

OMACIDE™ IPBC-Based Fungicide

Materials Protection

OMACIDE™ IPBC 20 Fungicide (EPA No. 1258-1222)

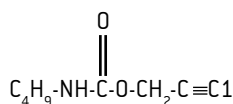
OMACIDE™ IPBC 40 Fungicide (EPA No. 1258-1220)

OMACIDE™ IPBC 100 Fungicide (EPA No. 1258-1219)

Technical Information Bulletin

Lonza now offers a family of fungicide products based on iodopropynyl butyl carbamate (IPBC). OMACIDE™ IPBC Fungicides are broad spectrum fungicide additives used in architectural coatings and construction applications (i.e. paints, stains, adhesives, caulks, and sealants), textiles, as well as plastic product applications to prevent dry film fungal growth. OMACIDE™ IPBC Fungicides are also very effective additives for controlling fungal growth in aqueous-based fluids such as inks and metalworking fluids.

Structural Formula of Active Ingredient



3-iodopropynylbutylcarbamate (C₈H₁₂NO₂I)

CAS No. 55406-53-6

Mol. Wt. 281.1

Approximate Solubility of Active Ingredient

Solvent	Approximate %
Water	0.015
Propylene Glycol	10
Ethylene Glycol	5
Diethylene Glycol	30
Dipropylene Glycol	40
Polyethylene Glycol (400, 600MW)	40
Ethylene Glycol Monobutyl Ether	45
Water Soluble Polyalkylene Glycol	40
Water Insoluble Polyalkylene Glycol	20
Ethoxylated Alkylphenol	30
Alkoxyated Linear Alcohol	20
Alkanolamines	30

Minimum Inhibitory Concentration (MIC ppm)

	OMACIDE™ IPBC, ppm Active Ingredient
Molds	
Aspergillus niger	4
Aureobasidium pullulans	≤2
Chaetomium globosum	≤2
Gliocladium virens	≤2
Penicillium pinophilum	4
Fusarium sp.	8
Yeast	
Candida albicans	≤2

Summary of OMACIDE™ IPBC¹-Based Fungicides (Typical properties, not specifications)

Physical Properties	IPBC 20 ²	IPBC 40 ³	IPBC 100 ⁴
Form	Liquid	Liquid	Crystalline solid
Appearance	Pale yellow to amber-colored liquid	Pale yellow to amber-colored liquid	White to pale yellow powder
Color (Gardner)	5 maximum	9 maximum	N/A ⁵
Odor	Mild, ester-like	Pungent Aromatic	Characteristic
Freezing Point	No Data	< 0° C (< 30° F)	66° C (151° F)
Boiling Point	160° C (320° F)	160° C (320° F)	N/A
Decomposition Temperature	180° C (356° F) by DSC ⁶ [after solvent removal]	180° C (356° F) by DSC [after solvent removal]	180° C (356° F) by DSC
Specific Gravity (20°C)	1.03 to 1.06	1.16 to 1.17	1.6
Density, lb/gal (kg/L)	8.70 (1.04)	9.70 (1.16)	13.3 (1.60)
Vapor Pressure	No Data	< 3 mm Hg	0.0076 mm Hg
Solubility in Water	Emulsifiable	Emulsifiable	150-175 ppm
Volatiles by Weight	80%	60%	< 3%
Evaporation Rate	< 1 (Butyl Acetate = 1)	< 1 (Butyl Acetate = 1)	N/A
Vapor Density	> 1 (Air = 1)	> 1 (Air = 1)	N/A

Composition	IPBC 20	IPBC 40	IPBC 100
IPBC	20% minimum	40% minimum	97% minimum
Texanol ⁷	40%	—	—
POLY-SOLV™ TPM ⁸	40%	—	—
DMSO ⁹	—	15%	—
Dipropylene Glycol	—	20%	—
High Flash Naphtha	—	25%	—

Suggested Use Levels	IPBC 20	IPBC 40	IPBC 100
Paints and Stains	0.2 to 4.0%	0.25 to 2.0%	0.1 to 0.8%
Adhesives and Caulks (wet stage)	0.1 to 1.25%	0.05 to 0.625%	0.02 to 0.25%
Textiles (i.e. carpeting, canvas, cordage)	0.1 to 5.0%	0.05 to 2.5%	0.02 to 1.0%
Metalworking fluids (end use concentration)	Not recommended due to solvent incompatibility	Not recommended due to solvent incompatibility	up to 0.1%

¹IPBC = iodopropynylbutylcarbamate

²IPBC 20 = OMACIDE™ IPBC 20 Fungicide

³IPBC 40 = OMACIDE™ IPBC 40 Fungicide

⁴IPBC 100 = OMACIDE™ IPBC 100 Fungicide

⁵N/A = Not Applicable

⁶DSC = Differential Scanning Calorimetry

⁷Texanol = 2,2,4-trimethyl-1,3-pentanediol monoisobutyrate

⁸POLY-SOLV™ TPM = tripropyleneglycolmonomethyl ether

⁹DMSO = dimethylsulfoxide

Applications

Paints and Stains

Generally, 0.3-0.5% of active material by weight of total formulation will protect against mildew growth. Where climates are ideal for mildew growth, up to 1.0% of active component should be used. Interior paints usually would require levels of 0.1-0.3% of active material on total formulation weight. In stains where protection against mold and staining fungi is required, 0.3-0.4% of active material is recommended. When formulating with IPBC powder, the material should be solubilized in a suitable polar solvent before it is added to the formulation. Note: IPBC based products have been associated with irreversible yellowing of the dry film in some formulations, especially those products containing resins based on styrenated polymers. The propensity for yellowing of any new paint formulation (especially white paints) should be thoroughly evaluated when using IPBC-based products.

Metalworking Fluids

OMACIDE™ IPBC 100 Fungicide is effective in inhibiting the growth of fungi in aqueous metalworking, cutting, cooling and lubricating fluids. Up to 1000 ppm of active ingredient can be used in the diluted fluid. The amount required in the concentrate will depend on the end use dilution. For example, if the desired concentration of the active component in the diluted fluid is 100 ppm, and the end use dilution of the concentrate is 5%, then 0.2% concentration of OMACIDE™ IPBC Fungicides should be added to the concentrate ($100 \text{ ppm} / 0.05 = 2,000 \text{ ppm}$ or 0.2%). OMACIDE™ IPBC Fungicides can be added directly to soluble oil, and semi-synthetic metalworking fluid concentrates. It can be premixed into petroleum oil, or added at the end of the formulation. While not necessary, slight heating (110-130F) will speed the dissolution. OMACIDE™ IPBC Fungicides is compatible with most soluble oil and semi-synthetic metalworking fluids, however preliminary physical and chemical compatibility testing is recommended prior to commercialization.

Adhesives

OMACIDE™ IPBC Fungicides prevent growth of fungus in both the wet product and dry film. Use levels for adhesives and caulks are 0.02-0.25% active material on total formulation weight. When using the fungicide powder, the product should be added to a polar organic solvent before adding to vehicle components.

Textiles

Canvas, carpet, shower curtains, and boat covers can be protected against mildew by adding levels of 0.02-1.0 % (on an active component basis). These products are suitable for use in both solvent borne and aqueous emulsions products used in coatings and dyes typical in textile materials processing.

For More Information

How to Order

If you would like to inquire about an existing order, place an order, ask about product availability, or order a sample please contact the nearest Lonza Sales Office. Sales office telephone numbers, addresses, and facsimile numbers are listed at the end of this document.

Application

For product application and formulation information please refer to OMACIDE™ IPBC Fungicides product labeling.

For information on spills, call 1 800 654 6911.

For more information, visit www.lonza.com

USA

Lonza Microbial Control
Materials Protection
5660 New Northside Drive, Suite 1100
Atlanta, GA 30328
Tel: +1 800 365 8324
Tel: +1 678 627 2000
microbialcontrol@lonza.com

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