

BLENDED CEMENT MILL TEST RESULTS

This form is for use by a blended 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	<u>FM 2</u>	Mill Location	<u>Argos Martinsburg Plant (ARGO1 15)</u>
Silo/Lot Number	<u>3MILJUL</u>	Dates(s) Produced (Ground)	<u>07/01/23 - 07/31/23</u>
Cement Type	<u>Type IL (10)</u>	Other	<u></u>
Quantity and Unit	<u>39,600 mT</u>	Mill Test Date	<u>8/11/2023</u>

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

CHEMICAL RESULTS		
Silica (SiO ₂)	<u>17.8</u>	%
Alumina (Al ₂ O ₃)	<u>4.4</u>	%
Iron Oxide (Fe ₂ O ₃)	<u>2.8</u>	%
Lime (CaO)	<u>62.5</u>	%
Magnesia (MgO)	<u>2.3</u>	%
Sulfur Trioxide (SO ₃)	<u>3.2</u>	%
Loss on Ignition	<u>5.8</u>	%
Insoluble Residue	<u>NA</u>	%
Alkalies (Na ₂ O + 0.658 K ₂ O)	<u>0.54</u>	%
Chloride	<u>0.0</u>	%
Carbon Dioxide (CO ₂)	<u>4.44</u>	%
Potential phase composition		
Tricalcium Silicate (C ₃ S)	<u>51.6</u>	%
Dicalcium Silicate (C ₂ S)	<u>11.4</u>	%
Tricalcium Aluminate (C ₃ A)	<u>6.8</u>	%
Tetracalcium Aluminoferrite (C ₄ AF)	<u>8.4</u>	%
C ₄ AF + 2(C ₃ A)	<u>22.0</u>	%
C ₃ S + 4.75 C ₃ A	<u>84.0</u>	%

LIMESTONE		
Processing Addition Data		
Amount	<u>11.1</u>	%
Silica (SiO ₂)	<u>0.3</u>	%
Alumina (Al ₂ O ₃)	<u>0.3</u>	%
Iron Oxide (Fe ₂ O ₃)	<u>0.1</u>	%
CaCO ₃ in Limestone	<u>91.0</u>	%
Lime (CaO)	<u>64.5</u>	%
Sulfur Trioxide (SO ₃)	<u>0.2</u>	%
Carbon Dioxide (CO ₂)	<u>43.4</u>	%
Loss on Ignition	<u>43.6</u>	%

PHYSICAL RESULTS		
Air Content (ASHTO T 137)	<u>7.1</u>	%
Fineness (Blaine)	<u>449</u>	m ² /kg
Soundness-Autoclave Expansion	<u>0.06</u>	%
Fineness (No. 325)	<u>98</u>	%
Compressive Strength:		
3 Day	<u>3800</u>	(26.2) psi (Mpa)
7 Day	<u>4670</u>	(32.2) psi (Mpa)
28 Day	<u>5800</u>	(40) psi (Mpa)
Normal Consistency (AASHTO T 129)	<u>25.1</u>	%
Time of Setting by Vicat		
Initial Set	<u>112</u>	min.
Final Set	<u>247</u>	min.
False Set	<u>60</u>	%
ASTM C1038 Mortar Bars	<u>0.010</u>	%
Heat of Hydration (7 day)	<u>NA</u>	cal/g (KJ/kg)
Date Performed	<u></u>	

POZZOLAN		
Source	<u></u>	
Loss on Ignition	<u></u>	%
Fineness (No. 325)	<u></u>	%
Activity Index at 28 Days	<u></u>	%
Activity Index AT 91 Days (2.5%)	<u></u>	%
Activity Index AT 91 Days (5%)	<u></u>	%
Activity Index AT 91 Days (7.5%)	<u></u>	%
Activity Index AT 91 Days (10%)	<u></u>	%
Activity Index AT 91 Days (12.5%)	<u></u>	%
Activity Index AT 91 Days (15%)	<u></u>	%
Lime (CaO)	<u></u>	%
Silica (SiO ₂)	<u></u>	%
Alkalies (Na ₂ O + 0.658 K ₂ O)	<u></u>	%

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

SLAG	
Source	_____
Fineness (No. 325)	_____ %
Activity Index at 28 Days	_____ %
Alkalies (Na ₂ O + 0.658 K ₂ O)	_____ %

We certify that the above-described cement, at the time of shipment, meets the chemical and physical requirements of AASHTO M 240 (current version)

Authorized Signature  Title Quality Coordinator Date 08/11/23