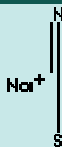


SODIUM THIOCYANATE

PRODUCT IDENTIFICATION

CAS NO.	540-72-7	
EINECS NO.	208-754-4	
FORMULA	NaCNS	
MOL WT.	81.06	
H.S. CODE	2838.03	
TOXICITY	Oral rat LD50: 764 mg/kg	
SYNONYMS	NaSCN; Sodium rhodanide; Sodium sulfocyanate; Sodium isocyanate; Thiocyanic acid, sodium salt; sodium sulfocyanate; Thiocyanate Sodium; Natriumthiocyanat (German); Tiocianato de sodio (Spanish); Thiocyanate de sodium (French);	
DERIVATION		
CLASSIFICATION		

PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	clear hygroscopic crystals, odorless
MELTING POINT	287 C
BOILING POINT	Decomposes
SPECIFIC GRAVITY	> 1
SOLUBILITY IN WATER	139g/100ml at 21 C
SOLVENT SOLUBILITY	
pH	
VAPOR DENSITY	
AUTOIGNITION	
NFPA RATINGS	Health: 3 Flammability: 0 Reactivity: 1
REFRACTIVE INDEX	
FLASH POINT	Not considered to be a fire hazard
STABILITY	Stable under ordinary conditions, hygroscopic/light sensitive

GENERAL DESCRIPTION & APPLICATIONS

Cyanic acid (the isomer of fulminic acid) is an unstable (explosive), poisonous, volatile, clear liquid with the structure of $\text{H}-\text{O}-\text{C}\equiv\text{N}$ (the oxoacid formed from the pseudohalogen cyanide), which is readily converted to cyamelide and fulminic acid. There is another isomeric cyanic acid with the structure of $\text{H}-\text{N}=\text{C}=\text{O}$, called isocyanic acid. Cyanate group (and isocyanate group) can react with itself. Cyanuric acid (also called pyrolithic acid), white monoclinic crystal with the structure of $[\text{HOC}(\text{NCOH})_2\text{N}]$, is the trimer of cyanic acid. The trimer of isocyanic acid is called biuret.

- Cyanic acid: $\text{H}-\text{N}=\text{C}=\text{O}$ or $\text{H}-\text{O}-\text{C}\equiv\text{N}$
- Fulminic acid: $(\text{H}-\text{C}=\text{N}-\text{O})$ or $\text{H}-\text{C}\equiv\text{N}-\text{O}$
- Isocyanic acid: $\text{H}-\text{N}=\text{C}=\text{O}$
- Cyanuric acid: $\text{HOC}(\text{NCOH})_2\text{N}$
- Biuret: $(\text{NH}_2\text{CO})_2\text{NH}$

Cyanic acid hydrolyses to ammonia and carbon dioxide in water. The salts and esters of cyanic acid are cyanates. But esters of normal cyanic acid are not known. The salts and esters of isocyanic acid are isocyanates. The isocyanate group reacts with the hydroxyl functional group to form a urethane linkage. Diisocyanates (or polyisocyanates) are monomers for polyurethane production. Polyurethane is made from a variety of diisocyanates in conjunction with polyether and polyester polyols as co-reactants by addition polymerization which needs at least two $-\text{N}=\text{C}=\text{O}$ groups.

Polyurethanes are widely used in the manufacture of flexible and rigid foams, fibres, coatings, and elastomers. If isocyanate monomer is polymerized with amine group, polyurea is produced. Cyanates (or Isocyanates) are readily reacts with various form of amine (including ammonia, primary-, secondary- amines, amides and ureas) and hydroxyl functional group. They are used in the synthesis for the target molecules such as pharmaceuticals, pesticides, textile softener, lubricants and industrial disinfectants. They can convert to polycyclic compounds such as hydantoins and imidazolons. They are used as plastic additives and as heat treatment salt formulations for metals.

Thiocyanate is a salt or ester of thiocyanic acid (HSCN). Aqueous solutions of thiocyanic acid, also called sulfocyanic acid, are very strong acids of the equilibrium mixture of thiocyanic and isothiocyanic. Thiocyanates are bonded through the sulfur(s) with the structure $R-S-C\equiv N$ or the isomeric $R-N=C=S$ (isothiocyanates). Thiocyanates are bonded through the sulfur(s) which replace for the oxygen (O) atom. Thiocyanates are the sulfur analog of isocyanates. Organic as well as metallic thiocyanates [CuSCN, $Ca(SCN)_2$, NaSCN, KSCN] are very versatile compounds. Isothiocyanates act as electrophiles with the carbon atom as the electrophilic center. They have wide range of applications as an intermediate to create a desired chemical compound through a series of chemical reactions for the industrial field including fungicide, bactericide, wood preservative, pharmaceutical and plastic and rubber. Some isothiocyanates are used in freezing solutions, fabric dyeing, electroplating, steel pickling, printing, and corrosion inhibitor against acid gases. They are used in photography industry as a stabilizer or accelerator. Certain isothiocyanates, such as phenethyl isothiocyanate and sulforaphane are known as chemopreventive agents against the development and proliferation of cancers. Allyl isothiocyanate, called mustard oil, shows also anti-tumor and anti-oxidant properties by inducing the activity of phase II detoxification enzymes in the urinary bladder.

SALES SPECIFICATION

APPEARANCE	crystalline powder
ASSAY	98.0% min
INSOLUBLES IN WATER	0.005% max
MOISTURE	0.5% max
CHLORIDES	0.05% max
SULFATES	0.05% max
Fe	5ppm max
HEAVY METALS	20ppm max

AQ.SOLUTION

ASSAY	51.0% min
INSOLUBLES IN WATER	0.005% max
CHLORIDES	0.01% max
SULFATES	0.05% max
HEAVY METALS	20ppm max
Fe	5ppm max

TRANSPORTATION

PACKING	25kgs in bag, 50kgs or 200kgs plastic drum
HAZARD CLASS	not regulated
UN NO.	

REMARKS

Hazard Symbols: XN, Risk Phrases: 20/21/22/32, Safety Phrases: 13