



TECHNICAL INFORMATION

Reducing Agents

BRUGGOLITE[®] E01 (Emulsion Polymerization)

Initiator for Emulsion Polymerization

Chemical Characterization

BRUGGOLITE[®] E01 is the sodium salt of the hydroxymethane sulphinic acid. Commercially it is also known as sodium formaldehyde sulphonylate.

Nomenclature sodium hydroxymethane sulphinate dihydrate

Formula weight 154,1 g/mol

Properties

Appearance white crystalline substance

Melting point app. 65°C

Solubility in water 680 g/l (20°C)
1400 g/l (60°C)

Alkaline resistance good

Acid resistance decomposition

Odour slight internal odour

Delivery form powder, granules

HS-Code 28 31 10 00

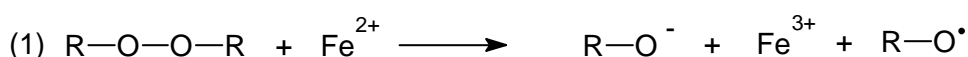
General description

BRUGGOLITE® E01 is used as a part of the initiator system in radical initiated emulsion polymerization processes.

a) Polymerization at low temperatures

Some polymerization systems, as for example the cold-SBR-system, are run at low temperatures. At these lower temperatures the commonly used organic peroxides do not cleave into radicals.

The cleavage of the organic peroxides is maintained by the addition of catalytic amounts of iron (II)-salts. The iron (II)-ions cleave the organic peroxides already at temperatures as for example at 5°C according to formula (1).



The iron (III)-ions cannot cleave any other organic peroxides anymore as they are already oxidized and cannot be oxidized further more. Higher amounts of iron-ions in the polymerization system are not desired due potential discoloration and autoxidation problems.

The iron (III)-ions have to be reduced in a very controlled reaction. BRUGGOLITE® E01 is proofed to be an excellent reducing agent for this application (2).



BRUGGOLITE® E01 helps to control the radically initiated emulsion polymerization in a very effective and reliable way.

b) Polymerization at higher temperatures and under acid conditions

The polymerization of different acrylic polymers are initiated by peroxides like hydrogen peroxide. At the end of the polymerization it is commonly practiced to complete the reaction by forming high concentrations of radicals. This can be managed by the cleavage of hydrogen peroxide with BRUGGOLITE® E01.



Health and Safety Data

According to 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work "product" is not defined as a chemical agent which meets the criteria for classification as a dangerous substance/preparation.

However, this does not a priori exclude that "product" will fall within the definition "hazardous chemical agent" according to Article 2b of 98/24/EC.

Therefore the actual situation at the workplace has to be determined. Further information is given in the corresponding safety data sheet which is available on request.

In any case the standard industrial safety and hygiene procedures when handling chemicals have to be observed.

The aforementioned remarks are deducted from the European legal system. Deviating or additional regulations in other legal systems must be observed accordingly when using the product.

Fields of Application

BRUGGOLITE® E01 is mostly used for the production of following polymers:

- styrene/butadiene rubber (SBR)
- acrylnitrile/butadiene rubber (NBR)
- acrylnitrile/butadiene/styrene terpolymer (ABS)
- polyvinylacetate (PVAC)
- acrylics and acrylics ester-rubber (ACM)
- polyvinylchloride (E-PVC)

Example: Formulation for the production of styrene/butadiene rubber (SBR) at low temperature (5°C, pH = 11)

75	parts butadiene
25	parts styrene
200	parts water
5	parts emulsifier
0,05	parts p-methane hydroperoxide
0,05	parts FeSO ₄ · 12 H ₂ O
0,1	parts BRUGGOLITE® E01
0,3	parts tertiary dodecyl mercaptan
0,5	parts Na ₃ PO ₄ · 12 H ₂ O
0,3	parts EDTA or another complexing agent

Example: Production of polyvinylacetate dispersion (PVAC) in acid medium at 30 - 40°C. The addition of BRUGGOLITE® E01 is 0,05 - 0,08 weight-%, based on monomer content.

Recommendations according food contact

BfR-Recommendations As a process auxiliary up to 0.07 % as sodium formaldehyde sulfoxylate (Chapter VI).
As a polymerization co-catalyst up to 0.25 % as sodium formaldehyde sulfoxylate (Chapter XIV).
As a polymerization co-catalyst up to 0.25 % as sodium formaldehyde sulfoxylate (Chapter XXXIV).

FDA-Status Listed in 21 CFR 175.105, 176.170, 175.180 (limited to use as a polymerization catalyst), 176.1210 (max. 0,05%), 177.2600.

Package and Storage

Standard packing is 25 kgs PE-bags, wurther packaging upon request.

If properly stored (25°C/ dry) the shelf life of BRUGGOLITE® E01 is for at least 12 months. Storing it together with oxidizing substances or with acids should be avoided.