

STEP-XZ83 is a crosslinked zirconium system designed for blends that meet the requirements of Directive 083¹ to protect non-saline aquifers. All additives in the blend pass the Microtox toxicity test² and are designed to minimize environmental impact.

The crosslinked fluid utilizes powder carboxymethyl hydroxypropyl guar (CMHPG) gel removed of toxic carrier fluid, and consists of Microtox friendly foamers, clay controls, non-emulsifiers, and breakers. STEP-XZ83 is designed for use at a bottom hole temperature of 20°C to 55°C.

The standard blend consists of the following:

- SWG-201 powder CMHPG
- SZX-1 instant zirconium crosslinker
- SBL-2 low pH buffer
- SCS-1 clay control
- SNE-1 non-emulsifier
- SBE-2 enzyme breaker or SBO-3 oxidizing breaker

The recommended water temperature for the system is 20°C to 30°C. During winter months the water temperature may need to be raised depending on ambient temperature and maximum proppant stage.

Operational Benefits:

- Powder CMHPG gel hydrates rapidly in cold temperatures with minimal hydration time
- Additives pass Microtox testing
- Can be customized based on well and water conditions
- Thermally stable crosslinked gel
- Dry gellants eliminate the use of oil based slurries, improving environmental profile
- Powdered gellants are more economical than equivalent liquid base version
- N₂ or CO₂ can be used to energize the system
- Low residue system

Physical Data:**Properties**

Hydration Time	30 seconds
pH	4 – 10.0
Vortex Closure	<5 seconds
Crosslink Time	<10 seconds

1. Alberta Energy Regulator (2013). Directive 083: Hydraulic Fracturing – Subsurface Integrity, Section 4.3.2 Nonsaline Aquifer Risk Assessment.
2. Alberta Energy Regulator (2016). Directive 050: Drilling Waste Management, Appendix 5: Toxicity Testing.