Admixture

GLENIUM® 51 P

(Formerly Melcret IR 105)

A high performance concrete superplasticiser based on modified polycarboxylic ether

Description

GLENIUM 51 P has been primarily developed for applications in the ready mixed and precast concrete industries where the highest durability and performance is required.

GLENIUM 51 P is free from chlorides and complies with ASTM C494 Types A and F.

GLENIUM 51 P is compatible with all Portland cements that meet recognised international standards.

Chemistry and mechanism of action of GLENIUM 51 P

Conventional superplasticisers , such as those based on sulphonated melamine and naphthalene formaldehyde condensates, at the time of mixing, become absorbed onto the surface of the cement particles. This absorption takes place at a very early stage in the hydration process. The sulphonic groups of the polymer chains increase the negative charge on the surface of the cement particle and dispersion of the cement occurs by electrostatic repulsion.

GLENIUM 51 P is differentiated from conventional superplasticisers in that it is based on a unique carboxylic ether polymer with long lateral chains. This greatly improves cement dispersion. At the start of the mixing process the same electrostatic dispersion occurs as described previously but the presence of the lateral chains, linked to the polymer backbone, generate a steric hindrance which stabilises the cement particles capacity to separate and disperse.

This mechanism provides flowable concrete with greatly reduced water demand.

Typical applications

The excellent dispersion properties of GLENIUM 51 P make it the ideal admixture for precast and readymixed 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 may be considered as an economical option.

GLENIUM 51 P can be used to produce very high early strength floor screeds. For screed mix designs consult degussa's Technical Services.

- high workability without segregation or bleeding
- less vibration required
- can be placed and compacted in congested reinforcement
- reduced labour requirement
- improved surface finish

Packaging

GLENIUM 51 P is available in 220kg. drums and in bulk tanks upon request.

Typical properties*

* Properties listed are only for guidance and are not a guarantee of performance.

Form	viscous liquid
Colour	light brown
Relative density	1.06 – 1.08 @ 20°C
pH	6.6
Viscosity	128 +/ - 30 cps @ 20°C
Transport	Not classified as dangerous
Labelling	No hazard label required

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

Compatibility of GLENIUM 51 P

GLENIUM 51 P must not be used in conjunction with any other admixture unless prior approval is received form MBT Middle East Technical Services.
GLENIUM 51 P is suitable for mixes containing:

- microsilica
- pulverised fuel ash
- ground granulated blast furnace slag cement

Dosage

The normal dosage for GLENIUM 51 P is between 0.5 and 1.6 litres per 100 kg of cement (cementitious material). Dosages outside this range are permissible subject to trial mixes.

Directions for use

GLENIUM 51 P is a ready to use admixture that is added to the concrete at the time of batching. The maximum effect is achieved when the GLENIUM 51 P is added after the addition of 50 to 70 % of the water. GLENIUM 51 P must not be added to the dry materials.
Thorough mixing is essential and a minimum mixing cycle, after the addition of the GLENIUM 51 P, of 60 seconds for forced action mixers is recommended.

Storage

GLENIUM 51 P should be stored in original containers and at above 5 Centigrade. If frozen gradually thaw and agitate until completely reconstituted.

Failure to comply with the recommended storage conditions may result in premature deterioration of the product or packaging. For specific storage advice consult MBT's Technical Services Department.

Safety precautions

GLENIUM 51 P contains no hazardous substances requiring labelling. For further information refer to the Material Safety Data Sheet.

Note

Field service, where provided, does not constitute supervisory responsibility. For additional information contact your local Degussa representative.

Degussa reserves the right to have the true cause of any difficulty determined by accepted test methods.

Quality

All products produced by Degussa certified manufacturing facilities, are produced to conform to systems designed to meet internationally recognised quality standards.

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GLENIUM® 110 P

(Formerly Melcret 106 SR)

A high performance concrete superplasticiser based on modified polycarboxylic ether

Description

GLENIUM 110 P has been primarily developed for applications in the ready mixed and precast concrete industries where the highest durability and performance is required.

GLENIUM 110 P is free from chlorides and complies with ASTM C494 Types B, D and G.

GLENIUM 110 P is compatible with all Portland cements that meet recognised international standards.

Chemistry and mechanism of action of GLENIUM 110 P

Conventional superplasticisers , such as those based on sulphonated melamine and naphthalene formaldehyde condensates, at the time of mixing, become absorbed onto the surface of the cement particles. This absorption takes place at a very early stage in the hydration process. The sulphonic groups of the polymer chains increase the negative charge on the surface of the cement particle and dispersion of the cement occurs by electrostatic repulsion.

GLENIUM 110 P is differentiated from conventional superplasticisers in that it is based on a unique carboxylic ether polymer with long lateral chains. This greatly improves cement dispersion. At the start of the mixing process the same electrostatic dispersion occurs as described previously but the presence of the lateral chains, linked to the polymer backbone, generate a steric hindrance which stabilises the cement particles capacity to separate and disperse.

This mechanism provides flowable concrete with greatly reduced water demand.

Typical applications

The excellent dispersion properties of GLENIUM 110 P make it the ideal admixture for precast and readymixed 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 may be considered as an economical option.

- high workability without segregation or bleeding
- less vibration required
- can be placed and compacted in congested reinforcement
- reduced labour requirement
- improved surface finish

Packaging

GLENIUM 110 P is available in 220kg. drums and in bulk tanks upon request.

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

Compatibility of GLENIUM 110 P

GLENIUM 110 P must not be used in conjunction with any other admixture unless prior approval is received from Degussa Technical Services. GLENIUM 110 P is suitable for mixes containing:

- microsilica
- pulverised fuel ash
- ground granulated blast furnace slag cement

Dosage

The normal dosage for GLENIUM 110 P is between 0.5 and 1.5 litres per 100 kg of cement (cementitious material).

Dosages outside this range are permissible subject to trial mixes.

Directions for use

GLENIUM 110 P is a ready to use admixture that is added to the concrete at the time of batching.

The maximum effect is achieved when the GLENIUM 110 P is added after the addition of 50 to 70 % of the water. GLENIUM 110 P must not be added to the dry materials.

Thorough mixing is essential and a minimum mixing cycle, after the addition of the GLENIUM 110 P, of 60 seconds for forced action mixers is recommended.

Storage

GLENIUM 110 P should be stored in original containers and at above 5 Centigrade. If frozen gradually thaw and agitate until completely reconstituted.

Failure to comply with the recommended storage conditions may result in premature deterioration of the product or packaging. For specific storage advice consult Degussa's Technical Services Department.

Safety precautions

GLENIUM 110 P contains no hazardous substances requiring labelling. For further information refer to the Material Safety Data Sheet.

Note

Field service, where provided, does not constitute supervisory responsibility. For additional information contact your local Degussa representative.

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Quality

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GLENIUM® ACE 303 P

Admixture Controlled Energy Essential component of Zero Energy system. A chloride free, new generation of polycarboxylic ether superplasticizer. In synergy with Rheodynamic concrete, it optimises the production of precast concrete structural elements. Suitable during the summer. Meets the requirements of EN 934 – 2 and ASTM C494 type A and F.

Description and field of application

GLENIUM ACE 303 P is an innovative second generation of polycarboxylic ether polymers superplasticizer. The particular molecular configuration of GLENIUM ACE 303 P accelerates the cement hydration. Rapid adsorption of the molecule onto the cement particles, combined with an efficient dispersion effect, exposes increased surface of the cement grains to react with water. As a result of this effect, it is possible to obtain earlier development of the heat of hydration, rapid development of the hydration products and, as a consequence, higher strengths at very early age.

GLENIUM ACE 303 P is suitable for making precast concrete elements with Rheoplastic concrete having fluid consistence, no segregation and low water cement ratio and, consequently, high early and long-term strengths. GLENIUM ACE 303 P may be used in combination with GLENIUM STREAM admixtures for producing Rheodynamic concrete, capable of self-compaction, even in the presence of dense reinforcement, without the aid of vibration, for making precast elements.

GLENIUM ACE 303 P is recommended for use at ambient temperature above 15°C.

ZERO ENERGY SYSTEM:
Zero Energy System is based on a combination of the avant-garde admixture GLENIUM ACE 303 P and the innovative technology of Rheodynamic concrete. The Zero Energy System has been developed to help the precast concrete producer to rationalize his production process and save on energy costs combined with improved quality of the product and the working conditions.

Benefits

GLENIUM ACE 303 P offers the following benefits for the precast concrete industry to:

- Produce Rheoplastic and Rheodynamic concrete having a low water cement ratio
- Optimize the curing cycles by reducing curing time or curing temperature
- Eliminate the heat curing
- Eliminate the energy required for placing and compaction and curing (ZERO ENERGY)
- Increase productivity
- Improve surface appearance
- Produce durable precast concrete elements as per EN 206-1
- As compared to the traditional superplasticizers, the engineering properties such as early and ultimate compressive and flexural strengths, bond to steel, modulus of elasticity, shrinkage, creep, and impermeability are improved.

Packing and storage

GLENIUM ACE 303 P is available in 220 kg. drums or in bulk.

GLENIUM ACE 303 P must be stored in a place where the temperature does not drop below 5°C. In case the product freezes, bring the temperature of the product to 30°C and remix.

GLENIUM® B 201

(Formerly Glenium 110 IR Plus)

A high performance concrete superplasticiser based on modified polycarboxylic ether

Description

GLENIUM B 201 has been primarily developed of self compaction concrete where the highest durability and performance is required.

GLENIUM B 201 is free from chlorides and complies with ASTM C494 Types B, D and G.

GLENIUM B 201 is compatible with all Portland cements that meet recognised international standards.

Chemistry and mechanism of action of GLENIUM B 201

Conventional superplasticisers , such as those based on sulphonated melamine and naphthalene formaldehyde condensates, at the time of mixing, become absorbed onto the surface of the cement particles. This absorption takes place at a very early stage in the hydration process. The sulphonic groups of the polymer chains increase the negative charge on the surface of the cement particle and dispersion of the cement occurs by electrostatic repulsion.

GLENIUM B 201 is differentiated from conventional superplasticisers in that it is based on a unique carboxylic ether polymer with long lateral chains. This greatly improves cement dispersion. At the start of the mixing process the same electrostatic dispersion occurs as described previously but the presence of the lateral chains, linked to the polymer backbone, generate a steric hindrance which stabilises the cement particles capacity to separate and disperse.

This mechanism provides flowable concrete with greatly reduced water demand.

Typical applications

The excellent dispersion properties of GLENIUM B 201 make it the ideal admixture for precast and readymixed 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 may be considered as an economical option.

- high workability without segregation or bleeding
- less vibration required
- can be placed and compacted in congested reinforcement
- reduced labour requirement
- improved surface finish

Packaging

GLENIUM B 201 is available in 220 and 1100kg. drums and in bulk tanks upon request.

Effect on hardened concrete properties

- better resistance to aggressive atmospheric conditions
- reduced shrinkage and creep
- increased durability

Compatibility of GLENIUM B 201

GLENIUM must not be used in conjunction with any other admixture unless prior approval is received from Degussa Technical Services. GLENIUM B 201 is suitable for mixes containing:

- microsilica
- pulverised fuel ash
- ground granulated blast furnace slag cement

Dosage

The normal dosage for GLENIUM B 201 is between 0.5 and 2.0 litres per 100 kg of cement (cementitious material).

Dosages outside this range are permissible subject to trial mixes.

Directions for use

GLENIUM B 201 is a ready to use admixture that is added to the concrete at the time of batching.

The maximum effect is achieved when the GLENIUM B 201 is added after the addition of 50 to 70 % of the water. GLENIUM B 201 must not be added to the dry materials.

Thorough mixing is essential and a minimum mixing cycle, after the addition of the GLENIUM B 201 of 60 seconds for forced action mixers is recommended.

Storage

GLENIUM B 201 should be stored in original containers and at above 5 Centigrade. If frozen gradually thaw and agitate until completely reconstituted.
Failure to comply with the recommended storage conditions may result in premature deterioration of the product or packaging. For specific storage advice consult Degussa's Technical Services Department.

Safety precautions

GLENIUM B 201 contains no hazardous substances requiring labelling. For further information refer to the Material Safety Data Sheet.

Note

MEYCO® SA 540

(Replaces Atrospeed D 14)

Alkali-free, non caustic and non toxic high performance powder accelerator for dry-mix shotcrete

Description

MEYCO SA 540 is a high performance alkali-free, non caustic and non toxic accelerator for the use in dry-mix shotcreting processes. It is a powder additive whose dosage can be varied to the desired setting and hardening times.

Features and benefits

The quick setting properties allow:

- overhead layer thicknesses of 100 -150 mm in a single application (as with aluminate based accelerators)
- rapid work progress

The unique formula:

- provides good early strength development
- limits the decrease of final strength
- improves durability as compared to mixes with traditional accelerators

The non caustic and non toxic nature of the product:

- prevents skin burns and provides an improved working environment
- reduces required handling precautions and hence improves economy
- reduces salt content in leaching water

Fields of application

MEYCO SA 540 is suitable for all applications where high early strength, high final strength and large thickness are required:

- For temporary and permanent rock support
- For final lining (one pass lining)
- For repair works
- In tunnels
- In mining

Packaging

MEYCO SA 540 is available in 15kg bags.

Typical properties*

* Properties listed are only for guidance and

are not a guarantee of performance.

Form	Powder
Colour	White
Bulk density	750 - 1000 kg / m³
pH value (in water dispersion)	7 ± 0.5
Chloride Content	< 0.1%

Dosage

The dosage of MEYCO SA 540 depends on the temperature of concrete, air, substrate and reactivity of the cement being used. Depending on the required setting time and early strength requirements dosage of MEYCO SA 540 will normally be in the range of 5-10% of cement weight. Over dosing, in excess of 10% will lead to lower final strengths. On site trials are recommended prior to use.

Application procedure

Preparation of the substrate:
The substrate must be clean and free from loose particles and only lightly sprinkled.

Sensitivity to cement:
Age: It is recommended to only use fresh cement since the age of the cement can have a negative influence on the setting characteristics of the mix.

Type: MEYCO SA 540 is sensitive to the type of cement. With some cements the obtained setting characteristics can be too slow. This sensitivity can be compensated by lowering the w/c ratio. We recommend the use of OPC (Ordinary Portland Cement) or RHPC (Rapid Hardening Portland Cement) which will normally give faster setting characteristics than Blended Cements or SRC (Sulphate Resistant Cement).

In any case, it is strongly recommended to do preliminary tests to check the setting time and

the 24 hour strength characteristics of the cement type used in the project.

Evaluation of setting and 24 hour strength characteristics:

Initial Set	Final Set	24 hour strength	Rating
2 minutes	6 - 8 minutes	18 - 20 N/mm²	Good
5 minutes	8 - 12 minutes	12 - 15 N/mm²	OK
> 10 minutes	> 15 minutes	< 10 N/mm²	Poor

Remarks: If the setting times are poor, the 24 hour strength is usually good. With a slow setting it is possible to apply 50-70 mm on the vertical and 30-50 mm overhead.

Mixing:

The minimum cement content with the use of MEYCO SA 540 is 350kg/m³, preferably it should be 400kg/m³.

Application:

MEYCO SA 540 is added to the mix immediately prior to use.

Compatibility with DELVOCRETE STABILISER

In combination with MEYCO SA 540, the DELVOCRETE STABILISER should not be dosed at more than 0.4% by weight of cement at ambient temperatures of > 20°C. At ambient temperatures of > 15°C only 0.2% by weight of

cement should be used. Below 15°C DELVO STABILISER should not be used at all. Dosages of DELVOCRETE STABILISER in excess of those above indicated can cause very slow setting, low early strength and retardation. With slowly reacting cements there could also be problems with adhesion to the rock substrate.

Note

The information given here is true, represents our best knowledge and is based not only on laboratory work, but also on field experience. However, because of numerous factors affecting results, we offer this information without guarantee and no patent liability is assumed. For more information or questions, contact your local Degussa representative.

Storage

Store in dry conditions. In their existing and undamaged packing MEYCO SA 540 has a shelf life of 6 months.

Safety precautions

Unlike traditional powder shotcrete accelerators, MEYCO SA 540 does not harm the skin. The risk for any health hazard is therefore significantly reduced. MEYCO SA 540 contains no hazardous substances.

Note

Field service, where provided, does not constitute supervisory responsibility. For additional information contact your local Degussa representative.

Degussa reserves the right to have the true cause of any difficulty determined by accepted test methods.

Quality

All products produced by Degussa certified manufacturing facilities, are produced to conform to systems designed to meet internationally recognised quality standards.

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MEYCO® SA160

(Replaces Atrospeed V-12)

Alkali-free, liquid high performance set

accelerator for wet-mix sprayed concrete

Description of product

MEYCO® SA160 is a high performance alkali-free set accelerator for sprayed concrete. It is a liquid admixture whose dosage can be varied to the desired setting and hardening times.

Fields of application

MEYCO® SA160 is suitable for all applications where high early strength, good final strength and thick layers are required:

- Temporary and permanent rock support in tunnels
- Rock support in mining
- In poor ground conditions
- Slope stabilisation
- Also suitable for acceleration of cementitious grouts, such as used in TBM tunnel linings, cement ground injection and foam concrete backfill operations

Features and benefits

MEYCO® SA160 is the ideally suited accelerator for wet mix sprayed concrete for rock support because:

- The quick setting property allows:
  Rapid work progress and the ability to construct thick sprayed concrete linings via layered application during one construction sequence.
- The unique product formulation provides continual early-age strength development whilst also achieving excellent long-term strength and durability.
- MEYCO® SA160 is a liquid product and thus provides easy handling, as well as facilitating accurate addition to the concrete.
- Very low dust production and therefore a good working environment.
- Since the product is non-aggressive, it provides improved working safety, reduced environmental impact and lower handling costs.

Packaging

MEYCO® SA160 is supplied in 220 kg. drums, 1100 kg. containers and in bulk.

Technical data*

* Properties listed are only for guidance and are not a guarantee of performance

Form	Suspension
Colour	Beige
Density (at +20°C, Gamma-Ball)	1.43 ± 0.06 g/ml
pH value (1:1 water solution)	2.6 ± 0.5
Viscosity +20°C, Brookfield)	650 ± 350 mPas
Thermal stability	+5°C to +35°C
Chloride content	<0.1%

Application procedure

The substrate must be clean and free from loose particles and preferrably damp.

It is recommended to use only fresh cement as the age of the cement can have a negative influence on the setting characteristics of the mix.

MEYCO® SA160 can be sensitive to the type of cement. With some cements the setting characteristics can be too slow. We recommend the use of Portland cements (PC /

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HPC) which normally give faster setting than blended or sulphate resistant cement types. However, MEYCO® SA160 also works well with composite cement types (blended cements, fly-ash / slag). In all cases, it is strongly recommended to do preliminary tests to check the setting and the 24

hours strength of the cements planned for use in a project.

Evaluation of setting and 24 hour strength (without addition of slump killing system), should be carried out on a test mortar in accordance with EFNARC European Specification for Spreayd Concrete (1996), Appendex 1, Clause 6.3. The following results should be taken as a performance guide only:

Initial set	Final set	24 hour strength	Rating
2 min.	6-8 min.	18-20 Mpa	Good
5 min.	8-12 min.	12-15 Mpa	OK
>10 min.	>15 min.	<10 Mpa	Poor

Remark: If the setting times are poor, the 24 hour strength usually remains good.

Mixing

When MEYCO® SA160 is used for wet mix spraying, the w/c+b ratio should be below 0.5 and preferably <0.45. When targeting extremely high early strength, 0.40 or lower. The lower w/c+b ratios provides faster setting, higher early strength, better durability, lower accelerator dosage and thicker layers can be applied over head.

Dosage

MEYCO® SA160 is added in the nozzle. To ensure a constant and accurate dosage to ensure quality sprayed concrete, it is crucial to follow the pump selection guideline given below:

Work very well.

- Mono pumps (screw pumps)
- Squeeze pumps (Bredel)
- MEYCO® Dosa

Should not to be used with:
- piston pumps
- all pumps with ball and seat valves
- pressure tanks
- gear pumps

Do not use a filter on the suction hose as this causes obstructions. Preferrably the material should be drawn off the bottom of the drum/container.

Compatibility with other accelerators

MEYCO® SA160 can be interchanged with Degussa's alkali-free accelerators MEYCO® SA161, 162 and 170. However, storage of mixed MEYCO® SA accelerators is not recommended. Degussa's alkali-free accelerators shall not be mixed with any other of Degussa accelerator other than those listed above.

Do not mix MEYCO® SA160 with any type of accelerator produced by another manufacturer, as this could cause immediate clogging of dosing pumps and hoses.

Consumption

The dosage of MEYCO® SA160 depends on the temperature conditions, reactivity of cement used and on required thickness of layers, setting time and early strength development. The consumption of MEYCO® SA160 is normally in the range of 3 to 10% of binder weight. **Overdosing (>10%) may result in decreased final strengths.**

Cleaning of dosing pump

Prior to the use of MEYCO® SA160, the dosing pump and other parts of the system **must be thoroughly cleaned** with plenty of water. Failure to do so provokes blockages in the dosing system. Make sure that all operators involved in testing and application are fully informed.

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Storage

MEYCO® SA160 must be stored at minimum +5°C and maximum +30°C. MEYCO® SA160 has to be kept in closed containers made of plastic, glassfibre plastic and stainless steel. MEYCO® SA160 must not be stored in normal steel containers as the pH can cause corrosion that might affect the performance of the product.

After prolonged storage we recommend that MEYCO® SA160 be always fully agitated prior to use by mechanical stirring or re-circulation pumping. **Agitation by compressed air is strictly not advised**.
Please contact your local Degussa

representative for details of shelf-life.

Open containers will allow prolonged contact with air leading to a skin film and lumps being produced that may cause blocking of accelerator system.
It is recommended that your local Degussa representative be consulted prior to the use of any product that has been frozen.
Performance testing should always be carried out before use.

Safety precautions

MEYCO® SA160 contains no hazardous substances requiring labelling. However the same precautions as with handling and use of cementitious products should be observed.

Avoid eye and skin contact and wear rubber gloves and goggles. If contact occurs, rinse with plenty of water. In case of eye contact seek medical advice. For further information, refer to the Material Safety Datasheet or contact your local Degussa company.

Note

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Quality

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MICRO AIR® 210

(Formerly Atro-air)

Air- entraining admixture for concrete

Description

MICRO AIR 210 is an air-entraining admixture, which creates ultra-stable air bubbles that are strong, small and closely spaced.

Applications

Entraining a controlled air content in a wide range of concrete types:

Normal mix designs.

Low slump concrete.

Concrete containing high carbon content fly ash.

Concrete containing large amounts of fine materials.

Concrete using high-alkali cements.

High temperature concrete.

Concrete with extended mixing times.

Advantages

MICRO AIR 210 is especially useful in the types of concrete known for their difficulty to entrain and maintain the air content desired.

Entrainment of the optimum air content in concrete results in the following improvements to quality:

Increased freeze / thaw resistance.

Reduced permeability - increased watertightness.

Reduced segregation and bleeding.

Improved plasticity and workability.

Increased resistance to scaling.

Greatly improved stability of air entrainment.

Ready to use - solution is at optimum strength for accurate dispensing.

content of concrete made with air-entraining Portland Cement.

The use of MICRO AIR 210 with Degussa admixtures forms a desirable combination for producing the highest quality, normal or lightweight concrete.

Packaging

MICRO AIR 210 is supplied in 220 kg. drums and bulk delivery as appropriate.

Typical properties*

* Properties listed are only for guidance and are not a guarantee of performance.

Specific gravity:	0.986 - 1.036
pH:	10.5 - 12.5
Colour:	Amber - brown
Chloride content:	Nil to BS 5075: 1982
Flash point:	Not applicable
Freeze point:	-1°C

Standards

MICRO AIR 210 meets the requirements of:

ASTM C-260-86

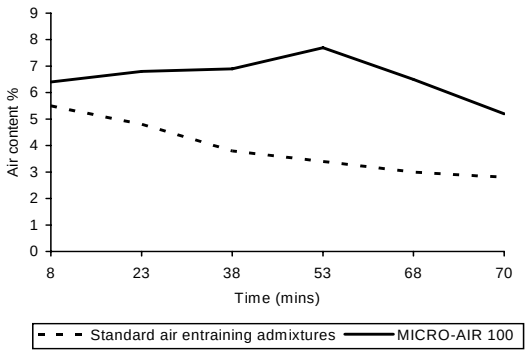
AASHTO M-154

CRD-C 13-77

BS 5075: 1982 Part 2

DIN 1048 Part 1

Figure 1 Air content vs mixing time



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1- In accordance with ASTM C-182: 3 minutes mix, 3 minutes rest followed by 2 minutes final mixing.
2- 13 minutes agitation and 2 minutes mixing.
3- Retempered and 2 minutes mixing time.
The graph represents the average of a number of laboratory and field evaluations data. The tests were conducted on concrete mixes known for their difficulty to entrain and maintain the desired air content. These mixtures contained large amounts of fine materials, high carbon content fly ash, high alkali cements, high concrete temperatures and low slumps.

Application procedure

As stated in ACI 212 and other publications, when two or more admixtures are used, they must be added to the mix separately (through dispensers or manually) and must not be mixed with each other prior to adding to the concrete mix.
For optimum, consistent performance, the air-entraining admixture should be dispensed on damp, fine aggregate.
Add MICRO AIR 210 admixture to the concrete mix using a dispenser designed for air-entraining admixtures; or add manually using a suitable measuring device that ensures accuracy within ±3% of the required amount.

Dosage

There is no standard dosage rate for MICRO AIR 210 admixture. The exact quantity of air-entraining admixtures needed should be determined by trial mixes. Factors are: temperature, cement, sand grading, sand-aggregate ratio, slump, means of conveying and placement, use of extra fine materials such as fly ash and micro silica.
The amount of MICRO AIR 210 admixture used will depend upon the amount of entrained air required under actual job conditions. In a trial mix, use 60ml to 400ml / 100kg of cement and adjust in the light of results obtained. In mixes containing water-reducing, set-controlling admixtures, the amount of MICRO AIR 210 needed is somewhat less than the amount required in plain concrete.

Storage

MICRO AIR 210 admixture should be stored and dispensed at 2°C or higher. Although freezing does not harm this product, precautions should be taken to protect it from freezing. If it freezes, thaw and reconstitute by mild mechanical agitation. Do not use pressurised air for agitation. Shelf life is 12 months when stored as above.

Safety precautions

MICRO AIR 210 is a caustic solution. In case of contact with skin, eyes or clothing, immediately flush the exposed area with water for at least 15 minutes. Remove contaminated clothing and shoes. Call a doctor - especially if contact is with eyes. Wash clothing before re-use and discard shoes. Always keep the product out of the reach of children.

Note

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Quality

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POZZOLITH® 55 RP

(Replaces Atroment 55)

Plasticising and water reducing admixture with set retarding properties

Description

POZZOLITH 55 RP is a powerful plasticiser which disperses and deflocculates cement particles whilst delaying the hydration process, thereby retarding the initial and final set. It can be used to improve workability without the addition of extra water, or to allow reductions in the free water content. Due to improved dispersion of the cement particles the process of hydration proceeds under the optimum conditions, leading to improved strength characteristics with or without reduction in free water.

Primary uses

- High strength, high cement content, low W/C ratio mixes.
- Hot weather concrete where control of initial and final set is important.
- Rolling compaction concrete application.

Typical applications

Slipformed concrete, high strength mixes, to control set of concrete particularly in high temperature conditions, bridge building, pre-stressed concrete work, mass concrete.

Benefits

- Increases compressive, tensile and flexural strength of concrete.
- Increases density of concrete reducing permeability and thus increasing durability.
- Allows a reduction in free water in the region of 8-12%.
- Highly effective in high cement content low water cement ratio mixes where its use enables concrete to be made more workable without loss in strength, density and durability.
- Enables controlled extension of initial set.
- The retarding action allows continuous concrete pours to be made, thus reducing the number of construction joints needed.
- The strength gain of concrete containing POZZOLITH 55 RP is enhanced. After retardation of initial and final set, a more rapid hardening of the concrete occurs, and the effect on stripping time is negligible.

Packaging

POZZOLITH 55 RP is available in bulk or 220 kg.drums and 1100 kg. containers.

Compatibility

POZZOLITH 55 RP can be used with all types of Portland cement including sulphate resisting (Type V). For use with other special cements, contact Degussa Iran Technical Dept.

POZZOLITH 55 RP should not be premixed with other admixtures. If other admixtures are to be used in concrete containing POZZOLITH 55 RP, they must be dispensed separately. If in doubt, consult Degussa Iran Technical Dept.

Properties*

* Properties listed are only for guidance and

are not a guarantee of performance.

Colour:	Brown
Specific gravity:	1.150--1.162 at 25°C
Air entrainment:	Nil
Chloride content:	Nil to BS 5075 : 1982
Nitrate content:	Nil
Freezing point:	0°C. Can be reconstituted if stirred after thawing.

Standards

ASTM C494: Type B & D
BS 5075: Part 1

Directions for use

POZZOLITH 55 RP should be added to the concrete mix during the mixing cycle, at the same time as the water, or the aggregates. Never add

POZZOLITH 55 RP to the dry cement. No extension to normal mixing time is necessary.

Dosage

Field trials should be conducted to determine the optimum addition rates of POZZOLITH 55 RP. As a guide to these trials, a dosage range of 160 to 280ml per 100kg cement is recommended as a starting point. Dosages outside this range can be used where improved workability, increased water reduction and / or further set retardation are required.

Effects of over dosage

A severe over dosage of POZZOLITH 55 RP will result in:

- Increased retardation of initial and final set.
- Increase in workability.
- Increase air entered

Providing concrete is properly cured the ultimate strength of the concrete will not be adversely effected and will generally be higher than for normal concrete. Care should be taken to allow for the affect on formwork pressures and on stripping times.

Dispenser

POZZOLITH 55 RP should be dispensed through a proprietary dispenser, such as is available from Degussa Iran.

Storage

Up to one year in unopened original packing. Store under cover, out of direct sunlight and protect from extremes of temperature.

Failure to comply with the recommended storage conditions may result in premature deterioration of the product or packaging. For specific storage advice consult Degussa's Technical Services Department.

Safety precautions

POZZOLITH 55 RP is not a fire or health hazard. Spillages should be washed down immediately with cold water. For further information refer to the Material Safety Data Sheet.

Note

Field service, where provided, does not constitute supervisory responsibility. For additional information contact your local Degussa representative.

Degussa reserves the right to have the true cause of any difficulty determined by accepted test methods.

Quality

All products produced by Degussa certified manufacturing facilities, are produced to conform to systems designed to meet internationally recognised quality standards.

04/2006 Degussa-IR

POZZOLITH® 390 P

Water reducing multi dosage / plasticiser to produce low slump loss flowable concretes. Chloride free.

Description

POZZOLITH 390 P is a water reducing, plasticising admixture for the production of low slump loss, high workability concrete.

POZZOLITH 390 P is formulated for use over a wide dosage range. POZZOLITH 390 P can match the performance characteristics of many superplasticisers at lower dosage and cost.

At the lower end of the dosage range POZZOLITH 390 P will substantially increase and extend workability of a given water cement ratio. Alternatively, the water cement ratio can be reduced whilst maintaining a given slump. The water reduction capability, slump and extension of workability, increase with dosage. At higher dosage rates, POZZOLITH 390 P will enable water reductions and the production of flowing concrete normally only available from superplasticisers.

Primary uses

POZZOLITH 390 P is formulated for use by commercial ready-mix operators, who can benefit from its multiple role characteristics by minimising admixture stock.

Typical applications

- In areas of congested reinforcement where high workability will ease placement and compaction.
- Hot weather concreting where extension of workability and controlled delays to initial set are beneficial.
- To effect reductions in the water cement ratio enabling either higher strength or cement economy.

Packaging

POZZOLITH 390 P is available in bulk or in 220 kg. drums and 1100kg. containers.

Compatibility

POZZOLITH 390 P is compatible with all types of Portland cement including SRC and modified, Type ll. For use with other special cement types or blends contact your Degussa representative for advice.

Typical properties*

* Properties listed are only for guidance and are not a guarantee of performance

Colour:	Brown liquid
Specific gravity:	1.13—1.14 at 25°C
Chloride content:	Nil to BS 5075 Part 1
Freezing point:	0°C
Flashpoint:	N/A

Standards

POZZOLITH 390 P complies with the performance requirements of ASTM C-494 type B, D, and G.

Strength

Used to reduce the water cement ratio, POZZOLITH 390 P will improve all the desirable performance characteristics of hardened concrete: higher compressive strength and modulus; lower permeability, shrinkage and creep.

Dosage

The normal range is 0.3 - 1.0 ltr / 100 kg cement. Higher dosages may be required when certain combinations of materials and conditions are present or water reduction in excess of 15% is required.

In all cases, trial mixes should be carried out to determine the optimum dosage required to achieve the desired concrete property.

Dispensing

POZZOLITH 390 P is introduced into the mixer with the mixing water. The admixture works more efficiently if it is added to the dampened mix after 50 - 70% of the water has been introduced. No extension to normal mixing time is necessary. POZZOLITH 390 P should never be added to dry cement.

Storage

POZZOLITH 390 P must be stored in a place where temperature does not drop below +5°C. If product has frozen, thaw and agitate until completely reconstituted. Store under cover, out of direct sunlight and protect from extremes of temperature. Failure to comply with the recommended storage conditions may result in premature deterioration of the product or packaging. For specific storage advice consult Degussa's Technical Services Department.

Safety precautions

POZZOLITH 390 P is not a fire or health hazard. Spillages should be washed down immediately with cold water. For further information, refer to material safety data sheet.

Note

Field service, where provided, does not constitute supervisory responsibility. For additional information contact your local Degussa representative.

Degussa reserves the right to have the true cause of any difficulty determined by accepted test methods.

Quality

All products produced by Degussa certified manufacturing facilities, are produced to conform to systems designed to meet internationally recognised quality standards.

04/2006 Degussa-IR

POZZOLITH® 420R

(Replaces Atroretard)

Setting retarder for cement bound building materials

Description

POZZOLITH 420R provides retardation in initial and final setting time in all cementitious materials.

Typical applications

When long distance transportation of concrete or extend of setting time is desirable such as ; Slip form-work , or hot weather concreting due to prevent fast setting or hardening . POZZOLITH 420 R should be added to concrete separately, it should not be premixed with other admixtures .

Packaging

POZZOLITH 420R is available in bulk or 220 kg. drums.

Appearance	Colorless liquid
Specific gravity	1.06 – 1.08 at 25°C
Mixable	With water in any ratio
Chloride content	Nil to BS 5075 Part 1
PH	9 - 10
Freezing point	0°C. Can be reconstituted if stirred after thawing.

Compatibility

POZZOLITH 420R can be used with all types of Portland cement including sulphate resisting (Type V).

POZZOLITH 420R should not be premixed with other admixtures. If other admixtures are to be used in concrete containing POZZOLITH 420R, they must be dispensed separately. If in doubt, consult Degussa Iran Technical Dept.

Dosage

Table below shows recommended dosage of POZZOLITH 420R in percentage of cement for different setting time delay in various temperatures.

Storage

POZZOLITH 420R should be stored in origin drums and be protected from damages. In this situation it has a shelf life of one year.

Note

Field service, where provided, does not constitute supervisory responsibility. For additional information contact your local Degussa representative.

Degussa reserves the right to have the true cause of any difficulty determined by accepted test methods.

Retarding (Hrs)	3	5	7	9	12	15	18	21
+ 10	----	-----	0.20	0.30	0.50	0.70	0.90	1.00
+ 15	----	0.10	0.30	0.40	0.60	0.80	1.10	1.50
+ 20	0.10	0.20	0.40	0.50	0.80	1.10	1.40	1.80
+ 25	0.20	0.30	0.50	0.60	1.00	1.50	2.00	----
+ 30	0.30	0.40	0.60	0.80	1.20	2.00	-----	----
+ 40	0.50	1.30	2.00	-----	-----	-----	-----	-----

Quality

All products produced by Degussa certified manufacturing facilities, are produced to conform to systems designed to meet internationally recognised quality standards.

04/2005 Degussa-IR

POZZOLITH® LD10 P

(Replaces Atroment 200)

Low dosage plasticising admixture for concrete

Description

POZZOLITH LD10 P is a liquid admixture which acts on the cement particles in the mix, combining the effects of a powerful plasticiser and deflocculating agent with controlled retardation.

Applications

- Hot weather concreting where controlled delay to initial set is of prime importance.
- Mass concrete like dam body and foundation.
- To improve cohesion, workability and compaction in concretes using poorly graded / shaped fine aggregates.
- Large slabs or bridge decks, etc. where extension of vibration limits is beneficial to avoid cold joints.

Advantages

- Considerably extends vibration limit of concrete mixes thus reducing incidence of honeycombing and cold joints.
- Reduces placing problems in hot weather concreting by improving workability and workability retention.
- Improves trowellability and surface finish.
- Improves pumpability of concrete.
- Considerably reduces permeability.
- Enables economies in mix designs to be achieved.

Packaging

POZZOLITH LD10 P is available in bulk or in 220 kg. drums, and 1100 kg. containers.

Typical properties*

* Properties listed are only for guidance and are not a guarantee of performance.

Colour	Dark brown liquid
Specific gravity	1.175 -1.185 @ 25° C
Air entrainment	Less than 1%
Chloride content	Nil to BS 5075 : 1982
Nitrate content	Nil
Freezing point	0° C. Can be reconstituted if stirred after thawing.
Flashpoint	Nil

Standards

ASTM C-494: Types A, B, & D
BS 5075: Part 1

Directions for use

POZZOLITH LD10 P should be added to the concrete mix during the mixing cycle at the same time as the water or the aggregate. Never add POZZOLITH LD10 P to the dry cement. No extension to normal mixing times is necessary.

Dosage

In all cases we recommend trial mixes are carried out to determine the correct levels of admixture required to achieve the desired concrete properties. The following figures should be utilised as a starting point for these trials. For site batched concrete where extended vibration time and improved finishing properties are of prime importance, a dosage of between 160 and 280ml per 100kg of cement should be used as a starting point for the trials. For ready mixed concrete, extended concrete workability is of prime importance, a dosage of between 280 to 420ml per 100kg of cement should be used as a starting point. Dependent on the desired properties, a dosage of up to 700ml per 100kg of cement may be utilised. Higher dosages may be required when certain combinations of materials and conditions are present.

Setting time

POZZOLITH LD10 P acts efficiently to give controlled retardation of initial set. Setting times of concrete mixes are related to cement type and ambient temperatures.

Compatibility

POZZOLITH LD10 P can be used with all types of Portland cement including Sulphate Resisting. For use with other special cements, contact Degussa's Technical Services Department.

POZZOLITH LD10 P should not be pre-mixed with other admixtures. If other admixtures are to be used in concrete containing POZZOLITH LD10 P, they must be dispensed separately. Consult Degussa's Technical Services Department for advice.

Effects of over dosage

A severe over dosage of POZZOLITH LD10 P will result in the following:

- Retardation of initial and final set.
- Slight increase in air entrainment.
- Increase in workability.

Providing it is properly cured, the ultimate strength of the concrete will not be adversely affected and will generally be higher than for normal concrete. The retarding effects of very high dosages will be exaggerated with SR cement.

Dispensing

POZZOLITH LD10 P should be dispensed through a proprietary dispenser, such as is available from Degussa.

Safety precautions

POZZOLITH LD10 P is not a fire or health hazard. Spillages should be washed down immediately with cold water. For further information refer to the material safety data sheet.

Storage

Store under cover, out of direct sunlight and protect from extremes of temperature. Shelf life is up to 1 year when stored as above. Failure to comply with the recommended storage conditions may result in premature deterioration of the product or packaging. For specific storage advice consult Degussa's Technical Services Department.

Note

Field service, where provided, does not constitute supervisory responsibility. For additional information contact your local Degussa representative.

Degussa reserves the right to have the true cause of any difficulty determined by accepted test methods.

Quality

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04/2006 Degussa-IR

POZZOLITH® LD21

Water-reducing, plasticizer / retarder for concrete.

Description

POZZOLITH LD21 is a versatile product which can be utilised to maintain workability and effect water reduction throughout a range of concrete mix designs and ambient temperature conditions.

POZZOLITH LD21 is a multi-role admixture capable of functioning as a water reducer to enable strength gains, whilst maintaining workability or set retardation.

Primary uses

- Hot weather concreting.
- To increase workability.
- To increase compressive strength.
- To reduce permeability.

Typical applications

POZZOLITH LD21 is used wherever effective workability retention and maximum strengths are required such as:

- Hot weather concreting and mass concreting where controlled delays to initial set are beneficial.
- Ready-mix concrete where workability retention coupled with retardation of initial set are beneficial.
- In areas of congested reinforcement where high workability is of benefit.
- Above or below ground waterproofing where maximum impermeability and watertightness are essential.

Advantages

- Reduces placing problems in hot weather concreting by improving workability and workability retention.
- Increases impermeability and durability.
- Higher early and ultimate strengths.
- Effective over wide range of cement contents.
- Improves surface finish, pumpability and trowelling.
- Enables significant economies in mix designs to be achieved, thereby saving cement.

Packaging

POZZOLITH LD21 is available in bulk or in 220 kg. drums, and 1100 kg. containers.

Compatibility

POZZOLITH LD21 can be used with all types of Portland cement including Sulphate Resisting and modified cement (Type II). For use with special cements, contact Degussa's Technical Services Department.

POZZOLITH LD21 should not be mixed with other admixtures. If other admixtures are to be used in concrete containing POZZOLITH LD21, they must be dispensed separately. Consult Degussa's Technical Services Department for advice.

Typical properties*

POZZOLITH LD21 acts efficiently on the cement particles by combining the effects of powerful plasticising and deflocculating agents.

It considerably improves the workability of concrete mixes without the addition of extra water. The improved dispersal of the cement particles ensures the process of hydration proceeds under optimum conditions.

Typical properties*

Colour:	Dark brown liquid
Specific gravity:	1.194 at 25°C
Air entrainment:	1-2% dependent on dosage.
Chloride content:	Nil to BS 5075
Nitrate content	Nil
Freezing point:	2°C. Can be reconstituted if stirred after leaving to thaw.
Flashpoint:	None

ASTM C-494: Types A, B and D
BS 5075: Part 1

Directions for use

POZZOLITH LD21 should be added to the mix with the gauging water after sand, cement, and aggregate have been blended. Alternatively POZZOLITH LD21 can be dispensed after the water has been added to the blended cement and aggregates.

Dosage

The normal dosage range is 280ml to 900ml per 100kg of cement. Higher dosages may be required when certain combinations of materials and conditions are present.

In all cases we recommend trial mixes are carried out to determine the correct levels of admixture required to achieve the desired concrete properties.

Setting

POZZOLITH LD21 acts efficiently to give controlled retardation of initial set. Setting times of concrete mixes are related to cement type and ambient temperature.

Effects of over dosage

A severe over dosage of POZZOLITH LD21 will result in the following:

- Retardation of initial and final set.
- Slight increase in air entrainment.
- Increase in workability.

Providing it is properly cured, the ultimate strength of the concrete will not be adversely affected and will generally be higher than for normal concrete. The retarding effects of very high dosages will be exaggerated with SR cement.

Dispensing

POZZOLITH LD21 should be dispensed through a proprietary dispenser, such as is available from Degussa. Details available on request.

Storage

Store under cover, out of direct sunlight and protect from extremes of temperature. Shelf life is up to 1 year when stored as above.
Failure to comply with the recommended storage conditions may result in premature deterioration of the product or packaging. For specific storage advice consult Degussa's Technical Services Department.

Safety precautions

POZZOLITH LD21 is not a fire or health hazard. Spillages should be washed down immediately with cold water. For further information refer to the material safety data sheet.

Note

Field service, where provided, does not constitute supervisory responsibility. For additional information contact your local Degussa representative.

Degussa reserves the right to have the true cause of any difficulty determined by accepted test methods.

Quality

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04/2006 Degussa-IR

POZZOLITH® 55 RP

(Replaces Atroment 55)

Plasticising and water reducing admixture with set retarding properties

Description

POZZOLITH 55 RP is a powerful plasticiser which disperses and deflocculates cement particles whilst delaying the hydration process, thereby retarding the initial and final set. It can be used to improve workability without the addition of extra water, or to allow reductions in the free water content. Due to improved dispersion of the cement particles the process of hydration proceeds under the optimum conditions, leading to improved strength characteristics with or without reduction in free water.

Primary uses

- High strength, high cement content, low W/C ratio mixes.
- Hot weather concrete where control of initial and final set is important.
- Rolling compaction concrete application.

Typical applications

Slipformed concrete, high strength mixes, to control set of concrete particularly in high temperature conditions, bridge building, pre-stressed concrete work, mass concrete.

Benefits

- Increases compressive, tensile and flexural strength of concrete.
- Increases density of concrete reducing permeability and thus increasing durability.
- Allows a reduction in free water in the region of 8-12%.
- Highly effective in high cement content low water cement ratio mixes where its use enables concrete to be made more workable without loss in strength, density and durability.
- Enables controlled extension of initial set.
- The retarding action allows continuous concrete pours to be made, thus reducing the number of construction joints needed.
- The strength gain of concrete containing POZZOLITH 55 RP is enhanced. After retardation of initial and final set, a more rapid hardening of the concrete occurs, and the effect on stripping time is negligible.

Packaging

POZZOLITH 55 RP is available in bulk or 220 kg.drums and 1100 kg. containers.

Compatibility

POZZOLITH 55 RP can be used with all types of Portland cement including sulphate resisting (Type V). For use with other special cements, contact Degussa Iran Technical Dept.

POZZOLITH 55 RP should not be premixed with other admixtures. If other admixtures are to be used in concrete containing POZZOLITH 55 RP, they must be dispensed separately. If in doubt, consult Degussa Iran Technical Dept.

Properties*

* Properties listed are only for guidance and are not a guarantee of performance.

Colour:	Brown
Specific gravity:	1.150--1.162 at 25°C
Air entrainment:	Nil
Chloride content:	Nil to BS 5075 : 1982
Nitrate content:	Nil
Freezing point:	0°C. Can be reconstituted if stirred after thawing.

Standards

- ASTM C494: Type B & D
- BS 5075: Part 1

Directions for use

POZZOLITH 55 RP should be added to the concrete mix during the mixing cycle, at the same time as the water, or the aggregates. Never add POZZOLITH 55 RP to the dry cement. No extension to normal mixing time is necessary.

Dosage

Field trials should be conducted to determine the optimum addition rates of POZZOLITH 55 RP. As a guide to these trials, a dosage range of 160 to 280ml per 100kg cement is recommended as a starting point. Dosages outside this range can be used where improved workability, increased water reduction and / or further set retardation are required.

Effects of over dosage

A severe over dosage of POZZOLITH 55 RP will result in:

- Increased retardation of initial and final set.
- Increase in workability.
- Increase air entered

Providing concrete is properly cured the ultimate strength of the concrete will not be adversely effected and will generally be higher than for normal concrete. Care should be taken to allow for the affect on formwork pressures and on stripping times.

Dispenser

POZZOLITH 55 RP should be dispensed through a proprietary dispenser, such as is available from Degussa Iran.

Storage

Up to one year in unopened original packing. Store under cover, out of direct sunlight and protect from extremes of temperature.

Failure to comply with the recommended storage conditions may result in premature deterioration of the product or packaging. For specific storage advice consult Degussa's Technical Services Department.

Safety precautions

POZZOLITH 55 RP is not a fire or health hazard. Spillages should be washed down immediately with cold water. For further information refer to the Material Safety Data Sheet.

Note

Field service, where provided, does not constitute supervisory responsibility. For additional information contact your local Degussa representative.
Degussa reserves the right to have the true cause of any difficulty determined by accepted test methods.

Quality

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04/2006 Degussa-IR

POZZOLITH® 390 P

Water reducing multi dosage / plasticiser to produce low slump loss flowable concretes. Chloride free.

Description

POZZOLITH 390 P is a water reducing, plasticising admixture for the production of low slump loss, high workability concrete.

POZZOLITH 390 P is formulated for use over a wide dosage range. POZZOLITH 390 P can match the performance characteristics of many superplasticisers at lower dosage and cost.

At the lower end of the dosage range POZZOLITH 390 P will substantially increase and extend workability of a given water cement ratio. Alternatively, the water cement ratio can be reduced whilst maintaining a given slump. The water reduction capability, slump and extension of workability, increase with dosage. At higher dosage rates, POZZOLITH 390 P will enable water reductions and the production of flowing concrete normally only available from superplasticisers.

Primary uses

POZZOLITH 390 P is formulated for use by commercial ready-mix operators, who can benefit from its multiple role characteristics by minimising admixture stock.

Typical applications

- In areas of congested reinforcement where high workability will ease placement and compaction.

Hot weather concreting where extension of workability and controlled delays to initial set are beneficial.

- To effect reductions in the water cement ratio enabling either higher strength or cement economy.

Packaging

POZZOLITH 390 P is available in bulk or in 220 kg. drums and 1100kg. containers.

Compatibility

POZZOLITH 390 P is compatible with all types of Portland cement including SRC and modified, Type ll. For use with other special cement types or blends contact your Degussa representative for advice.

Typical properties*

* Properties listed are only for guidance and are not a guarantee of performance

Colour:	Brown liquid
Specific gravity:	1.13—1.14 at 25°C
Chloride content:	Nil to BS 5075 Part 1
Freezing point:	0°C
Flashpoint:	N/A

Standards

POZZOLITH 390 P complies with the performance requirements of ASTM C-494 type B, D, and G.

Strength

Used to reduce the water cement ratio, POZZOLITH 390 P will improve all the desirable performance characteristics of hardened concrete: higher compressive strength and modulus; lower permeability, shrinkage and creep.

Dosage

The normal range is 0.3 - 1.0 ltr / 100 kg cement. Higher dosages may be required when certain combinations of materials and conditions are present or water reduction in excess of 15% is required.

In all cases, trial mixes should be carried out to determine the optimum dosage required to achieve the desired concrete property.

Dispensing

POZZOLITH 390 P is introduced into the mixer with the mixing water. The admixture works more efficiently if it is added to the dampened mix after 50 - 70% of the water has been introduced. No extension to normal mixing time is necessary. POZZOLITH 390 P should never be added to dry cement.

Storage

POZZOLITH 390 P must be stored in a place where temperature does not drop below +5°C. If product has frozen, thaw and agitate until completely reconstituted. Store under cover, out of direct sunlight and protect from extremes of temperature. Failure to comply with the recommended storage conditions may result in premature deterioration of the product or packaging. For specific storage advice consult Degussa's Technical Services Department.

Safety precautions

POZZOLITH 390 P is not a fire or health hazard. Spillages should be washed down immediately with cold water. For further information, refer to material safety data sheet.

Note

Field service, where provided, does not constitute supervisory responsibility. For additional information contact your local Degussa representative.

Degussa reserves the right to have the true cause of any difficulty determined by accepted test methods.

Quality

All products produced by Degussa certified manufacturing facilities, are produced to conform to systems designed to meet internationally recognised quality standards.

04/2006 Degussa-IR

POZZOLITH® 420R

(Replaces Atroretard)

Setting retarder for cement bound building materials

Description

POZZOLITH 420R provides retardation in initial and final setting time in all cementitious materials.

Typical applications

When long distance transportation of concrete or extend of setting time is desirable such as ; Slip form-work , or hot weather concreting due to prevent fast setting or hardening . POZZOLITH 420 R should be added to concrete separately, it should not be premixed with other admixtures .

Packaging

POZZOLITH 420R is available in bulk or 220 kg. drums.

Compatibility

POZZOLITH 420R can be used with all types of Portland cement including sulphate resisting (Type V).

POZZOLITH 420R should not be premixed with other admixtures. If other admixtures are to be used in concrete containing POZZOLITH 420R, they must be dispensed separately. If in doubt, consult Degussa Iran Technical Dept.

Properties*

Properties listed are only for guidance and are not a guarantee of performance.

Appearance	Colorless liquid
Specific gravity	1.06 – 1.08 at 25°C
Mixable	With water in any ratio
Chloride content	Nil to BS 5075 Part 1
PH	9 - 10
Freezing point	0°C. Can be reconstituted if stirred after thawing.

Dosage

Table below shows recommended dosage of POZZOLITH 420R in percentage of

Concrete Temp. °C \ Retarding (Hrs)	3	5	7	9	12	15	18	21
+ 10	----	-----	0.20	0.30	0.50	0.70	0.90	1.00
+ 15	----	0.10	0.30	0.40	0.60	0.80	1.10	1.50
+ 20	0.10	0.20	0.40	0.50	0.80	1.10	1.40	1.80
+ 25	0.20	0.30	0.50	0.60	1.00	1.50	2.00	----
+ 30	0.30	0.40	0.60	0.80	1.20	2.00	-----	----
+ 40	0.50	1.30	2.00	-----	-----	-----	-----	-----

cement for different setting time delay in various temperatures.

Storage

POZZOLITH 420R should be stored in origin drums and be protected from damages. In this situation it has a shelf life of one year.

Note

Field service, where provided, does not constitute supervisory responsibility. For additional information contact your local Degussa representative.

Degussa reserves the right to have the true cause of any difficulty determined by accepted test methods

Quality

All products produced by Degussa certified manufacturing facilities, are produced to conform to systems designed to meet internationally recognised quality standards.

04/2005 Degussa-IR

POZZOLITH® LD10 P

(Replaces Atroment 200)

Low dosage plasticising admixture for concrete

Description

POZZOLITH LD10 P is a liquid admixture which acts on the cement particles in the mix, combining the effects of a powerful plasticiser and deflocculating agent with controlled retardation.

Applications

- Hot weather concreting where controlled delay to initial set is of prime importance.
- Mass concrete like dam body and foundation.
- To improve cohesion, workability and compaction in concretes using poorly graded / shaped fine aggregates.
- Large slabs or bridge decks, etc. where extension of vibration limits is beneficial to avoid cold joints.

Advantages

- Considerably extends vibration limit of concrete mixes thus reducing incidence of honeycombing and cold joints.
- Reduces placing problems in hot weather concreting by improving workability and workability retention.
- Improves trowellability and surface finish.
- Improves pumpability of concrete.
- Considerably reduces permeability.
- Enables economies in mix designs to be achieved.

Packaging

POZZOLITH LD10 P is available in bulk or in 220 kg. drums, and 1100 kg. containers.

Typical properties*

* Properties listed are only for guidance and are not a guarantee of performance.

Colour	Dark brown liquid
Specific gravity	1.175 -1.185 @ 25° C
Air entrainment	Less than 1%
Chloride content	Nil to BS 5075 : 1982
Nitrate content	Nil
Freezing point	0° C. Can be reconstituted if stirred after thawing.
Flashpoint	Nil

Standards

ASTM C-494: Types A, B, & D
BS 5075: Part 1

Directions for use

POZZOLITH LD10 P should be added to the concrete mix during the mixing cycle at the same time as the water or the aggregate. Never add POZZOLITH LD10 P to the dry cement. No extension to normal mixing times is necessary.

Dosage

In all cases we recommend trial mixes are carried out to determine the correct levels of admixture required to achieve the desired concrete properties. The following figures should be utilised as a starting point for these trials. For site batched concrete where extended vibration time and improved finishing properties are of prime importance, a dosage of between 160 and 280ml per 100kg of cement should be used as a starting point for the trials. For ready mixed concrete, extended concrete workability is of prime importance, a dosage of between 280 to 420ml per 100kg of cement should be used as a starting point. Dependent on the desired properties, a dosage of up to 700ml per 100kg of cement may be utilised. Higher dosages may be required when certain combinations of materials and conditions are present.

Setting time

POZZOLITH LD10 P acts efficiently to give controlled retardation of initial set. Setting times of concrete mixes are related to cement type and ambient temperatures.

Compatibility

POZZOLITH LD10 P can be used with all types of Portland cement including Sulphate Resisting. For use with other special cements, contact Degussa's Technical Services Department.

POZZOLITH LD10 P should not be pre-mixed with other admixtures. If other admixtures are to be used in concrete containing POZZOLITH LD10 P, they must be dispensed separately. Consult Degussa's Technical Services Department for advice.

Effects of over dosage

A severe over dosage of POZZOLITH LD10 P will result in the following:

- Retardation of initial and final set.
- Slight increase in air entrainment.
- Increase in workability.

Providing it is properly cured, the ultimate strength of the concrete will not be adversely affected and will generally be higher than for normal concrete. The retarding effects of very high dosages will be exaggerated with SR cement.

Dispensing

POZZOLITH LD10 P should be dispensed through a proprietary dispenser, such as is available from Degussa.

Safety precautions

POZZOLITH LD10 P is not a fire or health hazard. Spillages should be washed down immediately with cold water. For further information refer to the material safety data sheet.

Storage

Store under cover, out of direct sunlight and protect from extremes of temperature. Shelf life is up to 1 year when stored as above. Failure to comply with the recommended storage conditions may result in premature deterioration of the product or packaging. For specific storage advice consult Degussa's Technical Services Department.

Note

Field service, where provided, does not constitute supervisory responsibility. For additional information contact your local Degussa representative.
Degussa reserves the right to have the true cause of any difficulty determined by accepted test methods.

Quality

All products produced by Degussa certified manufacturing facilities, are produced to conform to systems designed to meet internationally recognised quality standards.

04/2006 Degussa-IR

POZZOLITH® LD21

Water-reducing, plasticizer / retarder for concrete.

Description

POZZOLITH LD21 is a versatile product which can be utilised to maintain workability and effect water reduction throughout a range of concrete mix designs and ambient temperature conditions.

POZZOLITH LD21 is a multi-role admixture capable of functioning as a water reducer to enable strength gains, whilst maintaining workability or set retardation.

Primary uses

- Hot weather concreting.
- To increase workability.
- To increase compressive strength.
- To reduce permeability.

Typical applications

POZZOLITH LD21 is used wherever effective workability retention and maximum strengths are required such as:

- Hot weather concreting and mass concreting where controlled delays to initial set are beneficial.
- Ready-mix concrete where workability retention coupled with retardation of initial set are beneficial.
- In areas of congested reinforcement where high workability is of benefit.
- Above or below ground waterproofing where maximum impermeability and watertightness are essential.

Advantages

- Reduces placing problems in hot weather concreting by improving workability and workability retention.
- Increases impermeability and durability.
- Higher early and ultimate strengths.
- Effective over wide range of cement contents.
- Improves surface finish, pumpability and trowelling.

Enables significant economies in mix designs to be achieved, thereby saving cement.

Packaging

- POZZOLITH LD21 is available in bulk or in 220 kg. drums, and 1100 kg. containers.

Compatibility

- POZZOLITH LD21 can be used with all types of Portland cement including Sulphate Resisting and modified cement (Type II). For use with special cements, contact Degussa's Technical Services Department.
-
- POZZOLITH LD21 should not be mixed with other admixtures. If other admixtures are to be used in concrete containing POZZOLITH LD21, they must be dispensed separately. Consult

Degussa's Technical Services Department for advice.

Typical properties*

-
- POZZOLITH LD21 acts efficiently on the cement particles by combining the effects of powerful plasticising and deflocculating agents.
-
- It considerably improves the workability of concrete mixes without the addition of extra water. The improved dispersal of the cement particles ensures the process of hydration proceeds under optimum conditions.

Typical properties*

Colour:	Dark brown liquid
Specific gravity:	1.194 at 25°C
Air entrainment:	1-2% dependent on dosage.
Chloride content:	Nil to BS 5075
Nitrate content	Nil
Freezing point:	2°C. Can be reconstituted if stirred after leaving to thaw.
Flashpoint:	None

ASTM C-494: Types A, B and D
BS 5075: Part 1

Directions for use

POZZOLITH LD21 should be added to the mix with the gauging water after sand, cement, and aggregate have been blended. Alternatively POZZOLITH LD21 can be dispensed after the water has been added to the blended cement and aggregates.

Dosage

The normal dosage range is 280ml to 900ml per 100kg of cement. Higher dosages may be required when certain combinations of materials and conditions are present.

In all cases we recommend trial mixes are carried out to determine the correct levels of admixture required to achieve the desired concrete properties.

Setting

POZZOLITH LD21 acts efficiently to give controlled retardation of initial set. Setting times of concrete mixes are related to cement type and ambient temperature.

Effects of over dosage

A severe over dosage of POZZOLITH LD21 will result in the following:

Retardation of initial and final set.
Slight increase in air entrainment.
Increase in workability.

Providing it is properly cured, the ultimate strength of the concrete will not be adversely affected and will generally be higher than for normal concrete. The retarding effects of very high dosages will be exaggerated with SR cement.

Dispensing

POZZOLITH LD21 should be dispensed through a proprietary dispenser, such as is available from Degussa. Details available on request.

Storage

Store under cover, out of direct sunlight and protect from extremes of temperature. Shelf life is up to 1 year when stored as above.
Failure to comply with the recommended storage conditions may result in premature deterioration of the product or packaging. For specific storage advice consult Degussa's Technical Services Department.

Safety precautions

POZZOLITH LD21 is not a fire or health hazard. Spillages should be washed down immediately with cold water. For further information refer to the material safety data sheet.

Note

Field service, where provided, does not constitute supervisory responsibility. For additional information contact your local Degussa representative.

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Quality

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04/2006 Degussa-IR

POZZOLITH® STANDARD

Water reducing plasticiser for concrete

Description

POZZOLITH STANDARD is a powerful plasticiser which deflocculates and disperses the cement particles within a concrete mix. It can be used to improve workability, without the addition of extra water, or to allow reductions in the free water content of the concrete mix.

Primary uses

- To increase / extend workability.
- To increase compressive strength.
- To effect cement economies.
- For hot weather concreting.
- To reduce water content.

Typical applications

- In pre-stressed concrete.
- In areas of congested reinforcement where high workability is of benefit.
- In pre-cast concrete manufacture.
- In concrete brick and block manufacture.
- Wherever reduced water content would be of benefit to reduce permeability.
- In hot weather to extend workability.

Advantages

- Significantly improves the workability therefore easing placing.
- Improves the cohesive properties of the concrete helping to reduce segregation and bleeding.
- Allows water reduction in the region of 10% to be achieved whilst maintaining workability, thereby increasing strength, durability and impermeability.
- Of particular benefit in hot climatic conditions when used to extend workability.

Enables economies in mix designs to be achieved thereby saving cement.

Packaging

POZZOLITH STANDARD is available in bulk or in 220 kg. drums and 1100kg.containers.

Compatibility

POZZOLITH STANDARD can be used with all types of Portland cement including sulphate resisting. For use with other special cements, contact Degussa ME's Technical Services Department.

POZZOLITH STANDARD should not be pre-mixed with other admixtures. If other admixtures are to be used in concrete containing POZZOLITH STANDARD they must be dispensed separately.

Typical properties*

* Properties listed are only for guidance and are not a guarantee of performance.

Colour:	Dark brown liquid
Specific gravity	1.170 – 1.180 at 25°C
Air entrainment:	1 to 2% dependent on grading of sand and water content.
Chloride content:	Nil to BS 5075 Part 1
Nitrate content:	Nil
Freezing point::	0°C. Can be reconstituted if stirred after thawing.
Flashpoint:	None

Standards

ASTM C494: Types A & D
BS 5075: Part 1
WRC - Use in potable water

Directions for use

POZZOLITH STANDARD should be added to the concrete mix during the mixing cycle at the same time as the water and the aggregates. Never add POZZOLITH STANDARD to the dry cement.

Dosage

Field trials should be conducted to determine the optimum addition rates of POZZOLITH STANDARD. A dosage range of 280ml to 560ml per 100kg cement is recommended as a starting point. For hot weather concreting where POZZOLITH STANDARD is to be used to extend workability, a dosage of 400ml to 800ml per 100kg cement is recommended.

Effects of over dosage

A severe over-dosage of POZZOLITH STANDARD will result in the following:

- Retardation of initial set.
- Increase in air entrainment.
- Increase in workability.

Providing concrete is properly cured, the ultimate strength of the concrete will not be adversely affected and will generally be higher than for normal concrete.

Dispensing

POZZOLITH STANDARD should be dispensed through a proprietary dispenser. Details are available on request from Degussa.

Storage

Store under cover, out of direct sunlight and protect from extremes of temperature.

Failure to comply with the recommended storage conditions may result in premature deterioration of the product or packaging. For specific storage advice consult Degussa's Technical Services Department.

Safety precautions

POZZOLITH STANDARD is not a fire or health hazard. Spillages should be washed down immediately with cold water. For further information refer to the material safety data sheet.

Note

Field service, where provided, does not constitute supervisory responsibility. For additional information contact your local Degussa representative.

Degussa reserves the right to have the true cause of any difficulty determined by accepted test methods.

Quality

All products produced by Degussa certified manufacturing facilities, are produced to conform to systems designed to meet internationally recognised quality standards.

04/2005 Degussa-IR

RHEOBUILD® 561 P

(Replaces Atroment 101)

High range, water reducing superplasticiser for rheoplastic concretes

Description

RHEOBUILD 561 P is formulated from synthetic polymers specially designed to impart rheoplastic qualities to concrete.

A rheoplastic concrete is a fluid concrete with a slump of at least 200mm, easily flowing, but at the same time free from segregation and having the same water/cement ratio as that of a low slump concrete (25 mm) without admixture. RHEOBUILD 561 P is chloride free.

Advantages

RHEOBUILD 561 P considerably improves the properties of fresh and hardened concrete.

Primary uses

- Microsilica concrete
- Mass concrete pours
- Ready mixed concrete
- Long-distance transport
- Pumped concrete
- Casting in hot climates

To obtain:

- Reduced thermal peaks
- High workability for longer periods
- Lower pumping pressure
- Delayed setting with longer workability
- Higher ultimate strengths.
- Reduced permeability
- Improved durability

Compatibility

RHEOBUILD 561 P is compatible with all cements and most air entraining agents meeting the ASTM standards. The addition of RHEOBUILD 561 P and MICRO-AIR 100 (air entraining agent) to concrete is recommended where it is required to withstand freezing and thawing cycles.

Packaging

RHEOBUILD 561 P is available in bulk or in 220 kg. drums and 1100kg. containers.

Standards

ASTM C-494 Type B, D and G
BS 5075 Part 1 and 3

Dosage

RHEOBUILD 561 P is normally dispensed at a rate of 0.5-1.2 litres per 100kg of cement. Other dosages may be required depending on the specific working conditions and mix design. In particular higher dosages can be required to maintain longer workability, especially in hot climates.

Dispensing

RHEOBUILD 561 P is a ready-to-use liquid which is dispensed into the concrete together with the mixing water. The plasticising effect and water reduction are higher if the admixture is added to the concrete after 50 to 70% of the mixing water has been added. The addition of RHEOBUILD 561 P to dry aggregate or cement is not recommended. Automatic dispensers are available.

Typical properties*

Workability

RHEOBUILD 561 P ensures that rheoplastic concrete remains workable in excess time at +20°C.

Workability loss is dependent on temperature, and on the type of cement, the nature of aggregates, the method of transport and initial workability. It is strongly recommended that concrete should be properly cured particularly in hot and dry climates.

Storage

RHEOBUILD 561 P must be stored where temperatures do not drop below +5°C. If product has frozen thaw and agitate until completely reconstituted. Store under cover, out of direct sunlight and protect from extremes of temperature.
Failure to comply with the recommended storage conditions may result in premature deterioration of the product or packaging. For specific storage advice consult Degussa's Technical Services Department.

Safety precautions

RHEOBUILD 561 P is not a fire or health hazard. Spillages should be washed down immediately with cold water. For further information refer to the material safety data sheet.

Note

Field service, where provided, does not constitute supervisory responsibility. For additional information contact your local Degussa representative.

Colour:	Dark brown/black liquid
Specific gravity	1.165 – 1.175 at 25°C
Air entrainment	dependent on grading of sand and water content.
Chloride content	Nil to BS 5075 Part 1
Nitrate content	Nil
Freezing point	0°C. Can be reconstituted if stirred after thawing.
Flashpoint	None

Degussa reserves the right to have the true cause of any difficulty determined by accepted test methods.

Quality

All products produced by Degussa certified manufacturing facilities, are produced to conform to systems designed to meet internationally recognised quality standards.

04/2005 Degussa-IR

RHEOBUILD 851

High range, water reducing superplasticiser for rheoplastic concretes

Description

RHEOBUILD 851 is formulated from synthetic polymers specially designed to impart rheoplastic qualities to concrete. A rheoplastic concrete is a fluid concrete with a slump of at least 200mm, easily flowing, but at the same time free from segregation and having the same water/cement ratio as that of a low slump concrete (25 mm) without admixture. RHEOBUILD 851 is chloride free.

Advantages

RHEOBUILD 851 considerably improves the properties of fresh and hardened concrete.

Primary uses

- Microsilica concrete
- ass concrete pours
- Ready mixed concrete
- Long-distance transport
- Pumped concrete
- Casting in hot climates

To obtain:

- Reduced thermal peaks
- High workability for longer periods
- Lower pumping pressure
- Delayed setting with longer workability
- Higher ultimate strengths.
- Reduced permeability
- Improved durability

Compatibility

RHEOBUILD 851 is compatible with all cements and most air entraining agents meeting the ASTM standards. The addition of RHEOBUILD 851 and MICRO-AIR 100 (air entraining agent) to concrete is recommended where it is required to withstand freezing and thawing cycles.

Packaging

RHEOBUILD 851 is available in bulk or in 220 kg. drums and 1100kg. containers.

Typical properties

Properties listed are only for guidance and are not a guarantee of performance.

Colour:	Brown liquid
Specific gravity:	1.19 to 1.21 at 25°C
Chloride content:	Nil to BS 5075 Part 1
Freezing point:	0°C
Flashpoint:	N/A

Standards

ASTM C-494 Type A, B, D, and G

Dosage

Optimum dosage of RHEOBUILD 851 should be determined in trial mixes. As a guide the following dosages are recommended as a starting point for any trial. In normal concrete a dosage of between 0.8% and 2%. In high performance micro silica concrete a dosage of between 1.5 and 3%. Dependant upon mix requirement, it is possible to use a higher dosage of RHEOBUILD 851 without causing any adverse effects upon the concrete. Please consult Iranian Degussa Construction Chemicals Technical staff for further information.

Dispensing

RHEOBUILD 851 is a ready-to-use liquid which is dispensed into the concrete together with the mixing water. The plasticising effect and water reduction are higher if the admixture is added to the concrete after 50 to 70% of the mixing water has been added. The addition of RHEOBUILD 851 to dry aggregate or cement is not recommended. Automatic dispensers are available.

Workability

RHEOBUILD 851 ensures that rheoplastic concrete remains workable in excess 3 hours at +20°C. Workability loss is dependent on temperature, and on the type of cement, the nature of aggregates, the method of transport and initial workability. It is strongly recommended that concrete should be properly cured particularly in hot and dry climates.

Storage

RHEOBUILD 851 must be stored where temperatures do not drop below +5°C. If product has frozen thaw and agitate until completely reconstituted. Store under cover, out of direct sunlight and protect from extremes of temperature.

Failure to comply with the recommended storage conditions may result in premature deterioration of the product or packaging. For specific storage advice consult Degussa's Technical Services Department.

Safety precautions

RHEOBUILD 851 is not a fire or health hazard. Spillages should be washed down immediately with cold water. For further information refer to the material safety data sheet.

Note

Field service, where provided, does not constitute supervisory responsibility. For additional information contact your local Degussa representative. Degussa reserves the right to have the true cause of any difficulty determined by accepted test methods.

Quality

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04/2006 Degussa-IR

RHEOBUILD® 1100

A high range water reducing superplasticising admixture for the production of rheoplastic concrete

Description

The basic components of RHEOBUILD 1100 are synthetic polymers which allow mixing water to be reduced considerably and concrete strength to be enhanced significantly, particularly at early ages. RHEOBUILD 1100 is a chloride free product.

Primary uses

- Production of rheoplastic self compacting concrete.
- Precast concrete.
- Low water/cement ratio concrete.
- In complicated formwork or with congested reinforcement.

Advantages

RHEOBUILD 1100 allows the production of very flowable concrete, with a low water / cement ratio. Table 1 shows some typical examples of reductions in w/c ratio. Concrete with RHEOBUILD 1100 shows strengths higher than concrete without admixture having the same workability. The increase in strength, specially evident at early ages remains at later ages, both in air cured and steam cured processes. Initial and final sets do not change significantly with respect to concrete without admixture. Therefore, whenever longer transport and finishing times are needed, the use of retarding superplasticisers, such as RHEOBUILD 561M IR is recommended.

Due to the reduction in the water / cement ratio, all other properties of hardened concrete improve significantly, namely; lowered permeability, shrinkage and creep, increased workability and modulus of elasticity.

Compatibility

RHEOBUILD 1100 is compatible with all cements and admixtures meeting ASTM standards.
The use of RHEOBUILD 1100 and MICRO-AIR 100 air entraining agent is recommended whenever concrete is required to withstand freeze / thaw cycling.

Packaging

RHEOBUILD 1100 is available in bulk or 220 kg.drums and 1100kg. containers.

Typical properties*

* Properties listed are only for guidance and are not a guarantee of performance

Colour:	Brown free flowing liquid.
Specific gravity:	1.195 – 2.00 at 25°C.
Air entrainment:	Maximum 1%.
Chloride content:	Nil to BS 5075.
Nitrate content:	Nil.

Standards

ASTM C-494 Types A and F
BS 5075 Part 1 & 3

Dosage

RHEOBUILD 1100 is normally dispensed at a rate of 0.8 - 1.2 Litres per 100kg of cement. Other dosages may be used, depending on the materials and conditions.

Effects of over dosage

A severe over-dosage of RHEOBUILD 1100 will result in the following:
Retardation of initial and final set.

- Slight increase in air entrainment.
- Increase in workability.

Directions for use

RHEOBUILD 1100 should be added to the mix with the gauging water.
No extension to the mixing time is necessary. Never add RHEOBUILD 1100 to dry cement.
Alternatively, when using RHEOBUILD 1100 to produce flowing concrete at site using ready mix trucks, it can be added to the concrete via the feed hopper at the rear of the truck. Mix before discharge for 3 minutes at 10rpm to produce a fully homogenous mix.
When using RHEOBUILD 1100 to obtain very high early strengths, advantage must be taken of its water reducing properties.

Dispensing

RHEOBUILD 1100 is introduced into the mixer together with mixing water. The plasticising effect or water reduction is higher if the admixture is added to the concrete after 50-70% of the mixing water has been added. The addition of RHEOBUILD 1100 to dry aggregate or cement is not recommended.

Storage

Store under cover, out of direct sunlight and protect from extremes of temperature. Shelf life is at least 1 year when stored as above. Failure to comply with the recommended storage conditions may result in premature deterioration of the product or packaging. For specific storage advice consult Degussa's Technical Services Department.

Safety precautions

RHEOBUILD 1100 contains no hazardous substances requiring labelling. For further information refer to the material safety data sheet.

Note

Field service, where provided, does not constitute supervisory responsibility. For additional information contact your local Degussa representative.
Degussa reserves the right to have the true cause of any difficulty determined by accepted test methods.

Quality

All products produced by Degussa certified manufacturing facilities, are produced to conform to systems designed to meet internationally recognised quality standards.

Table 1

Typical examples of the influence of RHEOBUILD 1100 on strength of concrete cured at 20°C or steam cured (cement content = 350 kg/m³; aggregate max. size = 20 mm).

				Curing at 20°C				Steam curing			
				(days) Strength N/mm²							
Type of cement	RHEOBUILD 1100 litres per 100kg cement	w/c ratio	Slump (cm)	1	3	7	28	1	3	7	28
Ordinary Portland cement	0	0.60	21.5	5.6	13.1	25.3	33.8	17.3	20.1	26.2	33.2
	1	0.47	22.0	10.4	24.5	42.8	51.6	29.1	32.3	38.3	46.2
High strength Portland cement	0	0.63	21.0	8.2	14.8	29.6	38.3	21.1	24.1	30.8	38.5
	1	0.50	21.0	11.6	23.2	42.5	52.5	28.8	32.9	42.1	52.7
High strength and rapid hardening Portland cement	0	0.59	21.0	14.6	25.3	39.7	44.1	30.4	33.1	39.6	42.7
	1	0.43	21.5	21.0	41.2	53.2	60.0	40.2	44.2	54.6	59.4

3 hours precuring at 20°C steam heating from 20°C to 70°C in 3 hours: steam curing at 70°C for 6 hours: cooling from 70°C to 20°C in 6 hours time; curing finishing at 20°C.

RHEOBUILD® 2000M

(Replaces Atroment 10)

A high range melamine based superplasticiser

Description

A chloride free, admixture based on melamine formaldehyde, formulated for the production of rheoplastic concrete. Available as a liquid, or in powder form which must be dissolved in water prior to use.
A rheoplastic concrete is a fluid, but cohesive mix with a slump value of at least 200mm. It is virtually self compacting, but at the same time free from segregation and with a water/cement ratio as a no-slump concrete with an admixture.

Primary uses

- For the production of rheoplastic concrete
- To produce high early strength concrete
- Precast concrete
- Concrete with white cement

Typical applications

For the production of flowing, self compacting concrete with high early strengths. Where reduced striking times would be of benefit such as precast and steam cured concrete. For the production of high early (12-16 hours) and high long term strength concrete.

Packaging

Supplied in 220 kg. drums. Bulk deliveries available on request. Powder version is available in 25kg bags.

Typical properties* (liquid form)

* Properties listed are only for guidance and

are not a guarantee of performance.

Colour:	Clear to turbid liquid
Specific gravity:	1.1 at 25°C
Air entrainment:	Nil
Chloride content:	Nil to BS 5075:1982
Nitrate content:	Nil
Freezing point:	0°C. Can be reconstituted if stirred after thawing.

Standards

ASTM C-494-92: Type A, C, E & F
BS 5075: Part 1

Compatibility

RHEOBUILD 2000M can be used with all types of Portland cement, including sulphate resisting. For use with other special cements, contact Degussa Technical Services Department.
RHEOBUILD 2000M should not be premixed with other admixtures. If other admixtures are to be used in concrete containing RHEOBUILD 2000M, they must be dispensed separately.

Action

RHEOBUILD 2000M dramatically increases the workability of concrete by its powerful deflocculating and dispersing effect. It also acts catalytically to increase the rate of hardening of the cement particles thereby leading to higher early strength.

These combined effects can be utilised to obtain a significant reduction in free water content or to produce self compacting, high workability flowing concrete which has increased early strengths.

Benefits

- Translucent colour enables use with white cement concrete.
- Produces highly impermeable, dense concrete with enhanced durability.
- Enables higher strength and high workability concrete to be produced with normal cement contents.
- Enables precast units to be demoulded in 12 to 16 hours.

Can be used to produce self compacting flowing concrete which requires little or no vibration.

Method of use

RHEOBUILD 2000M should be added to the mix during the mixing cycle at the same time as the water or aggregates. Never add RHEOBUILD 2000M to the dry cement. No extension to the mixing time is necessary.

Alternatively, when using RHEOBUILD 2000M to produce rheoplastic concrete at site using ready mix trucks, it can be added to the concrete via the feed hopper at the rear of the truck, a few minutes before placing. Ensure at least 3 minutes mixing before use at a minimum drum revolution of 10 rpm to produce a fully homogeneous mix.

When using RHEOBUILD 2000M to obtain very high early strengths, advantage must be taken of its water reducing properties.

Mix designs

When using RHEOBUILD 2000M to produce rheoplastic concrete, it is essential for concrete mixes to be designed to accommodate an increase in workability. A conventional pumped concrete mix design with a further addition of 2-3% fine sand, will normally accommodate this, depending on overall fines content and sand grading. For water reduced or high early strength concrete, adjustment must be made to account for volume changes.

Dissolving powder

RHEOBULD 2000M Powder in water:
Ensure that water is clean , fresh and free of chlorides and other contaminants.
To dissolve quantities on a small scale use a clean, open top 210 litre container. The container should be made of plastic or stainless or coated steel.

To produce 200 kg (approximately 181 litres) of a 20 % solution, first pour 160 litres of water into the container and slowly add 40 kg of 2000M powder whilst stirring. If larger amounts are to be dissolved, the use of a mechanical slow speed stirrer is recommended.

Stir until all the powder is dissolved. RHEOBUILD 2000M Powder dissolves very rapidly, however if lumps do form continue to stir and reduce the speed of addition of the powder.

Dosage

Field trials should be conducted to determine the optimum addition of rates of RHEOBUILD 2000M. As a guide to these trials, the following figures are recommended as a starting point:

% water reduction	Dosage cc per 100 kg cement
10-15	1500
15-20	2000
20-25	3000

Flowing concrete

An addition of 1000-1500 cc per 100 kg cement is usually required to produce flowing concrete from a concrete with an initial slump in the range of 50-100 mm. Consideration should be given to the effect of increases in formwork pressures.

High early strength, high workability concrete

Concrete mixes can be produced with a reduction in water in the region of 10-15% and an increase in workability of between 50-100% by an addition rate of RHEOBUILD 2000M at the rate of 1000-3000 cc per 100 kg cement.

Effects of over dosage

A severe over dosage of RHEOBUILD 2000M will result in:-

- Slight retardation of initial set.
- Increase in workability.

Providing the concrete is properly cured, the ultimate strength of the concrete will not be adversely affected and will be generally higher than for normal concrete.
Care should be taken to allow for the effect of fluid concrete pressure on formwork and stripping times should be monitored.

Safety precautions

RHEOBUILD 2000M contains no hazardous substances requiring labelling. For further information refer to Product MSDS.

Storage

Store under cover, out of direct sunlight and protect from extremes of temperature. Powder should be protected from rain and stored off the ground on pallets. Shelf life is up to 1 year when stored as above.

Failure to comply with the recommended storage conditions may result in premature deterioration of the product or packaging. For specific storage advice consult Degussa's Technical Services Department.

Note

Field service, where provided, does not constitute supervisory responsibility. For additional information contact your local Degussa representative.

Degussa reserves the right to have the true cause of any difficulty determined by accepted test methods.

Quality

All products produced by Degussa certified manufacturing facilities, are produced to conform to systems designed to meet internationally recognised quality standards.

04/2005 Degussa-IR

RHEOBUILD® SP1

Replaces (Atroment 500)

A high range water reducing superplasticising admixture for the production of rheoplastic concrete

Description

RHEOBUILD SP1 is a liquid admixture for concrete based on sulphonated naphthalene. The product may be used to effect substantial water reductions or to produce rheoplastic concrete with normal setting times.

Primary uses

- Production of rheoplastic self compacting concrete.
- Precast concrete.
- Low water/cement ratio concrete.
- In complicated formwork or with congested reinforcement.

Advantages

- Powerful plasticising action reduces or eliminates the need for compaction.
- Concretes of similar workability can be produced with 20-30% less water.
- Increased compressive, tensile and flexural strength can be achieved as a benefit of its water reducing properties.
- High early strengths can significantly increase mould utilisation in precast works.

Compatibility

RHEOBUILD SP1 can be used with all types of Portland Cement, including Sulphate Resisting. For use with other special cements, contact Degussa Iran Technical Services Dept.

RHEOBUILD SP1 should not be premixed with other admixtures. If other admixtures are to be used they must be dispensed separately.

Packaging

RHEOBUILD SP1 is available in bulk or in 220 kg. drums and 1100kg. containers.

Typical properties*

* Properties listed are only for guidance and are not a guarantee of performance.

Colour	Dark brown/black liquid
Specific gravity	1.165 – 1.175 at 25°C
Air entrainment	Maximum 1%
Chloride content	Nil to BS 5075 : 1982
Nitrate content	Nil
Freezing point	0° C. Can be reconstituted if stirred after thawing.

Standards

Complies with ASTM C494 Type A & F
BS 5075 Part 1 Appendix D

Dosage rate

It is beneficial to evaluate RHEOBUILD SP1 by field trials, but as a general guide, to produce rheoplastic concrete, an addition rate of 600ml per 100kg of cement is usually sufficient to give the desired result. However, up to three times this amount may be required depending on mix design.

Dosage rates will increase in low w/c ratio concrete and concrete where temperatures are high.
To utilise the water reducing properties, a dosage of between 600 and 2000ml / 100kg of cement may be added.

Directions for use

RHEOBUILD SP1 should be added to the mix with the gauging water.
No extension to the mixing time is necessary.
Never add RHEOBUILD SP1 to dry cement.

When using RHEOBUILD SP1 to produce flowing concrete at site using ready mix trucks, it can be added to the concrete via the feed hopper at the rear of the truck. Mix before discharge for 5 minutes at 10rpm to produce a fully homogenous mix.

Effects of over dosage

- A severe over-dosage of RHEOBUILD SP1 will result in the following: Retardation of initial and final set.
- Slight increase in air entrainment.
- Increase in workability.

Providing it is properly cured, the ultimate strength of the concrete will not be adversely affected and will generally be higher than for normal concrete. Due allowance should be made for the effect of fluid concrete pressure on formwork, and stripping times should be monitored.

Dispensing

RHEOBUILD SP1 is introduced into the mixer together with mixing water. The plasticising effect or water reduction is higher if the admixture is added to the concrete after 50-70% of the mixing water has been added. The addition of RHEOBUILD SP1 to dry aggregate or cement is not recommended.

Storage

Up to 1 year in unopened original packing, protected from extremes of heat and cold and stored under shade.

Safety precautions

RHEOBUILD SP1 is not a fire or health hazard. Spillages should be washed down immediately with cold water. For further information refer to the Material Safety Data Sheet.

Note

Field service, where provided, does not constitute supervisory responsibility. For additional information contact your local Degussa representative.

Degussa reserves the right to have the true cause of any difficulty determined by accepted test methods.

Quality

All products produced by Degussa certified manufacturing facilities, are produced to conform to systems designed to meet internationally recognised quality standards.

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