



## Would you like to enhance the sustainability of concrete?

Concrete industry professionals are making the simple choice to reduce concrete's carbon footprint about 10% by switching from ordinary portland cement (OPC) to portland-limestone cement (PLC). PLC is intended to fully replace OPC.

Buzzi Unicem USA's transition from OPC to PLC is only one step in our commitment to improve our sustainability practices. Buzzi Unicem is a leading partner in a European research project called Cleanker. The name Cleanker signifies production of clean clinker. An emerging technology known as calcium looping achieves high energy efficiencies with a CO<sub>2</sub> capture over 90%. A demonstration unit is being tested at Buzzi Unicem's cement plant in Vernasca, Italy.

As a supporting member of the Portland Cement Association, Buzzi Unicem USA vigorously aided in the development of a roadmap to achieve carbon neutrality across the concrete value chain by 2050. This roadmap provides solutions for the built environment by optimizing the 5Cs: clinker; cement; concrete; construction; and carbonization.

### Product Description

Buzzi Unicem USA's portland-limestone cement (PLC) Type IL is formulated with a higher limestone content and manufactured with less embodied energy than ordinary portland cement (OPC). Buzzi Unicem USA aims to produce PLC Type IL that meets or exceeds the performance requirements of ASTM C150 Standard Specification for Portland Cement Types I and II.

Buzzi Unicem USA's PLC offers its customers the ability to produce concrete with superior plastic and hardened properties while reducing its impact on global climate change.

### Quality

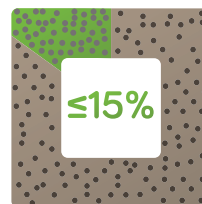
Portland-limestone cement (PLC) Type IL is governed by ASTM C595 or AASHTO M 240 Standard Specification for Blended Hydraulic Cements. It is a blended cement manufactured with a limestone content between 5% and 15%. Optimized particle packing and enriched nucleation sites allow PLCs to match the performance of ASTM C150 Standard Specification for Portland Cement Types I and II.

Buzzi Unicem USA's quality objectives demand equivalent or improved performance of concrete made with PLC compared to OPC.



#### OPC

ASTM C150 Standard Specification for Portland Cement sanctions a limestone portion up to 5%.



#### PLC

ASTM C595 or AASHTO M 240 Standard Specification for Blended Hydraulic Cements authorizes a limestone content between 5% and 15%.

## Industry Acceptance

Portland-limestone cement Type IL is permitted by codes and specifications including:

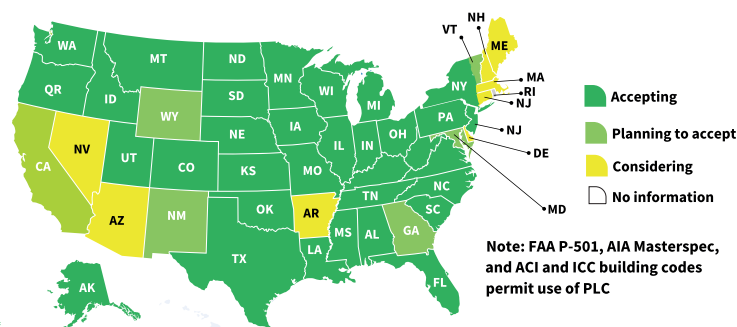
- American Concrete Institute (ACI) 318 Building Code Requirements for Structural Concrete
- American Concrete Institute (ACI) 301 Specification for Structural Concrete
- ASTM International (ASTM) C94 Standard Specification for Ready-Mixed Concrete
- American Institute of Architects (AIA) MasterSpec®
- Federal Aviation Administration (FAA)
- International Codes Council (ICC)
- >80% U.S. State Departments of Transportation (DOT)



The Allianz Tower in Milan, Italy is a 50-story skyscraper that was constructed with 80,000 cubic meters of concrete using Buzzi Unicem's PLC Type II/A-LL.

## Key Benefits

- Reduced carbon footprint of concrete construction
- Contributes towards the sustainability goals of green building rating systems
- Better positioned to comply with legislation encouraging the use of lower carbon products
- Effective with supplementary cementitious materials, such as fly ash, slag and microsilica
- Same concrete production and construction procedures
- Enhanced concrete finishing characteristics
- Similar strength profile and durability compared to OPC
- Compatible with chemical admixtures, including air-entrainment and water reducers



Source: Portland Cement Association

## History and Buzzi Unicem Group Experience

Cements with higher amounts of limestone than permitted by ASTM C150 have been commonly used internationally for decades, but are relatively new to North America. Europe markedly embraced blended cements with greater limestone fractions. AASHTO and ASTM specifications accepted PLC in 2012.

**“Buzzi Unicem USA believes in sustainable construction practices!”**

Scan the QR code to find out more about PLC.

Calculate the amount of CO<sub>2</sub> savings by using PLC to construct a building or pavement. Research validates that PLC works like OPC and case studies prove it.



[www.greencement.com](http://www.greencement.com)

**Note:** The instructions provided above are the result of our best experience and are merely indicative. No responsibility is taken for defects or damages caused by misuse of the product or when the conditions of its use differ from our instructions. The Technical Service Department is available for any advice and suggestions concerning proper use of the product and for the performance of technical tests.

### Buzzi Unicem USA

100 Brodhead Road, Suite 230  
Bethlehem, PA 18017  
Phone: +1 610 882.5000  
contactus@buzziunicemusa.com  
[www.buzziunicemusa.com](http://www.buzziunicemusa.com)