



PROMEX™ Na20S

Broad spectrum preservative

PROMEX™ Na20S is a glycolic solution of 20% 1,2-Benzisothiazolin-3-one
frost stable to -5°C

Key features

- used as a preservative of aqueous and water miscible chemicals and technical products
- broad antimicrobial efficacy against bacteria, yeasts and fungi
- often effective where other preservatives fail, especially at critical temperature and pH-values
- free from formaldehyde, formaldehyde releasers, phenolics, heavy metals, halogens
- non-volatile
- excellent thermal stability (-5° - 120°C)
- excellent chemical stability
- excellent long term efficacy
- good compatibility with other raw materials

Characteristic properties

- glycolic, yellowish solution
- odourless at use levels
- density at 20°C: ca. 1.1 kg/l
- pH (0.1%): ca. 9 - 10
- soluble in water
- compatible with non-ionic and anionic surfactants

PROMEX™ Na20S meets the highest purity requirements. Technically generated impurities are often the cause of undesired side effects in terms of toxicological or technical properties. These impurities are reduced to a minimum in **PROMEX™ Na20S**.

PROMEX™ Na20S penetrates the cells of microorganisms, reacts with vital parts of the cells and inactivates important substrates and enzymes necessary to normal cell function. These relatively unspecific reactions exhibit a bactericidal effect and minimise adaptation or the development of microbial resistance.

PROMEX™ Na20S prevents microbial deterioration of products and resulting consequences such as:

- phase separation
- odour build-up
- gas build-up
- changes in viscosity
- build-up of health threatening toxins

Microbial efficacy

Bacteria	MIC (ppm)	Fungi and yeasts	MIC (ppm)
<i>Pseudomonas aeruginosa</i>	250	<i>Aspergillus niger</i>	350
<i>Pseudomonas putida</i>	250	<i>Chaetomium globosum</i>	400
<i>Escherichia coli</i>	40	<i>Penicillium notatum</i>	125
<i>Enterobacter cloacae</i>	80	<i>Saccharomyces cerevisiae</i>	250
<i>Staphylococcus aureus</i>	40	<i>Rhodotorula rubra</i>	500
<i>Streptococcus lactis</i>	15	<i>Candida albicans</i>	100
<i>Streptococcus faecalis</i>	40	<i>Endomycopsis albicans</i>	250

Applications

PROMEX™ Na20S is highly suitable for the preservation of a magnitude of aqueous formulations due to its good thermal and chemical stability.

It shows highest efficacy in a wide pH range of pH 4 – 12 and is chemically stable from pH 2 – 12.

Experience shows that compatibility with most products and raw materials is excellent, although compatibility testing is recommended for special formulations.

Application areas

- paints
- polymer emulsions
- adhesives
- metal working fluids
- household cleaners
- printing inks
- starches
- fount solutions
- dispersions

Ecological effects (BIT)

Biodegradable. Permanent dosing with 10 ppm a.i. shows no negative effect on aerobic oxidation with activated sludge. For anaerobic degradation this level is 2 ppm. BIT has low bioaccumulation potential: $\text{Log } P_{\text{oct/w}} = 1.11$.

Aquatic toxicity (BIT)

LC ₅₀ 96h, Rainbow Trout	1.3 mg/l
EC ₅₀ 48h, Daphnia	1.5 mg/l
EC ₅₀ 96h, Algae	0.084 mg/l

Toxicological effects (BIT)

LD ₅₀ , oral, rat	1193 mg / kg body weight (active ingredient)
LD ₅₀ , dermal, rat	>4115 mg / kg body weight (active ingredient)

Chronic effects: *in vivo* studies have shown no indication of carcinogenicity, teratogenicity or fetotoxic effects.

Dermatological effects (BIT)

Study	Date	Result
primary skin irritation	1996	moderately irritating
sensitization – Bühler	1996	not considered a sensitizer
sensitization – Magnusson-Kligman	1997	9 / 20 animals reacted positively to 10 % w/v in ethanol. BIT is considered a moderate sensitizer under the conditions of the study

Long term studies in humans showed low allergy rates:

	Conc.	N tested	? / irritant	N positive	% positive	RI
BIT	0.10 % Pet.	1191	5	14	1.2	0.5

The reaction-index (RI) gives the ratio of questionable or irritant reactions to proven allergic reactions.

Cross reactions to other isothiazolinones are considered very rare.

Above 500 ppm active ingredient BIT can cause sensitization.

Regulatory approvals (Na20S)

USEPA Registration No. 80285-2 (as PROMEX™ 20S)

CDPR (California) Registration No. 80285-2-AA

Istituto Superiore di Sanità (ISS) (Italy) Company Code No. 3497368; Product Code AUT-1

BAuA Reg.-Nr. PT 2 - N-32259; PT 6 - N-32258; PT 12 - N-31842

Regulatory approvals (BIT)

Biocidal Products Directive (BPD) Notification No. N458.

BfR Rec. XIV Preservative for polymer emulsions in food contact applications.

BfR Rec. XXXVI Slimicide for manufacture of paper used in food contact applications.

BAuA Reg. Nr. PT2 – N-32280; PT6 – N-32281

USEPA Registration. No. 707-310-73930

FDA 21 CFR 176.170 Components of paper and paperboard in contact with fatty and aqueous foods (for use as a preservative in paper coating compositions and limited to use at a level not to exceed 0.01 mg/l² finished paper and paperboard.

FDA 21 CFR 176.180 Components of paper and paperboard in contact with dry food (for use as a preservative in paper coating compositions and limited to use at a level not to exceed 0.02 mg/l² finished paper and paperboard.

FDA 21 CFR 176.300 Slimicide for manufacture of paper used in food contact applications (for use at a level of 0.06 lb per ton of dry weight fiber).

FDA 21 CFR 177.2600(c)(4)(ix) Rubber articles intended for repeated use (for use as a biocide in uncured liquid rubber latex not to exceed 0.02 percent by weight of the latex solids, where the total of all items listed in paragraph (c)(4)(ix) of this section does not exceed 5 percent of the rubber product).

FDA 40 CFR 180.920 (formerly FDA 40 CFR 180.1001(d)) Ingredients in pesticide formulations (exempted from the requirement of a tolerance when used in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to growing crops only. As a preservative (not more than 0.1% of formulation. Not more than 0.02 lb to be applied per acre).

CEPA (Canadian Environmental Protection Act): All ingredients are on the DSL.

Literature

- Wallhäußer, *Praxis der Sterilisation Desinfektion Konservierung*, 5. Auflage (1995)
ISBN 3-13-416305-5
- Schnuch, A., Geier, J., Uter, W., Frosch, P.J.: Patch testing with preservatives, antimicrobials, and industrial biocides. Results from a multicentre study. *British Journal of Dermatology* 138, 467-476 (1998)

DISCLAIMER

All information contained in this brochure is given in good faith, and without liability. It is intended for guidance only.

Users are advised to conduct their own independent examination of the product to ascertain its suitability for incorporation into processes or products.

Users should ensure that the use of the product complies with all pertinent current legislation.