

CONTINUED SUPPORT THROUGH THE TYPE IL TRANSITION

Holcim is committed to providing sustainable products to meet the business needs of our customers while maintaining the high quality requirements and performance expectations of our industry. At Holcim, we understand there may be concerns with the Type IL transition and we are prepared to support you in moving towards lower carbon cements.

ASTM C595 Type IL Portland Limestone Cement (PLC) has a long and successful history of field performance in a variety of exposure conditions and applications. Decades of extensive research and testing have shown that PLC can be produced to provide similar performance than portland cement in concrete mixes.

As with any transition, we believe it is important to relay lessons learned from field implementation in order to provide continued success. As product familiarity is crucial in any transition, we are proponents of product evaluations and will continue to make samples available.

Below is a summary of some challenges that have been relayed and potential solutions. It is clear from the feedback received that the concerns discussed appear to be source and product specific, and that the solution, in general, is addressing them as such.

Adjustments at Holcim cement facilities are made with the intention of producing Type IL products that minimize any difference in water demand, set time and overall performance from their portland cement counterpart through control of particle size distribution.

POTENTIAL CONCERNS	POTENTIAL CAUSES	POTENTIAL SOLUTIONS
Higher water demand	Some Type IL cements are finer than their portland cement counterparts. In general, the difference in water demand observed is up to 1 gal/yd ³ . In some instances, this may require adjustments in mix proportions, including the dosage of water reducing admixtures to maintain workability and a constant w/c.	Adjustments to the concrete mix design including dosage of water reducing admixtures can generally be made to mitigate this concern, when necessary. This may particularly be the case in high performance concrete (HPC) mixes. In general, these adjustments are consistent with those made by changing a portland cement source.
Sticky concrete/ finishing challenges	Some Type IL cements are finer than their portland cement counterparts, which may change the finishing characteristics in some cases.	Adjustments to the concrete mix design can be made to mitigate this concern. These may include aggregate optimization and proportioning, paste volume or w/c, SCM use, use of admixtures, adjusting air content, or other mix adjustment techniques to improve finishing.

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Plastic shrinkage cracking	Some Type IL cements are finer than their portland cement counterparts. In some concrete mixes, such as those using a fine sand, this may cause the concrete to bleed less, exposing the surface to drying conditions.	Adjustments to the concrete mix design can be made to mitigate this concern. These may include aggregate optimization and proportioning, paste volume or w/c, SCM use, use of admixtures, adjusting entrained air, or other mix adjustment techniques to improve finishing. Additionally, changes in construction practices can be made to help mitigate this issue. This includes the use of evaporation retarding products and finishing aids. Proper curing practices are also essential in any application.
Drying Shrinkage Cracking	Some Type IL cements are finer than their portland cement counterparts. In general, the differences in water demand observed are less than 1 gal/yd ³ . The impact on such potential change in water demand should be negligible on drying shrinkage.	Adjustments to the concrete mix design can be made to mitigate this potential concern, when necessary. These may include aggregate optimization and proportioning, paste volume or w/c, SCM use, use of admixtures, adjusting entrained air, or other regular mix adjustment technique to improve finishing. Additionally, changes in construction practices can be made to help mitigate this issue.
Lower than expected early/late strengths	It has been observed that some Type IL cements can have lower, the same, or higher strengths compared to their portland cement counterpart. In some cases, water demand and admixture dosage require adjustment in order to maintain the w/c. Mixes need to be evaluated on a case by case basis.	Product familiarity is crucial in any successful transition. Preliminary testing that includes trial batching, test placement(s), and mock up(s) should be executed when a change or any new material is introduced into a concrete mix.
Change in set times	It has been observed that, depending on the source, some Type IL cements can have faster, the same, longer or even unpredictable set times compared to the portland cement counterpart. Variation such as a change in w/c, admixture use, and environmental conditions will also impact the set time.	In general, as with portland cement, different Type IL's have differences in set time. Use of set retarders, hydration stabilizers, and/or accelerating admixtures are common ways to adjust for these differences. Product familiarity is crucial in any successful transition. Environmental conditions and differences in mix proportions can also have a significant effect on mix performance.

To ensure continued success, it is imperative that any issues that may be related to any of our products be communicated with us directly.

Holcim is here to support its customers and the concrete industry. Contact your local Holcim Technical Engineer or representative to discuss options available to you.

Access our [white paper](#) to learn more.

