# LAFARGE CEMENT Cement Test Report

**Mill Test Report Number:** SEA_NEWCEM_OCTOBER2021
**YEAR:** 2021
**MONTH:** SEPTEMBER
**PLANT:** Seattle
**CEMENT TYPE:** NewCem Grade 100

## Reference Cement

| | | |
|---|---|---|
| **Fineness by Air Permeability** ($m^2$/kg; ASTM C204) | 376 | |
| **Fineness by 45 µm (No. 325) Sieve** (% retain; ASTM C430) | 2.6 | |
| **Compressive Strength** (ASTM C109/C109 M) | **psi** | **Min Limit** |
| 7-day | 5,160 | - |
| 28-day | 6,390 | 5,000 |
| | **Actual** | **Limits** |
| **Total Alkalies ($Na_2O$ + 0.658 $K_2O$)** (%, ASTM C114) | 0.9 | 0.6-0.9 |

## Slag

| **CHEMICAL ANALYSIS** | **Percent** |
|---|---|
| Silica Dioxide ($SiO_2$; ASTM C114) | 34.5 |
| Ferric Oxide ($Fe_2O_3$; ASTM C114) | 1.3 |
| Aluminum Oxide ($Al_2O_3$; ASTM C114) | 14 |
| Calcium Oxide (CaO; ASTM C114) | 43.3 |
| Sulfur Trioxide ($SO_3$; ASTM C114) | 4.5 |
| Magnesium Oxide (MgO; ASTM C114) | 5.5 |
| Potassium Oxide ($K_2O$; ASTM C114) | 0.4 |
| Titanium Oxide ($TiO_2$, ASTM C114) | 0.6 |
| Loss on Ignition (L.O.I.; ASTM C114) | 0.94 |
| Total Alkalies | 0.53 |
| Inorganic Process Addition | 5 |

## Slag

| | | | |
|---|---|---|---|
| **Fineness by Air Permeability** ($m^2$/kg; ASTM C204) | 458 | | |
| **Fineness by 45 µm (No. 325) Sieve** (% retain; ASTM C430) | 4.5 | | |
| **Compressive Strength** (ASTM C109/C109 M) | **psi [Mpa]** | **SAI** | **SAI Limit Min** |
| 28-day (Previous Month) | 6120 [42.2] | 103 | 95 |
| **Specific Gravity** ($Mg/m^3$; ASTM C188) | 2.87 | | |
| | **Actual** | | **Max Limit** |
| **Air Content of Mortar** (%, ASTM C185) | 3.4 | | 12 |
| **Sulfide Sulfur** (% S, ASTM C114) | 0.8 | | 2.5 |
| **Sulfate Ion** (% as SO3, ASTM C114) | 2.5 | | [A] |
| **Autoclave expansion** (%, CSA A3004-B5) | -0.013 | | 0.5 |
| **Color Value L*** | 77.8 | | |

[A] Not Applicable.

The ground granulated blast furnace slag complies with the current specification of the chemical physical requirement of ASTM C-989, AASHTO M-302 for grade 100 Ground Granulated Blast Furace Slag (GGBFS) and and CSA A3001 Slag.
Slag source is JFE Mineral Company in Kurashiki City, Japan. NewCem is ground and manufactured in Seattle, WA.

NSF Certified to NSF/ANSI 61

Certified by:

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October 15, 2021