



Chem Coats (Pvt) Ltd.

ChemPlast 400 SP

High performance high range water reducing admixture

DESCRIPTION

ChemPlast 400 SP is a chloride- free high performance high range water-reducing admixture based on proprietary blended organic polymers.

ChemPlast 400 SP has powerful wetting agents which when introduced to the mix, through the mixing water alter the molecular structure of the cement matrix, dramatically increasing workability levels, improving cement dispersion and enhanced cement hydration. ChemPlast 400 SP has excellent slump retention properties and provides slight retardation in initial set. ChemPlast 400 SP provides

- a. High workability and placing levels when maintaining water contents.
- b. High range water reductions when maintaining slumps.
- c. Higher early and ultimate strength development when maintaining Cement ratios.
- d. Slight retardation in initial set of between one and two hours will be obtained.

USES

- To significantly reduce the water demand of a concrete mix without reducing workability, allowing greatly increased early and ultimate strengths development without the additional of cement
- To significantly improve the workability of concrete without increasing the water requirement.
- Particularly suitable for ready mixed concrete at elevated temperatures
- To reduce concrete permeability and thereby reduce water penetration and enhance durability

BENEFITS

- For use in the production of flowable concrete applications.
- Fast placing and compaction capabilities.
- Workability loss is slower than that found in conventional superplasticisers.
- Major increases in strength development at all ages without increased cement contents.
- Particularly beneficial in precast construction applications.
- Reduction in water / cement ratio enhances durability, producing low permeability concrete with reduced shrinkage cracking potential.

STANDARDS COMPLIANCE

ChemPlast 400 SP complies with ASTM C494 as Type A, F & G. Water reducing, high range & retarding admixtures for concrete.

MIXING

TYPICAL DOSAGE

Typical dosage of ChemPlast 400 SP is 500 ml to 1.8 ltr / 100 kg of cementitious material, including PFA, GGBFS and microsilica. For optimum performance and dosage, ChemPlast 400 SP should always be determined by running site trials using the materials intended for use under prevailing site conditions. This allows for the complete assessment of the concrete mix, optimization of materials and admixture dosage.



PHYSICAL PROPERTIES

Appearance	Brown liquid
Specific Gravity	1.18 @ 20°C
Chloride Content	Nil (BS 5075)
Air entrainment	< 2 % (@ mid range dosage)
Alkali content	< 72.0 gms Na ₂ O equivalent / ltr of admixture
Freezing point	Approx. -3°C

MIX DESIGN

Where the primary intention is to improve strengths the addition of ChemPlast 400 SP will allow for the removal of approx. 15% 25 % of the mixing water (depending on the materials used and type of cement) from the mix whilst maintaining the workability at the levels obtained before the use of the admixture.

Where the primary intention is to provide high workability concrete, ChemPlast 400 SP will elevate workability levels and increase slumps whilst maintaining the level of mixing water obtained before its addition.

The mix should be designed as a pump mix. In correctly designed flowing concrete, the improved dispersion of cement particles and more efficient use of water will improve mix cohesion. High workability mixes generally require higher percentages of fine aggregate to that of conventionally placed concrete mixes to prevent and overcome segregation at high slumps. The slight air entrainment obtained with ChemPlast 400 SP will also help to minimize bleed and segregation.

Advice on mix design for flowing concrete is available from Chem Coats Technical Service Department.

USE AT OTHER DOSAGES

Dosages outside the typical ranges quoted may be used if necessary, provided that performance is assessed through trial mixes and adequate supervision is available. Contact Chem Coats Technical Department for advice in these cases.



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COMPATIBILITY

ChemPlast 400 SP is compatible with other Chem Coats admixtures in the same concrete mix. All admixtures should be added to the concrete separately and must not be mixed together prior to addition. The performance of concrete containing more than one admixture should be assessed by the trial mix procedure to ensure that effects such as unwanted retardation do not occur.

DISPENSING

The correct quantity of ChemPlast 400 SP should be measured by means of a recommended dispenser. The admixture should then be added to the concrete with the mixing water to obtain the best results.

EFFECTS OF OVERDOSING

An overdose of double the intended amount of ChemPlast 400 SP will result in significant retardation. Provided that adequate curing is maintained, the ultimate strength of the concrete will not be impaired by increased retardation and will generally be increased. The effects of overdosing will be further increased if sulphate resisting cement or cement replacement materials are used.

Excessive overdosing may also cause increased air entertainment, which will tend to reduce strength. The degree of this effect will depend on the particular mix design and overdose level.

Overdose is likely to increase the plasticizing effect of the admixture. If concrete is batched to target workability, increased plasticizing will allow an increased water reduction. This will have the effect of increasing ultimate strength and partially or fully offsetting the effect of any increased entrainment. If no increase in water reduction is taken and a significant rise in workability is allowed, there is a strong possibility of mix segregation. Increased initial workability will tend to extend the working life of the concrete, which will delay finishing and stiffening times to some extent.

Retardation is affected by factors other than the admixture, depending on the mix details and conditions involved. Provided that adequate curing is maintained, the ultimate strength of the concrete will not be impaired and will generally be increased. The effects of overdosing will be further increased if sulphate-resisting cement or cement replacement materials are used.

TYPICAL PERFORMANCE EXAMPLES

Trials should be made using relevant materials and conditions in order to determine the optimum mix design and admixture dosage to meet specific requirements. Typical performance examples from evaluation studies of ChemPlast 400 SP are included in this data sheet.

The values quoted are representative of results obtained with specific materials and are provided as illustrations of performance only.

See Table 1 below for Effects of compressive strength and workability.

CLEANING

Dispensing equipment, pumps and bulk storage tanks as well as spillages of ChemPlast 400 SP can be washed and cleaned with water.

PROTECTION ON COMPLETION

As with all structural concrete, good curing practice should be maintained. The most effective means of curing structures is by employing a good curing compound. Contact Chem Coats Technical Department for advice on the use of Chem Coats range of curing compounds.

MODEL SPECIFICATIONS

Incorporate ChemPlast 400 SP in to the concrete mix at the rate of 500 ml-1.8 ltr / 100 kg of cementitious material, all in accordance with the manufactures instructions.

PACKAGING

ChemPlast 400 SP is available in 200 ltr drums.

HANDLING & STORAGE

ChemPlast 400 SP has a shelf life of 12 months provided the temperature is kept within the range of 2° C to 50° C. in the original packaging. In more extreme conditions this period might be shortened.

HEALTH & SAFETY

ChemPlast 400 SP is non-hazardous. The use of gloves, eye protection is advised. Immediately wash with water in the event of contact with skin. Splashes into eyes should also be washed immediately with plenty of clean water and medical advice sought thereafter. ChemPlast 400 SP is water based and non-flammable.

IMPORTANT NOTE

The information given in this data sheet is based on current development work and many years of field experience. Whilst every effort is made to ensure that the information is reliable. We cannot accept responsibility for any work carried out with our materials as we have no controls over methods of applications, site conditions etc. In view of the continuing research and development being undertaken in our laboratories, we advice customers in their own interest to ensure that this data sheet has not been superseded by a more up-to-date publication. All products are sold subject to our standard conditions of sale which are available on request. Field services, where provided, does not constitute supervisory responsibility. For additional information, please contact your local Chem Coats representative.



Characteristics of wet mix					Compressive Strength MPA		
Mix	Dosage ltr / 100 kg OPC	Cement Kg / m ³	W/C Ratio	Slump Mm	1 day	7 days	28 days
Control Mix	-	350	0.571	75	8.0	23.0	35.0
ChemPlast 400 SP	1.2	350	0.550	165	11.5	26.5	39.0
ChemPlast 400 SP	1.2	350	0.457	80	13.5	29.5	43.5
ChemPlast 400 SP	1.2	300	0.570	75	9.5	25.0	37.0

RANGE OF PRODUCTS

WATERPROOFING SYSTEMS
INDUSTRIAL FLOOR SURFACES
PROTECTIVE COATINGS

PREPACKED REPAIR MORTARS
CEMENTITIOUS & EPOXY GROUTS
CONCRETE ADMIXTURES

SEALANTS
CRACK INJECTION
CONCRETE ADHESIVE