



	1 Identification Product identifier	
	Product name: 1-Cyclohexene-1-boronic acid pinacol ester	
	Stock number: H51036 CAS Number:	
	141091-37-4 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) 928-0789.	
	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.	
	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)	
	FRE Flammability = 1 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: 141091-37-4 1-Cyclohexene-1-boronic acid pinacol ester	
	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 delaved 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 active with water approver a cleabel registrant form	
	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 Boron oxide 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 material to be released to the environment without proper governmental permits. Methods and material for containment and cleaning up: Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust). 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 8 for information on personal protection equipment.

Control parameters Components with limit values that require mor Additional information: No data Exposure controls Personal protective equipment General protective and hygienic measures The usual precautionary measures for handling of Keep away from foodstuffs, beverages and feed. Remove all solled and contaminated clothing imm Wash hands before breaks and at the end of work Maintain an ergonomically appropriate working en Breathing equipment: Use suitable respirator wh Protection of hands: Impervious gloves Check protective gloves prior to each use for their The selection of suitable gloves not only depends Penetration time of glove material (in minutes) Eye protection: Safety glasses Body protection: Protective work clothing. Physical and chemical properties Information on basic physical and chemical pr General Information Appearance: Form: Color: Didor: Didor: Mot dete Boiling point/Melting range: Not dete Sublimation temperature / start: Not dete Flash point: Not dete Auto igniting: Not dete	ns and fires: No information known. ompatibilities ceptacles: No special requirements. rage facility: Store away from oxidizing agents. ners. on available. cal systems: for hazardous chemicals and having an average face velocity of at least 100 feet per minute. nitoring at the workplace: Not required. hemicals should be followed. rediately. k nitonment. hen high concentrations are present. r proper condition. on the material, but also on quality. Quality will vary from manufacturer to manufacturer. Not determined roperties	
Handling Precautions for safe handling Keep container tightly sealed. Store in cool, dry place in tightly closed containers Information about protection against explosion Conditions for safe storage, including any inco- Storage Requirements to be met by storerooms and re- Information about storage in one common stor Further information about storage conditions: Keep container tightly sealed. Store in cool, dry conditions in well sealed contain Specific end use(s) No further relevant information Additional information about design of technic Properly operating chemical fume hood designed Control parameters Components with limit values that require more Additional information: No data Exposure controls Personal protective equipment General protective and hygienic measures The usual precautionary measures for handling of Keep away from foodstuffs, beverages and feed. Remove all soiled and contaminated clothing imm Wash hands before breaks and at the end of work Maintain an ergonomically appropriate working en Breathing equipment: Use suitable respirator whe Maintain an ergonomically appropriate working en Breathing equipment: Use suitable respirator whe Protection of hands: Impervious gloves Check protection: Protective work clothing. Physical and chemical properties Deform: Color: Deprection: Safety glasses Body protection: Protective work clothing. Physical and chemical properties Difference: Form: Color: Difference: Form: Color: Difference: Not deter Boiling point/Boiling range: Sublimation temperature / start: Not deter Boiling point/Boiling range: Not deter Boiling po	ns and fires: No information known. ompatibilities ceptacles: No special requirements. rage facility: Store away from oxidizing agents. ners. on available. cal systems: for hazardous chemicals and having an average face velocity of at least 100 feet per minute. nitoring at the workplace: Not required. hemicals should be followed. rediately. k nitonment. hen high concentrations are present. r proper condition. on the material, but also on quality. Quality will vary from manufacturer to manufacturer. Not determined roperties	
Keep container tightly sealed. Store in cool, dry place in tightly closed containers Information about protection against explosion Conditions for safe storage, including any incomstonation about storage in one common ston Further information about storage conditions: Keep container tightly sealed. Store in cool, dry conditions in well sealed contain Specific end use(s) No further relevant information Additional information about design of technic Properly operating chemical fume hood designed Control parameters Components with limit values that require more Additional information: No data Exposure controls Personal protective equipment General protective equipment General protective and hygienic measures The usual precautionary measures for handling cl Keep oveall soiled and contaminated clothing imm Wash hands before breaks and at the end of word Maintain an ergonomically appropriate working err Breathing equipment: Use suitable respirator whe Protection of hands: Impervious gloves Check protective gloves prior to each use for thein Check protection: Protective work clothing. Physical and chemical properties Inf	ns and fires: No information known. ompatibilities ceptacles: No special requirements. rage facility: Store away from oxidizing agents. ners. on available. cal systems: for hazardous chemicals and having an average face velocity of at least 100 feet per minute. nitoring at the workplace: Not required. hemicals should be followed. rediately. k nitonment. hen high concentrations are present. r proper condition. on the material, but also on quality. Quality will vary from manufacturer to manufacturer. Not determined roperties	
Store in cool, dry place in tightly closed containers Information about protection against explosion Conditions for safe storage, including any inco Storage Requirements to be met by storerooms and re Information about storage in one common sto Further information about storage conditions: Keep container tightly sealed. Store in cool, dry conditions in well sealed contain Specific end use(s) No further relevant information Additional information about design of technic Properly operating chemical fume hood designed Control parameters Components with limit values that require mon Additional information: No data Exposure controls Personal protective equipment General protective equipment General protective and hygienic measures The usual precautionary measures for handling cl Keep away from foodstuffs, beverages and feed. Remove all soiled and contaminated clothing imm Wash hands before breaks and at the end of worth Maintain an ergonomically appropriate working er Breathing equipment: Use suitable respirator wh Protection of hands: Impervious gloves Check protection: Safety glasses Body protection: Protective work clothing. Physical and chemical properties Information on basic physical and chemical pro General Information Appearance: Form: Liquid Color: Dhysical and chemical properties Information on basic physical and chemical pro General Information Appearance: Form: Color: Difficulting point/Melting range: Not deter Boiling point/Melting range: Not deter Flash point: Flash point: Not deter Flash point: Not deter Auto igniting: Not deter Auto igniting: Not deter Auto igniting: Not deter Auto igniting: Not deter Auto igniting: Not deter Not deter N	ns and fires: No information known. ompatibilities ceptacles: No special requirements. rage facility: Store away from oxidizing agents. ners. on available. cal systems: for hazardous chemicals and having an average face velocity of at least 100 feet per minute. nitoring at the workplace: Not required. hemicals should be followed. rediately. k nitonment. hen high concentrations are present. r proper condition. on the material, but also on quality. Quality will vary from manufacturer to manufacturer. Not determined roperties	
Information about protection against explosion Conditions for safe storage, including any inco Storage Requirements to be met by storerooms and re Information about storage in one common stor Further information about storage conditions: Keep container tightly sealed. Store in cool, dry conditions in well sealed contain Specific end use(s) No further relevant information Additional information about design of technic Properly operating chemical fume hood designed Control parameters Components with limit values that require mon Additional information: No data Exposure controls Personal protective equipment General protective and hygienic measures The usual precautionary measures for handling of Keep away from foodstuffs, beverages and feed. Remove all solled and contaminated clothing immr Wash hands before breaks and at the end of work Maintain an ergonomically appropriate working en Breathing equipment: Use suitable respirator with Protection of hands: Impervious gloves Check protective gloves prior to each use for their The selection of suitable gloves not only depends Penetration time of glove material (in minutes) Eye protection: Protective work clothing. Physical and chemical properties Information on basic physical and chemical pro- General Information Appearance: Form: Color: Light yel Odor threshold: pH-value: Not detection of the start: Not detection of mange: Not detection of mange: Not detection temperature / start: Not detection temperature / start: Not detection temperature: Not detection	ns and fires: No information known. ompatibilities ceptacles: No special requirements. rage facility: Store away from oxidizing agents. ners. on available. cal systems: for hazardous chemicals and having an average face velocity of at least 100 feet per minute. nitoring at the workplace: Not required. hemicals should be followed. rediately. k nitonment. hen high concentrations are present. r proper condition. on the material, but also on quality. Quality will vary from manufacturer to manufacturer. Not determined roperties	
Storage Requirements to be met by storerooms and re Information about storage in one common sto. Further information about storage conditions: Keep container tightly sealed. Store in cool, dry conditions in well sealed contain Specific end use(s) No further relevant information Additional information about design of technic Properly operating chemical fume hood designed Control parameters Components with limit values that require more Additional information: No data Exposure controls Personal protective equipment General protective and hygienic measures The usual precautionary measures for handling cl Keep oaway from foodstuffs, beverages and feed. Remove all soiled and contaminated clothing imm Wash hands before breaks and at the end of work Maintain an ergonomically appropriate working en Breathing equipment: Use suitable respirator whe Protection of hands: Impervious gloves Check protection: Protective work clothing. Physical and chemical properties Information on basic physical and chemical progeneral information Appearance: Form: Liguid Color: <td>reptacles: No special requirements. rage facility: Store away from oxidizing agents. ners. on available. con available. ral systems: for hazardous chemicals and having an average face velocity of at least 100 feet per minute. nitoring at the workplace: Not required. hemicals should be followed. gediately. K. vironment. hen high concentrations are present. r proper condition. on the material, but also on quality. Quality will vary from manufacturer to manufacturer. Not determined roperties Now ermined.</td> <td></td>	reptacles: No special requirements. rage facility: Store away from oxidizing agents. ners. on available. con available. ral systems: for hazardous chemicals and having an average face velocity of at least 100 feet per minute. nitoring at the workplace: Not required. hemicals should be followed. gediately. K. vironment. hen high concentrations are present. r proper condition. on the material, but also on quality. Quality will vary from manufacturer to manufacturer. Not determined roperties Now ermined.	
Storage Requirements to be met by storerooms and re Information about storage in one common sto. Further information about storage conditions: Keep container tightly sealed. Store in cool, dry conditions in well sealed contain Specific end use(s) No further relevant information Additional information about design of technic Properly operating chemical fume hood designed Control parameters Components with limit values that require more Additional information: No data Exposure controls Personal protective equipment General protective and hygienic measures The usual precautionary measures for handling cl Keep oaway from foodstuffs, beverages and feed. Remove all soiled and contaminated clothing imm Wash hands before breaks and at the end of work Maintain an ergonomically appropriate working en Breathing equipment: Use suitable respirator whe Protection of hands: Impervious gloves Check protection: Protective work clothing. Physical and chemical properties Information on basic physical and chemical progeneral information Appearance: Form: Liguid Color: <td>reptacles: No special requirements. rage facility: Store away from oxidizing agents. ners. on available. con available. ral systems: for hazardous chemicals and having an average face velocity of at least 100 feet per minute. nitoring at the workplace: Not required. hemicals should be followed. gediately. K. vironment. hen high concentrations are present. r proper condition. on the material, but also on quality. Quality will vary from manufacturer to manufacturer. Not determined roperties Now ermined.</td> <td></td>	reptacles: No special requirements. rage facility: Store away from oxidizing agents. ners. on available. con available. ral systems: for hazardous chemicals and having an average face velocity of at least 100 feet per minute. nitoring at the workplace: Not required. hemicals should be followed. gediately. K. vironment. hen high concentrations are present. r proper condition. on the material, but also on quality. Quality will vary from manufacturer to manufacturer. Not determined roperties Now ermined.	
Information about storage in one common sto. Further information about storage conditions: Keep container tightly sealed. Store in cool, dry conditions in well sealed contair Specific end use(s) No further relevant informatio Exposure controls/personal protection Additional information about design of technic Properly operating chemical fume hood designed Control parameters Components with limit values that require mon Additional information: No data Exposure controls Personal protective equipment General protective and hygienic measures The usual precautionary measures for handling cl Keep away from foodstuffs, beverages and feed. Remove all soiled and contaminated clothing imm Wash hands before breaks and at the end of work Maintain an ergonomically appropriate working er Breathing equipment: Use suitable respirator wh Protection of hands: Impervious gloves Check protective gloves prior to each use for their The selection of suitable gloves not only depends Penetration time of glove material (in minutes) Eye protection: Safety glasses Body protection: Protective work clothing. Physical and chemical properties Information on basic physical and chemical pro General Information Appearance: Form: Color: Difference: Form: Color: Difference: Form: Color: Difference: Form: Color: Difference: Form: Color: Difference: Form: Color: Not deter Boiling point/Boiling range: Not deter Sublimation temperature / start: Not deter Flash point: Not deter Flash point: Not deter Flash point: Not deter Auto igniting: Not deter Not deter Not deter Sublimation temperature: Not deter Not deter Flash point: Not deter Auto igniting: Not deter Not deter Not deter Not deter Not deter Not deter Sublimation temperature: Not deter Not de	rage facility: Store away from oxidizing agents. ners. on available. cal systems: for hazardous chemicals and having an average face velocity of at least 100 feet per minute. nitoring at the workplace: Not required. hemicals should be followed. nediately. K. Noroment. hen high concentrations are present. r proper condition on the material, but also on quality. Quality will vary from manufacturer to manufacturer. Not determined roperties Now emmined	
Further information about storage conditions: Keep container tightly sealed. Store in cool, dry conditions in well sealed contain Specific end use(s) No further relevant information Additional information about design of technic Properly operating chemical fume hood designed Control parameters Components with limit values that require more Additional information: No data Exposure controls Personal protective equipment General protective and hygienic measures The usual precautionary measures for handling cl Keep away from foodstuffs, beverages and feed. Remove all soiled and contaminated clothing imm Wash hands before breaks and at the end of work Maintain an ergonomically appropriate working en Breathing equipment: Use suitable respirator where the selection of hands: Impervious gloves Check protective gloves prior to each use for their The selection of suitable gloves not only depends Penetration time of glove material (in minutes) Eye protection: Protective work clothing. Physical and chemical properties Information on basic physical and chemical progeneral Information Appearance: Not detee Form:<	ners. on available. cal systems: for hazardous chemicals and having an average face velocity of at least 100 feet per minute. nitoring at the workplace: Not required. hemicals should be followed. nediately. k wironment. hen high concentrations are present. r proper condition. o nthe material, but also on quality. Quality will vary from manufacturer to manufacturer. Not determined roperties	
Keep container tightly sealed. Store in cool, dry conditions in well sealed contair Specific end use(s) No further relevant information Additional information about design of technic Properly operating chemical fume hood designed Control parameters Components with limit values that require mon Additional information: No data Exposure controls Personal protective equipment General protective and hygienic measures The usual precautionary measures for handling chemically appropriate working er. Wash hands before breaks and at the end of work Maintain an ergonomically appropriate working er. Protection of hands: Impervious gloves Check protective gloves prior to each use for their The selection of suitable gloves not only depends Personal protection: Protective work clothing. Physical and chemical properties Information on basic physical and chemical pr General Information Appearance: Form: Liquid Color: Liquid Color: Not dete Odor threshold: Not dete pH-value: Not dete Dotor:<	ners. on available. for hazardous chemicals and having an average face velocity of at least 100 feet per minute. nitoring at the workplace: Not required. hemicals should be followed. hediately. Krivionment. hen high concentrations are present. r proper condition. on the material, but also on quality. Quality will vary from manufacturer to manufacturer. Not determined roperties	
Specific end use(s) No further relevant information Additional information about design of technic Properly operating chemical fume hood designed Control parameters Components with limit values that require mor Additional information: No data Exposure controls Personal protective equipment General protective and hygienic measures The usual precautionary measures for handling of Keep away from foodstuffs, beverages and feed. Remove all soiled and contaminated clothing imm Wash hands before breaks and at the end of work Maintain an ergonomically appropriate working en Breathing equipment: Use suitable respirator whe Protection of hands: Impervious gloves Check protection: Safety glasses Body protection: Protective work clothing. Physical and chemical properties Information on basic physical and chemical profection Appearance: Form: Liquid Color: Not dete Odor threshold: Not dete pH-value: Not dete Godor threshold: Not dete Sublimation temperature / start: Not dete	on available. cal systems: for hazardous chemicals and having an average face velocity of at least 100 feet per minute. nitoring at the workplace: Not required. hemicals should be followed. pediately. k rivironment. hen high concentrations are present. r proper condition. on the material, but also on quality. Quality will vary from manufacturer to manufacturer. Not determined roperties llow armined	
Additional information about design of technic Properly operating chemical fume hood designed Control parameters Components with limit values that require mon Additional information: No data Exposure controls Personal protective equipment General protective and hygienic measures The usual precautionary measures for handling cl Keep away from foodstuffs, beverages and feed. Remove all soiled and contaminated clothing imm Wash hands before breaks and at the end of work Maintain an ergonomically appropriate working er Breathing equipment: Use suitable respirator wh Protection of hands: Impervious gloves Check protective gloves prior to each use for their The selection of suitable gloves not only depends Penteration time of glove material (in minutes) Eye protection: Safety glasses Body protection: Protective work clothing. Physical and chemical properties Information on basic physical and chemical pr General Information Appearance: Form: Color: Differential information Appearance: Form: Color: Differential information Appearance: Form: Color: Differential information Appearance: Form: Change in condition Melting point/Boiling range: Sublimation temperature / start: Not detect Flash point: Flash point: Not detect Decomposition temperature: Not detect Auto igniting: Not detect Not dete	for hazardous chemicals and having an average face velocity of at least 100 feet per minute. nitoring at the workplace: Not required. hemicals should be followed. nediately. k. nironment. hen high concentrations are present. r proper condition. on the material, but also on quality. Quality will vary from manufacturer to manufacturer. Not determined roperties llow armined.	
Additional information about design of technic Properly operating chemical fume hood designed Control parameters Components with limit values that require mon Additional information: No data Exposure controls Personal protective equipment General protective and hygienic measures The usual precautionary measures for handling cl Keep away from foodstuffs, beverages and feed. Remove all soiled and contaminated clothing imm Wash hands before breaks and at the end of work Maintain an ergonomically appropriate working er Breathing equipment: Use suitable respirator wh Protection of hands: Impervious gloves Check protective gloves prior to each use for their The selection of suitable gloves not only depends Penteration time of glove material (in minutes) Eye protection: Safety glasses Body protection: Protective work clothing. Physical and chemical properties Information on basic physical and chemical pr General Information Appearance: Form: Color: Differential information Appearance: Form: Color: Differential information Appearance: Form: Color: Differential information Appearance: Form: Change in condition Melting point/Boiling range: Sublimation temperature / start: Not detect Flash point: Flash point: Not detect Decomposition temperature: Not detect Auto igniting: Not detect Not dete	for hazardous chemicals and having an average face velocity of at least 100 feet per minute. nitoring at the workplace: Not required. hemicals should be followed. nediately. k. nironment. hen high concentrations are present. r proper condition. on the material, but also on quality. Quality will vary from manufacturer to manufacturer. Not determined roperties llow armined.	
Control parameters Components with limit values that require mor Additional information: No data Exposure controls Personal protective equipment General protective and hygienic measures The usual precautionary measures for handling of Keep away from foodstuffs, beverages and feed. Remove all solled and contaminated clothing imm Wash hands before breaks and at the end of work Maintain an ergonomically appropriate working en Breathing equipment: Use suitable respirator wh Protection of hands: Impervious gloves Check protective gloves prior to each use for their The selection of suitable gloves not only depends Penetration time of glove material (in minutes) Eye protection: Safety glasses Body protection: Protective work clothing. Physical and chemical properties Information on basic physical and chemical pr General Information Appearance: Form: Color: Didor: Didor: Mot dete Boiling point/Melting range: Not dete Sublimation temperature / start: Not dete Flash point: Not dete Auto igniting: Not dete	nitoring at the workplace: Not required. hemicals should be followed. nediately. key vironment. hen high concentrations are present. r proper condition. on the material, but also on quality. Quality will vary from manufacturer to manufacturer. Not determined roperties llow emined emined.	
Components with limit values that require mon Additional information: No data Exposure controls Personal protective equipment General protective equipment Maintain an ergonomically appropriate working en Breathing equipment: Use suitable respirator whe Protection of hands: Impervious gloves Check protective gloves prior to each use for their The selection of suitable gloves not only depends Penetration time of glove material (in minutes) Eye protection: Safety glasses Body protection: Protective work clothing. O Physical and chemical properties Information on basic physical and chemical pro General Information Appearance: Form: Color: Dodor threshold: Dedor threshold: Distribution temperature start: Sublimation temperature start: Not dete Boiling point/Boiling range: Sublimation temperature: Not dete Flash point: Flash point: Mot dete Auto igniting: Not dete	hemicals should be followed. rediately. k. hor noment. hen high concentrations are present. r proper condition. on the material, but also on quality. Quality will vary from manufacturer to manufacturer. Not determined roperties llow ermined armined.	
Exposure controls Personal protective equipment General protective and hygienic measures The usual precautionary measures for handling cl Keep away from foodstuffs, beverages and feed. Remove all soiled and contaminated clothing imm Wash hands before breaks and at the end of work Maintain an ergonomically appropriate working er. Breathing equipment: Use suitable respirator with Protection of hands: Impervious gloves Check protective gloves prior to each use for their The selection of suitable gloves not only depends Penetration time of gloves Body protection: Safety glasses Body protection: Protective work clothing. Physical and chemical properties Information on basic physical and chemical progenetics Appearance: Form: Liquid Color: Liquid Odor: Not dete Odor threshold: Not dete pH-value: Not dete Sublimation temperature / start: Not dete Flash point: Not dete Flash point: Not dete Flammability (solid, gaseous) Not dete	hemicals should be followed. rediately. k. hor noment. hen high concentrations are present. r proper condition. on the material, but also on quality. Quality will vary from manufacturer to manufacturer. Not determined roperties llow ermined armined.	
Exposure controls Personal protective equipment General protective and hygienic measures The usual precautionary measures for handling cl Keep away from foodstuffs, beverages and feed. Remove all soiled and contaminated clothing imm Wash hands before breaks and at the end of work Maintain an ergonomically appropriate working er. Breathing equipment: Use suitable respirator with Protection of hands: Impervious gloves Check protective gloves prior to each use for their The selection of suitable gloves not only depends Penetration time of gloves Body protection: Safety glasses Body protection: Protective work clothing. Physical and chemical properties Information on basic physical and chemical progenetics Appearance: Form: Liquid Color: Liquid Odor: Not dete Odor threshold: Not dete pH-value: Not dete Sublimation temperature / start: Not dete Flash point: Not dete Flash point: Not dete Flammability (solid, gaseous) Not dete	hemicals should be followed. rediately. k. hor noment. hen high concentrations are present. r proper condition. on the material, but also on quality. Quality will vary from manufacturer to manufacturer. Not determined roperties llow ermined armined.	
Personal protective equipment General protective and hygienic measures The usual precautionary measures for handling cl Keep away from foodstuffs, beverages and feed. Remove all soiled and contaminated clothing imm Wash hands before breaks and at the end of work Maintain an ergonomically appropriate working er. Breathing equipment: Use suitable respirator where and independent of hands: Impervious gloves Check protective gloves prior to each use for their The selection of suitable gloves not only depends Penetration time of glove material (in minutes) Eye protection: Safety glasses Body protection: Protective work clothing. Physical and chemical properties Information on basic physical and chemical progeneral information Appearance: Form: Liquid Color: Liquid Odor: Not dete Odor threshold: Not dete pH-value: Not dete Sublimation temperature / start: Not dete Flash point: Not dete Flash point: Not dete Flammability (solid, gaseous) Not dete Ignition temperature: Not d	nediately. k. hyper non- her high concentrations are present. r proper condition. on the material, but also on quality. Quality will vary from manufacturer to manufacturer. Not determined roperties llow ermined armined.	
General protective and hygienic measures The usual precautionary measures for handling cl Keep away from foodstuffs, beverages and feed. Remove all soiled and contaminated clothing imm Wash hands before breaks and at the end of work Maintain an ergonomically appropriate working er Protection of hands: Impervious gloves Check protective gloves prior to each use for their The selection of suitable gloves not only depends Penetration time of glove material (in minutes) Eye protection: Safety glasses Body protection: Protective work clothing. Physical and chemical properties Information on basic physical and chemical progenance: Form: Liquid Color: Light yei Odor: Not dete pH-value: Not dete pH-value: Not dete Flash point: Not dete pecomposition temperature: Not d	nediately. k. hyper non- her high concentrations are present. r proper condition. on the material, but also on quality. Quality will vary from manufacturer to manufacturer. Not determined roperties llow ermined armined.	
Keep away from foodstuffs, beverages and feed. Remove all soiled and contaminated clothing imm Wash hands before breaks and at the end of worf Maintain an ergonomically appropriate working en Breathing equipment: Use suitable respirator wh Protection of hands: Impervious gloves Check protective gloves prior to each use for their The selection of suitable gloves not only depends Penetration time of glove material (in minutes) Eye protection: Safety glasses Body protection: Protective work clothing. Physical and chemical properties Information on basic physical and chemical pr General Information Appearance: Form: Liquid Color: Light yel Odor: Not dete pH-value: Not dete Diling point/Boiling range: Not dete Sublimation temperature / start: Not dete Flash point: Not dete Paremability (solid, gaseous) Not dete </td <td>nediately. k. hyper non- her high concentrations are present. r proper condition. on the material, but also on quality. Quality will vary from manufacturer to manufacturer. Not determined roperties llow ermined armined.</td> <td></td>	nediately. k. hyper non- her high concentrations are present. r proper condition. on the material, but also on quality. Quality will vary from manufacturer to manufacturer. Not determined roperties llow ermined armined.	
Wash hands before breaks and at the end of work Maintain an ergonomically appropriate working en Breathing equipment: Use suitable respirator where Protection of hands: Impervious gloves Check protective gloves prior to each use for their The selection of suitable gloves not only depends Penetration time of glove material (in minutes) Eye protection: Safety glasses Body protection: Protective work clothing. Physical and chemical properties Information on basic physical and chemical progenation Appearance: Form: Liquid Color: Not dete Odor threshold: Not dete pH-value: Not dete Boiling point/Melting range: Not dete Sublimation temperature / start: Not dete Flash point: Not dete Flammability (solid, gaseous) Not dete Ignition temperature: Not dete Auto igniting: Not dete	k, nvironment. hen high concentrations are present. r proper condition. c on the material, but also on quality. Quality will vary from manufacturer to manufacturer. Not determined Not determined	
Wash hands before breaks and at the end of work Maintain an ergonomically appropriate working en Breathing equipment: Use suitable respirator where Protection of hands: Impervious gloves Check protective gloves prior to each use for their The selection of suitable gloves not only depends Penetration time of glove material (in minutes) Eye protection: Safety glasses Body protection: Protective work clothing. Physical and chemical properties Information on basic physical and chemical progenation Appearance: Form: Liquid Color: Not dete Odor threshold: Not dete pH-value: Not dete Boiling point/Melting range: Not dete Sublimation temperature / start: Not dete Flash point: Not dete Flammability (solid, gaseous) Not dete Ignition temperature: Not dete Auto igniting: Not dete	k, nvironment. hen high concentrations are present. r proper condition. c on the material, but also on quality. Quality will vary from manufacturer to manufacturer. Not determined Not determined	
Protection of hands: Impervious gloves Impervious gloves Check protective gloves prior to each use for their The selection of suitable gloves not only depends Penetration time of glove material (in minutes) Eye protection: Safety glasses Body protection: Protective work clothing. Physical and chemical properties Information on basic physical and chemical progenation Appearance: Form: Liquid Color: Light yel Odor threshold: Not dete pH-value: Not dete Change in condition Not dete Boiling point/Melting range: Not dete Sublimation temperature / start: Not dete Flash point: Not dete Flammability (solid, gaseous) Not dete Ignition temperature: Not dete Auto igniting: Not dete	r proper condition. on the material, but also on quality. Quality will vary from manufacturer to manufacturer. Not determined	
Protection of hands: Impervious gloves Impervious gloves Check protective gloves prior to each use for their The selection of suitable gloves not only depends Penetration time of glove material (in minutes) Eye protection: Safety glasses Body protection: Protective work clothing. Physical and chemical properties Information on basic physical and chemical progenation Appearance: Form: Liquid Color: Light yel Odor threshold: Not dete pH-value: Not dete Change in condition Not dete Boiling point/Melting range: Not dete Sublimation temperature / start: Not dete Flash point: Not dete Flammability (solid, gaseous) Not dete Ignition temperature: Not dete Auto igniting: Not dete	r proper condition. on the material, but also on quality. Quality will vary from manufacturer to manufacturer. Not determined	
Check protection of suitable gloves not only depends The selection of suitable gloves not only depends Penetration time of glove material (in minutes) Eye protection: Safety glasses Body protection: Protective work clothing. Physical and chemical properties Information on basic physical and chemical pr General Information Appearance: Form: Liquid Color: Light yel Odor threshold: Not dete pH-value: Not dete Change in condition Not dete Boiling point/Boiling range: Not dete Sublimation temperature / start: Not dete Flash point: Not dete Flash point: Not dete Ignition temperature: Not dete Auto igniting: Not dete	on the material, but also on quality. Quality will vary from manufacturer to manufacturer. Not determined roperties	
The selection of suitable gloves not only depends Penetration time of glove material (in minutes) Eye protection: Safety glasses Body protection: Protective work clothing. Physical and chemical properties Information on basic physical and chemical progeneral Information Appearance: Form: Liquid Color: Light yet Odor threshold: Not dete Odor threshold: Not dete Defining point/Boiling range: Not dete Sublimation temperature / start: Not dete Flash point: Not dete Flash point: Not dete Informability (solid, gaseous) Not dete Flaumability (solid, gaseous) Not dete Auto igniting: Not dete	on the material, but also on quality. Quality will vary from manufacturer to manufacturer. Not determined roperties	
Penetration time of glove material (in minutes) Eye protection: Safety glasses Body protection: Protective work clothing. Physical and chemical properties Information on basic physical and chemical progeneral Information Appearance: Form: Liquid Color: Light yel Odor: Not dete Odor threshold: Not dete pH-value: Not dete Sublimation temperature / start: Not dete Flash point: Not dete Flash point: Not dete Ignition temperature: Not dete Auto igniting: Not dete	Not determined	<u> </u>
Physical and chemical properties Information on basic physical and chemical progeneral Information Appearance: Form: Liquid Color: Light yel Odor threshold: Not dete pH-value: Not dete Change in condition Melting point/Melting range: Melting point/Melting range: Not dete Sublimation temperature / start: Not dete Flash point: Not dete Ignition temperature: Not dete Information Mether Melting point/Boiling range: Not dete Sublimation temperature / start: Not dete Flash point: Not dete Ignition temperature: Not dete Apperature: Not dete Ignition temperature: Not dete Auto igniting: Not dete	roperties Ilow ermined ermined.	
Physical and chemical properties Information on basic physical and chemical progeneral Information Appearance: Form: Liquid Color: Light yel Odor threshold: Not dete pH-value: Not dete Change in condition Melting point/Melting range: Melting point/Melting range: Not dete Sublimation temperature / start: Not dete Flash point: Not dete Ignition temperature: Not dete Information Mether Melting point/Boiling range: Not dete Sublimation temperature / start: Not dete Flash point: Not dete Ignition temperature: Not dete Apperature: Not dete Ignition temperature: Not dete Auto igniting: Not dete	roperties Ilow ermined ermined.	
Information on basic physical and chemical progeneral Information Appearance: Form: Liquid Form: Light yel Odor: Not dete Odor threshold: Not dete pH-value: Not dete Boiling point/Melting range: Not dete Sublimation temperature / start: Not dete Flash point: Not dete Ignition temperature: Not dete Junction temperature: Not dete Sublimation temperature: Not dete Ignition temperature: Not dete Approximation temperature: Not dete Approximation temperature: Not dete Ignition temperature: Not dete Approximation temperature:	llow ermined ermined.	
General Information Appearance: Appearance: Liquid Form: Light yel Odor: Not dete Odor: Not dete Odor threshold: Not dete pH-value: Not dete Change in condition Not dete Melting point/Melting range: Not dete Sublimation temperature / start: Not dete Flash point: Not dete Flash point: Not dete Ignition temperature: Not dete Auto igniting: Not dete	llow ermined ermined.	
Appearance: Liquid Form: Liquid Color: Light yet Odor: Not dete Odor threshold: Not dete pH-value: Not dete Change in condition Not dete Boiling point/Boiling range: Not dete Sublimation temperature / start: Not dete Flash point: Not dete Ignition temperature: Not dete Jupition temperature: Not dete Auto igniting: Not dete	ermined ermined.	
Color:Light yellOdor:Not detellOdor threshold:Not detellOdor threshold:Not detellpH-value:Not detellChange in conditionMelting point/Melting range:Melting point/Boiling range:Not detellSublimation temperature / start:Not detellFlash point:Not detellFlash point:Not detellIgnition temperature:Not detellJuntion temperature:Not detellNot detellNot detellMolition temperature:Not detellNot detellNot detellAuto igniting:Not detellNot detell	ermined ermined.	
Odor: Not deternation Odor threshold: Not deternation pH-value: Not deternation Change in condition Not deternation Melting point/Melting range: Not deternation Boiling point/Boiling range: Not deternation Sublimation temperature / start: Not deternation Flash point: Not deternation Ignition temperature: Not deternation Decomposition temperature: Not deternation Auto igniting: Not deternation	ermined ermined.	
Odor threshold: Not determine pH-value: Not determine Change in condition Not determine Melting point/Melting range: Not determine Boiling point/Melting range: Not determine Sublimation temperature / start: Not determine Flash point: Not determine Ignition temperature: Not determine Decomposition temperature: Not determine Auto igniting: Not determine	ermined.	
Change in condition Melting point/Melting range: Not dete Boiling point/Boiling range: Not dete Sublimation temperature / start: Not dete Flash point: Not dete Flash point: Not dete Ignition temperature: Not dete Ignition temperature: Not dete Auto igniting: Not dete		
Melting point/Melting range: Not deter Boiling point/Boiling range: Not deter Sublimation temperature / start: Not deter Flash point: Not deter Plantion temperature: Not deter Decomposition temperature: Not deter Auto igniting: Not deter	rmined.	
Boiling point/Boiling range: Not detern to the start: Sublimation temperature / start: Not detern to the start: Flash point: Not detern to the start: Flash point: Not detern to the start: Flammability (solid, gaseous) Not detern to the start: Ignition temperature: Not detern to the start: Decomposition temperature: Not detern to the start: Auto igniting: Not detern to the start:		
Sublimation temperature / start:Not deterFlash point:Not deterFlammability (solid, gaseous)Not deterIgnition temperature:Not deterDecomposition temperature:Not deterAuto igniting:Not deter		
Flash point:Not deterFlammability (solid, gaseous)Not deterIgnition temperature:Not deterDecomposition temperature:Not deterAuto igniting:Not deter		
Flammability (solid, gaseous) Not dete Ignition temperature: Not dete Decomposition temperature: Not dete Auto igniting: Not dete		
Auto igniting: Not dete	ermined.	
Auto igniting: Not dete		
Danger of explosion: Product	does not present an explosion hazard.	
Explosion limits:		
Lower: Not dete Upper: Not dete		
Vapor pressure: Not dete	ermined	
Density: Not dete	ermined	
Relative density Not dete Vapor density Not dete		
Evaporation rate Not dete		
Solubility in / Miscibility with		
Water: Not dete		
Partition coefficient (n-octanol/water): Not dete Viscosity:	rmined.	
dynamic: Not dete		
kinematic: Not dete		
Other information No furthe	er relevant information available.	
Stability and reactivity		
Reactivity No information known. Chemical stability Stable under recommended s		

Thermal decomposition / conditions to be avoided: Decomposition Possibility of hazardous reactions No dangerous reactions known Conditions to avoid No further relevant information available. Incompatible materials: Oxidizing agents Hazardous decomposition products: Carbon monoxide and carbon dioxide Boron oxide

(Contd. of page 2) 11 Toxicological information Information on toxicological effects Acute toxicity: No effects known. LD/LC50 values that are relevant for classification: No data 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. Carcinogenicity: EPA-I: Data are inadequate for an assessment of human carcinogenic potential. Reproductive toxicity: No effects known. Specific target organ system toxicity - repeated exposure: No effects known. Specific target organ system toxicity - single exposure: No effects known. Aspiration hazard: No effects known. Aspiration hazard: No effects known. Subacute to chronic toxicity: No effects known. Subacute to chronic toxicity: Boron affects the central new system. Boron poisoning causes depression of the circulation, persistant vomiting and diarrhea, followed by profound shock and coma. The temperature may become subnormal and a scarletina form rash may cover the entire body. Additional toxicological information: To the best of our knowledge the 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. Bioaccumulative potential No further relevant information available. Mobility in soil No further relevant information available. Additional ecological information: Additional ecological information: General notes: Do not allow material to be released to the environment without proper governmental permits. 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. Net applicable 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. Uncleaned packagings: Recommendation: Disposal must be made according to official regulations. 14 Transport information Not a hazardous material for transportation **UN-Number** DOT, IMDG, IATA None UN proper shipping name DOT, IMDG, IATA None Transport hazard class(es) DOT, ADR, IMDG, IATA Class None Packing group DOT, IMDG, IATA None Environmental hazards: Not applicable Special precautions for user Not applicable Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable. Transport/Additional information: Not dangerous according to the above specifications. DOT Marine Pollutant (DOT): No 15 Regulatory information Safety, health and environmental regulations/legislation specific for the substance or mixture GHS label elements Not applicable Hazard pictograms Not applicable Signal word Not applicable Hazard statements Not applicable National regulations This product is not listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical Substance Inventory. Use of this product is restricted to research and development only. This product must be used by or directly under the supervision of a technically qualified individual as defined by TSCA. This product must not be used for commercial purposes or in formulations for commercial purposes. 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, female Substance is not listed. Prop 65 - Developmental toxicity, female Substance is not listed. Prop 65 - Developmental toxicity, male Substance is not listed. Prop 65 - Developmental toxicity, male Substance is not listed. Prop 65 - Developmental toxicity, male Substance is not listed. Prop 65 - Developmental toxicity, male Substance is not listed. Prop 65 - Developmental toxicity, male Substance is not listed. Prop 65 - Developmental toxicity, male Substance is not listed. Prop 65 - Developmental toxicity, male Substance is not listed. Prop 65 - Developmental toxicity, male Substance is not listed. Prop 65 - Developmental toxicity, male Substance is not listed. Prop 65 - Developmental toxicity, male Substance is not listed. Prop 65 - Developmental toxicity, male Substance is not listed. Prop 65 - Developmental toxicity, male Substance is not listed. Prop 65 - Developmental toxicity, male Substance is not listed. Prop 65 - Developmental toxicity, male Substance is not listed. Prop 65 - Developmental toxicity, male Substance is not listed. Prop 65 - Developmental toxicity, male Substance is not listed. Prop 65 - Developmental toxicity, male 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 t Hazard statements Not applicable 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 a constant.

market and use must be observed.

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

(Contd. on page 4)

(Contd. of page 3)

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 or the user.
Department issuing SDS: Global Marketing Department
Date of preparation / last revision 11/24/2015 / Abbreviations and acronyms:
RID: Reglement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)
ICAO: Thermational Civil Aviation Organization
ICAO: Thermational Civil Aviation Organization
ICAO: Thermational Civil Aviation Organization
ICAO: Thermational Antime Code for Dangerous Goods by
DOT: US Department of Transportation
ICAO: Thermational Abstracts Service (division of the American Chemical Society)
HMIS: Hazardous Materials Information System (Canada)
LC50: Lethal concentration, 50 percent
LD50: Lethal concentration ad Overmmental Industrial Hygienists (USA)
OSHA: Occupational Safety and Health Administration (USA)
INTP: National Toxicology Program (USA)
INTP: National Protection Agency (USA)

USA