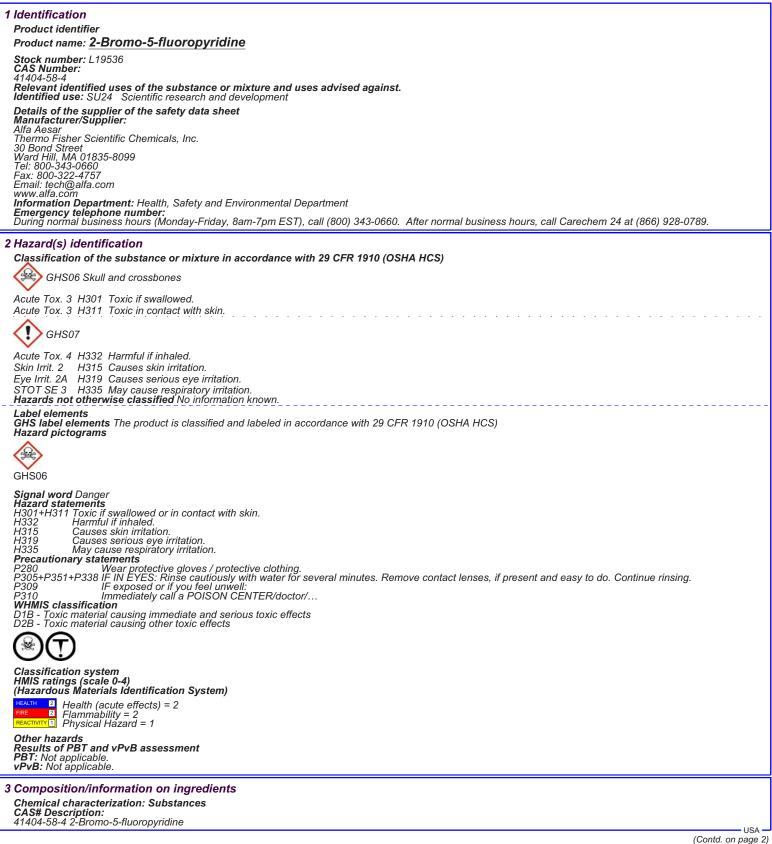


# Safety Data Sheet per OSHA HazCom 2012



## (Contd. of page 1) 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 After skin contact Immediately wash with water and soap and rinse thoroughly. Seek immediate medical advice. After eye contact Rinse opened eye for several minutes under running water. Then consult a doctor. After swallowing Seek medical treatment. Information for doctor Most important symptoms and effects, both acute and delayed No further relevant information available. Indication of any immediate medical attention and special treatment needed No further relevant information available. 5 Fire-fighting measures Extinguishing media Suitable extinguishing agents Carbon dioxide, extinguishing powder or water spray. Fight larger fires with water spray or alcohol 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 Hydrogen bromide (HBr) Nitrogen oxides (NOx) Possibly Hydrogen cyanide (HCN) Hydrogen fluorde (HF) Advice for firefighters Protective equipment: Wear self-contained respirator. 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: Dispose of contaminated material as waste according to section 13. Ensure adequate ventilation Prevention of secondary hazards: Keep away from ignition sources. Reference to other sections See Section 7 for information on safe handling See Section 8 for information on personal protection equipment. See Section 13 for disposal information. 7 Handling and storage Handling Precautions for safe handling Keep container tightly sealed. Store in cool, dry place in tightly closed containers. Ensure good ventilation at the workplace. Information about protection against explosions and fires: Keep ignition sources away. Conditions for safe storage, including any incompatibilities Storage Requirements to be met by storerooms and receptacles: No special requirements. Information about storage in one common storage facility: Store away from oxidizing agents. Further information about storage conditions: Keep container tightly sealed. Store in cool, dry conditions in well sealed containers. Specific end use(s) No further relevant information available. 8 Exposure controls/personal protection Additional information about design of technical systems: Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute. Control parameters Components with limit values that require monitoring at the workplace: Not required. 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 eronomically appropriate working environment. Avoid contact with the eyes and skin. Maintain an ergonomically appropriate working environment. **Breathing equipment:** Use suitable respirator when high concentrations are present. **Protection of hands:** Impervious gloves 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. **Penetration time of glove material (in minutes)** Not determined **Eye protection:** Safety glasses **Body protection:** Protective work clothing. LISA

(Contd. on page 3)

#### Product name: 2-Bromo-5-fluoropyridine

9 Physical and chemical properties

(Contd. of page 2)

Information on toxicological effects Acute toxicity: Harmfull inhaled. Toxic in contact with skin. Toxic in contact with skin. Toxic in contact with skin. Toxic in contact with skin. LDIC 50 values that are relevant for classification: No data skin inritation or corrosion: Causes skin inflation. Eye Irritation or corrosion: Causes serious eye irritation. Sensitization: No sensitizane offects known. Germ cell mutagenicity: No effects known. Specific target organ system toxicity - single 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. <b>12 Ecological information</b> Toxicity Aquatic toxicity: No further relevant information available. Bicaccumulative potential No further relevant information available. Bicaccumulative potential No further relevant information available. Bicaccumulative potential No further relevant information available. Additional ecological information: General notes: Do not allow material to be released to the environment without proper governmental permits. Do not allow undiluted product of large quantities to reach ground water, water course or sewage system. Avoid transfer into the environment. Results OF BPI and VPB assessment PPT: Not applicable. VPUE Not applicable.	9 Physical and chemical properties			
Contr.         Low mining and           Open in submitted         Mid defaulted           Attraction         Mid defaulted           Attraction         Default in submitted           Attraction         Default in submitted           Attraction         Default in submitted           Attraction         Default in submitted           Performation         To C (PL-B*P)           Default in submitted         To C (PL-B*P)           Performation         Not default in submitted           Attraction         Not default in submitted           Performation         Not default in submitted           Attraction         Not default in submitted           Attraction <td< th=""><th>General Information</th><th>emical properties</th><th></th></td<>	General Information	emical properties		
Color         When           Color         When           Color         When           Color         Mice designation           Subbinition comparison         Mice designation           Subbinition comparison         Mice designation           Color         Mice designation           Subbinition comparison         Mice designation           Color         Mice designation           Damage of subbinition comparison         Mice designation           Color         Mice designation           Damage of subbinition         Mice designation           Color         Mice designation           Damage of subbinition         Mice designation           Color         Mice designation		Low melting solid		
Other threshold:         Not applicable.           Other threshold:         Mod applicable.           Other and the applicable.         Bi-35 CT-21 ST (4 mmHg)           Builting points and applicable.         Bi-35 CT-21 ST (4 mmHg)           Fammability.         Bi-35 CT-21 ST (4 mmHg)           Auto (spittling).         Bi-35 CT-21 ST (4 mmHg)           Pammability.         Mod applicable.           Pametiston able.         Mod applicable.     <	Color:	White		
pH-value:         Met applicable.           Change or condition Meding point/Meding point/Meding and/ Sublimation temperature 2 sets 2 C 175 eff 17 (14 mmHq) Sublimation temperature 2 sets 2 C 175 eff 17 (14 mmHq) Sublimation temperature 2 sets 2 C 175 eff 17 (14 mmHq) Sublimation temperature 2 sets 2 C 175 eff 17 (14 mmHq) Sublimation temperature 2 sets 2 C 175 eff 17 (14 mmHq) Sublimation temperature 2 sets 2 C 175 eff 17 (14 mmHq) Sublimation temperature 2 sets 2 C 175 eff 17 (14 mmHq) Sublimation temperature 2 sets 2 C 175 eff 17 (14 mmHq) Sublimation temperature 2 sets 2 Sets 2 C 175 eff 17 (14 mmHq) Sublimation temperature 2 sets				
Mediang point/Metting anamatic         20:37 St (7) 20:87 F)           Bubblindton tomparture start         T3 C (18:37 F)           Flash point         T3 C (18:37 F)           Flash point         T3 C (18:37 F)           Mediang (10:100 F)         Mediang (10:100 F)           Best point         T3 C (18:37 F)           Person position temperature:         Mediang (10:100 F)           Mediang (10:100 F)         Product does not present an explosion hazard.           Depresent         Mediang (10:100 F)           Value of pressure:         Mediaphicable.           Value of pressure:         Mediaphicable.           Value of pressure:         Mediaphicable.           Value of control         Mediaphicable.	pH-value:			
Sublination temperature / start:         Not determined           Plank point:         Not determined           Accompatibility in the second secon	Change in condition			
Flormability foold, gasesous)       Mod determined         Decomposition numerature:       Mod determined         Upper:       Mod determined         Decomposition numerature:       Mod determined         Vacosity:       Mod determined         Detailing numerature:       Mod applicable         Detailing numerature:       Mod applicable         Other information numerature information available.       Mod applicable         Other information for numerature information available       Mod determined         Prossibility of numeration in the applicable       No further released information available.         Thormation conditions to be avoided Decomposition vicinates       Decomposition vicinates         Prossibility of numeration available       Decomposition vicinate	Boiling point/Boiling range:	26-31 °C (79-88 °F) 80-83 °C (176-181 °F) (44 mmHg) Not determined		
Bight Construction         Mod Stelemined           Auto System         Mod Stelemined           Dunger of explosion:         Product does not present an explosion hazard.           Explosion Intrast:         Mod Stelemined           Upper:         Not determined           Upper:         Not determined           Vance pressure:         Mod Stelemined           Vance pressure:         Mod Splicable           Relative density         Mod Splicable           Vance pressure:         Mod Splicable           Solubility in Miscobility with         Mod Splicable           Water         Insclube           Solubility on Internation         Mod Splicable           Ottow         Mod Spl	Flash point:			
Auto Igniting:         Not determined           Damper of septesion:         Product does not present an explosion hazard.           Upper:         Not determined           Upper:         Not determined           Density:         Not determined           Particle:         Not applicable.           Other information         Not applicable.           Other information         Not applicable.           Other information information available.         Not applicable.           Other information information         No further relevant information available.           Provide and provide information information available.         No further relevant information available.           10 Stability on fractivity         No further relevant information available.           11 Thermatic composition / conditions to be avoide.         Provide and stored according to specifications.           Provide information         No further relevant information available.           11 Toxicological information         No further relevant information available.           Provide in available affects Avauno available.	Flammability (solid, gaseous)			
Dengre of explosion:         Product does not present an explosion hazard.           Explosion initiat:         Not determined.           Captor:         Not determined.           Vapor pressure:         Not determined.           Vapor pressure:         Not determined.           Vapor pressure:         Not determined.           Vapor density         Not determined.           Pressity         Not dete	Decomposition temperature:	Not determined		
Explosion limits:         Not determined           Upper         Not deplicable.           Vector pressure:         Not deplicable.           Vector density         Not deplicable.           Monard:         Not label relevant information available.           Other information         No label/density.           Reset/vector density         Not label relevant information available.           Thormation controcological effects         Not applicable.           Prossibility of non-available in owned         Not applicable.           Information controcological effects         Not applicable.           Information controcological effects         Not applicable.           Prossibility of non-available in owned         Not applicable.           Prossibility o				
Lover: Mol determined Upper: Mol determined Particle Server: Mol Server: Mol applicable Particle Server: Mol Server: Mol applicable Particle Server: Mol Server: Mol applicable Particle Server: Mol Server:		Product does not present an explosion nazard.		
Variation pressure:         Not applicable.           Relative meaning         Not applicable.           Sequence of the cellulity with         Not applicable.           Partition cellulity with         Insoluble           Partition cellulity with         Insoluble           Partition cellulity with         Not applicable.           Innovation         Not applicable.           Other information         Not applicable.           Innovation recommended storage conditions.         Compatible meaning.           Reservice accompasition recommended storage conditions.         Recompatible meaning.           Internation         Not applicable.           Internation         Not applicable.           Internation on intocological offorts         Not applicable.           Internation on on cological offorts         Not applicable.           Intornation on on cological offorts <t< th=""><th>Lower:</th><th></th><th></th></t<>	Lower:			
Density:         Wat determined watave exponsion rate Evaporation rate Subject of the subject				
Vapor density         Not applicable.           Sompatibility mithebility with         Insoluble           Partition coefficient (n-ctan/watch: Not defermined.           Partition coefficient (n-ctan/watch: Not defermined.           If stability and reactivity           Reactivity (No information           70 Stability and reactivity           Reactivity (No information known.           Contrastic           71 Stability and reactivity           Reactivity (No information known.           Conditions to be evolved. Journal of the stabulation of the stabulatis the stabulatis the stabulatis the stabulation of the	Density:	Not determined		
Evenomics         Not spolicable.           Walking in Miscibility with Miscibility.         Not spolicable.           Paramic:         Not spolicable.         Not spolicable.           Other Information         Not Spolicable.         Not spolicable.           Cher Information known.         Cher Information / conditions to be availed: Decomposition will not occur if used and stored according to specifications.           Chernical Stability Stabile under recommended storage conditions.         Thermal decomposition / conditions to be availed: Decomposition will not occur if used and stored according to specifications.           Conditions to avoid to further relevant information available.         Not spolicable.           Horomation on toxicological effects         Not spolicable.           Autor on toxicological effects         Not spolicable.           Possibily Hydrogen cyanide (HCN)         Toxicological effects           11 Toxicological information         Not spolicable.           Note spolicable.         Not spolicable.           System Contrast with skin.         Toxic in contact with skin.           Toxic in contact with skin.         Not spolicable.           Toxic in contact with skin.         Not spolicable.           Toxic in contact with skin.         Not spolicable.           Toxic in co		Not determined. Not applicable		
Water         Insclubile           Partition of the concentration of the concentratis anowhere the concentratis and the concentration of the	Evaporation rate			
Partition coefficient (n-octanol/watel): Not determined. Viscosity: Presentation: Other Information Other Information Control Information Contrel Information Control Info		Insoluble		
dynamic: Wrematic: Other Information       Not applicable. No further relevant information available.         10 Stability and reactivity Reservity No information known. The memory decomposition / conditions to be avoided: Decomposition will not occur if used and stored according to specifications. Possibility of theardous reactions No damageneous reactions not conditions to avoid No further relevant information available. Not applicable.         Internal decomposition / conditions to be avoided: Decomposition will not occur if used and stored according to specifications. Possibility Hydrogen cyanic (HCNN)         11 Toxicological information Possibility Hydrogen cyanic (HCNN)         12 Toxicological information Possibility Hydrogen cyanic (HCNN)         13 Toxic of setting applicable. Skin Infration or corrosion: Causes senous sey inflation: Not if setting applicable. Skin Infration or corrosion: Causes senous sey inflation: Sensitization or corrosion: Causes senous sey inflation: Sensitization or corrosion: Causes senous sey inflation. Sensitization or corrosion: Causes senous server. May cause negativation interverse in subabulation or corrosion: Causes senitization: No adsidication data on carcinogenei properties of this material is available from the EPA, IARC, NTP, OSHA or ACGH. Reproductive Noxies, No effects known. Sensitization or corrosion: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.         12 Ecological information Subacute to chronic toxicity: No effects known. Se	Partition coefficient (n-octanol/water).			
Whermatic:         Not sipplicable:           Other information         No further relevant information available. <b>10</b> Stability and reactivity         Reactivity No information knows:           Chemical Stability Stable under recommended storage conditions:         Thermal decomposition / conditions to be avoided. Decomposition will not occur if used and stored according to specifications.           Thermal decomposition / conditions to be avoided. Decomposition will not occur if used and stored according to specifications.           Thermal decomposition / conditions to be avoided. Decomposition will not occur if used and stored according to specifications.           Thermal decomposition products:           Transport of avoid No Information available.           Hazardous decomposition products:           Pressition / victoregen cyanide (HCN) <b>11 toxicological information</b> Information or toxicological effects           Autre toxicity:           Harmful in inhaded.           Down or conston: Causes skin irritation.           Stim irritation or corroston: Causes skin irritation.           Berger Chemical Stability and releasing to the stability - single exposure: No afficies known.           Specific target organ system toxicity - single exposure: No afficies known.           Specific target organ system toxicity - single exposure: May cause respiratory irritation.           Asparitation ary system toxicity - single exposure: May cause re		Not applicable		
10       Stability and reactivity         Resctive y to information known         Chemical Stability Stability Stability         Thermal decomposition / conditions to be avoided: Decomposition will not occur if used and stored according to specifications.         Possibility of hardrous reactions to deprove sreactions in the approximation available.         Hazardous decomposition products::         Canditions to avoid the information available.         Hazardous decomposition products::         Canditions to avoid the information available.         Hydrogen fluoride         Possibility Hydrogen cyanide (HCM)           11     Toxicological information          Information on toxicological effects          Toxic i prostability Hydrogen cyanide (HCM)           11     Toxicological information          Information on toxicological effects          Toxic i prostability Hydrogen cyanide (HCM)         Did CSD values that are relevant for classification: No data          Did CSD values that are relevant for classification in toxic at sealable from the EPA, IARC, NTP, OSHA or ACGH.          Reproduction: No slassification date on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGH.          Reproduction: No classification date on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or A	kinematic:	Not applicable.		
Rescriving Vio information known.         Chemical stability Stabie 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 No degradues reactions (Normation available.         Importantial emotivation products:         Carbon monoxide and carbon dioxide         Hydrogen fluoride         Possibility Hydrogen cynnide (HCM) <b>11 Toxicological information</b> Information on toxicological effects         Acute toxicological information         Information on corresion: Causes skin inflation:         Toxic of semilarity in the store of t	Other information	No further relevant information available.		
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: 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: 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.	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 No dangerous reactions known Conditions to avoid No further relevant information available. Incompatible materials: Oxidizing agents Hazardous decomposition products: Carbon monoxide and carbon dioxide Hydrogen bromide Hydrogen oxides Hydrogen codies Hydrogen cod			
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:         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: 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.	Additional toxicological information:	To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.		
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.	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: 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: Not applicable. VvPB: Not applicable.			
Waste treatment methods Recommendation Consult state, local or national regulations to ensure proper disposal.	otner adverse effects No further releva	ant Information available.		
Waste treatment methods Recommendation Consult state, local or national regulations to ensure proper disposal.	13 Disposal considerations			
Recommendation Consult state, local or national regulations to ensure proper disposal. (Contd. on page 4)	Waste treatment methods			
USA —	<b>Recommendation</b> Consult state, local of	or national regulations to ensure proper disposal.	(Contd on page 4)	
			USA	

#### Product name: 2-Bromo-5-fluoropyridine

(Contd. of page 3)

#### Uncleaned packagings:

Uncleaned packagings: Recommendation: Disposal must be made according to	official regulations.		
14 Transport information			
UN-Number DOT, IMDG, IATA	UN2811		
UN proper shipping name			
DOT IMDG, IATA	Toxic solids, organic, n.o.s. (2-Bromo-5-fluoropyridine) TOXIC SOLID, ORGANIC, N.O.S. (2-Bromo-5-fluoropyridine)		
Transport hazard class(es)			
DOT			
Toxc >			
Class Label	6.1 Toxic substances. 6.1		
Class Label	6.1 (T2) Toxic substances 6.1		
IMDG, IATA	0.1		
×			
Class	6.1 Toxic substances.		
Label Packing group	6.1		
Packing group DOT, IMDG, IATA	III		
Environmental hazards:	Not applicable.		
Special precautions for user EMS Number:	Warning: Toxic substances F-A.S-A		
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable.			
Transport/Additional information:			
DOT Marine Pollutant (DOT):	No		
UN "Model Regulation":	UN2811, Toxic solids, organic, n.o.s. (2-Bromo-5-fluoropyridine), 6.1, III		
GHS06			
Signal word Danger Hazard statements			
H301+H311 Toxic if swallowed or in contact with skin. H332 Harmful if inhaled.			
H315 Causes skin irritation. H319 Causes serious eve irritation			
H335 May cause respiratory irritation. Precautionary statements			
P280 Wear protective gloves / protective clo	thing. er for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.		
P309 IF exposed or if you feel unwell:			
P310 Immediately call a POISON CENTER/ National regulations			
	ction Agency Toxic Substances Control Act Chemical Substance Inventory. Use of this product is restricte used by or directly under the supervision of a technically qualified individual as defined by TSCA. This ormulations for commercial purposes. ubstance is not listed.		
California Proposition 65 Prop 65 - Chemicals known to cause cancer Substance Prop 65 - Developmental toxicity Substance is not listed	e is not listed.		
Prop 65 - Developmental toxicity, female Substance is Prop 65 - Developmental toxicity, male Substance is no Information about limitation of use: For use only by tec	not listed. ot listed.		
Other regulations, limitations and prohibitive regulation Substance of Very High Concern (SVHC) according to The conditions of restrictions according to Article 67	ons o the REACH Regulations (EC) No. 1907/2006. Substance is not listed. and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the		
market and use must be observed. Substance is not listed. Annex XIV of the REACH Regulations (requiring Author Chemical safety assessment: A Chemical Safety Asses	<b>orisation for use)</b> Substance is not listed. sement has not been carried out.		
conformance with this Material Safety Data Sheet, or in co	ent to other information gathered by them, and should make independent judgement of suitability of this nd safety of employees. This information is furnished without warranty, and any use of the product not in ombination with any other product or process, is the responsibility of the user.		
Department issuing SDS: Global Marketing Department Date of preparation / last revision 11/24/2015 / - Abbreviations and acronyms:			

Abbreviations and acronyms: RID: Réglement 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)

### Safety Data Sheet per OSHA HazCom 2012

### Product name: 2-Bromo-5-fluoropyridine

- ICAO: International Civil Aviation Organization ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO) ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road) IMDG: International Maritime Code for Dangerous Goods DOT: US Department of Transport Association CAS: Chemical Abstracts Service (division of the American Chemical Society) HMIS: Hazardous Materials Identification System (USA) WHMIS: Workplace Hazardous Materials Information System (Canada) LC50: Lethal concentration, 50 percent UPVB: very Persistent and very Bioaccumulative ACGIH: American Conference of Governmental Industrial Hygienists (USA) OSHA: Occupational Safety and Health Administration (USA) NTP: National Toxicology Program (USA) INFC: International Protection Agency (USA)

(Contd. of page 4)

USA