

Safety Data Sheet per OSHA HazCom 2012

## 1 Identification Product identifier Product name: 1-Bromo-2,4-dichlorobenzene Stock number: L04159 CAS Number: 1193-72-2 EC number: 214-778-6 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. Inerrito Fisher Scheman C. 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) ! 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 GHS07 Signal word Warning Hazard statements H315 Causes skin irritation. H319 Causes serious eye irritation. H335 May cause respiratory irritation. Precautionary statements P261 Avoid breathing dust/fume/gas/mist/vapours/spray. P280 Wear protective gloves/protective clothing/eye protection/face protection. P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Store locked up. Dispose of contents/container in accordance with local/regional/national/international regulations. P405 WHMIS classification D2B - Toxic material causing other toxic effects Ţ Classification system HMIS ratings (scale 0-4) (Hazardous Materials Identification System) Health (acute effects) = 1Flammàbility = 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: 1193-72-2 1-Bromo-2,4-dichlorobenzene Identification number(s): EC number: 214-778-6 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. (Contd. on page 2)

٦

## Product name: 1-Bromo-2.4-dichlorobenzene

Seek immediate medical advice.         Prevalue you           After sealewing Seek immediate medical intention.         Prevalue you           After sealewing Seek immediate medical intention.         Prevalue you           Immediate medical advice.         Prevalue you           Immediate medical intention and special freetiment needed No kuther relevant aformation available.         Prevalue you           Immediate medical advice.         Prevalue you           Immediate you         Prevalue you           Immediate you <th>Product name: 1-Bromo-2,4-dicl</th> <th>hlorobenzene</th>	Product name: 1-Bromo-2,4-dicl	hlorobenzene
After equiprent finise operand eye for several intrustes under numbig weter. Then consult a doctor, thermation to the work weter intervention of the several doctor and dolayed bic further relevant information available. <b>3 First-Fighting measures</b> <b>5 First-Fighting measures</b> <b>6 First-Fighting measures</b> <b>7 First-Fighting meas</b>		(Contd. of page
After sealowing Seek medical risement: Most incortain regions and references to the use and debyed is to urther relevant information available. Endication of any immediate medical attention and special frastment needed No further relevant information available. Endication of any immediate medical statention and special frastment needed No further relevant information available. Endication of any immediate medical statention and special frastment needed No further relevant information available. Endication of any immediate medical statention and special frastment needed No further relevant information available. Endication of any immediate medical statention and special frastment needed No further relevant information available. Endication relevant information of the first information and special frastment needed No further relevant information available. Endication relevant information of the first information available information	After eye contact Rinse opened e	ye for several minutes under running water. Then consult a doctor.
Materia and an experiment symptoms and effects, both acute and delayed to luther relevant information available. 5 Fire-fighting measures Extinguishing agents Cutor dioxide, extinguishing powder or water spray. Fight larger fires with water spray or elochol resistant form. (1) This podds are stroked in a fire, the following can be meased: (2) Fire-fighting measures (2)	After swallowing Seek medical tre	batment.
5 Fina-fighting measures 7 Fina-fighting 7	Most important symptoms and e	ffects, both acute and delayed No further relevant information available.
Evinguishing media Subable exclusions and ender Provide product is moulded in a time, the following can be reference: Carbon manuaces and carbon Provide is moulded in a time, the following can be reference: Carbon manuaces and carbon Provide is moulded in a time, the following can be reference: Provide is moulded in a time, the following can be reference: Provide is moulded in a time, the following can be reference: Provide is moulded in a time, the following can be reference: Provide is moulded in a time, the following can be reference: Provide is moulded in a time, the following can be reference: Provide is moulded in the following can be reference: Provide is and material for containment and emergency procedures: Provide and material for containment and cheming up: Provide and storage Provide and storage Provide and storage Provide and storage in the following and mound and the containes: Provide and storage in the following and mound and the storage in the following and the storage in the storage	indication of any immediate med	ical attention and special treatment needed ino further relevant information available.
Suitable extinguishing agents Carbon dioxide, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam. Hits invasion in this water in the laboring on his releasest: Carbon menocide and carbon dioxide Hits invasion (Har) Advice for Intellighters Personal processions (Har) Advice for Intellighters Personal processions (Har) Advice for Intellighters Personal processions exit. Personal processions	5 Fire-fighting measures	
Special hazards arising from the substance or mixture Carbon monouscent and control to the substance or mixture Carbon monouscent and control to the substance or mixture Carbon monouscent memory and the substance of mixture Carbon monouscent memory and the substance of mixture Carbon monouscent memory and the substance of mixture Provide full finding these Provide full finding	Extinguishing media	arbon diaxide, extinguishing nowder or water spray. Fight larger fires with water spray or alcohol resistant foam
Carbon menocide and grafted added by the second of the second added by	Special hazards arising from the	substance or mixture
Herkpress bornde (HB) Protective generations, protective generators Was rule contained responses unit <b>5 Collections of releases measures</b> Personal processitions, protective equipment and emergency procedures Was rule protective equipment. Keep unprotected persons away. Environmental protective equipment and emergency procedures Was rule protective equipment. Keep unprotected persons away. Environmental protective equipment and chaning up- territorium equipment. Keep unprotected persons away. Environmental protective equipment and chaning up- Methods and material for containing out of the release and harding See Section 15 or releases Personal processions and harding See Section 15 or releases Personal processions and harding Personal processions and harding Personal processions and fires: No information known. Handing Proceedings for sele strange, including any incompatibilities Store procedure processions and fires: No information known. Hordings for sele strange, including any incompatibilities Store procedure processions and fires: No information known. Hordings for sele strange, including any incompatibilities Store procedure processions and fires: No information known. Hordings for sele strange, including any incompatibilities Store procedure processions and exceptable: No seaway from cadation gapents. Person and the workplace Person and the workplace Person and the selection of starses for the selection and the selection and the selection and the selection and the selection of starses Person and the selection of the selection and the	Carbon monoxide and carbon diox	ide
Advice for finding the set of the	Hydrogen chloride (HCl) Hydrogen bromide (HBr)	
Were all productive impervises suit.  6 Accidential release measures Personal preceduitors, protective equipment and emergency procedures Wear infly productive equip	Advice for firefighters	
6 Accidental release measures Personal precautions, protective equipment and emergency procedures Para productions protective equipment and emergency procedures Para productions protective equipment and emergency procedures Environmental precautions. To not allow product to reach severage system or any water course. Provention of secondary hundris. Keep asey from ignition sources. See Section 1 Secondary hundris. Keep asey from ignition sources. The secondary processing and the secondary se	Wear self-contained respirator.	
Personal presentions, protective equipment, and emergency procedures Wear profective equipment, lade purported telephone and severage system or any water course. Wethous and the equipment, lade purported telephone purported telephone and severage system or any water course. Wethous and material for constantment and cleaning up: Assort with liquid-binding material for constantment and cleaning up: Assort with liquid-binding material for constantment and cleaning up: Assort with liquid-binding material for constantment and cleaning up: Assort with liquid-binding material for constant (liquid-binding material (sand, diatomine, add binders, universal binders, sawdust). Beauting and storage Handling Proceedions for safe shared handling Proceedions and binding Proceedions Proceedio	wear fully protective impervious su	
Weat protective equipment, Neap unprotective provide savay.           Environmental presentations: Con callow product to reach savage system or any water course.           Methods and material for containment and cleaning up.           Service with independent presentations: Contrainment and cleaning up.           Reference to other sections:           Reference to other sections:           Reference to other sections:           See Saction 15 for disposal information:           See Saction 15 for disposal information:           Reference to other sections:           Reference to other sections:           Reference to other sections:           Reference to other sections:           See Saction 15 for disposal information:           See Saction 15 for disposal information:           See Saction 15 for more and protection equipment:           See Saction 15 for disposal information:           Storage           See Saction 15 for disposal information:           Storage in encodi, try piece in signify closed containers:           Storage in the protection of the charding information adult storage conditions:           Response onther tighty sealed:           Storage in the experiment is adult storage conditions:           Response onther tighty sealed:           Storage in the experiment is adult storage in the experint is adult in the experiment.           <	6 Accidental release measures	
Ensure adequate verification  For experiment and allow product to reach easing a system or any water course.  Method present for excitationed and cleaning up:  Assorb with Rejuck-Inding material (sard, diatomite, acid binders, universal binders, sawdust).  Fisure adequate venification  Faster adequate  Faster	Personal precautions, protective	equipment and emergency procedures
See Section 13 for disposal informations on safe handling See Section 13 for disposal information. 7 Handling and storage Handling Rescalation on personal protection equipment. See Section 13 for disposal information. 7 Handling Rescalation on personal protection equipment. See Section 13 for disposal information. 7 Handling Rescalation of the set of t	Ensura adaguata vantilation	
See Section 13 for disposal informations on safe handling See Section 13 for disposal information. 7 Handling and storage Handling Rescalation on personal protection equipment. See Section 13 for disposal information. 7 Handling Rescalation on personal protection equipment. See Section 13 for disposal information. 7 Handling Rescalation of the set of t	Methods and material for contain	ior allow product to reach sewage system or any water course. Iment and cleaning up:
See Section 13 for disposal information on safe handling See Section 13 for disposal information. 7 Handling and storage Handling Key the storage information on personal protection equipment. See Section 13 for disposal information. 7 Handling for safe handling Key the storage information and the workplace. Information about protection against explosions and fires: No information known. Information about protection against explosions and fires: No information known. Information about protection against explosions and fires: No information known. Information about protection against explosions and fires: No information known. Information about protection against explosions and fires: No information known. Information about storage in one common storage facility: Store away from oxidizing agents. Further information about storage in one common storage facility: Store away from oxidizing agents. Information about discige containers. Store in cool. div Conflictions: Store in cool. div Conflictions: Store in cool. div Conflictions: Store in cool. div Conflictions: Store in cool. div Conflictions: Control parameters: Control parameters: Control parameters: Properly operating chemical time hood designed for hazardous chemicals and having an average face velocity of at least 100 leet per minute. Control parameters: Control parameters: Maditional information: No data Exposure controls: Properly operating chemical time hood designed for hazardous chemicals and having an average face velocity of at least 100 leet per minute. Control parameters: Control parameters: Maditional information: No data Exposure controls: Properly operating chemical time hood designed for hazardous chemicals should be followed. Rear properties of parameters: Matal procentions in data against exploributing immediately. Wash hands before breaks and at the end of work. Matal approximation with exploration working environment. Recommended life device is short ferm indices as a backup to explorate ourdus. The su	Absorb with liquid-binding material Ensure adequate ventilation	(sand, diatomite, ačid binders, universal binders, sawdust).
See Section 13 for disposal information         7 Handling and storage         Handling for stafe handling         See Section 13 for disposal information.         7 Handling and storage         Handling for stafe handling         Recent and the storage information and the workplace.         Information about protection against explosions and fires: No information known.         Conditions for safe storage, including any incompatibilities         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 design to containers.         Store in cool, div (oxiditions)         Requirements to be met by storage containers.         Store in cool, div (oxiditions)         Store in cool, div (oxiditions)         Store in cool, div (oxiditions)         Requirements         Store in cool, div (oxiditions)         Requirement relevant information about design of technical systems:         Store in cool, to cool parameters         Control parameters         Control parameters         Control parameters         Reversound information ab	Prevention of secondary hazards	s: Keep away from ignition sources.
See Section of or information on personal protection equipment. See Section 13 for disposal information. 7 Handling and storage Personal protection equipment Section 201 for state storage Personal protection equipment Section 201 for personal protection equipment. Section 201 for personal protection equipment Section 201 for personal protection Sectif personal protection 201 for person	See Section 7 for information on sa	afe handling
7 Handling and storage Handling Precautions for safe handling Resp vontainer lightly sealed. Information about protection against explosions and frees: No information known. Conditions for safe storage, including any incompatibilities Storage Requirements to be met by storerooms and receptacles: No special requirements. Requirements to be met by storerooms and receptacles: No special requirements. Requirements about storage conditions: Kee containers thirthy sealed. Storage Storage in cool, dry Corditions in vell sealed containers. Store in cool, dry Corditions in vell sealed containers. Store in cool, dry Corditions in vell sealed containers. Reportment to the story protection Additional information about design of technical systems: Properly operating chemical fume hood designed for fazardous 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. Additional information about storage and tecd. Rep contained and the respect of materials with critical values that have to be monitored at the workplace. Additional information: No data Exposure controls Personal protective equipment Resures and stored equipment Resures and stored equipment Resonal protective of partners Resonal protective equipment Resonal protective equipment Resonal protective for handing chemicals should be followed. Keep away from foodstulfs, beverages and fed. Resonal protective equipment Resonal	See Section 8 for information on pe See Section 13 for disposal information	ersonal protection equipment. ation.
Hendling Precautions for safe handling Keep container tightly sealed (by place in tightly sealed containers): Information about protection against explosions and frees: No information known.         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 in one common storage facility: Store away from oxidizing agents. Further information about storage in one common storage facility: Store away from oxidizing agents. 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. 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. Additional information: No data Exposure controls Personal protective equipment General protective equipment Remain protective equipment Remain group commical systems Control for and myglane defed. Remove all solied and contaminated clothing immediately. Wash hands before basis and at the end of work Meintain an ergonomically appropriate working environment. Recemmented filter device for short term use: Use a respirative with information with informediately. Wash hands before basis and at the end of work Meintain an ergonomically appropriate working environment. Recemmented filter device for short term use: Use a respirative with genes of the in proper condition. Recemmented filter device for short term use: Use a respirative with regine down with endivented towal approved under appropriate government		
Precautions for safe handling Keep contained tiphity onespinot Keep contained tiphity onespinot Store in rood, dry place in tiphity onespinot For addition about protection against explosions and fires: No information known. 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 facely: Storage away from oxidizing agents. Further information about storage conditions: Keep contained to the store containers. Specific end use(s) No further relevant information available. Sepositie controls/personal protection Additional information and relevant information available. Sepositie controls/personal protection Additional information and relevant information available. Sepositie controls/personal protection Additional information about design of technical systems: Properly operating chemical iume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute. Control parameters Control para		
Ensure good ventilation at the workplace. Information about protection against explosions and fires: No information known. Conditions for safe storage, including any incompatibilities Storage Requirements to be met by storerooms and receptacles: No special requirements. Further information about storage conditions: Fore on 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 time 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. Additional information. No deat Exposure controls with limit values that require monitoring at the workplace: Control parameters Control parameters Control parating chemical time hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute. Control parameters Control parating chemical time hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute. Control parameters Control parating chemical time hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute. Control parating the event quantities of materials with critical values that have to be monitored at the workplace. Additional information. No defa Reproved to part the materials should be followed. Keep away from foodstuffs, beverages and fied, Keep away from foodstuffs, beverages and leid, Keep away from foodstuffs, beverages and leid, Keep away from foodstuffs, beverages and leid approved under appropriate government should be performed to determine if air-purifying respirators are appropriate workaing environment. Maintain an ergonomically	Precautions for safe handling	
Ensure good venitation at the workplace. Information about protection against explosions and fires: No information known. Conditions for safe storage, including any incompatibilities Storage Requirements to be met by storarooms and receptacles: No special requirements. Further information about storage conditions: Fourther information about storage conditions: Specific end use(s) No further relevant information available. Specific end use(s) No further relevant information about 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. Additional information. No data Exposure controls Renew and protective equipment General protective equipment General protective equipment Maintain an ergonomically appropriate splaring environment. Maintain an ergonomically appropriate splaring environment. Matinain an ergonomically appropriate splaring when high concentrations are present. Recommended filter device for short tested and approved under appropriate government standards such as NiOSH (USA) or CEN (EU). Protection of hands: Impervious glaves Body protection: Safety glasses Body	Store in cool, dry place in tightly clo	osed containers.
Conditions for safe storage, including any incompatibilities Storage Requirements to be met by storerooms and receptacles: No special requirements. Information about storage conditions: Keep contained tighty seeld. Store in cool, dry conditions in well seeled containers. Specific end use(s) No turther relevant information available. <b>8 Exposure controls/personal protection</b> Additional information about storage conditions: Requirements with limit values that require monitoring at the workplace: The product design of the charled systems: Properly operating chemical lume hold 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. Additional information: No data Exposure controls Personal protective equipment General protective and hygienic measures The usual protective and hygienic measures The usual protective and hygienic measures Maintain an ergonomically appropriate working environment. Breating equipment: Use suitable respirator when high concentrations are present. Recommend filter device for short ferm use: Use a negonation of herds: Only use equipment tested and approved under appropriate government standards such as NIOSH (USA) or CEN (EU). Protection of hands: Use a negonation of hands: Maintain an ergonomically appropriate working environment. Breating equipment: Use suitable respirator when high concentrations are present. Recommend filter device for short term use: Use a negonation of hands: Maintain an ergonomically appropriate das a backup to engineering controls. Risk assessment should be performed to determine if air-purifying Protection of hands: Maintain an ergonomically appropriate work and approved under appropriate government standards such as NIOSH (USA) or CEN (EU). Protection of hands: Mainta	Ensure good ventilation at the work	(place.
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 lightly sealed.         Specific end uses() No Unther relevant information available. <b>8</b> Exposure controls/personal protection         Additional information about design of technical systems:         Properly operating chemical lume 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.         Additional information: No data         Exposure controls         Personal protective equipment         General protective equipment         General protective and hygienic measures         The usual protective equipment.         Wash hand up appropriate working environment.         Recommended filter ducies for short term use:         Valid contact with the eyes and skin.         Maintain a regnonnically appropriate working environment.         Recommended filter ducies for short term use:         Intermation abero bere breacks and at the end of work.		•
Information about storage in one common storage facility: Store away from oxidizing agents. 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 tume 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. Additional information: No data Exposure controls Personal protective equipment General protective end Mygienic measures The usual precautionary measures for handling chemicals should be followed. Keep away from foodsturfs, beverages and feed. Remove all solied and contaminated clothing environment. Maintain an ergonomically appropriate working environment. Bereating equipment: Use suitable respirator when high concentrations are present. Recommended filter device for short term use: Use a respirator with end of work. Weak hand end of work. Maintain an ergonomical gas carticidges 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: Impervious gloves Devise how not contain. Maintain an ergonomical protective work clothing.  9 Physical and chemical properties Body protection: Protective work clothing.  9 Physical and chemical properties Cooling is appropriate work of a solution of the metandi, but also on quality. Quality will vary from manufacturer to manufacturer. Material of gloves Ninife tubber, NBR Personal protective and their proper condition. Therefore appropriate work clothing.  9 Physical and chemical prope	Doquiromonts to be met by store	prooms and recentacles. No special requirements
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 tume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.         Control parameters         Control parameters         Control parameters         Exposure controls.         Personal protective equipment         General protective and hygienic measures         The product does not contain any releasures for handling chemicals should be followed.         Keep away from foodstiffs, beverages and feed.         Remove all soled and contaminated clothing immediately.         Wash handle winning equipment:         Genitor particle weaks and at the end of work.         Additional information the self or short term use:         Use a respirator with organic vapordatic gas carticidges as a backup to engineering controls. Risk assessment should be performed to determine if air-purifying respirator with organic vapordatic gas carticidges as a backup to engineering controls. Risk assessment should be performed to determine if air-purifying respirator with organic vapordatic gas carticidges 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 approp	Information about storage in one	common storage facility: Store away from oxidizing agents.
Specific end use(s) No further relevant information available.         8 Exposure controls/personal protection         Additional information about design of technical systems: Properly operating chemical tume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.         Components with limit values that require monitoring at the workplace: 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. Additional information: No data Exposure controls Personal protective equipment General 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 solide and contaminated clothing immediately. Wash hands before breaks and at the end of work. Avoid contaminated clothing immediately. Wash hands before breaks and at the end of work. Avoid containvinted up eyes and skin. Maintain an ergonomically appropriate portion when high concentrations are present. Becomparing during filter Under forshore for use 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: Impervicuo gloves Check protection suitable gloves nor to each use for their proper condition. The selection of suitable gloves nor to any depends on the material, but also on quality. Quality will vary from manufacturer to manufacturer. Material of gloves Nither ubber, NER Peretration of use metarial (in minutes) Not determined Eye protection resolve down clothing.	Keep container tightly sealed.	
8 Exposure controls/personal protection         Additional information about design of technical systems:         Properly operating chemical tume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.         Control parameters         Control parameters <td>Store in cool, dry conditions in well <b>Specific end use(s)</b> No further rele</td> <td>sealed containers. evant information available.</td>	Store in cool, dry conditions in well <b>Specific end use(s)</b> No further rele	sealed containers. evant information available.
Additional information about design of technical systems:         Properly operating chemical fume hood designed for flazardous chemicals and having an average face velocity of at least 100 feet per minute.         Control parameters         Control parameters <td< td=""><td></td><td></td></td<>		
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. Additional information: No data Exposure controls Personal protective equipment General and contaminates 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. Maintain an ergonomically appropriate working environment. Berating equipment: Use suitable respirator when high concentrations are present. Recommended filter device for short term use: Use a respirator with organic vaporized 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). The selection of hands: 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 NINE VARS Body protection: Sriety glasses Body protection: Protective work clothing.  9 Physical and chemical properties Information Appearance: Form: Color: C		
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.         Additional information: No data         Exposure controls         Personal protective equipment         General protective and hygenic measures         The usual protective equipment         General protective and hygenic measures         The usual protective equipment         General protective and ochraminated 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.         Breating equipment:         Use are spirator with organic vapor/acid gas cartridges 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:         Impervious gioves         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 Nithile rubber, NBR         Penetration time of glove material (in minutes) Not determined <td>Properly operating chemical fume l</td> <td>hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.</td>	Properly operating chemical fume l	hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace. Additional information: No data 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 soiled 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 ferm use: Use a respirator with organic vapor/acid gas cartridges 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: 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 Mitrife nubber, NBR Penetration time of glove material (in minutes) Not determined Eye protection: Protective work clothing. 9 Physical and chemical properties Body protection: Protective work clothing. 9 Physical and chemical properties Form: Color: Color: Color: Not determined	Control parameters	at require monitoring at the workplace.
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 apportiate working environment.         Breathing equipment: Use suitable respirator when high concentrations are present.         Recommended filter device for short term use:         Use a respirator with organic vapor/acid gas cartridges 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:         Impervisor 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 Nitrie nubber, NBR         Protection: Safety glasses         Body protection: Protective work clothing.         9 Physical and chemical properties         Information on basic physical and chemical properties         General Information         Appearance:	The product does not contain any r	elevant quantities of materials with critical values that have to be monitored at the workplace.
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 soiled and contaminated clothing immediately. Wash hands before breaks and at the end of work. Avoid contact with the eyes and at the end of work. 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 organic vapor/acid ges cartridges as a backup to engineering controls. Risk assessment should be performed to determine if air-purifying respirator with organic vapor/acid ges cartridges as a backup to engineering controls. Risk assessment should be performed to determine if air-purifying respirator of hands: 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 Penetration time of glove material (in minutes) Not determined Eye protection: Safety glasses Body protection: Protective work clothing. 9 Physical and chemical properties Information on basic physical and chemical properties General Information Appearance: Form: Color: Not determined		
In the usual precautionary measures for handling chemicals should be followed. Keep away from foodstuffs, beverages and feed. Remove all soiled and contaminated clothing immediately. Wash hands before breaks and at the end of work. Avoid contact with the eyes 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 organic vapor/acid gas cartridges as a backup to engineering controls. Risk assessment should be performed to determine if air-purifying respirator with organic vapor/acid gas cartridges as a backup to engineering controls. Risk assessment should be performed to determine if air-purifying respirator with organic vapor/acid gas cartridges as a backup to engineering controls. Risk assessment should be performed to determine if air-purifying respirator with organic vapor/acid gas cartridges 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: 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 material (in minutes) Not determined Eye protection: Safety glasses Body protection: Protective work clothing. 9 Physical and chemical properties Information on basic physical and chemical properties General Information Appearance: Form: Color: Odor: Not determined	Personal protective equipment	
Remove all solled and contaminated clothing immediately. Wash hands before breaks and at the end of work. Avoid contact with the eyes and skine end of work. Maintain an ergonomically appropriate working environment. Breathing equipment: Use solitable respirator when high concentrations are present. Recommended filter device for short term use: Use a respirator with organic vapor/acid gas cartridges 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: 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 Penetration time of glove material (in minutes) Not determined Eye protection: Protective work clothing. 9 Physical and chemical properties Enformation on basic physical and chemical properties General Information Appearance: Form: Color: Color: Color: Color: Not determined	General protective and hygienic The usual precautionary measures	measures for handling chemicals should be followed.
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 organic vapor/acid gas cartridges 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: 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 Penetration time of glove material (in minutes) Not determined Eye protection: Safety glasses Body protection: Protective work clothing. 9 Physical and chemical properties General Information Appearance: Form: Color: Color Colorless Not determined	Keep away from foodstuffs, bevera	ges and feed. Id clothing immediately
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 organic vapor/acid gas cartridges 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: 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 Penetration time of glove material (in minutes) Not determined Eye protection: Safety glasses Body protection: Protective work clothing. 9 Physical and chemical properties Information on basic physical and chemical properties General Information Appearance: Form: Color: Color: Color: Not determined	Wash hands before breaks and at	the end of work.
Use a respirator with organic vapor/acid gas cartridges 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: 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 Penetration time of glove material (in minutes) Not determined Eye protection: Safety glasses Body protection: Protective work clothing.  9 Physical and chemical properties General Information Appearance: Form: Color: Colorless Odor: Not determined	Maintain an ergonomically appropr	iate working environment
Use a respirator with organic vapor/acid gas cartridges 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: 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 Penetration time of glove material (in minutes) Not determined Eye protection: Safety glasses Body protection: Protective work clothing.  9 Physical and chemical properties General Information Appearance: Form: Color: Colorless Odor: Not determined	Breathing equipment: Use suitable Recommended filter device for s	le respirator when high concentrations are present. <b>hort term use:</b>
Protection of hands: 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 Penetration time of glove material (in minutes) Not determined Eye protection: Safety glasses Body protection: Protective work clothing. 9 Physical and chemical properties Information on basic physical and chemical properties General Information Appearance: Form: Color: Color: Color: Not determined	Use a respirator with organic vapor	/acid gas cartridges as a backup to engineering controls. Risk assessment should be performed to determine if air-purifying
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 Penetration time of glove material (in minutes) Not determined Eye protection: Safety glasses Body protection: Protective work clohing. 9 Physical and chemical properties Information on basic physical and chemical properties General Information Appearance: Form: Color: Color: Color: Ddor: Not determined	Protection of hands:	se equipment tested and approved under appropriate government standards such as MOSH (OSA) of CEN (EO).
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 Penetration time of glove material (in minutes) Not determined Eye protection: Safety glasses Body protection: Protective work clothing.  9 Physical and chemical properties Information on basic physical and chemical properties General Information Appearance: Form: Liquid or low-melting solid Color: Color: Color: Not determined	Check protective gloves prior to ea	ch use for their proper condition.
Penetration time of glove material (in minutes) Not determined         Eye protection: Safety glasses         Body protection: Protective work clothing.         9 Physical and chemical properties         Information on basic physical and chemical properties         General Information         Appearance:         Form:       Liquid or low-melting solid         Color:       Colorless         Odor:       Not determined	The selection of suitable gloves no	t only depends on the material, but also on quality. Quality will vary from manufacturer to manufacturer.
9 Physical and chemical properties Information on basic physical and chemical properties General Information Appearance: Form: Liquid or low-melting solid Color: Colorless Odor: Not determined	Penetration time of glove materia	al (in minutes) Not determined
Information on basic physical and chemical properties General Information Appearance: Form: Liquid or low-melting solid Color: Colorless Odor: Not determined	Body protection: Protective work	clothing.
Information on basic physical and chemical properties General Information Appearance: Form: Liquid or low-melting solid Color: Colorless Odor: Not determined	9 Physical and chemical prope	rties
General Information for the form Appearance: Form: Liquid or low-melting solid Color: Colorless Odor: Not determined	Information on basic physical an	
Form: Liquid or low-melting solid Color: Colorless Odor: Not determined	General Information	
Odor: Not determined	Form:	
	Odor:	Not determined
		Not determined.
(Contd. on p		(Contd. on pag US

## Pı 1-Bromo-2 1-dichlorobenzono duct

Page 3/4 Printing date 11/23/2015 Reviewed on 08/04/2014 ٦

Product name: 1-Bromo-2,4-dichlord	obenzene		
- Muselan	Not determined	(Contd. of page 2)	
pH-value: Change in condition	Not determined.		
Melting point/Belting range: Boiling point/Boiling range: Sublimation temperature / start:	26-27 °C (79-81 °F) 235 °C (455 °F) Not determined		
Flash point:	98 °C (208 °F)		
Flammability (solid, gaseous) Ignition temperature:	Not determinéd. Not determined		
Decomposition temperature: Auto igniting:	Not determined Not determined.		
Danger of explosion:	Not determined.		
Explosion limits: Lower:	Not determined		
Upper: Vapor pressure:	Not determined Not determined		
Density:	Not determined		
Relative density Vapor density	Not determined. Not determined.		
Evaporation rate Solubility in / Miscibility with	Not determined.		
Water:	Not determined		
Partition coefficient (n-octanol/water): Viscosity:	Not determined.		
dynamic: kinematic:	Not determined. Not determined.		
Other information	No further relevant information available.		
10 Stability and reactivity			
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 Hydrogen chloride (HCI) Hydrogen bromide			
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: Causes skin irritation. Eye irritation or corrosion: Causes skin irritation. Sensitization: No sensitizing effects known. Germ cell mutagenicity: No effects known. Carcinogenicity: 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: No effects known. 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.			
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: General notes: 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		i	
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			
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	(Contd on page 4)	
		(Contd. on page 4) USA	

	Reviewed 011 08/04/2014
Product name: 1-Bromo-2,4-dichlorobenzene	
	(Contd. of page 3)
Packing group DOT, IMDG, IATA	
Environmental hazards:	Not applicable Not applicable.
Special precautions for user	Not applicable. Not applicable.
Transport in bulk according to Annex II of MARPOL	
Transport in burk according to Annex if of MARFOL	
DOT	
Marine Pollutant (DOT):	No
UN "Model Regulation":	
15 Regulatory information	
Safety, health and environmental regulations/legisla GHS label elements The product is classified and labe	ation specific for the substance or mixture eled in accordance with 29 CFR 1910 (OSHA HCS)
Hazard pictograms	
GHS07	
Signal word Warning Hazard statements	
H315 Causes skin irritation.	
H319 Causes serious eye irritation.	
H335 May cause respiratory irritation. Precautionary statements	
P261 Avoid breathing dust/fume/gas/mist/	Vapours/spray.
P305+P351+P338 IF IN EYES: Rinse cautiously with w	lothing/eye protection/face protection. vater for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P304+P340 IF INHALED: Remove person to fres P405 Store locked up.	sh air and keep comfortable for breathing.
P501 Dispose of contents/container in acc	cordance with local/regional/national/international regulations.
National regulations This product is not listed in the U.S. Environmental Prot	stection Agency Toxic Substances Control Act Chemical Substance Inventory. Use of this product is restricted
to research and development only. This product must b	ntection Agency Toxic Substances Control Act Chemical Substance Inventory. Use of this product is restricted be used by or directly under the supervision of a technically qualified individual as defined by TSCA. This in formulations for commercial surgeous
product must not be used for commercial purposes or in This product is not listed on the Canadian Domestic Sul	n formulations for commercial purposes. Ibstances List (DSL) or 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 Substan	ince is not listed.
Prop 65 - Developmental toxicity Substance is not list Prop 65 - Developmental toxicity, female Substance i	ited.
<b>Prop 65 - Developmental toxicity. male</b> Substance is	s not listed.
Information about limitation of use: For use only by te	technically qualified individuals.
Other regulations, limitations and prohibitive regula Substance of Very High Concern (SVHC) according	ations
The conditions of restrictions according to Article 6	t to the REACH Regulations (EC) No. 1907/2006. Substance is not listed. 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the
<i>market and use must be observed.</i> Substance is not listed.	
Annex XIV of the REACH Regulations (requiring Aut Chemical safety assessment: A Chemical Safety Asse	thorisation for use) Substance is not listed.
· · ·	
16 Other information Employers should use this information only as a suppley	amont to other information gathered by them, and should make independent judgement of suitability of this
information to ensure proper use and protect the health	ement to other information gathered by them, and should make independent judgement of suitability of this n 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	n combination with any other product or process, is the responsibility of the user.
Department issuing SDS: Global Marketing Department Date of preparation / last revision 11/23/2015 / -	ent
Abbreviations and acronyms:	
ADR: Accord européen sur le transport des marchandises dangereuses pr DOT: US Department of Transportation	par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road) ces ciety) SA) USA
EINECS: European Inventory of Existing Commercial Chemical Substance CAS: Chemical Abstracts Service (division of the American Chemical Soc	ies ciety)
HMIS: Hazardous Materials Identification System (USA) WHMIS: Workplace Hazardous Materials Information System (Canada)	
LC50: Lethal concentration, 50 percent LD50: Lethal dose, 50 percent	
vPvB: very Persistent and very Bioaccumulative ACGIH: American Conference of Governmental Industrial Hygienists (US)	SA)
OSHA: Occupational Safety and Health Administration (USÅ) NTP: National Toxicology Program (USA)	
IARC: International Agency for Research on Cancer EPA: Environmental Protection Agency (USA)	
<b>2</b> , , <b>2</b> , , , , , , , , , , , , , , , , , , ,	USA -

USA -