

**CEMENT MILL TEST RESULTS**

This form is for use by a cement/mill in reporting test results to the Pennsylvania Department of Transportation, Bureau of Project Delivery Construction and Materials, 81 Lab Lane, Harrisburg, Pa, 17110.

**Complete fillable fields, print and sign before submitting.**

Mill FM 1 & FM 2 Mill Location Argos Martinsburg Plant (ARGO1 15)  
 Silo/Lot Number 2M2JUL Dates(s) Produced (Ground) 07/01/22 - 07/31/22  
 Cement Type Type I/II Other \_\_\_\_\_  
 Quantity and Unit 47,500 mT Mill Test Date 8/10/2022

List below only those properties required by the Specification for type of cement indicated

CHEMICAL RESULTS		
Silica (SiO <sub>2</sub> )	<u>19.0</u>	%
Alumina (Al <sub>2</sub> O <sub>3</sub> )	<u>4.8</u>	%
Iron Oxide (Fe <sub>2</sub> O <sub>3</sub> )	<u>3.0</u>	%
Lime (CaO)	<u>62.9</u>	%
Magnesia (MgO)	<u>2.6</u>	%
Sulfur Trioxide (SO <sub>3</sub> )	<u>3.1</u>	%
Loss on Ignition	<u>2.9</u>	%
Insoluble Residue	<u>0.4</u>	%
Alkalies (Na <sub>2</sub> O + 0.658 K <sub>2</sub> O)	<u>0.59</u>	%
Chloride	<u>0.0</u>	%
Carbon Dioxide (CO <sub>2</sub> )	<u>1.49</u>	%
Potential phase composition		
Tricalcium Silicate (C <sub>3</sub> S)	<u>65.9</u>	%
Dicalcium Silicate (C <sub>2</sub> S)	<u>4.9</u>	%
Tricalcium Aluminate (C <sub>3</sub> A)	<u>7.6</u>	%
Tetracalcium Aluminoferrite (C <sub>4</sub> AF)	<u>9.3</u>	%
C <sub>4</sub> AF + 2(C <sub>3</sub> A)	<u>24.4</u>	%
C <sub>3</sub> S + 4.75 C <sub>3</sub> A	<u>101.9</u>	%
Limestone		
Processing Addition Data		
Amount	<u>3.5</u>	%
Silica (SiO <sub>2</sub> )	<u>1.1</u>	%
Alumina (Al <sub>2</sub> O <sub>3</sub> )	<u>0.6</u>	%
Iron Oxide (Fe <sub>2</sub> O <sub>3</sub> )	<u>0.2</u>	%
CaCO <sub>3</sub> in Limestone	<u>97.8</u>	%
Lime (CaO)	<u>64.1</u>	%
Sulfur Trioxide (SO <sub>3</sub> )	<u>0.2</u>	%
Carbon Dioxide (CO <sub>2</sub> )	<u>42.3</u>	%
Loss on Ignition	<u>42.7</u>	%


PHYSICAL RESULTS		
Air Content (ASHTO T 137)	<u>7.1</u>	%
Fineness (Blaine)	<u>383</u>	m <sup>2</sup> /kg
Soundness-Autoclave Expansion	<u>0.15</u>	%
Compressive Strength:		
1 Day	<u>2230</u>	(15.4) psi (Mpa)
3 Day	<u>3680</u>	(25.4) psi (Mpa)
7 Day	<u>4550</u>	(31.4) psi (Mpa)
28 Day	<u>5630</u>	(38.8) psi (Mpa)
Normal Consistency (AASHTO T 129)	<u>25.7</u>	%
Time of Setting by Vicat		
Initial Set	<u>120</u>	min.
Final Set	<u>260</u>	min.
False Set	<u>64</u>	%
ASTM C1038 Mortar Bars	<u>0.008</u>	%
Heat of Hydration (7 day)	<u>NA</u>	cal/g (KJ/kg)
Date Performed	_____	

BASE CEMENT PHASE COMPOSITION		
Tricalcium Silicate (C <sub>3</sub> S)	<u>57</u>	%
Dicalcium Silicate (C <sub>2</sub> S)	<u>11</u>	%
Tricalcium Aluminate (C <sub>3</sub> A)	<u>8</u>	%
Tetracalcium Aluminoferrite (C <sub>4</sub> AF)	<u>9</u>	%

Inorganic Processing Addition Data	
Type	_____
Source	_____
Amount	_____ %
Silica (SiO <sub>2</sub> )	_____ %
Alumina (Al <sub>2</sub> O <sub>3</sub> )	_____ %
Iron Oxide (Fe <sub>2</sub> O <sub>3</sub> )	_____ %
Lime (CaO)	_____ %
Sulfur Trioxide (SO <sub>3</sub> )	_____ %
Loss on Ignition	_____ %
Insoluble Residue	_____ %
Sodium Oxide (Na <sub>2</sub> O)	_____ %
Potassium Oxide (K <sub>2</sub> O)	_____ %
Alkalies (Na <sub>2</sub> O + 0.658 K <sub>2</sub> O)	_____ %
Specific Gravity	_____

Organic Processing Addition Data	
Type	Blended glycol _____
Source	Roan Industries Inc _____
Amount	0.04 %
Specific Gravity	1.12
Water Content	0.0 %

We certify that the above-described cement, at the time of shipment, meets the chemical and physical requirements of AASHTO M 85 (current version)

Authorized Signature  Title Quality Coordinator Date 08/10/22