

CERTIFICATE OF ANALYSIS: Port Manatee, FL (Zonguldak, Turkey)

ASTM: FLY ASH, Class F



ANALYSIS OF: Jun-2022

ASTM C618 & AASHTO M295 REQUIREMENTS	LIMITS ASTM (AASHTO)	RESULTS	TEST METHOD
Fineness; Retained when wet-sieved 45 µm (No. 325) Sieve, max. %	34	17.96	ASTM C311
Strength Activity Index			
7 day, min. percent of control	75 [†]	85	ASTM C311
28 day, min. percent of control	75 [†]	90	ASTM C311
Water Requirement, max. percent of control	105 (100)	98	ASTM C311
Soundness, autoclave expansion, max. %	0.8	0.01	ASTM C311
Density, specific gravity (g/cm ³)	-	2.34	ASTM C311
Uniformity Requirements; variation from average of preceding tests			
Density, max. variation from average, %	5	0.03	ASTM C311
Fineness, max. variation from average, %	5	4.1	ASTM C311
CHEMICAL			
Sum of SiO ₂ , Al ₂ O ₃ , and Fe ₂ O ₃ , min. %	50.0	88.4	ASTM C311
Sulphur Trioxide (SO ₃), max. %	5.0	0.5	ASTM C311
Moisture content, max. %	3.0	0.2	ASTM C311
Loss on ignition, max, %	6.0	1.2	ASTM C311
Silica Oxide (SiO ₂) (%)	-	56.61	ASTM C311
Alumina Oxide (Al ₂ O ₃) (%)	-	24.37	ASTM C311
Iron Oxide (Fe ₂ O ₃) (%)	-	7.44	ASTM C311
Calcium Oxide (CaO) (%)	18.0 max	3.21	ASTM C311
Magnesium Oxide (MgO) (%)	-	2.41	ASTM C311
Sodium Oxide (Na ₂ O) (%)	-	1.00	ASTM C311
Potassium Oxide (K ₂ O) (%)	-	1.81	ASTM C311
Total alkalis (Na ₂ O) eq. = Na ₂ O + 0.658 K ₂ O (%)	-	2.19	ASTM C311
Available alkalis, Na ₂ O eq., (%)	‡	-	ASTM C311

COMMENTS:

Parameters with no limit listed are included for information purposes only, and are not requirements of the standards.
 † Meeting the 7 day or the 28 day strength activity index indicates compliance with the specification.
 ‡ Not a requirement of ASTM C618 or AASHTO M295. Required only when requested by purchaser to limit alkali content in concrete containing reactive aggregate.

This certifies compliance with the most current editions of ASTM C 618 and AASTHO M 295 standards.
 This Fly Ash meets all applicable FDOT (Facility ID: FA 54) specifications for Class F Fly Ash.
 The data is typical of product shipped by CRH US. Individual shipments may vary.

REPORT PREPARED BY:

PRINT DATE:

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Tests performed by Ash Grove Cement - Technical Center