

Smart-Vis

Smart-Vis is a multi-component viscoelastic agent based on polysaccharides, which has the properties of delayed formation of elastic gel and autonomous destruction.

The composition of Smart-Vis can be adjusted to various geothermal and other conditions of application, while ensuring the formation of a strong gel and its autonomous destruction in specified time intervals.

Typical Physical Properties

Appearance	Power of creamy or yellowish-brown color
Specific density	2.0
pH (1% water solution)	7.5-8
Density (1% water solution)	0.9-1

Applications

The main function of Smart-Vis is temporary isolation of the reservoir or thief zone for repair process operations. The agent specifics prevent it from deep penetration into the isolated reservoir, which is an effective means of preserving the natural permeability of the reservoir upon open stope well completion. Programmable cross-linking and autonomous destruction processes ensure comfortable delivery of the agent to the required interval, formation of a block sweep and subsequent removal of the agent from the well, which does not require any additional treatment. In addition, the agent implies its using it as a temporary buffer that prevents contact and mixing of various process fluids in the well. The composition of Smart-Vis can be weighted to the required density with barite.

Ingredients

Smart-Vis P

The base polymer is the basis for the formation of a cross-linked gel. The optimal concentration of Smart-Vis P polymer for most tasks is 10 kg/m³.

Smart-Vis C

Cross-linker that provides delayed formation of polymer gel. It is introduced into the viscoelastic agent immediately before the start of injection. The recommended concentration of Smart-Vis C is from 1 to 3 L/m³ of the agent, depending on the required rate of gel formation and strength.

Smart-Vis Acc

A gel-forming accelerator intended to cross-link a viscoelastic agent based on brine or at low temperatures. The agent increases the activity of the Smart-Vis C cross-linker. The recommended concentration of the Smart-Vis Acc agent is from 1 to 6 L/m³.

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Eastern Hemisphere
 Gamle Forusvei 43
 N-4033 Stavanger,
 Norway
 Phone: +47-51-57-73-00
 Fax: +47-51-57-74-51

Western Hemisphere
 P.O. Box 42842
 Houston, Texas 77242-2842
 Phone: 281-561-1300
 Fax: 281-561-1441
 www.miswaco.slb.com



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Smart-Vis D

A destructive agent of delayed action, which can be activated by increasing the temperature and alkalinity of the medium. It is used in cases where it is necessary to independently destroy the cross-linked gel to a low-viscosity mass for the required time interval at temperatures of 50-70 C0. The recommended concentration of the Smart-Vis D agent is from 0.5 to 4 kg/m3, depending on the required time of autonomous destruction of the agent.

Advantages

- Programmable cross-linking time and autonomous destruction of the agent
- Effective agent for temporary isolation of producing reservoirs that does not affect the natural permeability of the reservoir
- High potential in the process of loss liquidation
- Adaptation to different application conditions

Limitations

- High concentrations of bivalent and trivalent ions, such as Ca2+, Mg2+, Fe3+, Al3+, can cause coagulation of the Smart-Vis P polymer and uncontrolled cross-linking of the agent.
- Susceptible to bacterial decomposition.
- Programming of cross-linking timers is provided within the temperature range of 20-70 C0, and autonomous destruction is achieved at temperatures from 50 C0.

Toxicity and handling requirements

Handle as an industrial agent, use protective equipment and observe the precautions specified in the material safety data sheet.

The composition of Smart-Vis has a high level of environmental safety.

Packaging and storage

The Smart-Vis P is packed in 25 lb (11.3 kg) or 55.1 lb (25 kg) multi-layer paper bags with an inner polyethylene layer. Auxiliary components of the Smart-Vis system are supplied in a random or desired packaging.

Store in a dry place away from heat or fire sources and minimize the amount of dust in the storage area.

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N-4033 Stavanger,
Norway
Phone: +47-51-57-73-00
Fax: +47-51-57-74-51

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