WG-31™ Gelling Agent

WG-31™ gelling agent is a powdered, “one-bag” blend of high-viscosity, rapid-yielding, intermediate-residue guar gum mixed with a nonionic surfactant and a suspending agent. WG-31 gelling agent is added to diesel to prepare LGC-IV™ (liquid gel concentrate), a gelling agent that can be delivered continuously from a transport or supply tank to a blender and mixed with water or other aqueous fluids to form fracturing gels.

Features

WG-31 gelling agent will disperse and hydrate when added directly to water from LGC-IV and then agitated. In LGC-IV, WG-31 gelling agent can be used for several fracturing applications, such as Waterfrac processes, Delta Frac®, Hybor™, and My-T-Gel™ fracturing fluids. At surface temperatures, viscosities derived from WG-31 gelling agent are slightly higher than those derived from WG-19™ and WG-22™ gelling agents. The well conditions and required fluid properties in the fracture will determine appropriate concentrations of WG-31 gelling agent for specific jobs.

Crosslinking. The crosslink time of fluids treated with WG-31 gelling agent depends on pH, buffers, temperature, and the crosslinker used.

Breakers. WG-31 gelling agent does not contain internal breakers; therefore, unless the bottomhole temperature is sufficiently high, a breaker must be added to the gel before it is injected into the well. For low-temperature applications, GBW-30 breaker can be used. SP™ breaker and ViCon NF™ breaker are recommended for high-temperature applications.

Buffers. When used to form LGC-IV gelling agent, WG-31 gelling agent is not sensitive to any particular acid or base, except borates. Therefore, a buffering agent should be selected based on the sensitivities of any crosslinking agents that will be used.

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HALLIBURTON
**Methanol Tolerance.** The hydration of WG-31™ gelling agent is affected by the amount of methanol present in the base fluid. A 5% methanol concentration is the maximum amount that should be used in fluids prepared with LGC-IV™ gelling agent. Higher concentrations of methanol negatively affect viscosity and hydration.

**Compatibilities**

WG-31 gelling agent can generally be used in fresh water, sodium chloride brines, calcium chloride brines, potassium chloride water, and water-methanol mixtures containing up to 5% methanol. The gel yielded from a combination of WG-31 gelling agent and any of these fluids can be used in Waterfrac services as well as several of Halliburton’s aqueous, crosslinked fracturing fluid systems, such as Delta Frac®, Hybor™, and My-T-Gel™ systems.

**Benefits**

WG-31 gelling agent provides the following benefits:

- When used to create LGC-IV gelling agent, WG-31 provides a liquefied, guar gelling agent formulation for preparing base fracturing gels.
- In LGC-IV, WG-31 does not create “fish eyes” when additional gelling agents are added to the base to increase viscosity.
- In LGC-IV, the combination of WG-31 gelling agent and diesel lowers fluid loss, which may improve fluid efficiency in formations with permeabilities less than 1 md.