CEMATRIX™
Lightweight Fill Solutions

Technical Data Sheet

CEMATRIX Cellular Concrete

including:

CEMATRIX CMEF Engineered Fill
CEMATRIX CMI Insulation
CEMATRIX CMG Grout

Product Description

CEMATRIX Cellular Concrete is a high-performance, lightweight, insulating, flowable, self-compacting, excavatable material utilized to address many geotechnical challenges. Primary uses are as lightweight fill, insulation, grout and flowable fill. Typical applications include lightweight retaining wall/MSE backfill; lightweight embankment and road subbase fill; insulation for foundations, utilities, tank bases and frost-heave susceptible roads; trench and pipeline backfill; void fill; and grout for abandoned pipes, annular fills, and tunnels.

Properties

The following data is based on a standard mix design for CEMATRIX Cellular Concrete using Type GU/GUL Portland Cement and supplementary cementitious materials. These are typical properties only and may vary depending on customisations to mix designs for specific projects or applications. For project specific information, please consult your CEMATRIX Technical Sales representative.

Cast Density (kg/m³)	**400**	**475**	**550**	**650**	**800**	**ASTM C796**
Compressive Strength, Minimum Specification @ 28 days (MPa)	0.18	0.40	0.50	0.80	1.50	ASTM C495
Compressive Strength, Typical @ 28 days (MPa)	0.3 – 0.8	0.6 – 1.3	0.9 – 1.7	1.4 – 2.3	2.0 – 3.0	ASTM C495
Flexural Strength, Typical (MPa)	~15% of compressive strength					ASTM C78
Tensile Strength, Typical (MPa)	~10% of compressive strength					ASTM C496
Modulus of Elasticity, Typical @ 28 days (GPa)	0.3 – 0.7	0.5 – 1.0	0.7 – 1.3	1.1 – 1.7	1.5 – 2.2	ASTM C469
Poisson's Ratio	0.2	0.2	0.2	0.2	0.2	ASTM C469
Thermal Conductivity (W/m/K)	-	0.15	-	-	-	ASTM D5334
R-Value (thermal resistance per inch)	-	1	-	-	-	
Hydraulic Conductivity (cm/s) @ P_c = 125 kPa	$1x10^{-4}$	$1x10^{-5}$	$1x10^{-5}$	$1x10^{-6}$	$1x10^{-6}$	ASTM D5084
Freeze/Thaw Resistance[1] (E_D % after 120 F/T cycles)	~70%	>85%	>90%	>95%	>95%	ASTM C666 Procedure B
Resilient Modulus (GPa)	~0.4	~0.5	~0.6	~0.8	-	ASTM 7369
Cohesion (kPa)	10	30	40	60	-	ASTM D3080
Friction Angle	34°	34°	34°	34°	-	
Removability Modulus, Maximum @ 28 days[2]	0.1	0.2	0.3	0.4	0.7	ACI 229-R13

1. As per ACI 523.1R-06, low density cellular concrete intended for exterior exposure should have a relative dynamic modulus of elasticity (E) at least 70% its original value after 120 cycles when tested using Procedure B of ASTM C 666.
2. As per ACI 229R-13 a CLSM material is considered removable if it has a Removability Modulus, RE, <1.