



# **P-SAD**

## **STIMULATION SERVICE BULLETIN**

09/25/90

### **P-SAD (PETROCHEM - SANDSTONE ACID DIVERTER)**

#### **TECHNICAL DATA**

**P-SAD** is a liquid dispersion of finely divided oil-soluble resins, formulated like fluid-loss control additives; it contains a combination of finely divided additives, which can form a filter cake having a very low permeability. It is extremely effective in stopping fluid flow into a sandstone matrix. Being insoluble in acid but highly dispersible, P-SAD is very effective in sandstone acidizing of oil and gas reservoirs.

Because only small quantities of P-SAD are required, and the agent is completely soluble in oil, essentially complete cleanup is obtained with virtually no formation damage. In order to assure more rapid cleanup, an over flush of light oil or solvent (P-PSL) can be used.

The solvent over flush technique is frequently used with P-SAD when it is used in treating injection wells where it is not convenient to backflow the well to remove the diverter.

P-SAD is also used when acidizing dry gas wells. When used with Mud Acid treatments the filter cake of P-SAD is completely removed by back flowing the spent acid, whereby, a thin layer of formation under the filter cake becomes unconsolidated by the action of the Mud Acid. The filter cake, along with the loosened sand grains, is removed as the acid returns, eliminating the need for a solvent over flush.

#### **Compatibility**

Since P-SAD is oil soluble, it cannot be used in acid emulsions. All acid to which P-SAD will be added must be completely free of oil. All tanks, lines and pumps must be flushed until they are oil free. Any oil present will dissolve part of the diverter and reduce its effectiveness.

P-SAD is compatible with most Petrochem additives along with corrosion inhibitor P-HTI. However, do not use it in the same solution with P-MS or with alcohol acid because it will not disperse properly. If P-MS is required, it is preferably used in a pre-flush or over flush.

P-SAD may be used at bottom hole treating temperatures up to 250E Wells having much higher static temperatures may be treated using an adequate cool-down pad.



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## **Limestone Acidizing**

**P-SAD** is not recommended for use in limestone acidizing. Acid etches fractures and enlarges flow channels to the extent that the fine solids of P-SAD are not effective as a diverting agent. A much coarser diverting agent such as P-LAD (Petrochem-Limestone Acid Diverter) is required.

The use of P-SAD in stimulating limestone reservoirs is limited to leak off control in fracturing treatments. It is very effective as a fluid-loss control agent in acid or water-base fracturing fluids.

## **Recommended P-SAD Concentration**

<b><u>Application</u></b>	<b><u>Up to 175E Gallons P-SAD</u></b>	<b><u>175E to 200E Gallons P-SAD</u></b>
Per Perforation	0.025	0.05
Per foot of Open Hole	0.050	0.10
Max concentration (Gals P-SAD/1,000 gal acid)	0.5	1.0
Storage		

P-SAD is not freeze-thaw stable and should be stored at temperatures above IOF. P-SAD should not be subjected to extremely high temperature during storage. The resin may soften and cause P-SAD to lose effectiveness. P-SAD should be stored in a warehouse if outside temperature is below 10<sup>0</sup>F or above 100<sup>0</sup>F.

Upon prolonged storage, there is a tendency for solid components to separate. This will result in the formation of a layer of liquid at the bottom of the drum. Before using, agitate to re-disperse this liquid layer. The separation of this liquid layer in no way reduces the effectiveness of P-SAD, providing it is remixed thoroughly prior to use.



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### Physical Properties

<u>Material</u>	<u>Form</u>	<u>Freezing Point (F;I</u>	<u>Flash Point</u>	<u>S.G.</u>	<u>Packaging</u>
P-SAD Liquid	Pale Yellow	0 Deg F	> 200 Deg F	1.05	55 GI. Dr. 5 gl. pail

### Handling and Mixing

The mixing order for P-SAD is to add the P-NASL (surfactant) to the acid solution and mix thoroughly before adding the P-SAD. After adding the P-SAD, the solution should be agitated for several minutes to ensure a thorough mixture. The inhibitor should be added last, with agitation after its addition. P-SAD will normally stay dispersed in the acid without further agitation for a reasonable length of time. In concentrated acid, the separation is a little faster. Agitation may be required if the acid stands for several hours.

### Safety - Industrial Hygiene:

Avoid eye contact and prolonged skin contact. May cause eye burns and skin irritation. Before using any of these products, be sure to consult the appropriate Material Safety Data Sheet.