly sealed. t information available. | |
| Components with limit values that require monitoring at the workplace: The product design of cardinal my relevant quantities of makenials with critical values that have to be monitored at the workplace. Figure cardinal productive equipment General protective and hygienic measures The usual productive equipment General protective and hygienic measures The usual productive equipment General protective and hygienic measures The usual productive equipment General protective and hygienic measures The usual productive equipment General protective and hygienic measures The usual productive equipment General protective and hygienic measures The usual productive equipment General protective and hygienic measures The usual productive equipment General protective at the of do work mment. General protective at the of do work mment The sole of hands: | Additional information about design of Properly operating chemical fume hood | of technical systems: | |
| Personal protective equipment General protective and Nytenic measures frequences and the equipment tasks should be followed. Heap away from footsfulfs, beverages and fed Remove all solid and containisted colling immediately. Wash hands before breaks and at the end of work. Beep away from footsfulfs, beverages and fed Remove all solid and containisted colling immediately. Wash hands before breaks and at the end of work. Beep away from footsfulfs, beverages and fed Remove all solid and containisted colling immediately. Wash hands before breaks and at the end of work. Breakting equipment: Use solid before for their proper condition. The selection of satisfies and chemical properties Body protection: Protective work clothing. | Components with limit values that re The product does not contain any releva | quire monitoring at the workplace: ant quantities of materials with critical values that have to be monitored at the workplace. | |
| Impervious gloves Circle Applicative gloves prior to each use for their proper condition. Prederation time of glove material (in uninutes) Not determined Body protection: Safety glasses Portsation: Portsation: Portsation: Not determined Body protection: Not determined Body protection: Not determined Body protesistin: Not determin | Personal protective equipment General protective and hygienic meas The usual precautionary measures for h Keep away from foodstuffs, beverages a Remove all soiled and contaminated clo Wash hands before breaks and at the e Maintain an ergonomically appropriate v Breathing equipment: Use suitable res | andling chemicals should be followed. and feed. thing immediately. nd of work. vorking environment. | |
| Information on basic physical and chemical properties General Information Appearance: Form: Powder Color: White Odor: Not determined Odor: Not determined Odor: Not applicable Charge in condition Not applicable Charge in condition Not determined Boiling point/Meiting range: Not determined Boiling point/Meiting r | Impervious gloves Check protective gloves prior to each us The selection of suitable gloves not only Penetration time of glove material (in Eye protection: Safety glasses | minutes) Not determined | |
| General Information Powder Appearance: Powder Form: Powder Odor: White Odor: Not determined Odor threshold: Not determined pH-value: Not determined Definition Melting point/Boiling range: Not determined Boiling point/Boiling range: Sublimation temperature / start: Not determined Boiling point/Boiling range: Not determined Boiling in condition Medermined Boiling in temperature: Not determined Genomosition temperature: Not determined Danger of explosion: Not determined Explosion limits: Not determined Lower: Not determined Vapor pressure: Not determined Relative deality Not determined Relative deality Not determined Viscosity: Not determined Vapor pressure: Not determined Vapor pressure: Not determined Vapor pressure: Not determined Viscosity: Not determined Viscosity: < | 9 Physical and chemical properties | \$ | |
| Color: White Odor: Not determined Odor: Not determined. pH-value: Not applicable. Change in condition Melting point/Bolling range: Melting point/Bolling range: Not determined Bolling point/Bolling range: Not determined Sublimation temperature start: Not determined Geomposition temperature: Not determined Mot igniting: Not determined Danger of explosion: Not determined Low of goint innits: Not determined Low of the termined Not determined Wapor pressure: Not determined Upper: Not determined Vapo | General Information Appearance: | | |
| pH-value: Not applicable. Change in condition Melting point/Welting range: Not determined Boiling point/Welting range: Not determined Sublimation temperature / start: Boiling point/Welting range: Not determined Welting point/Welting range: Not determined Boiling point/Welting range: Flammability (solid, gaseous) Not determined Weltermined Not determined Ignition temperature: Not determined Danger of explosion: Not determined. Explosion limits: Not determined Upper: Not determined Vapor pressure: Not applicable. Density: Not determined Vapor density Not applicable. Vapor density Not applicable. Vapor density Not determined. Vapor density Not applicable. Vapor density Not determined. | Color: Odor: | White Not determined | |
| Change in condition Melling point/Melling range: Not determined Boiling point/Boiling range: Not determined Sublimation temperature / start: Not determined Flammability (solid, gaseous) Not determined geniton temperature: Not determined Danger of explosion: Not determined Danger of explosion: Not determined Auto igniting: Not determined Danger of explosion: Not determined Upper: Not determined Upper: Not determined Vapor pressure: Not determined. Vapor pressure: Not determined. Vapor density Not applicable. Evaporation rate Not applicable. Solubility in / Miscibility with Not applicable. Viscosity: Not determined. qynamic: Not determined. Viscosity: Not determined. Qupart: Not determined. Solubility in / Miscibility with Not applicable. Viscosity: Not determined. Qupartic: Not determined. Relative density Not applicable. | | | |
| Melting point/Welting range: Not determined Boiling point/Boiling range: Not determined Sublimation temperature' start: Not determined Flammability (solid) gaseous) Not determined Junger of explosion: Not determined Danger of explosion: Not determined Lower: Not determined Lower: Not determined Upper: Not determined Lower: Not determined Upper: Not determined Vapor pressure: Not determined Vapor density Not applicable. Solubility in / Miscibility with Not applicable. Vapor matic: Not applicable. Solubility in / Miscibility with Not applicable. Water: Not determined Partition coefficient (n-octanol/water): Not determined Viscosity: Not applicable. Other information known. | Change in condition | | |
| Auto igniting: Not determined. Danger of explosion: Not determined. Explosion limits: Lower: Lower: Not determined Vapor pressure: Not applicable. Density: Not determined. Relative density Not determined. Vapor pressure: Not determined. Partition coefficient (n-octanol/water): Not determined. Viscosity: Not determined. Partition coefficient (n-octanol/water): Not determined. Viscosity: Not applicable. Viscosity: Not determined. Viscosity: Not determined. Viscosity: Not applicable. Viscosity: Not applicable. Viscosity: Not applicable. Viscosity: Not applicable. Other information No further relevant information available. 10 Stability and reactivity No further relevant information sto available. Thermical stability Stable under recommended storage conditions. Chemical stability Stable under recommended storage conditions. Thermal decomposition / conditions to be avolided: Decomposition will not occur if used and stored according to specifications. | Melting point/Melting range: Boiling point/Boiling range: Sublimation temperature / start: Flammability (solid, gaseous) Ignition temperature: Decomposition temperature: | Not determined Not determined Not determined Not determined Not determined | |
| Explosion limits: Not determined Lower: Not determined Upper: Not determined Vapor pressure: Not determined Pensity: Not determined Relative density Not determined Vapor density Not determined Relative density Not applicable. Evaporation rate Not applicable. Solubility in / Miscibility with Not determined Water: Not determined. Partition coefficient (n-octanol/water): Not determined. Viscosity: dynamic: Not applicable. kinematic: Not applicable. ofter information Not determined. Viscosity: dynamic: dynamic: Not applicable. kinematic: Not applicable. ofter information No further relevant information available. 10 Stability and reactivity Reactivity No information known. Chemical stability Stable under recommended storage conditions. Chemical stability Stable under recommended storage composition will not occur if used and stored according to specifications. Possibility of hazardous reactions Reacts with storago oxidizing agents Conditions to avoid No furth | Auto igniting: | | |
| Vapor pressure: Not applicable. Density: Not determined. Relative density Not applicable. Evaporation rate Not applicable. Solubility in / Miscibility with Not determined. Water: Not determined. Partition coefficient (n-octanol/water): Not determined. Viscosity: Not determined. viscosity: Not determined. Viscosity: Not applicable. dynamic: Not applicable. kinematic: Not applicable. 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 avoided: Decomposition valiable. Incompatible materials: Oxidizing agents Heat | Explosion limits: Lower: | Not determined | |
| Derisity: Not determined Relative density Not applicable. Vapor density Not applicable. Evaporation rate Not applicable. Solubility in / Miscibility with Not determined Partition coefficient (n-octanol/water): Not determined. Partition coefficient (n-octanol/water): Not determined. Viscosity: Not applicable. dynamic: Not applicable. kinematic: Not applicable. Other information No truther 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 Not diale agents Vision genetic Avoid No further relevant information available. | Vapor pressure: | Not applicable. | |
| Vapor density * Not applicable. Evaporation rate Not applicable. Solubility in / Miscibility with Not determined Water: Not determined. Partition coefficient (n-octanol/water): Not determined. Viscosity: Not applicable. dynamic: Not applicable. kinematic: Not applicable. 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 available. Incompatible materials: Oxidizing agents Oxidizing agents Heat | Density: | Not determined | |
| Solubility in / Miscibility with | Vapor density | Not applicable. | |
| Partition coefficient (n-octanol/water): Not determined. Viscosity: dynamic: Not applicable. winematic: Not applicable. 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 Heat | Evaporation rate Solubility in / Miscibility with | Not applicable. | |
| dynamic: Not applicable. kinematic: Not applicable. 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 Heat | Partition coefficient (n-octanol/water) | | |
| kinematic: Not applicable. 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 Oxidizing agents | dynamic: | Not applicable. | |
| 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 Heat | kinematic: | Not applicable. | |
| (vonto, or) page oj LISA – | Reactivity No information known. Chemical stability Stable under recome Thermal decomposition / conditions to Possibility of hazardous reactions Re Conditions to avoid No further relevan Incompatible materials: Oxidizing agents | to be avoided: Decomposition will not occur if used and stored according to specifications. eacts with strong oxidizing agents | (Contd. on page 3) |

10 Stability and reactivity

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| Product name: Nepsilon-Benzyloxycarbonyl-Nalpha-Boc-L- | -lysine | |
| | | (Contd. of page 2) |
| Hazardous decomposition products: Carbon monoxide and carbon dioxide Nitrogen oxides | | |
| 11 Toxicological information | | |
| Information on toxicological effects | | |
| Acute toxicity: No effects known. LD/LC50 values that are relevant for classification: No data | | |
| Skin irritation or corrosion: May cause irritation | | |
| Eye irritation or corrosion: May cause irritation Sensitization: No sensitizing effects known. Germ cell mutagenicity: No effects known. | | |
| Germ cell mutagenicity: No effects known. Carcinogenicity: No classification data on carcinogenic properties of the | his material is available from the EPA_IARC_NTP_OSHA or ACGIH | |
| Reproductive toxicity: No effects known. | | |
| Specific target organ system toxicity - repeated exposure: No effect Specific target organ system toxicity - single exposure: No effects I | known. | |
| Specific target organ system toxicity - single exposure: No effects I Aspiration hazard: No effects known. Subacute to chronic toxicity: No effects known. Additional toxicological information: To the best of our knowledge th | | |
| Additional toxicological information: To the best of our knowledge th | ne acute and chronic toxicity of this substance is not fully known. | |
| 12 Ecological information | | |
| Toxicity | | |
| Aquatic toxicity: No further relevant information available. Persistence and degradability No further relevant information available. | le. | |
| 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: General notes: | | |
| Do not allow material to be released to the environment without proper Do not allow undiluted product or large quantities to reach ground water | governmental permits. | |
| Avoid transfer into the environment. | r, water course or sewage system. | |
| 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 | e proper disposal | |
| Uncleaned packagings: Recommendation: Disposal must be made according to official regulat | | |
| | uuns. | |
| 14 Transport information UN-Number | | |
| DOT, ADN, IMDG, IATA | Not applicable | |
| UN proper shipping name DOT, ADN, IMDG, IATA | Not applicable | |
| Transport hazard class(es) | | |
| DOT, ADR, ADN, IMDG, IATA Class | Not applicable | |
| Packing group DOT, IMDG, IATA | Νοι αρμισανίο | |
| | Not applicable | |
| Environmental hazards: Special precautions for user | Not applicable. Not applicable. | |
| Transport in bulk according to Annex II of MARPOL73/78 and the I | | |
| Transport/Additional information: | | |
| DOT | | |
| Marine Pollutant (DOT): | No | |
| UN "Model Regulation": | - | |
| 15 Regulatory information | | |
| Safety, health and environmental regulations/legislation specific for | or the substance or mixture | |
| GHS label elements Not applicable Hazard pictograms Not applicable | | |
| Signal word Not applicable Hazard statements Not applicable | | |
| 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 Non-Domestic Substances List (NDSL). | | |
| SARA Section 313 (specific toxic chemical listings) Substance is not listed. California Proposition 65 | | |
| Prop 65 - Chemicals known to cause cancer Substance is not listed. | | |
| 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 limitation of use: For use only by technically qualit Other regulations, limitations and prohibitive regulations | | |
| The conditions of restrictions according to Article 67 and Annex X | Regulations (EC) No. 1907/2006. Substance is not listed. VII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturi. | ng, placing on the |
| market and use must be observed. Substance is not listed. | | - |
| Anney XIV of the REACH Regulations (requiring Authorisation for | use) Substance is not listed | |

Annex XIV of the REACH Regulations (requiring Authorisation for use) Substance is not listed.

(Contd. on page 4)

(Contd. of page 3)

USA

Product name: Nepsilon-Benzyloxycarbonyl-Nalpha-Boc-L-lysine

Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 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. conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the use Department issuing SDS: Global Marketing Department Date of preparation / last revision 11/23/2015 / - 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) DOT: US Department of Transportation EINECS: European Inventory of Existing Commercial Chemical Substances CAS: Chemical Abstracts Service (division of the American Chemical Society) HMIS: Hazardous Materials Identification System (USA) WHMIS: Workplace Hazardous Materials Information System (Canada) LC50: Lethal concentration, 50 percent PVPB: very Persistent and very Bioaccumulative ACGIH: American Conference of Governmental Industrial Hygienists (USA) OSHA: Occupational Safety and Health Administration (USA) MTP: National Toxicology Program (USA) MARC: International Agency for Research on Cancer EPA: Environmental Protection Agency (USA)