Preparation and Testing of Foamed Cement Formulations at Atmospheric Pressure

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1 Scope

This standard defines the test methods including the generation of unfoamed base and their corresponding foamed cement slurries at atmospheric pressure. These procedures are developed for foaming cement slurries with air, at atmospheric conditions, which could mimic a foam quality experienced with nitrogen at downhole conditions; they may be modified to accommodate other gases such as nitrogen. Slurries that are foamed with nitrogen, and their properties, will also be discussed within this standard as they are relevant to the scope of the standard.

This standard does not address testing at pressures above atmospheric conditions, nor does this standard include or consider the effects of nitrogen solubility in the nitrogen fraction calculations.

2 Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies. However, not all documents listed may apply to your specific needs. The body of the standard should be referred to for how these documents are specifically applied. For a list of other standards associated with this standard, see the Bibliography.

API Recommended Practice 10B-2, *Recommended Practice for Testing Well Cements*

API Recommended Practice 10B-3, *Recommended Practice on Testing of Deepwater Well Cement Formulations*

3 Terms, Definitions, and Symbols

3.1 Terms and Definitions

For the purposes of this document, the following definitions apply.

3.1.1
additive
Material added to a cement slurry to modify or enhance some desired property.

3.1.2
batch mixing
Process of mixing and holding a volume of cement slurry prior to placement in the wellbore.

3.1.3
cement
Portland cement
Material formed by the grinding of clinker, generally consisting of hydraulic calcium silicates and aluminates and usually containing one or more of the forms of calcium sulfate added during grinding.

3.1.4
compatibility
Capacity to form a fluid mixture that does not undergo undesirable chemical and/or physical reactions.

3.1.5
compressive strength
Strength of a set cement sample measured by the force required to cause it to fail in compression, expressed as force per unit area.