

WXB-7

Delayed Borate Cross-Linker



LIBERTY



Applications:

WXB-7 is a boron-based cross-linker for use in hydraulic fracturing applications where it is advantageous to delay the cross-linking reaction. The delay action is useful for reducing friction pressures in high rate/deep well applications. WXB-7 delays the cross-link by two mechanisms: (1) slowly dissolves over time allowing the borate to cross-link the polymer; (2) slowly raises the pH from 5 to ~10. The cross-linker can be used with conventional guar and derivatized polymers, however, derivitization further delays the cross-link time. The combination of guar gum (WG-111L) and WXB-7 provides cross-link times from to 1.5 to 5 minutes and exhibits excellent temperature stability, reducing the need for high temperature stabilizers. This system is also easier to break than traditional borate systems, requiring less breaker.

Typical loadings are 2-6 GPT, depending on the amount of polymer in the blend, bottomhole temperature and desired cross-link time.

Properties:

Appearance Tan liquid; hydrocarbon odour
Solubility Moderately soluble in water and brines
Specific Gravity 1.160

Advantages:

- Reduced friction pressures.
- High temperature stability (280 °F) (additional additives may be required).
- 1.5-5 minutes controllable delay.
- Excellent shear stability.
- No need for high pH buffers (built in mechanism).
- Brine compatible (KCl, NaCl, NaBr).

Limitations:

- Cannot be used in cold-shallow wells.
- Becomes viscous below 32 °F.
- May require agitation to re-suspend solids.



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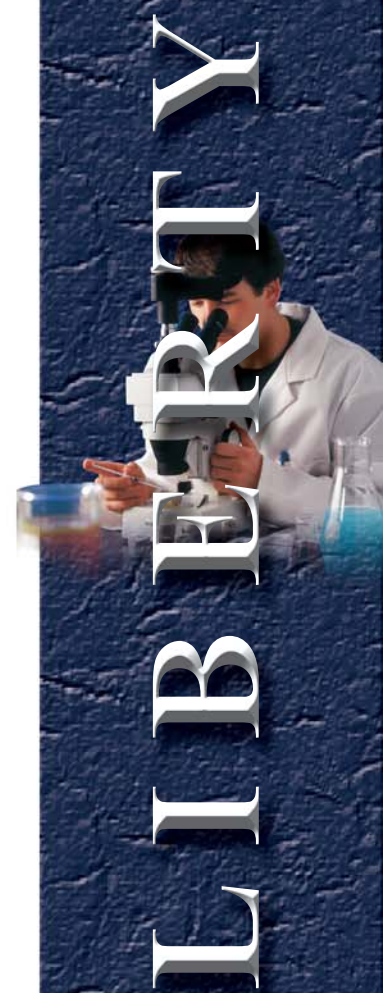
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Handling Precautions:

- Irritation may result on exposed flesh.
- Read MSDS before handling this product.

Mixing & Blending Instructions:

- WXB-7 should be run continuously throughout the job using a metered chemical additive pump.
- Always perform a gel test prior to fracturing to ensure the cross-link time is as per laboratory specifications.



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