

Portland Lime Cement (PLC Type IL) Presentation by Dave Figurski

#	Question	Asker Name	Answer
1	Type '1'L or type 'i'L. Get to the bottom of this one please. ;)	Bucky Brown	TYPE "1" L is the proper term. We also use PLC (Portland Limestone Cement). Those terms are interchangeable
2	Do we anticipate IP/ IS/ IT also entering the colorado market or will the pozzolans continue to be added primarily at the ready mix plant?	michael lyons	live answered
2	Do we anticipate IP/ IS/ IT also entering the colorado market or will the pozzolans continue to be added primarily at the ready mix plant?	michael lyons	The first transition from the ASTM C 150 cements will be to the 1L (PLC) as Dave is explaining and will remain so for some time. However, this will not allow the cement industry to achieve the carbon reduction goals over the long term. Hence it is expected that 1P / 1S / 1T will eventually move into this market
3	what is the projection of slag availability/viability as plants become more efficient/conform to tighter regs?	Nicholas Johnson	Slag availability in the Colorado market is very difficult as it is produced from steel production. Therefore, slag is available in regional markets where steel production occurs, or in markets where it can be imported via ship from overseas.
4	C150 standards for tricalcium aluminate phases are based off of ASTM C114 tests for each oxide. C150 Appendix A allows us to grab the C3A phase composition via equations, and also offer a correction factor to assess C3A based off the level of inorganics/raw limestone. Can this equation not be used for ASTM C595 PLCs (only binary IL blends, nothing else for sake of discussion), since ingredients of the ordinary portland cement have remained the same?	Nick Barrio	Bryan Patterson: In response to Nick Barrios question - ASTM C595 does not allow this bogue calculation for Type IL cements.
5	The correct terminology is Type IL - Roman numeral one - pronounced as Type "one-L"	Bryan Patterson	As confirmed byu PCA Thank you Bryan
8	Does the industry need to get past the 28 day compressive performance specs and look further down the schedule to meet the "similar" performance?	Dan Corneau	No. Dave will be showing performance data later in the presentation where it is similar at each age.
9	Cost to produce comparison on Type IL compared to I/II? Are we going to see an increase/decrease in price not attributed to general inflation rates?	Bucky Brown	Given that multiple cement producers are on this call, we cannot legally discuss price. We recommend sending private messages to your cement producer to discuss this.
10	Is there any guidance on how C595 IL cements behave as compared C150 cements when used in concrete for water retaining structures / corrosive conditions in wastewater treatment plants (chemical resistance in particular)?	Craig Daigle	Dave may have some experience here that he can share. In my conversations with some Engineering firms who work in this space, there is some concern as it isnt clear how much testing has been done in the wastewater treatment arena.
11	We have started to specify 56 day test for f'c for some projects/ elements, unrelated to PLC but curious if suppliers are seeing more of this from specifiers and proactively getting test data available at longer durations	michael lyons	While we do appreciate more of this happening, especially as we move to using more SCM's in concrete (which helps drastically reduce the carbon footprint of concrete mixes), it is not required for PLC. However, this may be needed as we move to 1P and 1T cements over the long term. I dont know that we have seen a significant change in terms of how often we see 56 day strength criteria
11	We have started to specify 56 day test for f'c for some projects/ elements, unrelated to PLC but curious if suppliers are seeing more of this from specifiers and proactively getting test data available at longer durations	michael lyons	56 day strength data is useful in some scenarios, but as Dave has shown, the variability between Type I/II and IL cements is not significant in strength or other testing properties overall. Any testing beyond 56 day strength criteria is minimal, understanding most strength gain occurs within the first 7-14 days and most within those 56 days.

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12	What about Type V cements, which are commonly required for durability in some soils in Colorado. Does the IL cement meet the requirements of the ACI 318 as a substitution for Type V cement?	Chris	As part of ASTM C 595, a modifier can be added to the specification for (HS) - High Sulfate resistance.
13	Is there a cost difference between the traditional C150 cements and the IL cement? Higher? Lower? Equivalent?	Chris	As asked previously, we will not discuss costs of the cements on this webinar. Please contact your cement supplier directly to discuss and differences in cost.
14	can we use C451 (sulfate test for OPCs) for PLCs (that have no SCMs)? How can we explicitly specify sulfate resistant cements? Can we require that the base cement of the Type IL mix has C150 Type II, V properties?	Nick Barrio	ASTM C595 Type IL (MS) ASTM C595 Type IL (HS)
15	Will these slides be made available after today's webinar?	Jason Hanson	Yes
16	We can spec the use of SCMs (may be already required if ASR controls on the aggregates), but, we cant quantify it's effectiveness unless we run C1012 (impractical for construction) tests with that SCM in the mortar bar. that is the risk most agencies take on by saying "just include at least 25% class f ash" because not every situation will be the same, or sometimes the SCMs (middle east) may not have large access to fly ash or slag.	Nick Barrio	live answered
17	Can you expound on the sulfate resistance requirements for C595 cement? On previous webinars, (MS) and (HS) designations were described as like for like replacements for Type II and V designations when using IL cement. In your presentation it sounds like additional testing is required instead. Thanks	Scott	live answered
18	Is there any data on long term strength gain, in comparison to C150 cements?	Jennifer Harris	live answered
19	Does IL react similarly to SCMs? I've heard some hearsay that with Type IL there may some benefit using Natural Pozz over Class F Flyash, but in general similar reactions.	Bucky Brown	live answered
20	Thank you all! And sorry for all the questions too. But MH or HS designations require C1012, but, as we mentioned, nearly impossible to incorporate for construction projects. Our office is trying to find a way to cover our bases w regards to sulfate to keep projects moving (some of them that cant access f ash/slag)	Nick Barrio	live answered
21	Is there any significant diffrence of the durability seen from Type IL that experince freeze thaw cylces?	Jospeh Somer	live answered
22	To piggyback on Nick's question, how does the C1012 testing fit into a typical construction schedule? Sorry to keep hammering on this, but I work on wastewater treatment plants primarily so sulfates are critical.	Scott	live answered
23	Assuming the IL will be replacing the bagged mixes at Home Depot for those DIY customers at home. Not concerned, but curious nonetheless as I haven't noticed any on the shelf. Maybe I need to do more work at home?	Bucky Brown	live answered
23	Assuming the IL will be replacing the bagged mixes at Home Depot for those DIY customers at home. Not concerned, but curious nonetheless as I haven't noticed any on the shelf. Maybe I need to do more work at home?	Bucky Brown	These are coming soon. :)

Portland Lime Cement (PLC Type II) Presentation by Dave Figurski

#	Question	Asker Name	Answer
24	How does magnesium chloride that is applied to concrete with L1 on roads affect the spalling during the first winter season?	Matthew Keenan	live answered
25	Good job Team!	Bryan Patterson	
26	thank you all for the webinar. Do appreciate it.	Nick Barrio	thank you all for the webinar. Do appreciate it.
27	Thanks you guys! Great presentation!	Rudolf Oplatka	
28	Please continue to use 20% SCMs with any type of cement to help resist the impacts of deicing chemicals!	Angela Folkestad - ACPA	
29	Thanks!	Amy Strouthopoulos	