

grotan[®] 14

Stabilized combination of isothiazolones

- Water based combination of chloromethyl-/ methylisothiazolone (CMI/ MI)
- Suitable for preservation of a broad range of water based products
- Broad, balanced spectrum of effect against bacteria, yeasts and moulds
- Free of VOC and organic solvents
- Approved for Ecolabel, e.g. "Blue Angel" or "European Flower"

Active substance

EINECS-Name:	CAS-No.	EC-No.
5-Chloro-2-methyl-2H-isothiazol-3-one	26172-55-4	247-500-7
2-Methyl-2H-isothiazol-3-one	2682-20-4	220-239-6
(Mixture of 5-Chloro-2-methyl-2H-isothiazol-3-one and 2-Methyl-2H-isothiazol-3-one)	55965-84-9	

Physico-chemical properties

Colour	light yellow - amber
Form	Liquid
Odour	stinging
Density (20 °C)	ca. 1.3 g/cm ³
Initial boiling point	ca. 100 °C
Flow time (DIN 53211 - 20 °C)	< 15 s
Water solubility (20 °C)	soluble
VOC-Content to Directive 2004/42/EC	none
pH (concentrate)	ca. 2 - 4

Fields of application

The optimum use level should be evaluated by means of a repeated challenge test (e.g. at schülke Technical and Microbiological department). Limits for labelling can be seen from the separate schülke labelling sheet.

Use biocides safely. Always read the label and product information before use.

	Recommended dosage	
Dispersion paints	0.10 - 0.20 g/kg	(0.01 - 0.02 %)
Textured coatings/ plasters	0.10 - 0.20 g/kg	(0.01 - 0.02 %)
Polymer dispersions	0.05 - 0.20 g/kg	(0.005 - 0.02 %)
Glues, adhesives	0.15 - 0.30 g/kg	(0.015 - 0.03 %)
Sealants	0.10 - 0.20 g/kg	(0.01 - 0.02 %)
Household products	0.05 - 0.20 g/kg	(0.005 - 0.02 %)
Watermiscable metalworking fluids	0.05 - 0.35 g/kg	(0.005 - 0.035 %)
Other uses	Kindly contact us.	

Indications for use

Solubility	Fully soluble in water and in most polar organic solvents.
Recommended use pH range	3 - 8.5
Maximum use temperature	max. 60 °C (pH > 6 up to 40 °C)
Additional advice	If possible, to be incorporated at an early stage during production. pH, temperature and redox conditions are to be taken into consideration. Avoid alkaline pre-solutions. Cleaning of equipment is possible by rinsing with water.

Microbiological efficacy

The efficacy of the product has been tested against the following microorganisms according to DGHM (German Society for Hygiene and Microbiology). Determination of the minimum inhibitory concentration in the serial dilution test produced the following values (MIC in % of the product):

Bacteria (gram-negative)	MIC	Bacteria (gram-positive)	MIC	Yeasts	MIC
<i>Enterococcus faecium</i>	0.025	<i>Bacillus subtilis</i>	0.010	<i>Candida albicans</i>	0.001
<i>Escherichia coli</i>	0.006	<i>Staphylococcus aureus</i>	0.005	<i>Rhodotorula spp.</i>	< 0.001
<i>Klebsiella pneumoniae</i>	0.001			<i>Saccharomyces cerevisiae</i>	0.001
<i>Micrococcus luteus</i>	0.010				
<i>Proteus mirabilis</i>	0.003			Moulds	MIC
<i>Pseudomonas aeruginosa</i>	0.003			<i>Alternaria spp.</i>	< 0.001
<i>Pseudomonas fluorescens</i>	0.001			<i>Aspergillus niger</i>	0.001
<i>Pseudomonas putida</i>	0.010			<i>Penicillium expansum</i>	0.001
<i>Pseudomonas stutzeri</i>	0.001			<i>Penicillium funiculosum</i>	< 0.001
				<i>Trichoderma virens</i>	0.001

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Compatibility*		
	compatible	to be avoided
concentrate	high-alloyed stainless steel (e. g. 1.4571), ethylene-propylene-terpolymer (EPDM), polyethylene, polyvinylchloride, nitrile rubber, natural rubber	fluoro-, chloroprene- and styrene butadiene rubber, sealants and plastics other than mentioned, metals other than mentioned
aqueous dilution (0.02 %)	No significant difference to water	Water incompatible materials

*Compatibility has to be proved in each case

Labelling	
R-phrases(s)	R20/21/22, R34, R43, R50/53
S-phrases(s)	S26, S28, S35, S36/37/39, S45, S60, S61
Labelling	C (Corrosive), N (Dangerous for the environment)
	For further hazard instructions and safety advice please refer to the actual material safety data sheet.

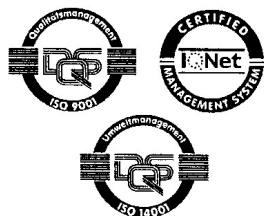
Environmental information
 grotan[®] 14 contains only biodegradable components. Dilutions of grotan[®] 14 do not normally interfere with the operation of waste water treatment plants. The canisters and drums used by schülke are made of polyethylene (HDPE) and are labelled accordingly. The 1000 kg containers are covered by a return scheme that ensures collection of the used containers free of charge and appropriate reuse all over Europe. The labels are made of PE. schülke packaging materials contain no PVC and can be recycled. For further information please ask for our detailed environmental report.

Listings and approvals of active ingredients
EINECS / ELINCS (Europe)
TSCA (USA)
ECL (Korea)
DSL / NDSL (Canada)
ENCS (Japan)
PICCS (Philippines)
AICS (Australia)
IECSC (China)
BfR XIV, XXXVI
FDA 175.105 / 176.170

Transport & Storage	
Dangerous goods	Yes
UN-Number	2922
Packaging group	II
Package sizes	5 kg, 200 kg, 1000 kg
Shelf life	12 Months
Storage	Protect from frost, heat and direct sunlight. Store at room temperature in the original container.

Ecolabel			
	Basic criteria	Product type	max. use concentration
Blue Angel (Germany)	RAL-UZ-102	low-emission wall paints	0.01 %
European Flower	K(2008)4453	indoor paints and varnishes	0.01 %

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Our recommendations regarding our products are based on in-depth scientific testing in our Research Department; they are given in good faith, but no liability can be derived from them. It is the responsibility of the final product manufacturer to assure that claims made for the final product are in conformance with all applicable local laws. In other respect our Conditions of Sale and Supply apply.

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