

## Silbreak™ 491 Fines Control Agent

### Product Description

Siliceous fines are, generally, loosely bound to sandstone formations and are easily mobilized into the produced liquids, particularly during or after acid jobs. Their presence may lead to plugging (of the pores of the formation or of screens) or to the formation of stable emulsions (fines may act as nucleating centres). The net effect is short and long term production decline or, in severe cases, well abandonment.

Silbreak 491 fines control agent is an excellent candidate to consider for use in fines control to address fines migration challenges associated with siliceous rocks, particularly those encountered in crude oil production or generated during or after the hydraulic fracturing or acid fracturing of formations. Such treatment may result in a significant increase of the productivity and stabilization of the well, typically for a long time (several years in some cases) and may help reduce the maintenance costs, especially those associated with erosion in both wellbore pipes and surface equipment.

### Key Features and Typical Benefits

- Powerful impact on siliceous fines consolidation
- May be used either during well completion or stimulation
- Typically forms a non-oil wetting coating
- Generally does not affect well permeability
- If used during acid jobs, it may reduce excessive mineral dissolution by HF

### Typical Physical Properties

Physical Form	Clear liquid
Color	Straw
Viscosity at 20 °C, mm <sup>2</sup> ·s <sup>-1</sup>	4.0
Specific Gravity at 25/25 °C	1.076
Flash Point Pensky-Martens closed cup ASTM D-93, °C	100
Solubility	See "How to Use" section

Typical properties are average data and are not to be used as or to develop specifications.

### General Considerations for Use

Silbreak 491 fines control agent is an excellent candidate to consider for fines originating from non-clay formations such as quartz, mica, amorphous silica and feldspar. It is easily dispersible in water and in various brines.

When used in completion fluids, we recommend a starting level of 1% v/v of Silbreak 491 fines control agent as received. At this concentration, the material is soluble in 2% KCl, 3% NH<sub>4</sub>Cl, or 3% CaCl<sub>2</sub> brines. The level of Silbreak 491 fines control agent will need to be adjusted depending on the severity of the problem and the effect required.

If Silbreak 491 fines control agent is used in a conventional frac pack operation without the use of other fines stabilizing agents, we recommend following the normal process that consists of a mini-frac and step-rate injection test to establish the fracture/formation characteristics. The fracture is created with fluid devoid of proppant followed by crosslinked fluid containing increasing levels of proppant injected in stages. Silbreak 491 fines control agent should be added to the pad (proppant) portion of the fluid at a starting level of 5 to 10 gpt (gallons of Silbreak 491 fines control agent per 1000 gallons of base fluid). This level will have to be adjusted depending on the severity of the problem and the effect required.

Silbreak 491 fines control agent may also be considered for use in acid jobs. At 1% by weight, it is soluble in 15% HCl, 12% HCl+ 3% HF and in 10% HCl + 10% acetic acid. The success or failure of an acid job is highly dependent on the concentration of the acids, particularly HF: small concentration variations may have disproportionately high effects. The use of Silbreak 491 fines control agent can help mitigate this issue, thus increasing the chances of success and the reliability of the treatment without the need for extensive laboratory work to establish the optimum levels of acids needed for a particular formation. It is recommended that Silbreak 491 fines control agent is evaluated at increasing concentrations starting at 0.5% by weight and reaching 1%. Alternatively, Silbreak 491 fines control agent may be blended at similar levels in the NH<sub>4</sub>Cl brine overflush following the acid treatment.

### **Patent Status**

Nothing contained herein shall be construed to imply the nonexistence of any relevant patents or to constitute the permission, inducement, or recommendation to practice any invention covered by any patent, without authority from the owner of the patent.

### **Product Safety, Handling and Storage**

Customers should review the latest Safety Data Sheet (SDS) and label for product safety information, safe handling instructions, personal protective equipment, if necessary, emergency service contact information, and any special storage conditions required for safety. Momentive Performance Materials (MPM) maintains an around-the-clock emergency service for its products. SDS are available at [www.momentive.com](http://www.momentive.com) or, upon request, from any MPM representative. For product storage and handling procedures to maintain the product quality within our stated specifications, please review Certificates of Analysis, which are available in the Order Center. Use of other materials in conjunction with MPM products (for example, primers) may require additional precautions. Please review and follow the safety information provided by the manufacturer of such other materials.

### **Limitations**

Customers must evaluate Momentive Performance Materials products and make their own determination as to fitness of use in their particular applications.

## Customer Service Centers

For additional information, please contact our Customer Service Team

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