

Pure Gas: Nitrogen Trifluoride

DESCRIPTION

Nitrogen trifluoride is a colorless, stable, and toxic gas with a characteristic moldy odor under ambient conditions. Nitrogen trifluoride has been used successfully as a fluorine source for high energy chemical lasers. It is sometimes preferred over fluorine because of its relative ease of handling at ambient conditions.

Nitrogen trifluoride is also used in the fluorination of fluorocarbon olefins and as an oxidizer for high energy fuels.

PURITY SPECIFICATIONS (MAXIMUM IMPURITY LEVELS)	
Component	UHP Grade (99.8%)
Argon (Ar) & Oxygen (O ₂)	< 50.0 ppm
Carbon Dioxide (CO ₂)	< 10.0 ppm
Carbon Monoxide (CO)	< 10.0 ppm
Carbon Tetrafluoride (CF ₄)	< 1500 ppm
Hydrolizable Fluorides (HF)	< 1.0 ppm
Moisture (H ₂ O)	< 1.0 ppm
Nitrogen (N ₂)	< 50 ppm
Sulfur Hexafluoride (SF ₆)	< 25.0 ppm

CYLINDER INFORMATION		PRESSURE	CONTENT	
Cylinder Size	Valve Outlet		Psig/Bar	Lbs/Kg
1	CGA 330	DISS 640	1475/102.7	50/22.7

(Continued)



PHYSICAL CONSTANTS

Chemical name	Nitrogen Trifluoride	
Molecular weight	71.002	
Density of the gas at 70°F (21,1°C), 1 atm	2.941 kg/m ³ ; 0.1836 lb/ft ³	
Relative density of the gas at 70°F (21,1°C), 1 atm (Air = 1)	2.452	
Density of liquid @-70 F	1.204g/cm ³	
Boiling point at 1 atm	144.09K, -129.06 C, -340.22 F	
Critical temperature at 1 atm	233.85 K, -39.3 C, -38.74 F	
Critical pressure	45.3 bar, 44.71 atm, 657.02 psia	
Critical density	0.5979g/cm ³	
Latent heat of vaporization at normal boiling point	70.1 Btu/lb, 162.6kJ/kg	
Specific heat of the gas at 70°F (21,1°C), 1 atm	Cp	0.755 kJ/(kg K), 0.289 BTU/(lb R)
	Cv	0.638 kJ/(kg K), 0.152 BTU/(lb R)
Ratio of specific heats (Cp/Cv)	1.183	

SHIPPING DATA

Synonyms	NF3
CAS Register Number	7883-54-2
DOT Classification	2.2 (Nonflammable gas)
DOT Label	NON FLAMMABLE GAS, OXIDIZER
Transport Canada Classification	2.3, 5.1
Substance Identification (SI)	2451
UN Number	Un 2451
Hazards	Irritant
Toxicity (TLV)	10 ppm
Flammability Range (in air)	N/A
Odor	Moldy