

Product Data Sheet

CasTech ES-438

Nov-2025, Ver. 01.01



MID-RANGE WATER-REDUCING AND ACCELERATING ADMIXTURE

DESCRIPTION

CasTech ES-438 is a versatile, high-performance water-reducing and accelerating admixture, specially formulated for use in ready-mix and precast concrete applications. Developed using advanced polymer and accelerator blend technology, ES-438 enhances early strength development, workability, and overall concrete performance across a wide range of mix designs, from conventional concrete to high-performance and fast-track construction applications. Unlike conventional accelerating admixtures that rely primarily on simple chemical activation, CasTech ES-438 features an innovative dual-action mechanism. It combines efficient cement particle dispersion through electrostatic repulsion with controlled acceleration of cement hydration, resulting in rapid early strength gain, reduced setting time, and superior water reduction efficiency. This unique formulation significantly improves workability retention during placement, enables faster formwork removal, and supports high early compressive strength development, making it ideal for precast operations, cold weather concreting, and projects requiring rapid turnaround times.

USES

The excellent dispersion properties of **CasTech ES-438** make it the ideal admixture for precast and ready mixed concrete where low water cement ratios are required. This property allows the production of very high early and high ultimate strength concrete with minimal voids and therefore optimum density. Due to the strength development characteristics, the elimination or reduction of steam curing in precast works be considered as an economical option.

BENEFITS

- High water reduction efficiency
- Accelerated early strength development
- Reduced setting time
- Improved workability and flow
- Enhanced surface finish
- Faster formwork removal
- Increased production efficiency for precast plants
- Improved durability and density of concrete
- Compatible with most cement types and supplementary cementitious materials (SCMs)

The contractor / applicator:

- Easier placing and faster strength development
- Improved concrete surfaces

The engineer:

- Insurance that concrete meets original specification
- High quality durable concrete

ADVANTAGES

During mixing and placement:

- High workability without segregation or bleeding
- Can be placed and compacted in congested reinforcement
- Reduced labor requirement
- Improved surface finish
- Chloride free

Effect on hardened concrete properties:

- Increased early and ultimate compressive strengths
- Increased flexural strength
- Higher E modulus
- Improved adhesion to reinforcing and stressing steel
- Better resistance to carbonation
- Lower permeability
- Better resistance to aggressive atmospheric conditions
- Reduced shrinkage and creep
- Increased durability

TYPICAL PROPERTIES

Consistence	Liquid
Colour	Light Yellow
Chloride According to EN 934-2	Nil
Classification According to ASTM C494 and ASTM C1017	Type E and Type F
Specific Gravity	1.07±0.02@ 25°C
Air Entrainment	Less than 1.9%
pH (ISO 4316)	4.0±2
Alkali Content (EN 480-12) (%)	< 3

COMPATIBILITY

CasTech ES-438 is compatible with all Portland cements that meet recognized international standards. CasTech ES-438 must not be used in conjunction with any other admixture

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unless prior approval is received from CasTech Technical Department. CasTech ES-438 is suitable for mixes containing: Micro silica Pulverized fuel ash Ground granulated blast furnace slag cement.

INSTRUCTIONS FOR USE

HPS-002 is a ready to use admixture that is added to the concrete at the time of batching. The maximum effect is achieved when the CasTech ES-438 is added after the addition of 70% to 80% of the water. CasTech ES-438 must not be added to the dry materials. Thorough mixing is essential and a minimum mixing cycle, after the addition of the CasTech ES-438, of 90 seconds for forced action mixers is recommended.

DOSAGE:

The normal dosage for CasTech ES-438 is between 0.5% and 2.0% per 100 kg of cement (cementitious material). Dosages outside this range are permissible subject to trial mixes.

PRECAUTIONS

Health & Safety:

CasTech ES-438 is non-toxic. Any splashes to the skin should be washed immediately with water. Splashes to the eyes should be washed immediately with water and medical advice should be sought.

Curing:

As with all structural concrete, normal curing methods apply.

Cleaning:

Spillages of CasTech ES-438 can be removed with water.

STORAGE

CasTech ES-438 should be protected from extreme temperature. Should the material become frozen, it must be completely thawed and thoroughly mixed before use. CasTech ES-438 has a minimum shelf life of 6 months provided temperature is kept within range 5°C to 30°C.

Fire:

CasTech ES-438 is non-flammable

PACKAGING

CasTech ES-438 is available in IBC, 210-liter drums and in bulk tanks upon request.

TECHNICAL SUPPORT

CasTech provides technical support service on mix design, admixture selection, evaluation of trials, dispensing equipment etc. Please contact the Technical Department in these cases.

CasTech MIDDLE EAST FZE

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