

Achieving durability through High-Performance Concrete Admixture

The decision as to whether a given building needs to be strengthened and to what degree, must be based on calculations that show if the levels of safety demanded by present codes and recommendations are met. Kalmatron is one such specified product. Kalmatron® Corporation is the manufacturer and supplier of its products for the building industry on the world market by appointed agencies and companies. The signature characteristics of Kalmatron concrete are high density (as in 100% waterproof concrete), the complete absence of shrinkage cracks, and increased resistance to environmental and chemical corrosion.

The Kalmatron® concept was discovered by Dr. Alex V. Rusinoff in 1982, resulting in the theory about different mechanisms of cement grain decay-hydration, which gave rise to numerous technologies for repair and building of new structures with the highest performance of durability. Specifications of the products are provided and published by the U.S.A. official specifier ARCAT.

The specialised Concrete Admixture: KALMATRON® KF-A

The company specialises in the admixtures and its product KALMATRON® KF-A is high on demand and quality. It is a powder admixture to concrete mixes. This powdered admixture is designed and classified as a Concrete Class Upgrading Admixture for the cement containing mixes such as concrete, mortar, shotcrete, guniting, and grout to complete its liquid impermeability, compressive and tensile strengths, corrosion resistance, and conservation rebar from rusting.

The performance:

KF-A provides an extension of the cement gel surface by decay-hydration of the cement grains from 100 µm to 10 µm during the first 20 minutes. This increases cementitious value and volume of the cement rock. Completed cement hydration

by KF-A makes it possible to completely replace SILICA FUME and MICROCEMENTS at a fraction of the cost. Raising the standards, the company considers the concrete as a matter of hydration with conformity closer to isotropic features where KF-A is a cost effective example of the transformation of conventional concrete mix to the High-Performance Concrete. For instance, concrete or mortar made with KF-A has no shrinkage cracks, impermeable to any liquids and don't require water mitigation or isolation membranes.

Classification:

KF-A falls under the classification of the following types of ASTM C 494:

- Type C cement hydration accelerator
- Type F high range water-reducing admixture
- Type S specific performance admixture

KF-A acts in four ways after added into the concrete batch:

- As a Water Reducer during mixing and pumping
- As a Plasticizer during transportation and placement
- As a Shrinkage controlling and Curing Compound during setting time
- As a Strength gainer and impermeability performing agent during hardening time
- As a rebar corrosion inhibitor during batching



Concrete Flow of the mix with KALMATRON® KF-A at left and Concrete Flow of any other known concrete explains higher workability

KF-A is safe for use with drinking water and food containing structures.

The advantages:

- Cost reductions. For conventional concrete mixes, KF-A will solely replace the following admixtures and supplementary materials:

1. Water reducers
2. Superplasticizers
3. Pozzalone
4. Silica fume
5. Fly ash
6. Membranes
7. Fine fillers
8. Fibers
9. Density and strength gainers

- Dosage reduction of water at the rate of 10%-30% in conventional concrete mixes
- No surface preparation (remove loose materials)
- High cement hydration
- Yield of mixed batch is higher by 8% to 14% of cement gel. Early strengthening at 3rd to 7th day; Compressive strength is increased by up to 25%
- Shrinkage is lower at 2 to 3 times; Exothermic heat is lower at 30% to 50%
- 100% water impermeability at 2 inch concrete thick layer; Strong adhesion to any porous material; Works with concrete in ambient temperature range of -4F to 104F
- Increased pumpability
- Increased workability
- No shrinkage cracks



Concrete with KF-A applied by shotcrete without plasticizer & water reducer.

COMMUNICATION FEATURE

- No cracks, flakes, efflorescence and slud areas
- No bleeding
- Highest resistance to chemical and climate corrosions
- Highest freeze-thaw resistance
- Mixing for up to 5 hours keeps concrete batch revived with approximately 20% slump reduction, however, workability will be the same
- No curing is required

Applications:

- Production of high performance concrete
- Production of liquid impermeable concrete, including crude oil
- Fineness and corrosion resistant pre-cast concrete
- Abrasion and salt resistant trafficable concrete
- Non-shrinking concrete for flat works
- Pervious concrete
- Waterproofing

Concrete must be free of cracks, impermeable, and durable without excuses.

KALMATRON® CONCRETE is one of the best in this regard.

Admixtures

- KALMATRON® KF-A, K100®, KC, KF-SEA,
- Road Repair & Patching - KF-K
- Earth Material Sealants - KF-D
- Protective Coatings - KF-B, KF-F, KF-H, KRETE100®
- Thermal Resistant Coating - KF-I
- Regenerative Sprays - KF-G
- Leak Patching Materials - KF-C
- Setting Time Control Agent - KF-JET
- Radiation Shielding Material - KF-αβγ
- Incinerated Industrial Waste Utilization - KF-ASH

Kalmatron® admixtures offer a host of improvements to concrete, including but not limited to:

- Waterproofing
- Increasing batch workability
- Increasing compression strength
- Protection against rebar corrosion and rust
- Protection from the seepage of engine and diesel oil

- Reducing the effects of carbonization
- Reducing penetration of chloride salts and acids

Other Product Lines:

In addition to admixtures, the Kalmatron product line includes primers, concrete regenerative sprays, radiation shielding materials, DCM, EMS, IIW utilization technology, and protective and waterproofing coatings for concrete, wooden and masonry structures. ■

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Launching of 104 Satellites breaks Russia's Record



Indian Space Research Organization (ISRO) created history today by successfully launching 104 satellites in a single mission. The Mission Readiness Review Committee and Launch Authorization Board gave the approval and the countdown of the mission began yesterday at 5:28 am. Polar Satellite Launch Vehicle PSLV-C37 took off in the morning at 9:28 am today from space centre based at Sriharikota, ISRO Chairman A S Kiran Kumar announced, "All 104 satellites successfully placed in orbit. My hearty congratulations to the entire ISRO team for the wonderful job they have done".

Out of the total 104 satellites, 101 co-passenger satellites belong to international customers as a part of the arrangement made with ANTRIX Corporation Ltd, the commercial wing of the ISRO. 96 of these Nano satellites belong to USA and 5 to Israel, Kazakhstan, Netherlands, Switzerland and United Arab Emirates.

The other two Indian Nano satellites are the INS-1A and INS-1B, which will carry equipment from Space Application Centre (SAC) and Laboratory for Electro Optics System (LEOS) for their Space activities. Cartosat-2 Series is the primary satellite, weighing about 320 tonnes and a height about 44.4 meters tall, it has a lifespan of five years. XL Variant is used and it's the most powerful rocket. The same is used during Mars Orbiter Mission.

The launched lasted for 28 minutes and was closely watched by ISRO Chairman and other top scientists from the mission control centre at Sriharikota. Prime Minister Narendra Modi and President Pranab Mukherjee were few among many who congratulated Team ISRO for the successful launch.