



C.T.S. S.R.L.
VIA PIAVE, 20/22 - 36077 **ALTAVILLA VICENTINA (VICENZA)**
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VIA L. GORDIGIANI, 54 int. A1-A2 - 50127 **FIRENZE** - TEL. 055 3245014 (2 linee r.a.) - FAX 055 3245078
VIA B. CROCE, 129 - 80026 **CASORIA (NA)** - TEL. 081 5846604 (2 linee r.a.) - FAX 081 5844805
VIA POPOLI, 15 - 06039 S. MARIA IN VALLE - **TREVI (PG)** - TEL. 0742 381027 - FAX 0742 386413
VIA A. F. STELLA, 5 - 20125 **MILANO** - TEL. 02 67493225 (2 linee r.a.) - FAX 02 67493233
VIA A. GRAMSCI, 3/A - 95030 **GRAVINA DI CATANIA (CT)** - TEL. 095 7441565 - FAX 095 7442954

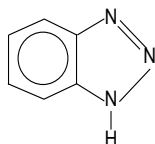


BENZOTRIAZZOLO

Metal deactivator

Typical chemical and physical properties

BENZOTRIAZZOLO, technical grade benzotriazole, is a metal deactivator.



Appearance	Slightly yellow to beige granules
Melting point	93 °C
Density at 25 °C	1.36 g/cm ³ by ASTM D 2638 - helium pycnometer method
Flash point	195 °C, Pensky-Martens
Solubility	
Water	1.5%
Mineral oil	< 0.1%
Nitrogen content	35.2%

Applications and typical treat levels recommended

Water miscible fluid concentrates	0.2-1%
Industrial lubricants	0.01-0.05%

Benefits

Provides high activity at low concentrations
Protects yellow metals and cobalt alloys from corrosion
Low odour
FDA approved for surface lubricants

Restriction

Solubility in mineral oil is less than 0.1%



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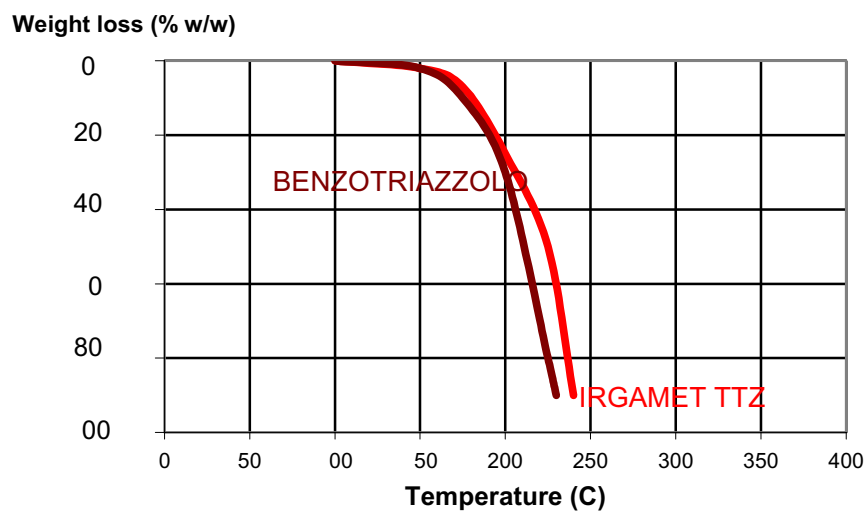
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Additive volatility

The volatility of additives can have a major impact on lubricant performance characteristics.

Thermogravimetric analysis (TGA) provides information about the volatility of an additive, as well as its thermal and oxidative stability.

Test procedure Additive < 50 mg, is heated in a controlled atmosphere (air) at a rate of 10 °C per minute from 25 °C up to as high as 400 °C. The weight loss (in %) of the sample as a function of temperature is represented graphically.



Lubricants with incidental food contact

Ciba can offer the following product cleared by FDA/USA for formulating surface lubricants, which may come into contact with food. Please see Product Selection Guide for full list.

Cleared under 21 CFR 178.3910, surface lubricants used in the manufacture of metallic articles

BENZOTRIAZZOLO	Maximum treat level no limit
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SINCERT



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Performance benefits: Metal surface protection

Copper protection

BENZOTRIAZZOLO provides excellent copper surface protection under ASTM D 130 conditions.

Test oils

BENZOTRIAZZOLO	(%)	0.05	
Base stock 35, API Group I, ISO VG 32		balance	neat
Addition of elemental sulphur	(ppm)	50	50

(ASTM D 130)
3 hrs, 100 °C

Copper strip	(rating)	1 a	3 b
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Multimetal protection

BENZOTRIAZZOLO protects many different types of metals against corrosion under severe oxidation / corrosion test conditions (FTMS 5308.6)

Test oils

BENZOTRIAZZOLO	(%)	0.05	
Base stock 36, API Group I, ISO VG 100		balance	neat

(FTMS 5308.6)
72 hrs, 175 °C, 5 l O₂ / hr

Weight changes	(mg/cm ²)		
Steel		- 0.04	- 0.05
Copper		- 0.12	- 1.50
Cadmium plated steel		- 0.05	- 1.18
Aluminium alloy		- 0.04	- 0.03
Magnesium alloy		- 0.03	- 0.02



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**Synthetic aviation lubricants
 Copper protection**

BENZOTRIAZZOLO controls the oxidative-corrosion of aviation lubricants based on pentaerythritol ester treated with Irganox L 06.

Test oils

BENZOTRIAZZOLO	(%)	-	0.10
Irganox L 06	(%)	3.0	3.0
Pentaerythritol ester (1)		balance	balance

Pratt and Whitney 512 B test
 48 hrs, 204 °C, 5 l air / hr,
 metal catalysts

Viscosity change at 38.9 °C	(%)	24.7	17.6
Sludge	(mg/100 ml)	10.8	11.5
TAN change	(mg KOH/g)	2.1	1.1
Metal weight changes	(mg/cm ²)		
Magnesium alloy		+ 0.04	+ 0.05
Aluminium alloy		+ 0.02	+ 0.05
Copper		- 1.38	+ 0.02
Silver		- 0.04	+ 0.03
Steel		- 0.01	+ 0.02

(1) Viscosity 5.0 mm²/s at 99 °C

**Engine coolants
 Multimetal protection**

BENZOTRIAZZOLO gives excellent multimetal protection in engine coolant formulations.

Engine coolant concentrate		
Borax	(%)	3.0
Phosphoric acid	(%)	1.1
Triethanolamine	(%)	2.9
Ethylene glycol		balance

Test oils

BENZOTRIAZZOLO	(%)	0.2	-	FORD
Irgamet® 42	(%)	-	0.2	norm
Engine coolant concentrate	(%)	33.0	33.0	MB-BL1-1
Water according to ASTM D 1384		balance	balance	

FORD glassware test
 (ASTM D 1384)

Metal specimen weight loss (mg/cm ²)				max.
Copper	0.06	0.06		0.3
Solder	nil	0.02		0.6
Brass	0.2	0.2		0.3
Cast iron	0.2	nil		0.3
Steel	0.14	0.06		0.3
Aluminium alloy	1.7	1.3		1.1



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Safety and Handling

Please read Material Safety Data Sheet (MSDS) before handling.

Product Specification

This information is available on request through our local representative.

Packaging

This information is available on request through our local representative.

Quality Policy

Ciba has developed a Quality System, which we use to fulfill the mutually beneficial arrangements we have with our partners. To enhance customer satisfaction in the Plastic Additives business, our processes that include Research, Development, Production, Marketing and Supply focus on:

- meeting customer expectations initially
- identifying times when we do not meet customer expectations and then correcting the root cause of the problem

The Plastic Additives' Quality System is registered to the ISO 9001 International Standard. All Plastic Additives employees are familiar in their role in the Quality System and consequently, all employees are committed to the principles of customer satisfaction and continuous improvement.

Important

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