

Respect and preserve Earth's delicate ecosystems with Roanoke Cement's Type II Cement

TYPE II FEATURES & BENEFITS:

- 10% Lower carbon footprint than Type I/II
- DOT approved | AASHTO M240
- A one-to-one replacement for Type I/II cement
- Reduces CO2 by up to 40% when used with SCM
- Reinforces concrete's environmental and sustainability messages

Let's build a better tomorrow with low-carbon cement!
Talk to your sales representative to learn more.

Where Safety Comes First

Photo of Roanoke Cement's Trout Pond

6071 Catawba Road | Troutville, VA 24175
1-800-782-7622 | www.roanoke-cement.com



Type IL(1'-MS Portland Limestone Cement

Roanoke Cement Company (RCC) Type IL(1H)-MS portland limestone cement is manufactured at the Roanoke Cement facility in Troutville, VA and is blended with up to 15% limestone. It is formulated to exhibit a ~~3~~ performance, allowing a one to one replacement of the RCC Type I/II cement. It is manufactured with the same raw materials, equipment, and quality control processes as the Type I/II cement.

Approvals

RCC Type IL-portland limestone cement meets or exceeds ASTM C595 and AASHTO M240 for Type IL-MS and ASTM C1157 for Type GU-MS. The use of this cement is allowed in the following reference codes and specifications:

- ACI 301-11 *Specifications for Structural Concrete*
- ACI 318-11 *Building Code Requirements for Structural Concrete*
- ACI 350.5-12 *Specifications for Environmental Concrete Structures*
- ASTM C94 *Standard Specification for Ready Mixed Concrete*
- ASTM C90 *Standard Specification for Loadbearing Concrete Masonry Units*
- ASTM C476 *Standard Specification for Grout for Masonry*
- Department of Transportation: VA, NC, SC, TN, KY, WV
- International Building Code

Blaine

RCC Type IL(1H)-MS cement has higher Blaine fineness than Type I/II cement. However, limestone distorts this test, resulting in a "False Blaine" not representative of particle

size distribution. Heat generation is similar in RCC Type IL(1H)-MS and I/II cements.

Ready Mix Concrete Use

RCC recommends that Type IL-MS cement be used on all projects allowing use of Type I or Type II cement in up to S1 exposure class as defined in ACI 318-11.

Cement Properties

Parameter	Method	Units	Type I/II	Type IL
1-day strength	C109	psi	2300	2600
3-day strength	C109	psi	3900	4300
7-day strength	C109	psi	4750	5200
28-day strength	C109	psi	6150	6750
% Limestone		%	4.24	14.29
CaCO ₃ in Limestone	C114	%	96.0	96.0
Fineness (Blaine)	C204	m ² /kg	375	468
Fineness (#325 Residue)	C430	%	1.3	0.5
Loss on Ignition	C114	%	2.62	6.95
SO ₃		%	2.13	2.57
K ₂ O		%	0.84	0.82
Na ₂ O ₃		%	0.11	0.09
Equivalent Alkalis, as Na ₂ O ₃		%	0.66	0.63
Setting Time, Initial (Vicat)	C191	Min	140	137
Air Content in Mortar	C185	%	6.8	7.2
Sulfate Resistance, 6 mo	C1012	%	N/A	N/A

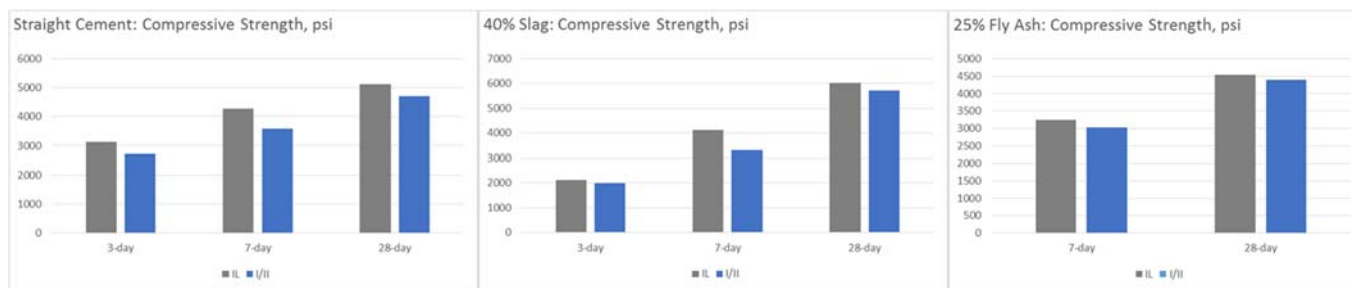
Data reflects typical results (Jan-Dec. 2020); see mill certificate for latest data.

Sulfate Exposure

RCC Type IL(1H)-MS cement meets the requirements for ASTM C1157 and ASTM C595 for Type MS based on ASTM C1012 measurements and can be used in S1 exposure class as defined by ACI 318-14. (See ACI 318-14 Table 19.3.2.1 Footnote 3.). This is the same class for which Type II cement is permitted.

Concrete Performance

Concrete mixtures adjusted to equal slump and air content.



For additional information or to obtain Safety Data Sheets, please visit titanamerica.com or contact your sales representative.

Roanoke Cement Company
6071 Catawba Road, Troutville, VA 24175