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PRODUCT SPECIFICATION	
Title: BORON TRIFLUORIDE (BF ₃)	Document No. : NFIL/QC /SPEC/FP/030/00 Effective Date : 05/11/2008

Material Code : INP001002, SPE001002, SPE009002.

Packing Material : Cylinders 25 kg, Tube Trailer

Storage Requirements : Storage at Room temperature.

Structural Formula : 

Molecular Formula : BF₃

Molecular Weight : 67.82

Synonyms : Boron Fluoride; Trifluoroboron;

Sr. No.	TEST	SPECIFICATION
Product Specification:		
1	Appearance / Description	Colourless gas forms fume when contact with air
2	Purity	99.50 % Min.
3	SO ₂	500 ppm Max.
4	SiF ₄	500 ppm Max.
5	SO ₄	10 ppm Max.
6	Air (By Difference)	00.40 % Max.

- Customer should discuss particular concern with business unit at speciality@nfil.in for the requirements other than specified.
- Analytical Method No. **NFIL/QC/WI/FP/030**

1. CHEMICAL IDENTITY

Chemical Name	Boron tri fluoride
Synonym	
Formula	BF ₃

2. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredients name: Boron trifluoride C.A.S. No 7637-07-2 ;EC No. 231-569-5

3. PHYSICAL / CHEMICAL DATA

Boiling Point	-99.9 °C	Vapour Pressure at -141.3 °C	10 mmHg
Melting Point	-126.5 °C	Solubility in water at 0 °C	332 gm/100 ml (highly soluble)
Vapour Density (Air = 1) gm/lit	2.4	Appearance	Colorless gas forming thick fumes in moist air
Specific Gravity/Density	1.6	Odour	Pungent, suffocating
pH	Lewis Acid.	Other	.
Physical state	Gas		

4. FIRE / EXPLOSION HAZARD DATA

Flammability: Non flammable	LEL%	Not found	Flash Point °C : NA
Auto Ignition Temperature: NA	UEL%	Not found	
TDG Flammability	Not found.		
Explosion Sensitivity to Impact	Not found.		
Explosion Sensitivity to static electricity	Not found.		
Hazardous Combustion Product	Non combustible.		
Hazardous Polymerization	Will not occur		
Combustible liquid	NA	Oxidizer	NA
Flammable material	No	Organic Peroxide	NA
Pyrophoric material	NA	Corrosive	NA
Explosive material	NA	Other	-

5. STABILITY & REACTIVITY DATA

Chemical stability/ reactivity	Stable.
Incompatibility	Alkali metals, alkaline earth metals (except Mg.) alkaline nitrate, calcium oxide, heat , moist air, lower alcohols, slacked lime, AlCl ₃ s
Conditions to avoid	NA.
Hazardous decomposition / reaction products	On decomposition it produces toxic & corrosive fumes of fluorine containing compounds, boron compounds

6. HEALTH HAZARD DATA





Route of entry	Skin, Eyes, Ingestion, Inhalation.
Effects of exposure/ Symptoms	Substances irritating to eyes, skin & respiratory. Highly toxic may cause death or permanent injury after very small exposure to small quantity, hair loss, anemia, mottled teeth, kidney/liver injury

7. TOXICOLOGICAL INFORMATION

LD 50 / LC50	LC50(rat), Inhalation 1180 mg/m ³ for 4 Hrs.
Permissible Exposure Limit	1 ppm ceiling (OSHA / ACGIH) Very toxic by inhalation and highly corrosive to eyes, respiratory system and skin.

8. ECOLOGICAL INFORMATION

Not Available. May cause pH changes in aqueous ecological systems.
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9. PREVENTIVE MEASURES/EXPOSURE CONTROL/PERSONAL PROTECTION		
Engineering Controls	Use explosion-proof ventilation equipment. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use only under a chemical fume hood.	
Personal Protective Equipments	Protective gloves, protective goggles, lab coat, aprons, respirators.	
10. HANDLING & STORAGE		
Normal Handling	Wear safety equipment. Keep container well closed. Store in dry place.	
Storage Recommendation	Keep container well closed. Store in dry place.	
11. EMERGENCY / FIRST AID MEASURE		
Fire	Fire extinguishing medium	Dry chemicals, carbon dioxide, fog or foam
Exposure/first aid measures	Inhalation	Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
	Eyes/ Skin	Eye: Flush eyes with running water for several minutes, while keeping the eyelids wide open. Skin: Remove contaminated shoes, socks and clothing; wash the affected skin with plenty of water. Dermal burns may be treated with calcium gluconate gel or slurry in water or glycerin.
	Ingestion	Considered unlikely
Special procedure	Isolated area until the gas has dispersed area. Use self contained breathing apparatus and full body protection	
12. ACCIDENTAL RELEASE MEASURES		
General Information	Use proper personal protective equipment as indicated in section 9	
Spills / Leaks	Flow in to mixed solution of sodium hydroxide and slaked lime. Do not direct water at spill. Cover with dry sand or earth.	
13. DISPOSAL CONSIDERAIONS:		
Dispose of in a manner consistent with federal, state, and local regulations.		
14. TRANSPORT INFORMATION:		
	US DOT	Canada TDG
Proper Shipping Name	BORON TRIFLUORIDE	BORON TRIFLUORIDE
Hazard class	2.3	2.3
Identification / UN Number	UN 1008	UN 1008
Shipping Label	POISON GAS 	POISAN GAS 
Secondary Label	CORROSIVE 	CORROSIVE 
Additional Information:- NFPA Rating: Health: 4, Flammability: 0; Ractivity:1 Hazchem Code: 4WE		

15. REGULATORY INFORMATION:

European & International Regulations

EC Labelling

Symbol(s): T+ (Very toxic) and C (Corrosive)

R Phrase(s)

R14: Reacts violently with water.

R26: Very toxic by inhalation.

R35: Causes severe burns.

Safety Phrase(s):

S9: Keep container in a well-ventilated place.

S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S28: After contact with skin, wash immediately with

S36/37/39: Wear suitable protective clothing, gloves and eye/face protection.

S45: In case of accident or if you feel unwell, seek medical advice immediately (show the label when possible)

16. NAME OF FIRM: NAVIN FLUORINE INTERNATIONAL LIMITED

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