FREEZE-RESISTANT CONCRETE

WHAT IS FREEZE-RESISTANT CONCRETE?
Freeze-resistant concrete is a system designed to allow the placement of quality concrete in extremely inclement weather. This cost-effective use of a high quality concrete mix incorporates some of our non-chloride accelerating admixtures. Freeze-resistant concrete is not anti-freeze; however, when placed properly within the guidelines set forward here, concrete will resist the ravages of freezing weather. Remember, not all non-chloride containing accelerators can make freeze-resistant concrete. When running a freeze-resistant concrete project, Euclid Chemical recommends the use of ACCELGUARD 90 or ACCELGUARD G3.

WHEN SHOULD FREEZE-RESISTANT CONCRETE BE USED?
Freeze-resistant concrete should be used when the ambient temperature is at or below 32 ºF (0 ºC) at the location of concrete placement.

WHY SHOULD YOU USE IT?
Historically, severe weather has caused ready mix-concrete plants and trucks to sit idle waiting for better weather. Freeze-resistant concrete allows a producer and contractor to maintain a proper construction and delivery schedules even in instances where ACI 306 is not practical. In certain instances, freeze-resistant concrete may result in increased profits for both parties as well.

FREEZE-RESISTANT CONCRETE PROCEDURES
- Do not place on frozen forms or subgrade.
- Minimum cement content is 564 lb/yr (335 kg/m³).
- Concrete must have 6% air entrainment after placement.
- Maximum slump is 6 in (15 cm).
- Do not add any jobsite water.
- No pozzolans such as fly ash, GGBFS or GGBF slag.
- Travel time to the jobsite from the concrete plant should not exceed 30 minutes.
- Delay service of freeze-resistant concrete for minimum of 7 days.
- Protect concrete surface from additional moisture during placement and finishing.
- Have adequate personnel to prepare, place and finish concrete.

WHAT CAN HAPPEN IF THESE PROCEDURES ARE NOT FOLLOWED?
- Lower freeze/thaw durability
- Lower compressive strengths
- Improper strength development
- Possible thermal cracking
- Shortened lifespan or service life of the structure

FREEZE RESISTANT CONCRETE APPLICATIONS
- Freezer floors
- Exterior concrete
- Interior concrete exposed to freeze/thaw during placements
- Metal deck placements
- Commercial/Industrial concrete
- Retail facilities
- Residential concrete

RELEVANT ACI/ASTM DOCUMENTS
ACI 306R Guide “Cold Weather Concreting”
ASTM C1622/C1622M Standard Specification for Cold-Weather Admixture Systems