



P-FFA

CEMENTING SERVICE BULLETIN

10/05/05

P-FFA (PETROCHEM – FREE FLOW ADDITIVE)

TECHNICAL DATA

FUNCTION AND BENEFITS

P-FFA is a solid adsorption product that reduces and/or eliminates the build-up of static electricity when transferring materials such as cement, propping agents, and minerals. These materials can be handled more efficiently with less product loss as a result of the incorporation of this additive. The product not only minimizes static electricity, but it also alleviates air entrainment due to particle agglomeration.

APPLICATION

CEMENT:

- Recommended amount of P-FFA (0.05% by weight) is added to the base cement and blended for two (2) minutes
- Add other additives for cement mix
- Add remaining cement and blend for fifteen (15) minutes

PROPPANTS:

- Recommended amount of P-FFA (0.05% by weight) is added to proppant at the air can prior to transfer or at the manufacturer's plant.

DESCRIPTION:

P-FFA is a newly developed, specialty compound designed to significantly reduce the time for loading, transfer and off-loading of fine particulates. The product reduces and/or eliminates the build-up of static electricity when transferring materials such as cement, cement blends, propping agents and minerals. Particulates can be handled efficiently with more complete material transfer. It has been extensively laboratory tested and field proven to not only diminish static electricity, but also to alleviate air entrainment due to particle agglomeration.



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APPLICATION:

CEMENT:

- 1) Load $\frac{1}{2}$ of the base cement in the blender
- 2) Add recommended amount (0.05% by wt) of P-FFA and blend for (2) minutes
- 3) Add other necessary additives.
- 4) Load the rest of base cement and blend for (15) minutes

PROPPANTS: To relieve static charge encountered when transferring proppants add P-FFA at a rate of 50 lbs. /100,000 lbs. (0.05% by wt.). This can be added at the air can prior to transfer or added by the manufacturer. This has been field tested and proven to be the optimum concentration. There is no known compatibility problems associated with the use of P-FFA.

Before handling, storage or use, see the Material Safety Data Sheet (MSDS) for details.

P-FFA blending additive can improve typical pneumatic equipment's ability to provide fluid-like flow for bulk materials. Cement particles treated with P-FFA additive separate more easily. Consequently, surging can be reduced, resulting in a smoother cement flow and better density control.

Applications

Positive and negative charges are distributed across the surfaces of cement particles, resulting in forces of attraction and repulsion. These forces are largely responsible for a cement blend's ability or inability to flow well in a pneumatic transfer system. When P-FFA additive contacts cement particles, it reacts with charged particle surfaces, causing repulsion to be the dominant force within the blend. For certain cement blends that have historically exhibited material losses between 30 and 60%, P-FFA additive can reduce losses to less than 10%.

Compatibilities

P-FFA additive treatment concentrations are typically very low, so materials must be measured carefully and blended thoroughly. Because of the chemical reactions that occur between P-FFA additive and cement, using P-FFA additive is a treatment process and not simply additive blending. When blending lime cements, add the P-FFA additive to the cement before adding lime.

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Do not vacuum P-FFA additive through the additive lines while vacuuming other materials such as retarders, fluid loss additives, lime, P-EXT, P-BEA, etc. P-FFA additive can preferentially react with these materials before it treats the cement, rendering the treatment ineffective. In addition, improper mixing can prevent additives from performing as designed.

Benefits

P-FFA additive can provide the following benefits:

- It can greatly improve the transfer of bulk materials.
- It can reduce surging.
- It alters the pack-set index (PSI) of the cement blend.
- It can help improve flow by reducing the effect of environmental factors such as temperature and humidity and transfer conditions such as system pressure and tank design.
- It can help offset the effect of tanks with a low angle of repose, such as horizontal or marine tanks.

P-FFA		pH	2.6 to 3 (1% solution)
Description	Free Flow Additive	Bulk Density	32 lb./ft ³
Form	White dry powder	Absolute Volume	0.0741 gal/lb.
Specific Gravity	1.6	Flash Point	120°F
Concentration Range	0.04 to 0.2%	Packaging	50 lb./sk.