



Enhanced performance and value compared to fly ash, slag and silica fume

R-E-D's Metakao 110 HR is optimally sized for pozzolanic reactivity.

METAKAO directly enhances concrete & cement-based product performance as a proven, readily-available, highly-reactive alternative to fly ash, slag and silica fume.

R-E-D's METAKAO 110 HR Exceeds ASTM C-618 & AASHTO M295-11

R-E-D's METAKAO 110 HR is an ultra-fine material produced from the aluminum silicate mineral kaolin that exceeds the technical specifications for ASTM C-618 & AASHTO M295-11 class-N pozzolans.

Performance beyond standard pozzolans

The METAKAO 110 HR additive reacts with the free-lime in portland cement to increase the formation of calcium silicate hydrate (CSH). The additional CSH formed improves the cementitious bonds in concrete to make a stronger, more durable and less porous final product.

	Typical properties	ASTM C-618-17a specification
Particle structure	Amorphous	
325 mesh residue, wt%	0.6	34.0 max
Particle size, Sedigraph D50 (µm)	3.5	
Free moisture, wt%	1.1	3.0 max
Specific gravity	2.69	
pH (20% solids)	4.8	
Bulk density, lb/ft ³	25.4 (loose), 32.3 (tapped)	
Chemistry, wt% (via ICP)		
SiO ₂	50-53	
Al ₂ O ₃	40-45	
Fe ₂ O ₃	<2.5	
TiO ₂	<3.0	
SiO ₂ +Al ₂ O ₃ +Fe ₂ O ₃	>95	70.0 min

Applications:

- High-performance, high-strength and lightweight concrete
- Precast and poured-mold concrete products
- Oilfield cement
- Dry-bagged products
- Fibercement & ferrocement products
- Metal casting
- Specialty uses

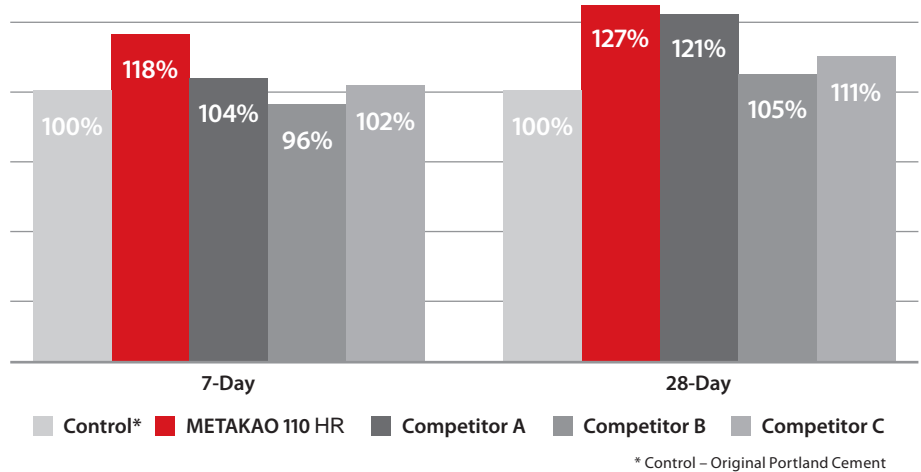
Benefits:

- Improves strength, durability, and workability of portland concrete
- Produces a smoother finish, minimizing cracking and shrinkage
- Reduces permeability, alkali silica reactions (ASR) and efflorescence
- Resists chemical & physical attack
- **Green Product:** reduces overall CO₂ & can accelerate set time
- Available in 40 lb bags, 2,000 lb super sacks and bulk delivery

Compressive strength

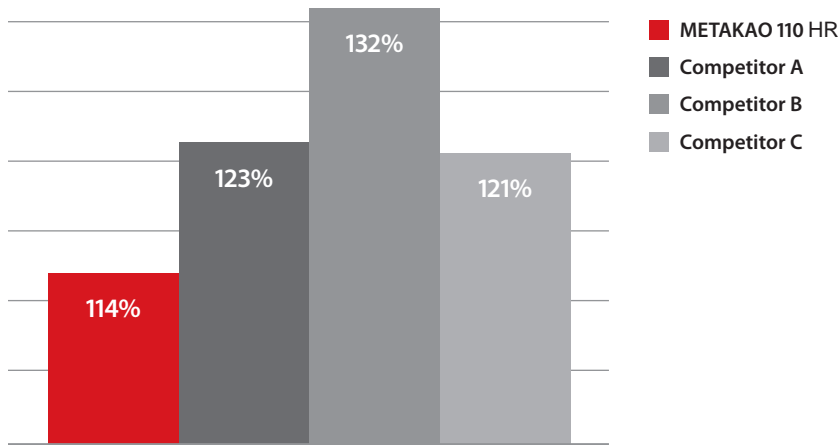
The quality of concrete is typically judged by its strength characteristics. The ability of METAKAO 110 HR to produce very high compressive strength provides several economic and performance benefits to a variety of concrete applications.

- Increased early high-strength, allowing for quicker removal of framework
- Improved durability by reducing permeability and mitigating ASR and sulfate attacks
- Improved pumpability and workability of concrete mixtures
- Reduced amount of materials needed for concrete vertical column loading



Water demand

METAKAO 110 HR requires the lowest water demand of the metakaolins tested. When cured properly, the water-to-cement ratio largely determines the strength and durability of concrete. Typically the compressive, tensile and flexural strengths of a concrete mix increase as water demand decreases. Concretes with low water requirements are usually high in strength and quality, and less susceptible to shrinkage and cracking.



Contact R-E-D Industrial Products to find out how we can help you enhance your performance.

REDIndustrialproducts.com

It is not recommended that substitutions be made without batch trialing, this helps ensure mixes are consistent with intended use.