

 HALLIBURTON	Cementing Technology Manual	Section A
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Cementing Technology

Manual



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Cementing Technology
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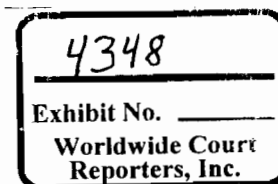
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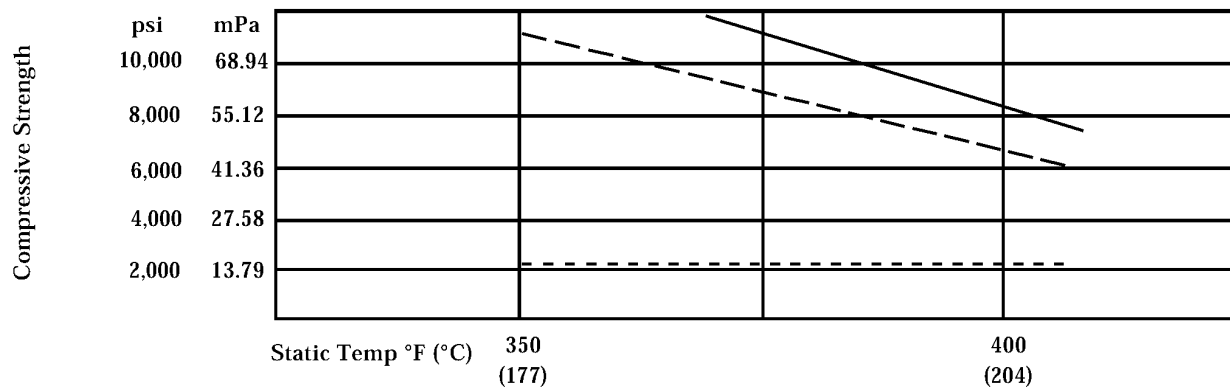


Fig. 5-18: HR®-20 (2 part HR-12:1 part Compound R): Influence on Compressive Strength — 24 Hours: Premium Cement, Based on a Slurry with a 3- to 4-hr Thickening Time at BHCT.

Charts indicate general trends and guidelines.

SCR-100

Description and Primary Function: SCR-100 is a non-lignosulfonate retarder which simplifies the design of thixotropic slurries. It is effective in fresh-water slurries with circulating temperatures as high as 250°F and in saturated salt slurries with circulating temperatures from 250°F to 350°F. When combined with certain retarder enhancing agents, such as HR®-25, SCR-100 can be used in freshwater cement systems at circulating temperatures as high as 430°F.

Secondary Effects: SCR-100 can be used with HALAD®-9, HALAD-22A, HALAD-24, or Diacel LWL to impart thixotropy.

Interaction with Other Additives: SCR-100 interacts well with other additives.

Safety and Handling Procedures: Avoid getting SCR-100 on the skin and in the eyes. Avoid creating and inhaling dust.

Properties:

Additive: SCR-100

Part No.: 516.00535

Specific Gravity: 1.42

Form: powder

Color: white

How Packaged: 50-lb sk

Bulk Density: 34.8 lb/cu ft

Water Requirement: none

Absolute Volume: 0.0844 gal/lb

Solubility in Water: soluble

Odor: none

Normal Range of Use in Wells:

Temperature: Up to 250°F (121°C) circulating (fresh water); 250°F to 350°F (121°C to 176°C) circulating (saturated salt)

Concentration: 0.1 to 2.0% bwoc

Special Information:

Usage Restrictions: none

Effect on Slurry Properties:

1. increases the thickening time
2. imparts thixotropy when used with certain fluid-loss additives
3. tends to give higher early compressive strengths compared to equivalent slurries using lignosulfonate retarders
4. disperses

D-AIR 3

Description and Primary Function: D-AIR 3 is an effective defoamer with two major applications. It reduces foaming in water-based spacers and controls foaming in latex cement slurries.

Secondary Effects: It is useful for reducing foaming in liquid additives and DUAL SPACER surfactants.

Interaction with Other Additives: Adding salt and/or cement retarders can cause foaming problems.

Safety and Handling Procedures: Avoid skin and eye contact. Avoid fumes. Flush affected area with water.

Properties:

Additive: D-AIR 3

Part No.: 516.00517, 5 gal; 516.00518, 52 gal

Specific Gravity: 1.00

Form: liquid

Color: creamy white

How Packaged: 5 gal and 55 gal

Water Requirement: none

Absolute Volume: 0.1200 gal/lb

Odor: none

Flash Point: boils at 212°F

Freeze Point: 32°F

pH: 7.0

Activity: 100%

Normal Range of Use in Wells:

Temperature: 60°F to 500°F (16°C to 260°C)

Concentration: 0.02 to 0.15 gal/bbl of spacer; 0.02 to 0.2 gal/sk of cement

Special Information:

Usage Restrictions: Do not use D-AIR 3 in foam cements

Effect on Slurry Properties:

1. reduces air entrainment in cement and spacers

Foam Cement

Description and Primary Function: Foam cement slurries consist of normal cement slurries, including HOWCO-SUDS and Halliburton Foam Stabilizer. They are injected with varying amounts of nitrogen to generate the foam in the cement slurry to obtain the required density. Attaining an extremely low density is useful to prevent formation breakdown to weak formations and prevent lost circulation.

Secondary Effects: Foam cement improves insulating properties.

Related Information: See Foam Cements in the Lightweight Additives section for more information and typical performance characteristics.

Interaction with Other Additives: Avoid using dispersants or defoamers additives.

Safety and Handling Procedures: The foam cement slurry in the lines and well is under pressure. The return relief lines should be chained and staked, and precautions should be taken when releasing the pressure because the foam cement will expand greatly when released to atmospheric pressure. Avoid getting dust in eyes and inhaling dust. Wash the affected area with plenty of water.

Properties: See Table 11-1 on page 18.

Normal Range of Use in Wells:

Temperature: 28°F to 600°F (-2°C to 316°C)

Concentration: 1.5% HOWCO-SUDS bwow; 0.75% Stabilizer (Halliburton Foam Stabilizer or HC-2.) Nitrogen content varies with density and wellbore hydrostatic pressures.

Special Information:

Usage Restrictions: 4 to 15 lb/gal (0.48 to 180 kg/L). In salt cement slurries, use 3.0 to 4.5% CFA-S by weight of water instead of HOWCO-SUDS.

Effect on Slurry Properties:

1. increases yield
2. decreases density and strength
3. imparts compressibility
4. reduces filtrate loss