

# grotan<sup>®</sup> OF

## Preservative for technical products

- Bactericidal effect
- Broad, balanced spectrum of effect (incl. sulphate-reducing bacteria)
- Good immediate effect
- Good anticorrosion properties
- Contains no nitrate, nitrosing agents or organically bound chlorine (has no effect on the AOX value)
- Odour improved methylenebisoxazolidine

### Active substance

<b>EINECS-Name:</b>	<b>CAS-No.:</b>	<b>EC-No.:</b>
3,3'-Methylenebis[5-methyloxazolidine]	66204-44-2	266-235-8

### Physico-chemical properties

Colour	colourless - light yellow
Form	Liquid
Odour	amine-like
Density (20 °C)	1.073 - 1.093 g/ml
Refractive index (20 °C)	1.477 - 1.489
boiling temperature	ca. 116 °C
Flash point (ISO 2719)	> 100 °C
Flow time (DIN 53211 - 20 °C)	< 15 s
Water solubility (20 °C)	in all proportions
Foaming characteristics (DIN 53902)	Non foaming (0.15 % in water)
VOC-Content to Directive 2004/42/EC	97 %

### Fields of application

The optimum use level should be evaluated by means of a repeated challenge test (e.g. at schülke Technical and Microbiological dept).

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

	Recommended dosage	
Watermiscable metalworking fluids	1.0 - 1.5 g/kg	(0.10 - 0.15 %)
Technical emulsions	1.0 - 1.5 g/kg	(0.10 - 0.15 %)
Metalworking fluid concentrates [1.0 - 2.0 g/kg (0.10 - 0.20 %) in the end dilutions]	20 - 40 g/kg	(2.0 - 4.0 %)
Aqueous systems	1.0 - 1.5 g/kg	(0.10 - 0.15 %)
System cleaner [1,0 - 1,5 g/kg (0,10 - 0,15 %) in the end dilutions]	100 - 150 g/kg	(10 - 15 %)

### Indications for use

General Information	grotan <sup>®</sup> OF is suitable for use in water-mixed metalworking fluids, metalworking fluid concentrates and other technical emulsions.
Solubility	Fully soluble in water and in most polar organic solvents.
Recommended use pH range	8 - 11
Maximum use temperature	max. 80 °C
Additional advice	In order to avoid microbial growth and the resultant consumption of preservative from the outset, it is advisable to add grotan <sup>®</sup> OF to the fresh mix of metalworking fluid. More can be added at weekly to fortnightly intervals depending on the discharge of the metalworking fluid. When adding grotan <sup>®</sup> OF, it should be added at a point with good turbulence in order to ensure good distribution in the system. Before refilling the plant, system cleaning is recommended (e.g. with grotan <sup>®</sup> ). In centralised plants with heavy fungal contamination, a combination of grotan <sup>®</sup> OF with grotan <sup>®</sup> F 10 or grotan <sup>®</sup> F 15 is recommended.

### 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>Escherichia coli</i>	0.030	<i>Staphylococcus aureus</i>	0.025	<i>Candida albicans</i>	0.125
<i>Klebsiella pneumoniae</i>	0.040			<i>Rhodotorula mucilaginosa</i>	0.050
<i>Proteus mirabilis</i>	0.040				
<i>Pseudomonas aeruginosa</i>	0.030				
		Sulphate-reducing bacteria	MIC	Moulds	MIC
		<i>Desulfovibrio desulfuricans</i>	0.050	<i>Aspergillus niger</i>	0.040
				<i>Fusarium oxysporum</i>	0.050
				<i>Penicillium funiculosum</i>	0.025

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Compatibility*		
	compatible	to be avoided
concentrate	stainless steel, steel, polypropylene, polytetrafluoroethylene	sealants and plastics other than mentioned
aqueous dilution (0.15 %)	No significant difference to water	Water incompatible materials

\*Compatibility has to be proved in each case

Labelling	
R-phrases(s)	R21/22, R34, R52
S-phrases(s)	S26, S35, S36/37/39, S45, S61
Labelling	C (Corrosive)
For further hazard instructions and safety advice please refer to the actual material safety data sheet.	

**Environmental information**  
 At a sufficient degree of dilution, all components of grotan<sup>®</sup> OF are completely biodegradable. Dilutions of grotan<sup>®</sup> OF do not normally interfere with the operation of waste water treatment plants. grotan<sup>®</sup> OF contains no organic chlorine compounds, so that there is no effect on the AOX as a result of grotan<sup>®</sup> OF in the waste water. 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)
AICS (Australia)
ECL (Korea)
DSL / NDSL (Canada)
PICCS (Philippines)
IECSC (China)
Fullfills the requirements of the TRGS 611 (Germany)

Transport & Storage	
Dangerous goods	Yes
UN-Number	2735
Packaging group	III
Package sizes	10 kg, 200 kg, 1000 kg
Shelf life	36 Months
Storage	Protect from frost, heat and direct sunlight. Store at room temperature in the original container.

## schülke subsidiaries:



### Belgium

S.A. Schülke & Mayr  
 Belgium N.V.  
 1830 Machelen  
 Tel. +32-02-479 73 35  
 Fax +32-02-479 99 66

### The Netherlands

Schülke & Mayr Benelux B.V.  
 2003 LM-Haarlem  
 Tel. +31-23-535 26 34  
 Fax +31-23-536 79 70

### China

Schülke & Mayr GmbH  
 Shanghai Representative Office  
 Shanghai 200041  
 Tel. +86-21-62 17 29 95  
 Fax +86-21-62 17 29 97

### Switzerland

Schülke & Mayr AG  
 8003 Zürich  
 Tel. +44-466 55 44  
 Fax +44-466 55 33

### France

S & M France  
 75341 Paris Cedex 07  
 Tel. +33-1-44 11 00 81  
 Fax +33-1-44 11 02 41

### The United Kingdom

Schülke & Mayr UK Ltd.  
 Sheffield S9 1 AT  
 Tel. +44-1142-54 35 00  
 Fax +44-1142-54 35 01

### Italy

Schülke & Mayr Italia S.r.l.  
 20148 Milano  
 Tel. +39-02-40 21 820  
 Fax +39-02-40 21 829

### Other Distributors:

Africa (north) · Albania · Argentina · Australia · Austria · Belarus · Bosnia-Herzegovina · Brazil · Bulgaria · Canada · Croatia · Cyprus · Czech Republic · Denmark · Egypt · Estonia · Finland · Ghana · Greece · Hong Kong · Hungary · India · Indonesia · Iran · Israel · Japan · Jordan · Kazakhstan · Korea · Kuwait · Latin America · Latvia · Lebanon · Lithuania · Malaysia · Malta · Macedonia · Mexico · Middle East · New Zealand · Nigeria · Norway · Pakistan · Philippines · Poland · Portugal · Puerto Rico · Romania · Rus · Serbia Montenegro · Singapore · Slovakia · Slovenia · Spain · South-Africa · Sweden · Syria · Taiwan · Thailand · Turkey · Ukraine · Vietnam

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.

**Schülke & Mayr GmbH**  
 22840 Norderstedt  
 Germany  
 Tel. +49 40 52100-0  
 Fax +49 40 52100-244  
[www.schuelke.com](http://www.schuelke.com)  
 sai@schuelke.com