

grotamar® 82



Preservative for modern B5** - B100** diesel fuel and heating oil

- Fast bactericide and fungicide efficacy (incl. sulphate-reducing bacteria)
- Enhances anti-corrosion and anti-oxidation properties
- Provides excellent long-term protection against microbial material degradation
- Contains no organically bound chlorine (acc. 19. Bundes-Immissionsschutzgesetz)*
- Excellent soluble in biodiesel, diesel fuel and heating oil with biogenic compounds
- Improves storage stability of B5** - B20** diesel blends

* German Law on the Prevention of Emissions

** Biodiesel amount in % blended in mineral oil diesel

Active substance

EINECS-name	CAS-No.	EG-No.
3,3'-methylenbis[5-methyloxazolidine]	66204-44-2	266-235-8

Physico-chemical properties

Appearance	colourless – yellowish
Form	liquid
Odour	amine-like
Density (20°C)	0.884 – 0.895 g/ml
Refractive index (20°C)	1.474 – 1.486
Flashpoint (ISO 2719)	> 100 °C
Viscosity (DIN 53 211)	flow time < 15 sec (20 °C)
VOC-Content to Directive 2004/42/EG	20%

Use concentration

	Recommended dosage	Remarks
Diesel fuels/ heating oil (prophylactic treatment)	0.25 – 0.80 l for 1000 l diesel or heating oil continuously every time the tank is refilled (250-800 ppm)	Underdosing must be avoided! Due to the demand for biodegradability the effectiveness of preservatives used below the required activity level are quickly lost. Should under-dosing occur on a regular basis there is the possibility that some selected microorganisms may not be killed by the preservative. In those circumstances, as most other organisms have been killed, the selected microorganisms will find ideal growth conditions. Use biocides safely. Always read the label and product information before use.
Diesel fuel/ heating oil (shock dosing)	1.0 – 2.50 l for 1000 l diesel or heating oil (1000 – 2500 ppm)	

Instructions on application

grotamar® 82 is optimised for usage in all diesel fuel and heating oil qualities each with or without biodiesel fuel rate (B0 - B20) and in addition also for pure biodiesel (e.g. FAME as B100). grotamar® 82 is already diluted and disperses quickly and evenly in the fuel. In case of microbial contamination of tank systems which is already visible or is causing technical problems, e.g. if visible biosludge or filter blockages frequently occur, we recommend shock dosing of 1000 ppm up to 2500 ppm of grotamar® 82. The dosage must be related to the total fuel volume. After applying grotamar® 82 dead microorganism or dissolved biosludge can soon block filters and cause a filter change. In cases of heavy fouling, the fuel system (tank, pipes, filter) should be cleaned thoroughly before treatment with grotamar® 82 to avoid recontamination from biosludge residues. For prophylactic treatment the dosage of 250-800 ppm are sufficient., every time the tank is refilled. **Product should only be used in places with good ventilation. Direct inhalation has to be avoided. Always wear long-sleeve shirts and pants (or coveralls), closed-toe shoes, gloves, and protective eyewear when applying grotamar® 82 to the fuel, fuel tank or fuel system. Make sure that the container is always stored in an upright position.**

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
Escherichia coli	0.310	Staphylococcus aureus	0.310	Candida albicans	0.625
Pseudomonas aeruginosa	0.310	Sulphate-reducing bacteria	MIC	Moulds	MIC
		Desulfovibrio desulfuricans	0.250	Aspergillus brasiliensis	0.310
				Penicillium pinophilum	0.155
				Hormoconis resinae	0.750
				Fusarium oxysporum	0.300

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Material compatibility

	compatible	to be avoided
concentrate	Stainless steel (V2A), Copper, Brass, Zinc, Iron (tool steel), Aluminium, Polyethylene (hard), Polymethylmethacrylate, Polyoxymethylene, Polyamide 6, Acrylonitrile butadiene-styrenepolymer, Polyethyleneterephthalate, Polysulfone, Polyvinyl chloride (hard), Fluoric rubber	Polystyrene, Polystyrene, glass-clear, Polycarbonate, Natural rubber / Styrene-butadien rubber, Ethylene propylenediene Momomer rubber, Nitrile rubber, Isobutylene-isoprene rubber, Chloroprene rubber/ Styrenebutadien rubber, Polyvinyl chloride (soft), Polymethylsiloxane, Polyurethane rubber

Safety and Labelling

R- and S-Phrases	R 34 S 26, 28, 35, 36/37/39, 45
Labelling	C (Corrosive) For further hazard instructions and safety advice please refer to the actual material safety data sheet.

Environmental informationen

Dilutions of grotamar® 82 do not interfere with the operation of municipal sewage treatment plants. grotamar® 82 contains no organic chlorine compounds, so that there is no effect on the AOX value as a result of grotamar® 82 in the waste water. grotamar® 82 is halogen-free, and can therefore be used in accordance with the 19th German Law on the Prevention of Emissions, which prohibits chlorine and bromine compounds. grotamar® 82 contains an organic solvent. The canisters and drums used by schülke are made of polyethylene (HDPE) and are labelled accordingly. The containers are covered by a return scheme that in Europe ensures collection of the used containers free of charge and appropriate re-use. 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.

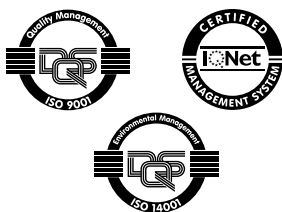
Listings and approvals of Active ingredients

EINECS / ELINCS (Europe)	Dangerous good	Yes
BlmSchG approved (Germany)	UN-No.	UN 3267
	Packaging group	III
	Packaging sizes	200 ml, 1 L, 10 L, 200 L, 1000 L
	Shelf life	24 months
	Storage	Protect from heat and direct sunshine. Store at room temperature in the original container.

References/ Approvals

German armed forces – National stock number 1L bottle 6840-12-388-3545, 10L canister 6840-12-388-3543; Operating supply item number XW0131 • **MTU Friedrichshafen GmbH** – grotamar® 82 is approved for usage in all MTU and DDC engines of series 2000/4000 • **MAN Nutzfahrzeuge AG** – grotamar® 82 has been tested and approved • **Deutz AG** – The usage of grotamar® 82 is recommended against biological contamination in fuel, technical newsletter 0199-99-1218/ODE • **OI-Warme-Institut Aachen** – grotamar® 82 has passed the hardware-in-the-loop test bench successfully in 2000 hours test time • **SGS Fresenius** – grotamar® 82 fulfills the criteria check list for heating oil additives (DGMK 646).

schülke subsidiaries in:



Belgium

Schülke & Mayr
Belgium N.V.
1130 Brussels
Phone +32-02-479 73 35
Fax +32-02-479 99 66

China

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

Frankreich

Schülke France SARL
94250 Gentilly
Telefon +33-1-49 69 83 78
Telefax +33-1-49 69 83 85

Italy

Schülke & Mayr Italia S.r.l.
20148 Milano
Phone +39-02-40 26 590
Fax +39-02-40 26 609

Netherlands

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

Switzerland

Schülke & Mayr AG
8003 Zurich
Phone +41-44-466 55 44
Fax +41-44-466 55 33

United Kindom

Schülke & Mayr UK Ltd.
Sheffield S9 1AT
Phone +44-114-254 3500
Fax +44-114-254 3501

Other Distributors in:

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 · Montenegro · New Zealand · Nigeria · Norway · Pakistan · Philippines · Poland · Portugal · Puerto Rico · Romania · Russia · Serbia · 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. In other respects our Conditions of Sale and Supply apply.

Schülke & Mayr GmbH
22840 Norderstedt
Phone +49 40 521 00-0
Fax +49 40 521 00-244
www.schuelke.com
sai@schuelke.com