

## Cement - 0:1:0 Class G HSR

### API Class G Oilwell Cement

#### Description:

Manufactured according to the American Petroleum Institute (API) Specification 10A standards.

#### Physical Properties:

Appearance: Finely textures grey powder

Bulk Density: 1.44 m<sup>3</sup>/Tonne

Composition: Oilwell G Cement

Blaine: 296 m<sup>2</sup> / Kg

#### Chemical Properties:

pH: 10 - 12 (in fresh water)

Solubility: Insoluble in water

Water Requirement: 0.44 m<sup>3</sup>/Tonne

Type: High Sulfate Resistant (HSR) Oilwell Cement

#### Applications:

Intended as a basic oilfield cement that can be used in all application up to 110 °C without using

#### Technical Features:

#### Chemical Composition:

#### API Standard Requirement

#### Lafarge Canada Class G HSR

Loss on ignition	≤ 3.0 %	≤ 0.97 %
Insoluble residue	≤ 0.75 %	≤ 0.19 %
MgO	≤ 6.0 %	≤ 4.3 %
SO <sub>3</sub>	≤ 3.0 %	≤ 2.6 %
Alkali Content	≤ 0.75 %	≤ 0.46 %
C <sub>3</sub> S	48.0 - 65.0 %	58.6 %
C <sub>3</sub> A	≤ 3.0 %	≤ 2.1 %
C <sub>4</sub> AF + 2C <sub>3</sub> A	≤ 24.0 %	≤ 16.8 %
Free fluid content	≤ 5.9 %	≤ 3.9 %
Compressive Strength 8h, 38 °C	≥ 2.1 MPa	≥ 4.8 MPa
Compressive Strength 8h, 38 °C	≥ 10.3 MPa	≥ 17.7 MPa
Thickening Time (Schedule 5)	90 - 120 min	97 min
Maximum Consistency ( 30 min)	≤ 30 Bc	≤ 17 Bc

#### Safety:

See MSDS



Analysis for Laboratory: January 2020  
Samples from: Exshaw, Mill Run Type Oil Well Class "G" HSR Average  
Analysis from Period: 1 to 31 January 2020  
Report Prepared on: March 3, 2020

### Chemical Analysis

Silica (SiO <sub>2</sub> )	21.1 %
Alumina (Al <sub>2</sub> O <sub>3</sub> )	3.4 %
Iron Oxide (Fe <sub>2</sub> O <sub>3</sub> )	4.1 %
Calcium Oxide, Total (TCaO)	62.7 %
Magnesium Oxide (MgO)	4.3 %
Sulphur Trioxide (SO <sub>3</sub> )	2.6 %
Loss on Ignition	0.97 %
Insoluble Residue	0.19 %
Equivalent Alkali (as Na <sub>2</sub> O)	0.46 %
C <sub>3</sub> S	58.6 %
C <sub>2</sub> S	16.3 %
C <sub>3</sub> A	2.1 %
C <sub>4</sub> AF	12.5 %
C <sub>4</sub> AF + 2X C <sub>3</sub> A	16.8 %

### Physical Analysis

Thickening Time (Schedule 5)	97 min.
Max. Consis. 15 - 30 min.	17 Bc
Fineness 45 µm sieve	92.5 %
Blaine	296 m <sup>2</sup> / kg
Compressive strength 8 Hours. @ 38° C	4.8 MPa
Compressive strength 8 Hours. @ 60° C	17.7 MPa
Free Fluid	3.9 %

Specifications: Current API Spec. 10A

The cement represented here is certified to comply with all standard requirements of the above noted specification.

Certified:

A handwritten signature in black ink, appearing to read 'John W Blair'.

John W Blair  
Quality Manager

**Cement Group / Exshaw Plant**

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