

Product information (provisional)

Metaver™ I

**Thermal treated pure kaolin (metakaolin)
pozzolanic hardening admixture for cementitious building materials**

Description

Metaver™ I is produced by calcination of concentrated kaolin and is a slightly reddish, mostly amorphous aluminosilicate reacting with Portlandite (calcium hydroxide) to build cementitious CSH-phases.

Chemical composition (M.-%)

SiO ₂	52-54	CaO	< 0,5
Al ₂ O ₃	40-42	MgO	< 0,4
Fe ₂ O ₃	< 2,5	Na ₂ O	< 0,1
TiO ₂	< 1,0	K ₂ O	< 2,0

Physical characteristics

Specific density		2,6	g/cm ³
Particle size distribution	d ₅₀	~ 3,4-4,5	µm
	d ₉₅	~ 12-18	µm
Specific surface (Blaine)		ca. 23 000	cm ² /g
Specific surface (BET)		ca. 18	m ² /g
Colour		reddish	
Whiteness (Dr. Lange)		ca. 60	
Apparent density	freely settled	0,32 - 0,37	g/cm ³
	tapped	0,45 - 0,52	g/cm ³

Function

Metaver™ I is mostly composed of the mineral Kaolinit – a layered silicate mineral with a distance of 7,2 Å between the layers. Between the layers of SiO₂ and Al₂O₃ in proportions of 1:2 water is imbedded in the layers that can be evaporated through heat treatment by calcination. The kaolin is then activated.

Portland cement develops ca. 25 % calcium hydroxide (free lime) in its hydration. This alkaline by-product is very soluble and is primarily attacked and dissolved in the presence of acids or sulphates.

Metaver™ I special feature is its capacity to bind large amount of free lime in the form of stable CSH-phases. Speed and amount of this reaction may be controlled through chemical and construction adequate methods

In relation to its reactivity Metaver™ I can be qualified as „medium“. Together with lime and water the setting will occur in about 12 hours (method Newchem).

Application

Metaver™ I is a pozzolanic mineral additive that may improve many performances of hydraulic cementitious mortars, concrete and analogous products.

Metaver™ I is easily mixed in and gives a soft plastic consistence that is easy to work. Through its particle size distribution no big increase in water demand is given.

Metaver™ I has shown its advantages in applications where strength, density and resistance are requested.

In the following applications Metaver™ I has been shown to be very useful:

Plasticity	shot-crete, repair mortars, coatings
Stability	self compacting concrete and mortars, selfleveling compounds
Strength	renders based on lime and cement
Lime binding	tile adhesive, coating of water pipes and reservoirs
Resistance	coatings of waste water or see water constructions
Pigmentation	better dispersion in precast or visible concrete
Efflorescence	roofing tiles, facade precast
Durability	improved alkali silicate reaction

Dosage 5 to 15 % replacement of cement by weight.

Stability unlimited in dry conditions.

Storage in protected and dry rooms.

Packaging in big bags of 1000 kg or bulk.

The above information and recommendations are based upon our experience and are offered merely for advice. They do not absolve the consumer from making his own tests. Responsibility for damage arising from the use of our products cannot be derived from the recommendations given. The observance of any intellectual property rights of third parties is the responsibility of the consumer in each case.

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