



CERTIFIED ISO 9002

1, 2, 3 Benzotriazole

Corrosion inhibitor for copper metal, ultra violet rays absorbant for paints, dyes & plastics

General Description :

1, 2, 3 Benzotriazole is a corrosion inhibitor for metals. In the case of copper and copper alloys, it functions by forming a strong polymeric complex on reacting with the copper oxide on the surface. This complex formation results in a protective layer or film on the copper surface, 10 to 20 molecules thick, providing both a mechanical and electrochemical barrier against corrosive attack. This protective layer has a high degree of thermal and oxidative stability and cannot be easily removed.

1, 2, 3 Benzotriazole complexes copper ions in solution thereby preventing galvanic corrosion of other metals like aluminium, aluminium alloys, zinc and iron.

1, 2, 3 Benzotriazole also protects steel, grey cast iron, cadmium and nickel alloys and aluminium under certain conditions and in combination with other inhibitors.

Addition of 1, 2, 3 Benzotriazole in various oils, fluids, lubricants, synthetic fluids etc enhances the oxidation resistance and stability of the fluid and leads to better performance and use. It functions as a metal passivator and prevents the catalytic action of the metal, which leads to degradation of all such fluids.

1, 2, 3 Benzotriazole is used as an additive in plastics, paints, inks, dyes etc where it prevents fading and discoloration caused by ultra-violet rays.

Properties :

Appearance	Off white buff coloured powder, flakes or Agglomerates.
Assay %	99%
Molecular	119.13
Formula	$C_6H_4NHN_2$
Moisture	0.5% max
Ash	0.03% max
Melting Point	93°C - 98°C
Boiling Point	160°C (3mm)
PH	5 to 6

1, 2, 3 Benzotriazole

- 2-

Uses :

Antifogging Agent :	In photographic developer solution.
Anticorrosive Agent :	For copper and copper based alloys, steels and mild steel etc. in cooling water system and radiator cleaning fluids.
Antioxidant :	In lubricating oils, greases, brakes & steering fluids.
Antifading Agent / Ultra-Violet ray absorbant :	In dyes, paints, plastics & printing inks.
As a process tissue additive :	To get increased yields of copper ore.
In wrapping tissue & boxboard :	For wrapping interleaving, shipping & storing mill products & fabricated items.
Corrosion Control Agent :	In air-conditioner, cleaning fluids & industrial cleaning fluids.
Prevents discoloration :	Of bronze, inks & paints by preventing corrosion.
Additive in soaps & detergents :	To prevent discoloration of nickel, silver and cutlery, also prevents corrosion of washing machines.
Anticorrosive additive :	In insulating material for copper wire.
Electrolytic process :	Addition of 0.01% to 0.02% in the copper bath improves the brightness and hardness of the precipitated copper.
Metal Polishes and waxes :	0.5 to 5% 1, 2, 3 Benzotriazole in metal polishes gives lasting protection to copper, brass, bronze, nickel etc.
Detergents :	Addition of 1, 2, 3 Benzotriazole in rinsing agents inhibits the corrosion of metal parts.
Paper Industry :	Addition of 0.01% in the process water for manufacturing paper, protects wire screens made of copper alloys.
Plastics :	0.1% to 5% addition stabilizes plastics and polymers used for electrical insulation. Oxidation of polymers catalyses by copper ions is considerably reduced.
Tyres :	0.1 to 1.0% addition in the rubber blend prevents corrosion of the brass - plated steel cord, improves bonding between rubber and cord ions is considerably reduced.
De-icers, Anti-icing Agents :	1, 2, 3 Benzotriazole is frequently used in deicing solution used in aircraft on runways, rail bound vehicles and other civil and military equipments to prevent corrosion.

1, 2, 3 Benzotriazole

- 3-

Metalworking Fluids and Lubricants : 1, 2, 3 Benzotriazole is suitable for use in both aqueous and non - aqueous metal working fluids.

Solubility :

(At 25°C, wt%)	
Water :	1.98
Water (60°C):	7.4
Methanol:	71.6
1 Methoxy - 2 propanol :	55.0
Isopropanol :	53.9
Heptanol L :	34.6
Ethylene Glycol :	50.7
Polyethylene Glycol :	47.7
Methyl Ethyl Ketone :	46.1
Benzene :	1.3
Tetrachloroethylene :	0.06
White mineral oil :	0.004
Turbine oil :	0.01

Note : Petroleum oil formulation containing polar additives such as tricresyl phosphate an alkylbenzenesulfonic acid derivatives will increase the apparent solubility.

Method of Application : 1, 2, 3 Benzotriazole is incorporated in liquids at concentrations between 0.1% and 2.0%. Liquids may be either aqueous or nonaqueous. It may also be use as a solid or vapour.

Availability : Readily available from exstock in 10 kgs bags and as per customer requirements. Available in only one form at present.

Toxicity : The acute data for benzotriazole is as follows :

LD 50 oral (rata)	560 mg/kg
LC 50 Dermal (rabbits)	2 g/kg
LC 50 inhalation (rats)	5.7 mg/l
Skin irritant	Not a skin irritant
Eye irritant	Severe irritant

Actual concentration measured at breathing zone.

The acute aquatic toxicity data are :

96 Hr. Tim	28 mg/kg
Bluegill sunfish	
Minnow	28 mg/l
96 Hr LC 50	
Rainbow trout	39.0 mg/l
48 Hr.EC 50	
Daphina Magna	141.6 mg/l
96 Hr.EC 50	
Algae	15.4 mg/l

1, 2, 3 Benzotriazole

- 4-

Carcinogenicity :

NCI-CG-TR 88 conclude that " there was no convincing evidence that under the conditions of this bioassay 1H-benzotriazole was carcinogenic in B6 C3 F1 mice or Fischer 344 rats of either sex" (NTIS PB 205 202).

Safe Handling :

Good ventilation and other engineering controls should be used to minimize exposure to benzotriazole dust if contains are not adequate, use a respirator approved by NIOSH/MSHA in dust laden areas. Wear protective clothing and gloves. Follow rules of good personal hygiene regarding handling of any chemical such.

601 Centre Point
S. V. Road, Santacruz (W)
Mumbai 400054.
INDIA.

T: +91 22 3070 6064
F: +91 22 3070 6070
E: info@chembondindia.com
U: www.chembondindia.com



Chembond Centre, EL-71, MIDC Mahape, Navi Mumbai – 400710
Contact: (022) 3921 3000 Email: info@chembondindia.com
Website: www.chembondindia.com

