



P-LFS

PRODUCT DATA SHEET

1/10/22

P-LFS (PETROCHEM - LAMINAR FLOW SPACER)

TECHNICAL DATA

- **P-LFS** is a water based Laminar/Plug flow spacer fluid designed for use at bottom-hole temperatures below <250°F for spacer fluids used ahead of a cement slurry. The spacer separates the cement slurry from the drilling fluid and is designed to be compatible with both the slurry and the water/oilbased drilling fluid.

- **P-LFS** can be used in fresh water or salt/seawater spacers up to 37% salt BWOW. When **P-LFS** is pre-hydrated in salt water systems, the salt must be added after the complete hydration of the **P-LFS**. After hydration, add the weighting agent and/or loss circulation material if needed. Ideally, the spacer is designed to be of a higher density and viscosity than the drilling mud. The spacer is pumped in Laminar/Plug flow displacing the drilling fluid.

- **P-LFS** is compatible with most water based muds. However, compatibility tests with the mud and cement are strongly recommended prior to the job. If the **P-LFS** is to be used with *oil base mud*, the addition of **PNSL2** (Petrochem - Nonionic Surfactant Liquid) is required at a concentration between one (1) to two (2) gallons per barrel of spacer, to render the spacer compatible with the oil base mud. A minimum of 500 feet of annular fill or 10 barrels of spacer, whichever is greater is recommended. A good guideline to use is 2 barrels per foot of depth. Increased temperature will thin the spacer fluid but will not cause the gel structure to break, subsequently the system will continue to support solids at recommended temperatures. When weighting up the spacer use a coarse grind material to avoid excess viscosity, but at densities above 18 ppg consider using Hematite or a mixture of Barite and Ilmenite. The mixing equipment used for pre-hydrating must be clean, in particular, from mud contamination. Use **PDFL** (Petrochem - Defoamer Liquid) if salt is to be used, it must be added after the complete hydration of the **P-LFS**. Do not pre-hydrate the **P-LFS** for more than a few hours before the job, otherwise a bactericide may be required.

- The recommended spacer volume should be 500 ft. of annular fill (i.e., 12.5 - 9.625 annulus) is 31 bbl. Since this is less than the recommended minimum value of 60 bbl., use 60 bbl. as the required spacer volume. For offshore operations, when mixing in the slug pit, the mud hopper can be used provided that lines and equipment have been cleaned. To check if hydration of the spacer concentrate is complete, the viscosity of the **P-LFS** base fluid can be measured (either with a FANN viscometer or with a Marsh funnel) and compared with the viscosity of a sample prepared in the laboratory. If needed, the required amount of salt is added to the spacer solution and thoroughly mixed to allow for complete dissolution of the salt. To minimize the formation of foam, the recirculation rate should be lowered before addition of the salt. If foaming occurs during the addition of salt then **P-DFL** can be added as an efficient defoamer.

- Add the required amount of weighting agent & mix thoroughly. The weighting agent should be added directly into a point of agitation, i.e., into the hopper of the mixer or vortex of the paddle tank. The best way is to directly blow the bulk barite into the spacer base fluid through the cement feed line. Never add the weighting agent before the base fluid is ready & fully hydrated with any salt completely dissolved. At this point, the density of the spacer should be checked, because the actual density of the weighting agent used in the field can be somewhat lower than the theoretical density used for the calculations. If needed, add extra weighting agent.



PROPERTIES

- Appearance: White (Powder)
- Specific Gravity: 2.53
- Temperature Range: <250°F

RECOMMENDED TREATMENT

- The normal concentration range of **P-LFS** is between 0.1% -1.5% by weight of spacer and for the liquid version **P-LFSL** use ~0.1 - ~3.5 gallons per barrel of spacer and for higher temperatures <450°F use **P-LFS2** at ~2% - ~6% by weight of spacer ranging from 12 ppg to 20 ppg respectfully.

FIELD MIXING PROCEDURES:

- Mix the **P-LFS** thoroughly especially in sea/salt water to complete the additive hydration. The sequence of the addition of the additives should be the same as that used in the laboratory. The data given is to be used only as a guide. Subsequently, each job is to be designed and tested in the laboratory prior to the job.

PACKAGING

- **P-LFS** is packaged in 40x50 lb. Sacks per Pallet.

SAFETY

- Read the SDS before use.