Product in Focus
Master X-Seed® 55 Strength-Enhancing Admixture
Precast Concrete Production

Technology
Master X-Seed 55 strength-enhancing admixture is based on a proprietary BASF technology that ensures a stable suspension of synthetically-produced crystalline calcium silicate hydrate (CSH) nanoparticles. These nanoparticles facilitate the growth of CSH crystals between cement grains and improve the overall hydration in a concrete mixture, thereby increasing early- and late-age strength development with minimal changes in the time of setting of concrete.

Benefits of Master X-Seed 55 strength-enhancing admixture:
- Required strengths can be achieved faster (Fig. 1) with Type II cement, leading to faster shipping of units and increased operational efficiency.
- Ability to match strength performance of Type III cement with Type II cement (Fig. 2).
- Enhanced strength performance at early ages, which enables the use of increased replacement levels of supplementary cementitious materials (Fig. 3).
- Reduction in total cementitious materials content while meeting the required strength, thus, reducing the overall environmental impact of the concrete mixture.
- Extending the performance space of existing concrete mixtures.
- Lowering energy costs by either reducing or eliminating heat- or steam-curing, while meeting early-age strength requirements.
**Master X-Seed 55 Strength-Enhancing Admixture**

**Strength Enhancement**

Cement Content = 745 lb/yd³ (447 kg/m³), w/c = 0.36

![Strength Development Graph](image)

Fig. 1. Strength development of concrete mixtures with Type II cement compared to Type II cement + Master X-Seed 55 admixture

**Ability to Match Cement Performance**

Cement Content = 750 lb/yd³ (450 kg/m³), w/c = 0.40

![Compressive Strength Graph](image)

Fig. 2. Strength development of concrete mixtures with Type III cement compared to Type II cement + Master X-Seed 55 admixture

**Flexibility to Increase SCMs**

Cementitious materials content = 1025 lb/yd³ (615 kg/m³), w/c = 0.30

![Compressive Strength Graph](image)

Fig. 3. Early-age strength development of concrete mixtures with 25% slag cement compared to 35% slag cement + Master X-Seed 55 admixture

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