

PRODUCTS LIST

ADMIXTURES

Wakerplast - P51	Code:100
Wakerplast - SP 130	Code:101
Wakerplast - SP 131	Code:102
Wakerplast - SP 134	Code:103
Wakerflow- HSP135	Code:104
WakerPlast-AE	Code:108
W.K-Antifreez A	Code:110

GROUTS & ANCHORS

W.K-Grout G1	Code: 200
W.K-Grout G2	Code: 201
W.K-Grout G3	Code: 202
W.K-Epoxy Grout	Code: 203
W.K-Epoxy Bond H&v	Code: 204

SURFACE TREATMENTS

W.K-cure 100 Code: 301

PROTECTIVE COATINGS & WATER PROOFINGS

W.K-coat 900 Code: 500

W.K-FCW Code: 502

SEALANTS

Wakerseal sel Code: 602

REPAIRING

W.K-Plug Code:701

W.K-Adhesive 321 Code:702

W.K-seal LIR200 Code:703

Wakerplast-P51

Retarding and Water reducing admixture

Description

Wakerplast-P51 is a chloride free water reducing admixture based on selected sugar-reduced, lignosulphonates. It is supplied as a brown solution which instantly disperses in water. Wakerplast-P51 disperses the fine particles in the concrete mix, enabling the water content of the concrete to perform more effectively and improving the consistency of the concrete. This produces higher levels of workability for the same water content, allowing benefits such as water reduction and increased strengths to be taken.

standards compliance

wakerplast-P51 conforms with AS TM C494 as Type A., B, D

Uses

- To improve the effectiveness of the water content of a concrete mix.
- At higher dosages to provide a cost effective means of reducing concrete permeability and thereby reducing water penetration.

Advantages

- Allows specified strength grades to be met at reduced cement content or increased workability.
- Water reduction significantly improves compressive strengths at all ages and enhances durability through the production of low permeability concrete.
- Minimizes the risk of segregation and bleeding and assists in the, production of a dense, close textured surface, improving durability.
- Chloride free, safe for use in prestressed and reinforced concrete.

Important note

Waker products are guaranteed against defective materials and are sold subject to its standard conditions for the supply of Goods and Service.

Properties

Appearance	: Brown liquid
Specific gravity	: Typically 1/2gr/cm ³
Chloride content	: Nil to BS 5075
Air entrainment	: Typically less than 2% additional air is entrained at normal dosages
Alkali content	: Typically less than 5.0 g. Na ₂ O equivalent/litre of admixture.

Dosage

The optimum dosage of wakerplast-P51 to meet specific requirements should always be determined by trials using the materials and conditions that will be experienced in use. The normal dosage range is 0/2 to 0/6 kg /100 kg of Cementitious material, including PFA, GGBFS and microsilica.

Use at other dosages

Dosages outside the normal ranges quoted above can be used to meet particular mix requirements. Contact waker for advice in these cases.

Effects of overdosing

An overdose of double the intended amount of wakerplast-P51 will result in an increase in retardation as compared to that normally obtained at the intended dosage.

Dispensing

The correct quantity of Wakerplast-P51 should be measured by means of a recommended dispenser. The admixture should then be added to the concrete with the mixing water to obtain the best results. Contact waker for advice regarding suitable equipment and its installation.

Estimating – packaging

Wakerplast-P51 is available in 210 litre and 250 kg drums or in 20 litre and 24 kg containers. For larger users, storage tanks can be supplied.

Storage

Wakerplast – P51 has a minimum shelf life of 18 months provided the temperature is kept within the range of 4°C to 41°C. Should the temperature of the product fall outside this range then contact waker for advice.

Freezing point: Approximately - 3°C

Precautions

Health and safety

Wakerplast–P51 does not fall into the hazard classifications of current regulations. However, it should not be swallowed or allowed to come into contact with skin and eyes.

Suitable protective gloves and goggles should be worn.

Splashes on the skin should be removed with water. In case of contact with eyes rinse immediately with plenty of water and seek medical advice. If swallowed seek medical attention immediately – do not induce vomiting.

Fire

Wakerplast – P51 is water based and non – flammable.

Waker plast – SP130

High performance superplasticising admixture

Description

Waker Plast- SP130 is a chloride free. Superplasticising admixture based on selected sulphonated naphthalene polymers. It is supplied as a brown solution which instantly disperses in water. Waker Plast-SP130 disperses the fine particles in the concrete mix, enabling the water content of the concrete to perform more effectively. The very high levels of water reduction possible allow major increases in strength to be obtained.

Standards compliance

Waker Plast- SP130 conforms with ASTM C494 as Type A and Type F, depending on dosage used.

Uses

- To provide excellent acceleration of strength gain at early ages and major increases in strength at all ages by significantly reducing water demand in a concrete mix.
- Particularly suitable for precast concrete and other high early strength requirements.
- To significantly improve the workability of site mixed and precast concrete without increasing water demand.
- To provide improved durability by increasing ultimate strengths and reducing concrete permeability.

• Advantages

- Major increases in strength at early ages without increased cement contents are of particular benefit in precast concrete, allowing earlier stripping times.
- Makes possible major reductions in water: cement ratio which allow the production of high strength concrete without excessive cement contents.

Important note

Waker products are guaranteed against defective materials and are sold subject to its standard conditions for the supply of Goods and Service.

Use in production of flowing concrete permits easier construction with quicker placing and compaction and reduced labour costs without increasing water content.

- Increased workability levels are maintained for longer than with ordinary sulphonated melamine admixtures.
- Improved cohesion and particle dispersion minimizes segregation and bleeding and improves pumpability.
- Chloride free, safe for use in prestressed and reinforced concrete.

Properties

Appearance	:	Brown liquid
Specific gravity	:	1.18 gr/cm ³ 22°C ± 2°C
Water soluble chloride	:	Nil
Alkali Contents		Typically less than 55 g.
	:	Na ₂ O equivalent/litre of admixture

Dosage

The optimum dosage of WakerPlast-SP130 to meet specific requirements should always be determined by trial mixes using the materials and conditions that will be experienced in use. For high strength, water reduced concrete the normal dosage range is from 0/5 to 1/5 kg/100 kg of cementitious material, including PFA, GGBFS and microsilica. For high workability concrete the normal dosage range is from 0.70 to 1/3 kg/ 100 kg of cementitious material.

Use at other dosages

Dosages outside the typical ranges quoted above can be used to meet particular requirements. Contact waker for advice.

Effects of overdosing

An overdose of double the amount of WakerPlast-SP130 will result in an increase in retardation as compared to that normally obtained.

Dispensing

The correct quantity of WakerPlast-SP130 should be measured by means of a recommended dispenser. Normally, the admixture should then be added to the concrete with the mixing water to obtain the best results. Where high workability concrete is required from normal workability concrete delivered to site WakerPlast-SP130 may also be added to concrete direct into a readymix truck. Full blending of the admixture and the concrete should be ensured by mixing at high speed for a period of at least two minutes.

Contact Waker for advice regarding suitable equipment and its installation.

Estimating

WakerPlast-SP130 is available in 210 litre and 250 kg drums or in 20 litre and 24 kg containers. For larger users, storage tanks can be supplied.

Storage

WakerPlast-SP130 has a minimum shelf life of 18 months provided the temperature is kept within the range of 4°C to 41°C. Should the temperature of the product fall outside this range contact waker for advice.

Freezing point: Approximately- 2°C

Precautions

Health and safety

WakerPlast-SP130 does not fall into the hazard classifications of current regulations. However, it should not be swallowed or allowed to come into contact with skin and eyes.

Suitable protective gloves and goggles should be worn.

Splashes on the skin should be removed with water. In case of contact with eyes rinse immediately with plenty of water and seek medical advice. If swallowed seek medical attention immediately do not induce vomiting.

Fire

WakerPlast-SP130 is water based and non-flammable.

Wakerplast-Sp131

High performance superplasticising admixture

Description

WakerPlast-SP131 is a chloride free, superplasticising admixture based on selected sulphonated naphthalene polymers. It is supplied as a brown solution which instantly disperses in water.

WakerPlast-SP131 disperses the fine particles in the concrete mix, enabling the water content of the concrete to perform more effectively. The very high levels of water reduction possible allow major increases in strength to be obtained.

Standards compliance

WakerPlast-SP131 conforms with ASTM C494 Type B, D and G, depending on dosage used.

Uses

- To provide increased ultimate strength gain by significantly reducing water demand in a concrete mix
- To significantly improve the workability and retention of site mixed concrete without increasing water demand.
- To provide improved durability by increasing ultimate strengths and reducing concrete permeability.
- Specifically developed for use in high quality concrete mixes utilizing cement replacements.

Advantages

- Makes possible major reductions in water: cement ratio which allows the production of high strength concrete without excessive cement contents.

Important note

Waker products are guaranteed against defective materials and are sold subject to its standard conditions for the supply of Goods and Service.

- Increased workability levels are maintained for longer than with ordinary sulphonated melamine and naphthalene admixtures.
- Improved cohesion and particle dispersion minimizes segregation and bleeding and improves pumpability.
- Chloride free, safe for use in prestressed and reinforced concrete.

Properties

Appearance	:	Brown liquid
Specific gravity	:	1/18gr/cm ³ 22°C±2°C
Water soluble chloride	:	Nil
Alkali content	:	Typically less than 50g : Na ₂ O equivalent/litre of admixture

Dosage

The optimum dosage of WakerPlast-SP131 to meet specific requirements should always be determined by trial mixes using the materials and conditions that will be experienced in use.

For high strength, water reduced concrete, the normal dosage range is from 0/5 to 1/5 kg/ 100 kg of cementitious material, including PFA GGBFS and microsilica.

Use at other dosages

Dosages outside the typical ranges quoted above can be used to meet particular requirements, Contact Waker for advice.

Effects of overdosing

An overdose of double the amount of WakerPlast-SP131 will result in an increase in retardation as compared to that normally obtained.

Dispensing

The correct quantity of WakerPlast-SP131 should be measured by means of a recommended dispenser. Normally, the admixture should then be added to the concrete with the mixing water to obtain the best results. Where high workability concrete is required from normal workability concrete delivered to site WakerPlast-SP131 may also be added to concrete direct into a ready mix truck. Full blending of the admixture and the concrete should be ensured by mixing at high speed for a period of at least two minutes.

Contact Waker for advice regarding suitable equipment and its installation.

Estimating-packaging

WakerPlast-SP131 is available in 210 litre and 250kg drums or in 20 litre and 24kg containers. For larger users, storage tanks can be supplied.

Storage

WakerPlast-SP131 has a minimum shelf life of 18 months provided the temperature is kept within the range of 4°C to 41°C. Should the temperature of the product fall outside this range contact waker for advice.

Freezing point: Approximately -2 °C

Precautions

Health and safety

WakerPlast-SP131 does not fall into the hazard classifications of current regulations. However, it should not be swallowed or allowed to come into contact with skin and eyes.

Suitable protective gloves and goggles should be worn.

Splashes on the skin should be removed with water. In case of contact with eyes rinse immediately with plenty of water and seek medical advice. If swallowed seek medical attention immediately do not induce vomiting.

Fire

WakerPlast-SP131 is water based and non-flammable.

WakerPlast-SP134

High performance superplasticiser for slump retention and high strength concrete

Description

WakerPlast-SP134 is a chloride free, superplasticising admixture based on selected synthetic polymers. It is supplied as a brown solution which instantly disperses in water.

WakerPlast-SP134 disperses the fine particles in the concrete mix enabling the water content of the concrete to perform more effectively. The very high levels of water reduction possible allow major increases in strength to be obtained.

Standards compliance

WakerPlast-SP134 conforms with ASTM C494 as Types F and G depending on dosage used.

Uses

- To provide excellent slump retention properties in tropical conditions even at low water cement ratio.
- Particularly suitable for high strength concrete.
- To significantly improve the workability of site mixed concrete without increasing water demand.
- To provide improved durability by increasing ultimate strengths and reducing concrete permeability.

Advantages

- Makes possible major reductions in water: cement ratio which allow the production of high strength concrete without excessive cement contents.

Important note

Waker products are guaranteed against defective materials and are sold subject to its standard conditions for the supply of Goods and Service.

- Use in production of flowing concrete permits easier construction with quicker placing and compaction and reduced labour costs without increasing water content.
- Increased workability levels are maintained for longer than with ordinary sulphonated melamine admixtures.
- Improved cohesion and particle dispersion minimizes segregation and bleeding and improves pumpability.
- Chloride free, safe for use in prestressed and reinforced concrete.

Properties

Appearance	:	Brown liquid
Specific gravity	:	1.15gr/cm ³ 22°C±2°C
Water soluble chloride	:	Nil
Alkali content	:	Typically less than 40g. Na ₂ O equivalent/litre of admixture

Dosage

The optimum dosage of WakerPlast-SP134 to meet specific requirements should always be determined by trial mixes using the materials and conditions that will be experienced in use.

For high strength, high workability concrete the normal dosage range is from 0.5 to 1.50 kg/100kg of cementitious material.

Use at other dosages

Dosages outside the typical ranges quoted above can be used to meet particular requirements. Contact Waker for advice.

Effects of overdosing

An overdose of double the amount of WakerPlast-SP134 will result in an increase in retardation as compared to that normally obtained.

Dispensing

The correct quantity of WakerPlast-SP134 should be measured by means of a recommended dispenser. Normally the admixture should then be added to the concrete with the mixing water to obtain the best results. Where high workability concrete is required from normal workability concrete delivered to site, WakerPlast-SP134 may also be added to concrete direct into a ready mix truck. Full blending of the admixture and the concrete should be ensured by mixing at high speed for a period of at least 2 minutes.

Contact waker for advice regarding suitable equipment and its installation.

Estimating

WakerPlast-SP134 is available in 210 litre and 230kg drums or in 20 litre and 22kg containers. For larger users, storage tanks can be supplied.

Storage

WakerPlast-SP134 has a minimum shelf life of 18 months provided the temperature is kept within the range of 4°C to 41°C. Should the temperature of the product fall outside this range contact waker for advice.

Freezing point: Approximately -2°C

Precautions

Health and safety

WakerPlast-SP134 does not fall into the hazard classifications of current regulations. However, it should not be swallowed or allowed to come into contact with skin and eyes.

Suitable protective gloves and goggles should be worn.

Splashes on the skin should be removed with water. In case of contact with eyes rinse immediately with plenty of water and seek medical advice. If swallowed seek medical attention immediately- do not induce vomiting.

Fire

WakerPlast-SP134 is water based and non-flammable.

Wakerflow-HSP135

A high performance concrete superplasticiser based on polycarboxylic technology

Description

Wakerflow-HSP135 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 an electrostatic dispersion occurs but the presence of the lateral chains, linked to the polymer backbone, generate a steric hindrance which stabilises the cement particle's capacity to separate and disperse. This mechanism considerably reduces the water demand in flowable concrete.

Wakerflow-HSP135 combines the properties of water reduction and workability retention. It allows the production of high performance concrete and/or concrete with high workability. Wakerflow-HSP135 is a particularly strong superplasticiser allowing production of consistent concrete properties around the required dosage.

Standards Compliance

Wakerflow-HSP135 conforms with ASTM-C494 as Types, B, D and G depending on dosage used.

Uses

Wakerflow-HSP135 is a high performance superplasticiser intended for applications where increased early and ultimate compressive strengths are required, and it has been developed for use in:

- Self compacting concrete
- Pumped concrete
- Concrete requiring long workability retention
- High performance concrete
- Pre-cast concrete

Important note

Waker products are guaranteed against defective materials and are sold subject to its standard conditions for the supply of Goods and Service.

Advantages

- 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

Properties

Appearance	:	Light yellow to reddish coloured liquid
pH	:	6.5
Volumetric mass	:	1.13 gr/cm ³ 22°C±2°C
Chloride content	:	<0.1%
Alkali content	:	Typically less than 1.5 gm Na ₂ O equivalent/ litre of admixture

Dosage

The optimum dosage of Wakerflow-HSP135 to meet specific requirements should always be determined by trials using the materials and conditions that will be experienced in use. The normal dosage range is between 0.2 to 1 kg/ 100 kg of cementitious material.

Use at other dosages

Dosages outside the normal range quoted above can be used to meet particular mix requirements. Contact waker for advice in these cases.

Effects of overdosing

Overdosage may cause delay in the setting time.

Instructions for use

Compatibility

Wakerflow-HSP135 should not be used in conjunction with any other admixture unless prior approval is obtained from your local waker office.

Wakerflow-HSP135 is suitable for use with all types of Portland cements and cement replacement materials such as PFA, GGBFS, SRC and microsiliics.

Mixing

When used at the mixing plant, wakerflow-HSP135 should be added in the mixing water. In some instances, e.g. addition to ready mix concrete on site, wakerflow-HSP135 can be added directly in the truck mixer and mixed at maximum speed for an extra 5 minutes.

For self compacting concrete, a viscosity enhancer eg. WakerPlast-P51 is recommended at a dosage between 1.0-2.0 litre per cubic metre.

Dispensing

The correct quantity of wakerflow-HSP135 should be measured by means of a recommended dispenser. The admixture should then be added to the concrete with the mixing water to obtain the best results. Contact waker for advice regarding suitable equipment and its installation.

Estimating-packaging

Wakerflow-HSP135 is available in 200 litre and 230 kg drums or in 20 litre and 22 kg containers. For larger users, storage tanks can be supplied.

Storage

Wakerflow-HSP135 has a minimum shelf life of 18 months provided the temperature is kept within the range of 4°C to 41°C. Should the temperature of the product fall outside this range then contact waker for advice.

Precautions

Health and safety

Wakerflow-HSP135 does not fall into the hazard classifications of current regulations. However, it should not be swallowed or allowed to come into contact with skin and eyes.

Suitable protective gloves and goggles should be worn.

Splashes on the skin should be removed with water. In case of contact with eyes rinse immediately with plenty of water and seek medical advice. If swallowed seek medical attention immediately- do not induce vomiting.

Fire

Wakerflow-HSP135 is water based and non-flammable.

W.K-Grout G1 **Cement expanded Grout – Type G2**

Description

W.K-Grout G1 cementitious grout is supplied as a ready to use dry powder. The addition of a controlled amount of clean water produces a flowing non-shrink grout for gap thicknesses up to 120 mm w.k-Grout G1 is a blend of Portland cement, graded fillers and chemical additives which impart controlled expansion in the plastic state whilst minimizing water demand. The low water demand ensures high early strength. The graded filler is designed to assist uniform mixing and produce a consistent grout.

Standards Compliance

- W.K- Grout G1 is formulated to comply with ASTM-C1107, ASTM-C476 and ASTM-C827-78

Uses

W.K-Grout G1 general purpose grouting is used where it is essential to eliminate shrinkage when completely filling the cement expanded Grout-Type G2 void between a base plate and a substrate. Such an application would be the grouting of a stanchion base plate. It can also be used for anchoring a wide range of fixing. These include masts anchor bolts and fence posts.

Advantages

- Gaseous expansion system compensates for shrinkage and settlement in the plastic state.
- No metallic iron content to cause staining.
- Prepackaged material overcomes potential on-site batching variations.
- Develops high early strength without the use of chlorides.

High ultimate strength and low permeability ensure the durability of the hardened grout.

Important note

Waker products are guaranteed against defective materials and are sold subject to its standard conditions for the supply of Goods and Service.

Properties

Compressive strength	25 N/mm ² @ 1 day : 55 N/mm ² @ 7 days 67 N/mm ² @ 28 days
Flexural Strength	5.0 N/mm ² @ 1 day : 8.0 N/mm ² @ 7 days 11 N/mm ² @ 28 days
Time for expansion	Start: 20 minutes : Finish: 2:30 hours
Fresh wet density	Approx. 2200 kg/m ³ : depending on actual consistency used.
Modulus of elasticity ASTM C469-83	: > 28000 MPa
Expansion characteristics	Up to 2% @ 24 hours : ASTM C940

Instructions for use

Preparation

Concrete surface

The substrate surface must be free from oil, grease or any loosely adherent material. If the concrete surface is defective or has laitance, it must be cut back to a sound base. Bolt holes and fixing pockets must be blown clean of any dirt or debris.

Pre-soaking

For a minimum of 2 hours prior to grouting, the area of cleaned substrate should be flooded with fresh water. Immediately before grouting takes place, any free water should be removed. Particular care should be taken to blow out all bolt holes and pockets.

Base plate

It is essential that this is clean and free from oil, grease or scale. Air pressure relief holes should be provided to allow venting of any isolated high spots.

Leveling shims

If these are to be removed after the grout has hardened, they should be treated with a thin layer of grease.

Formwork

The formwork should be constructed to be leakproof. This can be achieved by using foam rubber strip or mastic sealant beneath the constructed formwork and between joints. In some cases it is practical to use sacrificial semi dry sand and cement formwork. The formwork should include outlets for pre-soaking.

Unrestrained surface area

This must be kept to a minimum. Generally the gap width between the perimeter formwork and the plate edge should not exceed 75 mm on the pouring side and 25 mm on the opposite side. It is advisable where practical to have no gap at the flank sides.

Mixing

For best results a mechanically powered grout mixer should be used. When quantities up to 40 kg are used, a slow speed drill fitted with a Mixing Paddle (MR3) should be used. Larger quantities will require a high shear vane mixer. Do not use a colloidal impeller mixer.

To enable the grouting operation to be carried out continuously, it essential that sufficient mixing capacity and labour are available. The use of a grout holding tank with provision to gently agitate the grout may be required.

Consistency of mixed grout

The quantity of clean water required to be added to a 30kg bag to achieve the desired consistency is given below.

Trowellable	:	3.9- 4.2 litres
Flowable	:	4.35- 5.7 litres

The selected water content should be accurately measured into the mixer. The total contents of the W.K-Grout G1 bag should be slowly added and continuous mixing should take place for 5 minutes. This will ensure that the grout has a smooth even consistency.

Curing

On completion of the grouting operation, exposed areas should be thoroughly cured. This should be done by the use of W.K-cure-100 curing membrane, or continuous application of water and/or wet hessian.

High temperature working

It is suggested that, for temperatures above 35°C, the following guidelines are adopted as good working practice:

1. Store unmixed material in a cool (preferably temperature controlled) environment, avoiding exposure to direct sunlight.
2. Keep equipment cool, arranging shade protection if necessary. It is especially important to keep cool those surfaces of the equipment which will come into direct contact with the material itself.
3. Try to eliminate application during the hottest times of the day and in direct sunlight.
4. Make sufficient material, plant and labour available to ensure that application is a continuous process.
5. Water (below 20°C) should be used for mixing the grout prior to placement.

Limitations

Grouts should not be placed in any unrestrained situation, i.e, base plate plinths, etc. Failure to comply may lead to crack development in the grout.

Estimating

Supply

W.K- Grout : G1 30kg bags

Storage

W.K-Grout G1 has a shelf life of 18 months if kept in a dry store in sealed bags. If stored in high temperature and high humidity locations the shelf life will be reduced.

Precautions

Health and safety

W.K-Grout G1 is alkaline and should not come into contact with skin and eyes. Avoid inhalation of dust during mixing. Gloves, goggles and dust mask should be worn. If contact with skin occurs, wash with water. Splashes to eyes should be washed immediately with plenty of clean water and medical advice sought.

Fire

W.K-Grout G1 is non-flammable.

W.K-Grout G2

Non – shrink cementitious bridge bearing grout Type G2

Description

W.K-Grout G2 is a ready to use dry powder supplied in 30kg moisture resistant bags. W.K-Grout G2 has been formulated specifically for grouting of bridge bearings and parapet post base plates.

The addition of a controlled amount of clean water produces a free-flowing grout with high early and ultimate strengths as well as long term durability, suitable for use in section thicknesses 10mm to 120mm.

Standards compliance

W.K-Grout G2 is formulated to comply with ASTM C1107 Grade C, ASTM-C476 and ASTM- C827-78

Uses

W.K-Grout G2 is an exceptionally high strength grout designed for grouting beneath bridge bearings, parapet posts and flanged lighting columns.

Advantages

- Non-shrink
- High early and ultimate compressive strengths
- Good flow, particularly at low temperatures
- Low permeability ensures durability
- Can be poured or pumped

Important note

Waker products are guaranteed against defective materials and are sold subject to its standard conditions for the supply of Goods and Service.

Properties

Test method	Typical result
Compressive strength BS 1881: part 116 (1983)	30 N/mm ² @ 24 hours 55 N/mm ² @ 3 days 65 N/mm ² @ 7 days 80 N/mm ² @ 28 days
Expansion ASTM C827-87	Controlled positive expansion
Total chloride ion content (as % of mass of cement)	< 1%
Rapid chloride permeability AASHTO T277	: Very Low
Water permeability DIN 1048 Pt- 5: 1991	: < 2mm
Total acid soluble Sulphate SO ₃ (as % of mass of cement)	: < 4%
Flexural Strength	5.5 N/mm ² 1 day 9.0 N/mm ² 7 day 12.0 N/mm ² 28 day
Time for expansion	Start: 20 minutes Finish: 2: 30 hours
Fresh wet density	: 2200 kg/m ³
Expansion characteristics	: Up to 2% 24 hours ASTM-c940

Instructions for use

Preparation

Concrete surfaces

The substrate surface must be free from oil, grease or any loosely adherent material. If the concrete surface is defective or has laitance, it must be out

back to a sound base. Boll holes or fixing pockets must be blown clean of any dirt or debris.

Pre-soaking

For a minimum of 2 hours prior to grouting, the area of cleaned substrate should be flooded with fresh water. Immediately before grouting takes place, any free water should be removed. Particular care should be taken to blow out all bolt holes and pockets.

Bearing plate/ parapet post baseplate

It is essential that this area is clean and free from oil, grease or scale.

Leveling shims

If these are to be removed after the grout has hardened, they should be treated with a thin layer of grease.

Formwork

The formwork should be constructed to be leak proof as W.K- Grout G2 is a free flowing grout. This can be achieved by using foam rubber strip or mastic sealant beneath the constructed formwork and between joints. In some cases it is practical to use a sacrificial semi-dry sand and cement formwork. The formwork should include outlets for the pre-soaking water.

Unrestrained surface area

The unrestrained surface area of the grout must be kept to a minimum. Generally the gap width between the perimeter formwork and the plate edge should not exceed 150 mm on the pouring side and 50 mm on the opposite side. There should be no gap at the flank sides.

Mixing

For best results a mechanically powered grout mixer should be used. For quantities up to 40kg a slow speed drill fitted with a high shear paddle is suitable.

Consistency of mixed grout

The quantity of clean water required to be added to a 30kg bag to achieve the desired consistency is given below.

Trowellable	:	3.45- 3.750 litres
Flowable	:	3.900-4.350 litres

The water should be accurately measured into the mixer. Slowly add the total contents of the W.K-Grout G2 bag, mix continuously for 5 minutes, ensuring a smooth even consistency is obtained.

Note: For the first two to three minutes of mixing the mixture will be of a stiff consistency.

Curing

On completion of the grouting operation, exposed areas should be thoroughly cured. This should be done by the use of W.K-cure 100 curing membrane, or continuous application of water and/ or wet hessian.

High temperature working

It is suggested that, for temperatures above 35°C, the following guidelines are adopted as good working practice.

1. Store unmixed material in a cool (preferably temperature controlled) environment, avoiding exposure to direct sunlight.
2. Keep equipment cool, arranging shade protection if necessary. It is especially important to keep cool those surfaces of the equipment which will come into direct contact with the material itself.
3. Try to eliminate application during the hottest times of the day and in direct sunlight.
4. Make sufficient material, plant and labour available to ensure that application is a continuous process.
5. Water (below 20°C) should be used for mixing the grout prior to placement.

Limitations

Grouts should not be placed in any unrestrained situation, i.e. base plate plinths. etc. Failure to comply may lead to crack development in the grout.

Estimating**Supply**

W.K-Grout G2 : 30kg bags

Storage

W.K-Grout G2 has a shelf life of 18 months if kept in a dry store in sealed bags. If stored in high temperature and high humidity locations, the shelf life may be reduced.

Precautions**Health and safety**

W.K- Grout G2 contains cement powders which, when mixed or become damp, release alkalis which can be harmful to the skin. During use, avoid inhalation of dust and contact with skin and eyes.

Wear suitable protective clothing, gloves, eye protection and respiratory protective equipment. The use of barrier creams provides additional skin protection.

In case of contact with skin, rinse with plenty of clean water, then cleanse with soap and water. In case of contact with eyes rinse immediately with plenty of clean water and seek medical advice. If swallowed, seek medical attention immediately- do not induce vomiting.

Fire

W.K- Grout G2 is non-flammable.

W.K-Grout G3

Reinforced Cement Expanded Grout With Fiber (Type G2)

Description

W.K-Grout G3 is a non – shrink cementitious read – mix grout fibers reinforced polymer with 100 MPa compressive strength. Due to the special combination of W.K-Grout G3, it is useful for filling and grouting of base plates in steel frame buildings and installation of heavy machinery.

Standards compliance

W.K-Grout G3 is formulated to comply with ASTM C1107 Grade C. ASTM-C476 and ASTM- C827-78

Uses

W.K-Grout G3 is an exceptionally high strength grout designed for grouting beneath bridge bearings, parapet posts and flanged lighting columns.

Advantages

- Non-shrink
- High early and ultimate compressive strengths
- Good flow, particularly at low temperatures
- Low permeability ensures durability
- Can be poured or pumped
- Fiber reinforced polymer

Important note

Waker products are guaranteed against defective materials and are sold subject to its standard conditions for the supply of Goods and Service.

Properties

Test method	Typical result
	35 N/mm ² @ 24 hours
Compressive strength BS 1881: part 116 (1983)	: 80 N/mm ² @ 7 days 100 N/mm ² @ 28 days
Expansion ASTM C827-87	: Controlled positive expansion
Total chloride ion content (as % of mass of cement)	: < 1%
Rapid chloride permeability AASHTO T277	: Very Low
Water permeability DIN 1048 Pt- 5: 1991	: < 2mm
Total acid soluble Sulphate SO ₃ (as % of mass of cement)	: < 4%
Flexural Strength	6 N/mm ² 1 day : 9.5 N/mm ² 7 day 12.5 N/mm ² 28 day
Time for expansion	: Start: 20 minutes Finish: 2: 30 hours
Fresh wet density	: 2300 kg/m ³
Expansion characteristics	: Up to 2% 24 hours ASTM-c940

Instructions for use

Preparation

Concrete surfaces

The substrate surface must be free from oil, grease or any loosely adherent material. If the concrete surface is defective or has laitance, it must be out

back to a sound base. Boll holes or fixing pockets must be blown clean of any dirt or debris.

Pre-soaking

For a minimum of 2 hours prior to grouting, the area of cleaned substrate should be flooded with fresh water. Immediately before grouting takes place, any free water should be removed. Particular care should be taken to blow out all bolt holes and pockets.

Bearing plate/ parapet post baseplate

It is essential that this area is clean and free from oil, grease or scale.

Leveling shims

If these are to be removed after the grout has hardened, they should be treated with a thin layer of grease.

Formwork

The formwork should be constructed to be leak proof as W.K- Grout G3 is a free flowing grout. This can be achieved by using foam rubber strip or mastic sealant beneath the constructed formwork and between joints. In some cases it is practical to use a sacrificial semi-dry sand and cement formwork. The formwork should include outlets for the pre-soaking water.

Unrestrained surface area

The unrestrained surface area of the grout must be kept to a minimum. Generally the gap width between the perimeter formwork and the plate edge should not exceed 150 mm on the pouring side and 50 mm on the opposite side. There should be no gap at the flank sides.

Mixing

For best results a mechanically powered grout mixer should be used. For quantities up to 40kg a slow speed drill fitted with a high shear paddle is suitable.

Consistency of mixed grout

The quantity of clean water required to be added to a 30kg bag to achieve the desired consistency is given below.

Trowellable	:	2.4- 2.7 litres
Flowable	:	3.3-3.45 litres

The water should be accurately measured into the mixer. Slowly add the total contents of the W.K-Grout G3 bag, mix continuously for 5 minutes, ensuring a smooth even consistency is obtained.

Note: For the first two to three minutes of mixing the mixture will be of a stiff consistency.

Curing

On completion of the grouting operation, exposed areas should be thoroughly cured. This should be done by the use of W.K-cure 100 curing membrane, or continuous application of water and/ or wet hessian.

High temperature working

It is suggested that, for temperatures above 35°C, the following guidelines are adopted as good working practice.

1. Store unmixed material in a cool (preferably temperature controlled) environment, avoiding exposure to direct sunlight.
2. Keep equipment cool, arranging shade protection if necessary. It is especially important to keep cool those surfaces of the equipment which will come into direct contact with the material itself.
3. Try to eliminate application during the hottest times of the day and in direct sunlight.
4. Make sufficient material, plant and labour available to ensure that application is a continuous process.
5. Water (below 20°C) should be used for mixing the grout prior to placement.

Limitations

Grouts should not be placed in any unrestrained situation, i.e. base plate plinths. etc. Failure to comply may lead to crack development in the grout.

Estimating

Supply

W.K-Grout G3 : 30kg bags

Storage

W.K-Grout G3 has a shelf life of 18 months if kept in a dry store in sealed bags. If stored in high temperature and high humidity locations, the shelf life may be reduced.

Precautions

Health and safety

W.K- Grout G3 contains cement powders which, when mixed or become damp, release alkalis which can be harmful to the skin. During use, avoid inhalation of dust and contact with skin and eyes.

Wear suitable protective clothing, gloves, eye protection and respiratory protective equipment. The use of barrier creams provides additional skin protection.

In case of contact with skin, rinse with plenty of clean water, then cleanse with soap and water. In case of contact with eyes rinse immediately with plenty of clean water and seek medical advice. If swallowed, seek medical attention immediately- do not induce vomiting.

Fire

W.K- Grout G3 is non-flammable.

W.K-EpoxyGrout

High strength, epoxy resin grout

Description

W.K-Epoxy Grout is a solvent free epoxy resin grout designed for grouting of gap widths of 10-75 mm.

It is supplied as a three component system consisting of base, hardener and specially graded aggregate. The components are supplied in the correct mix proportions designed for whole pack mixing on site.

Uses

Provides a free flowing grout, for use where physical properties and chemical resistance of the hardened grout are of utmost importance.

It is suitable for a wide range of heavy duty applications including:

- Underplate grouting to substantial structural elements.
- Base plate grouting in dynamic load situations such as turbines and other reciprocating machinery.
- Heavy industrial applications in steelworks, refineries chemical plants and electroplating works.
- Structural infill where very high strength is required.
- Rail track applications, to support heavy cranes, or on transporter rails.

Advantages

- Excellent durability- high compressive, flexural and tensile strengths ensure a long working life.
- Cost effective- high early strength gain promotes minimum downtime and early commissioning of plant.
- User friendly- simple, full pack mixing to ensure that the performance characteristics are achieved.
-

Important note

Waker products are guaranteed against defective materials and are sold subject to its standard conditions for the supply of Goods and Service.

Versatile- suitable for a wide range of loading situations including repetitive dynamic loads.

- Excellent in service performance- non-shrink capability ensures full surface to surface contact.

Properties

Pot life	: 20 min @ 20°C
Tensile strength	: 10 N/mm ² @ 7day
Flexural strength	: 26 N/mm ² @ 7day
Compressive strength	: 65 N/mm ² @ 3 day : 100 N/mm ² @ 7 day
Maximum flow distance for a head of 100 mm @ 20°C	: 35 mm gap 2000 mm : 70 mm gap 3500 mm
Coefficient of thermal expansion (ASTM C531)	: 28.1×10 ⁻⁶
Compressive creep (ASTM C1181)	: 2.05×10 ⁻³ mm/mm (2.85 N/mm ² , 1 year, 60°C)
Density	: 1800 kg/m ³
Modulus of elasticity ASTM-C580	: 87500 kg/cm ²
Bond strength ASTM-C882	: 24.5 kg/cm ²
Linear shrinkage ASTM-C531	: 0.005%
Maximum continuous service temperature	: 126°C

Instructions for use

Preparation

Underplate grouting

The unrestrained surface area of the grout must be kept to a minimum.

Generally, the gap between the perimeter formwork and the plate edge should not exceed 75 mm on the pouring side and 25 mm on the opposite side.

Formwork on the flank sides should be kept tight to the plate edge.

Formwork

The formwork should be constructed to be leak proof as W.K-Epoxy Grout is a free flow grout.

This can be achieved by using foam rubber strip or mastic sealant beneath the constructed formwork and between joints.

For free flow grout conditions, it is essential to provide a hydrostatic head of grout.

To achieve this, a feeding hopper should be used- please consult your local waker office for more details.

Foundation surface

This must be free from oil, grease, or any loosely adherent material. If the concrete surface is defective or has laitance, it must be cut back to a sound base. Bolt holes or fixing pockets must be blown clean of any dirt or debris.

Mixing

The entire contents of the hardener can should be poured into the base container and mixed until homogeneous. Place the mixed base and hardener into a suitable forced action mixer making sure that the entire volume is poured in. Add the aggregate and mix for 2-3 minutes or until uniform color is achieved. Once mixed, the material must be used within the specified pot life (see under Properties). After this time, unused material will have stiffened and should be discarded.

Note: Immediately prior to placement, all surfaces must be dry.

Grouting

Ensure that the grout can be placed within its pot life, Continuous grout flow is essential. Sufficient grout must be available prior to starting and the time taken to pour a batch must be regulated to the time taken to prepare the next one. Pouring should be from one side of the void to eliminate air entrapment. The hydrostatic head must be maintained at all times so that a continuous grout front is achieved.

High temperature working

Whilst the performance of W.K-Epoxy Grout at elevated temperatures is assured, application under such conditions can sometimes be difficult. It is therefore suggested that for temperatures above 35°C, the following guidelines are used:

1. Store unmixed materials in cool environment (preferably temperature controlled), avoiding exposure to direct sunlight.
2. Keep mixing and placing equipment cool, arranging shade protection if necessary. It is especially important to keep cool those surfaces of the equipment which will come into direct contact with the material itself.
3. Try to eliminate application in the middle of the day, and certainly avoid application in direct sunlight.
4. Ensure that there are sufficient operatives available to complete application within the material's pot life.

Limitations

Grouts should not be placed in any unrestrained situation, i.e. base plate. Plinths, etc. Failure to comply may lead to crack development in the grout.

Storage

When stored in warehouse conditions below 35°C, W.K-Epoxy Grout will have a shelf life of 12 months.

Precautions

Health and safety

Some people are sensitive to epoxy resin so gloves and a barrier cream such as kerodex 71, Rozalex 9, Debba-Wet Work or similar should be used when handling these products. If contact with the resin occurs, it must be removed before it hardens with a resin removing cream such as Kerocleanse 22 or Rozalex 42. Follow by washing with soap and water. Do not use solvent. The use of goggles is recommended but should accidental eye contamination occur, wash thoroughly with plenty of clean water and seek medical treatment immediately.

W.K-Epoxy Bond H&V

Structural Epoxyadhesive For Adhering Horizontal And Vertical

Introduction:

W.K-Epoxy Bond H&V is two – component, high strength, solvent free, non – slumping epoxy adhesive, used for installation of strips and laminates on horizontal and vertical surfaces in FRP applications, as well as steel or composite bar anchoring.

The ability to supply a modified maintaining technical specifications and flow characteristics of class: W.K-Epoxy Bond T.G

Standard:

The Production of W.K-Epoxy Bond H&V is in conformity with standards of ASTM-C488 and ASTM – C881 Type I, II, IV,V.

Where To Use:

W.K-Epoxy Bond H&V is general purpose thixotropic adhesive which does not shrink while curing and provides excellent bonding to many construction materials. It is fast curing material to give high mechanical properties and excellent chemical resistance, which makes it ideal for a variety of applications, The product can be used in the following applications:

- Bonding of composite strips and laminates to concrete, steel, wood, stone or any other masonry materials
- Structural bonding of steel plates to concrete, wood and other masonry materials
- Repairing concrete surface defects and honeycombs
- Dowel bars anchoring
- As a gap filling adhesive
- As leveling and bedding layer on surfaces to be received external strengthening.

Important note

Waker products are guaranteed against defective materials and are sold subject to its standard conditions for the supply of Goods and Service.

Technical information:

Appearance	Grey paste (mixed) Comp. "A": White Compe. "B": Black
Mixing ratio	A: B=3: 1 by weight or volume
Specific gravity (at 25°C)	1.6 kg/l (mixed)
Bonding strength	2.5 MPa (Concrete failed)
Compressive strength	70 MPa (7 days)
Flexural strength	30 MPa
Full cure	After 7 days (at 25°C)
Working Time/ Pot life	60 min. (25°C)

Properties:

- Excellent adhesion to concrete and most construction materials
- Excellent early and final mechanical strengths
- Excellent chemical resistance.
- Impact and shock resistance
- Color coded components to ensure proper mixing control.
- Good wetting properties, no primer or bonding agent is needed on dry substrate
- Easy to apply.
- Low odor
- Non-sagging and non-slumping material
- Does not shrink while curing.
- Can be extended with quartz sand as a repair mortar
- Will not corrode reinforcement
- Suitable for use in vertical and overhead applications

Surface preparation:

The substrate must be sound and free of loose particles. Remove dust, laitance, oil, grease, curing compounds, waxes, disintegrated and other bond inhibiting materials from the surface. Surface can be prepared by blasting methods, grinding, or chipping. Substrate should be dried before application. For wet surfaces use as primer.

Honeycombs and gaps have to be repaired by W.K-Adhesive 321 as repair mortar.

Mixing:

Mix each component separately. Add component "B" to Component "A" and mix them thoroughly using a low speed drill (max. 400 rpm) fitted to the suitable paddle for at least for 3 minutes or until all striations have disappeared and a uniform color is obtained. For partial mixing, add 1 part of component "B" to 3 parts of component "A" by weight or volume and mix them thoroughly, Mix only required quantity which can be used within the pot life.

To produce an epoxy repair mortar, slowly add up to 1 part by loose Volume of quartz sand (0.1~2.0 mm) to 1 part of mixed W.K-Epoxy Bond H&V and mix until uniform consistency be achieved.

Application method:

Thoroughly mixed W.K-Epoxy Bond H&V should be applied in a thickness of minimum 2 mm on substrate using a trowel, spatula, or knife, Also apply the mixed paste on laminate or plate with a dented spatula to a uniform thickness of 1.5 mm. Place the laminate or plate over the surface within given open time. Press the laminate or plate into the paste by mean of a rubber roller until extra pastes force out from both sides and maximum 3.0 mm thickness of uniform paste remains in place, Excess materials have to be removed.

External strengthening should not be done during first 24 hours. The epoxy paste will reach designed strengths after 7 days.

Material consumption:

W.K-Epoxy Bond H&V: Approximately 1.6 kg/m² for 1 mm layer thickness.

Limitations:

Minimum layer thickness: 0.5 mm

Maximum layer thickness 5.0 mm

Do not apply W.K-Epoxy Bond H&V at temperatures less than +5°C.

Do not thin W.K-Epoxy Bond H&V by solvent. Solvent will prevent proper curing.

Age of concrete must be 21~28 days, depending upon curing and drying conditions.

Cleaning:

Tools and equipment should be clean after each application job or before break time. Uncured material can be washed with approved solvent Cured material can only be removed mechanically.

Storage/Shelf life:

Store the product out of direct sunlight on pallet, and protect from extreme heat and rain fall. The shelf life for originally unopened package is 12 months from date of production

Packaging:

W.K-Epoxy Bond H&V is available in 4.0kg, Total unit.

Safety precautions:

Product may cause skin irritation, Use personal safety devices such as gloves and goggles if contacted with eyes or mucous membrane, wash immediately with plenty of warm water and seek medical attention.

W.K-FCW

Highly Flexible Cementitious Waterproofing Membrane For Horizontal & Vertical Surfaces

DESCRIPTION

A two part acrylic polymer modified highly flexible cementitious waterproof membrane supplied in pre-packaged form for the protection of concrete and mortar. W.K- FCW provides excellent adhesion, flexibility, crack bridging ability, and durability.

FIELD OF APPLICATION

Coatings made of W.K.FCW are wear-proof elastic and waterproof. Such coatings can be used for areas subject to mechanical stresses and for areas which might be subject to cracking, e.g. waterproofing layers on terraces and balconies, as protection for concrete surfaces which can be walked on, as waterproofing for water tanks, swimming pools, underground concrete structures, pits, basins, wet and damp – rooms underneath tiles and ceramic coverings.

ADVANTAGES

- Solvent free and non-toxic- Environmentally friendly.
- Protection against carbonation and chlorides.
- Excellent adhesion. Full bonded.
- Bridges cracks up to 2 mm on positive water pressure side application.
- Minimum surface preparation needed. No priming is necessary in most cases.
- Stands up to pedestrian and light traffic.
- Resists abrasion. mechanical wear & deicing Salts.
- Applied to moist/damp substrates. (also it can be applied to 24 hour old concrete.)
- Approved for use in contact with potable water

Important note

Waker products are guaranteed against defective materials and are sold subject to its standard conditions for the supply of Goods and Service.

- Breathable (not a vapor barrier)
- Does not support the growth of mold & mildew
- UV, weather & freeze/thaw resistant
- Resists strong hydrostatic pressure (tested up to 7 bar water pressure positive side).

SURFACE PREPARATION

The substrate should be clean and sound, free of dust, loose particles, grease, oil, primers from previous membrane systems or bitumen. Bitumen or primers should be removed by shot blasting or mechanical means. Spalled concrete should be repaired by cutting out to sound concrete and patching with W.K Repair. Cracks, holes and honeycombs must be repaired prior to application.

MIXING

W.K-FCW is supplied in premeasured units. Slowly add the powder to the liquid and mix to a lump free smooth consistency. Do not add Water or rework a stiffened mix by adding water. Mix sufficient material to use within 30 minutes.

APPLICATION

Saturate the Concrete's surface with clean water. Apply the first coat while the surface is still damp but no free standing water. Apply using a short stiff bristle brush, rubber squeegee or roller at a rate of 1-2 mm for walls and floors. depending on the expected water pressure The required thickness is achieved by applying 2 layers taking care that each layer is not thicker than 1mm. Leave the first coat to dry for 2-4 hours before applying the second coat.

The second coat can be rubbed down with a soft dry sponge. Spray or trowel application is acceptable providing the mixing ratio is adjusted to achieve the right consistency. Leave the second coat of W.K- FCW to cure overnight before proceeding to conduct water ponding test.

PHYSICAL & TECHNICAL PROPERTIES

Grey

Appearance	2:3 (by weight)
Mixing Ratio	Approx 1/8 g/cm ₃
Density (A+B)	Approx 1.7 kg/m ₂ /mm
Coverage	Approx 30 minutes at 30°C
Pot Life	Approx. 85
Shore A Hardness	> 1.5 Mpa (According to ASTM D 412)
Tensile Strength	> 200% (According to ASTM D 412)
Tensile Elongation	> 2 mm
Crack Bridging (2 mm layer thickness)	>2 MPa (Concrete failure) According to
Adhesion to Concrete	ASTM D 4541
Recoat Time	Approx. 2 to 4 hours depending on the atmospheric, conditions
Resistance to Water Penetration	No water penetration (According to BS EN 12390-8)
Accelerated weathering, 500 hours Exposure to	No chalking or cracking on the film - rain after approx. 3day - Pedestrian traffic after approx. 1 day - pressure water after approx. 7days - Setting of tiles after approx 1 day

STORAGE & SHELF LIFE

The shelf life is 9 months if unopened, stored free from frost moisture and direct sunlight

HEALTH & SAFETY

W.K- FCW is non-toxic but is alkaline in its nature when applying gloves & goggles should be worn. Wash off splashes to skin with water. If in eyes wash out with plenty of clean water and seek medical attention W.K-FCW is non – flammable Wakerco is available at waker website.

TECHNICAL SERVICE

The waker INTERNATIONAL GROUP Technical Department is available to assist you in the correct use of our products and its resources are at your disposal entirely without obligation.

W.K-ANTIFREEZ A

Chloride free accelerating admixture

Description

W.K-Antifreez A is a chloride free accelerating admixture based on a combination of format and nitrite salts. It is supplied as a straw colored solution that instantly disperses in water W.K-Antifreez A accelerates the early stages of cement hydration, producing more rapid stiffening and allowing strength gain to commence at an earlier stage. This effect is particularly noticeable at low temperatures and is most significant in the first 24 hours after mixing.

Standards compliance

W.K-Antifreez A complies with ASTM C494 as typeC and E.

Uses

- To accelerate the stiffening and early strength gain of protand cement concrete and mortar
- Typical applications include concrete or mortar placed in cold weather and precast concrete

Advantages

- particularly effective in assisting to offset the delaying effect of low temperatures on setting and strength gain
- Accelerated setting gives added protection against early age frost attack
- Also provides a degree of water reduction or increased workability
- Suitable for use in bricklaying mortar
- Chloride free, safe for use in reinforced concrete

Important note

Waker products are guaranteed against defective materials and are sold subject to its standard conditions for the supply of Goods and Service.

Typical Dosage

The optimum dosage of W.K-Antifreez A to meet specific requirements should always be determined by trials using the materials and conditions that will be experienced in use. This allows the optimization of admixture dosage and mix design and provides a complete assessment of the concrete mix. A starting point for such trials is to use a dosage within the normal typical range of 1.00 to 5.00 kg/100 kg of cement.

Use at other dosages

Dosages outside the typical range quoted above may be used if necessary and suitable to meet particular mix requirements, provided that adequate supervision is available. Compliance with requirements must be assessed through trial mixes. Contact the Customer Service Department for advice in these cases.

Effects of overdosing

An overdose of double the intended amount of W.K-Antifreez A may result in increased acceleration. In common with other accelerators this may slightly reduce the ultimate strength of the concrete.

Testing has shown no detrimental effect on embedded steel even at four times overdose.

Properties

Appearance	:	non coloured liquid
Specific gravity	:	typically 1.15 @ 20°C
Chloride content	:	nill to bs 50/75

Air Entrainment	:	typically less than 1%
		Additional air is Entrained at normal dosages.
	:	Typically less than 155.0 g.
Alkali content		Na ₂ O equivalent /liter of admixture. A fact sheet on this subject is available

Instructions for use

Compatibility

W.K-Antifreez A is compatible with other waker admixtures in the same concrete mix. The admixtures must be added to the concrete separately with the mixing water and must not be directly mixed together prior to addition. The performance of concrete containing more than one admixture should be assessed by trial mixes to ensure the desired combination of effects is obtained.

W.K-Antifreez A is suitable for use with ordinary portland cement.

Contact the Waker Customer Service Department for advice on use with sulphate resisting cements and cement replacement materials.

Durability

W.K-Antifreez A has no detrimental effect on the protection given to embedded steel by the alkalinity of cement and is safe for use as an accelerator in situations where chloride containing admixtures can not be used.

Dispensing

The correct quantity of W.K-Antifreez A should be measured by means of a recommended dispenser. The admixture should then be added to the concrete with the mixing water to obtain the best results.

Contact the Waker Customer Service Department for advice regarding dispensing suitable equipment and its installation.

Curing

As with all structural concrete, good curing practice should be maintained. Water spray, wet hessian or a W.K-cure100 spray applied curing membrane should be used.

Limitations

W.K-Antifreez A is most effective at low temperatures and early ages. Where compressive strength gain is the major requirement, and stiffening rates are less important, a more cost effective performance may be obtained through the use of a plasticizer or supreplasticser.

Estimating-packaging

W.K-Antifreez A is available in 210 liter 240 kg drums or in 20 liter and 23 kg containers. For larger users, storage tanks can be supplied.

Storage

W.K-Antifreez A has a minimum shelf life of 18 months provided the temperature is kept within the range of $5^{\circ}C$ to $35^{\circ}C$. Should the temperature of the product fall outside this range then the Waker Customer Service Department should be contacted for advice.

Freezing point: Below $-10^{\circ}C$

Crystallization may occur below $-1^{\circ}C$. If crystallization does occur it is important that the product is reconstituted before use.

Precautions**Health and safety**

W.K-Antifreez A is toxic and should not be swallowed or allowed to come into contact with skin and eyes.

Wear suitable protective gloves and goggles.

Splashed on the skin should be removed with water. In case of contact with eyes rinse immediately with plenty of water and seek medical advice. If swallowed seek medical attention immediately. Do not induce vomiting.

Fire

W.K-Antifreez A is water based and non-flammable but should be stored away from combustibile materials.

WAKERPLAST-AE

Air entraining agent

Description

Wakerplast-AE is a chloride-free admixture based on neutralized vinsol resin and is supplied as a dark brown solution. Complast AEA acts on the interface of the cement/aggregate particles and mixing water to produce microscopic air bubbles evenly distributed throughout the concrete.

Standards compliance

Wakerplast-AE complies with ASTM C457, ASTM C233, ASTM C 666 as an air entraining agent.

Uses

To produce air entrained concrete for increased durability, resistant to damage by frost and de-icing salts. And to improve the cohesion and workability of concrete mixes where poorly graded aggregates must be used, and in any situation where bleeding, segregation or sand runs occur.

- Concrete roadways
- Bridge decks
- Airport runways and taxiways
- Other extensive areas of concrete exposed to potential frost damage.

Advantages

- Provides concrete with resistance to freezing and thawing.
- Improves cohesion, reduces segregation and bleeding.
- Gives dense, uniform close textured surface to concrete
- Excellent air bubble stability.
- Consistent performance, even with changes in aggregate quality and ambient temperature.
- effective in low workability concrete.
- Suitable for use in middle East conditions.

Important note

Waker products are guaranteed against defective materials and are sold subject to its standard conditions for the supply of Goods and Service.

Dosage

The optimum dosage must be determined by site trials with the particular concrete mix. As a guide, a dosage of 0.45 to 0.045 kg /100 kg cement.

Effects of overdosing

An overdose of double the recommended amount of Wakerplast-AE can result in slight increase in settling time and a reduction in compressive strength.

Properties

Appearance	:	Brown liquid
Chloride content	:	Nil to BS 5075
Specific gravity	:	1.02 @ 20° C
PH	:	7

Compatibility

Wakerplast-AE is compatible with other Waker plast admixtures, but it is recommended that all admixtures be added to concrete separately.

Wakerplast-AE can be used with all types of port and cements. For advice on special cements, consult the technical department.

Dispensing

The correct quantity of Wakerplast-AE should be measured by means of a recommended dispenser. The company's technical department should be consulted regarding suitable equipment and its installation.

Wakerplast-AE should be added directly to the mixer and best results are obtained if added at the same time as the mixing water.

Estimating-packaging

Wakerplast-AE is available in 210 liter and 250 kg drums or in 20 liter and 20kg containers. For larger users, storage tanks can be supplied.

Storage

Wakerplast-AE has a minimum shelf life of 12 months provided the temperature is kept within the range of $5^{\circ}C$ to $37^{\circ}C$.

Precautions

Health and safety

Wakerplast-AE is slightly and must not be ingested. It is mildly alkaline and prolonged contact with the skin must be avoided. Splashes to the skin should be washed with water. Any splashes to eyes should immediately be flushed with clean water and medical advice should be sought.

Fire

Wakerplast-AE is non-flammable.

W.K-PLUG

Rapid setting cement based, water-stopping mortar

Description

W.K-Plug is supplied as a ready to use blend of dry powders which requires only the site addition of clean water to produce a highly consistent, rapid setting mortar which is easy to apply in many difficult conditions. The material is based on a blend of cements, graded aggregates, special fillers and chemical additives which control the rate of set and minimize the risk of thermal cracking. W.K-Plug provides an initial set time of approximately one minute.

Uses

For the rapid temporary patching and plugging of concrete segments. Concrete & brick tunnel linings, sewage systems, below ground access chambers, pipes, basements, foundations and mines.

Advantages

- Emergency water-stopping capability.
- Single component-only requires addition of clean water.
- Excellent bond to the substrate.
- Low exotherm minimizes thermal cracking.
- Pre-bagged formulation to overcome variations in site batching.
- Contains no chloride admixtures.

Specification

Water stopping mortar

The water stopping mortar shall be W.K-Plug. A single component cement-based blend of powders to which only the site – addition of clean water shall be permitted. It must be chloride-free and must be formulated to prevent high exotherm and minimize thermal cracking.

Important note

Waker products are guaranteed against defective materials and are sold subject to its standard conditions for the supply of Goods and Service.

Design criteria

W.K-Plug can be applied to horizontal. Vertical or overhead surfaces at a wide range of thicknesses. Generally, the volume of mixed material used in a single application is restricted to that which can be applied by trowel or gloved hand. Thicker sections can be built up in layers. If any doubt arises about the nature of the substrate, consult the local Waker office for further information.

Properties

Compressive strength (BS 6319, Part 2: 1983)	:	3 N/mm ² @ 15 min @ 20° C 5 N/mm ² @ 2 hours @ 20° C 25 N/mm ² @ 28 days @ 20° C
Initial set time	:	Approx. 1 minute @ 20° C

Note: Set times will be extended when mixed at lower temperatures.

Instructions for use

Preparation

Areas to be patched should be cut back to a depth of 15 mm and given a good mechanical key. Feather-edges must not be allowed. Surface should be brushed clean to remove loose material, dust and laitance. Grease, slime or mould growth should be removed by steam cleaning or high-pressure water jetting.

A proprietary degreasing agent should be used for removal of light oil or grease contamination. To seal leaks. Crack openings must be chased out to approximately 20 mm square. The chase should always be undercut to avoid leaving a v-section. All loose material and debris should be removed.

Mixing

W.K-Plug should be added to clean water in the following proportions:

One part clean water. 3 part W.K-Plug (measured by volume). Mix to a stiff consistency in a suitable mixing drum or bucket using a trowel or gloved

hand. Due to the rapid set characteristics of the product, only prepare a quantity of mortar which can be placed within the prescribed set time.

Application

Trowel apply or hand-knead the mixed mortar in place. Ensuring maximum contact with the substrate before the material sets. If being used to plug running water. W.K-Plug should be used and held in place until the initial set is reached.

Note: the minimum applied thickness of W.K-Plug should be 15 mm.

Cleaning

W.K-Plug products should be removed from tools, equipment and mixers with clean water prior to the initial set. Cured material can only be removed mechanically.

Limitations

W.K-Plug should not be used when the temperature is below 1°C and falling. If any doubts arise concerning application or substrate conditions, consult the local Waker office.

Low temperature working

In cold conditions down to 1°C the use of warm water (up to 20°C) is advisable to accelerate strength development. Normal precautions for winter working with cementitious materials should be adopted. The material should not be applied when the substrate and/or air temperature is 1°C and falling. At 1°C static temperature or at 1°C and rising the application may proceed.

High temperature working

At ambient temperature above 35°C the material should be stored in the shade and cooler water (down to 20°C) used for mixing.

Estimating

Supply

W.K-Plug : 25 kg bags

Storage

W.K-Plug has a shelf life of 12 months if kept in a dry store in the original, unopened bags or packs. If stored at high temperatures and/or high humidity conditions the shelf life will be reduced.

Precautions

Health & safety & fire

W.K-Plug products contain cement powders which, when mixed or become damp, release alkalis which can be harmful to the skin. During use, avoid inhalation of dust and contact with skin and eyes. wear suitable protective clothing, gloves, eye protection and respiratory protective equipment. The use of barrier creams provides additional skin protection. In case of contact with skin, rinse with plenty of clean water, then cleanse, with soap and water. In case of contact with eyes, rinse immediately with plenty of clean water and seek medical advice. If swallowed seek medical attention immediately – do not induce vomiting. For further information, refer to the Product Material Safety Data Sheet W.K-Plug is non-flammable.

W.K-COAT 900

Emulation

Description:

The product is kind of protective coating based on polymeric substances dissolved in water which are applied for prevention from penetration of attack of existing ions on soil over sections of concrete before buried in the soil and after drying would have good adhesive with concrete surfaces.

Standard:

The production of W.K-coat 900 is in conformity with standards of ASTM-D2939, IS:9862-1918.

Application Instances:

- Waterproofing (insulation) of retaining walls, basements and runnels.
- Protection from concrete surfaces against attaching factors.

Note: The product W.K-coat 900 can not be used instead of glass-fiber felt, Therefore for the purpose waterproof and scaling the product W.K-Coat 950 must be applied. For more information, please refer to technical information of W.K-Coat 950.

Advantages:

- Single in part
- Quick drying Excellent adhesiveness
- Easy to apply, low cost with high coating rate.
- Propel protection against environmental factors (penetration of ions).
- Proper for curing concrete.

Important note

Waker products are guaranteed against defective materials and are sold subject to its standard conditions for the supply of Goods and Service.

Technical Specifications

Appearance	Dark Brownish Liquid
Specific Weight	1gr/cm ³
Flash Point	Inflammable
Drying time	Depend on temperature and humidity of environment

Method of Consumption

- Stir well before use
- The surfaces must be completely dean. Apply a complete layer of W.K-coat 900 on the surface and wait until gets dried. Then apply the second layer vertically on the first layer on the surface.
- This substance should be sprayed with minimum of two coatings of the concrete surfaces. The use of roller is also possible.

Note:

- * Not to be applied in temperature under 10°C
- * Not to be applied during rain anti wet surface.
- * Prevent from pouring water on the surface until gets dried completely.

Packaging:

As liquid is available 220 liters barrels or 20 liters gallons. It can be delivered to customers as requested in special packaging or without packaging via tanker.

Method of Keep

Minimum usefulness time of W.K-coat 900 in case of keeping in temperature between 5-37 °C, in regional package and proper environment conditions and far from any pollutions particularly any type of dust is minimum of 12 months after production date. Incase of longer time, stir well before use. Incase the product is outside the above limits please contact the technical office of wakerco Company

Health & Safety

Under no circumstances the product W.K-coat 900 must not have any contact with eyes. thus using of safety glass for prevention with eye contact is recommended. In case of eye contact with the product, wash the eyes with plenty water and refer to physician, Prevent from skin contact, particularly continuous contact and use hand gloves during work.

Note:

Right after execution, wash all tools with water immediately, If the product is dried on the surface of tools, initially clean it by petroleum substances then with water.

W.K-Cure 100

Resin Based Curing Compound

Description:

W.K-Cure 100 is an enriched compound based on resins of hydrocarbons dissolved in solvent which after execution, quickly to give assured membranous form in the surface of concrete for preservation of internal moisture of concrete and contributes cement's complete hydration.

The formed layer through W.K-Cure 100 in the concrete surface, in addition to reflection of main part of sun light radiation and prevention from temperature increase of surface, it is eliminated after 2-3 weeks under atmospheric effect.

Note: Before any re-performance of concrete and for the purpose of preserving integration of concrete, clean residual of the film W.K-Cure 100 from surface of concrete through washing with water.

Standards

The production of W.K-Cure 100 is in conformity with ASTM-C309, ASTM- C171, BS8110, ACI308 Part 1.

Application Instances

- Keeping & Curing of varieties of concrete structures
- Wide concrete surfaces like airports, concrete roads, bridges' deck
- In hot climate regions through sun radiation
- Concreting in regions of windy and exposed to wind flow.

Important note

Waker products are guaranteed against defective materials and are sold subject to its standard conditions for the supply of Goods and Service.

Advantages

- Reduction of superficial permeability of concrete.
- Easiness and speed in execution through spray.
- Lack of prevention from continuity of concrete layers.
- Lack of need to water spray and keeping concrete as wet.
- Maintenance of required moisture & heat for continual hydration reaction.
- Prevention from appearance of surface cracks due to drying shrinkage of concrete.

Rate of Consumption

The best consumption rate of W.K-Cure 100 for specific specifications is determined by performance of various tests in workshop conditions.

Common rate of consumption is from 150 cc to 200 cc in every cubic meter.

Consumption Method

W.K-Cure 100 should be applied in open surfaces right after concreting and at a time the surface water has gone lost and in case of delay, initially it is necessary to wet the surface of the concrete to make it saturated and W.K-Cure 100 to be applied afterward.

Note: Immediately right after end of the work, the nozzle spray must be washed with solvent.

Packaging

As liquid is available 220 liters barrels or 20 liters gallons. It can be delivered to customers as requested in special packaging or without packaging via tanker.

Method of Keep

Minimum usefulness time of W.K-cure100 in case keeping in temperature between 5-35°C is 18 months after production date, far from freezing and direct sun light for long period and unopened package is about 12 months after production date.

Health & Safety

Under no circumstances the product W.K-cure100 must not have any contact with eyes, thus using of safety glass for prevention with eye contact is recommended. In case of eye contact with the product, wash the eyes with plenty water and refer to physician. Prevent from skin contact particularly continuous contact and use hand gloves during work.

Note: this substance is flammable.

W.K-SEALLIR200

Low viscosity injection resin based on special selected epoxies

Description:

W.K-SEALLIR200 is two-component, high strength, solvent free, low viscosity injection resin based on selected epoxies. It can be used for crack injection in concrete or other masonry materials. The product complies with ASTM C881.

Where to use:

W.K-SEALLIR200 is based on very low viscosity resins. It is ideal for filling and sealing cavities and static cracks (from widths greater than 100 microns) in structural elements such as columns, beams, foundations, wall and floor slabs. It forms an effective permanent seal against ingress of corrosive fluids and gases. Also structurally bonds tile concrete sections and is capable of providing integrity to structural elements.

Technical information:

Appearance	Light yellow liquid (mixed) Comp. "A" Transparent Comp. "B". Amber
Mixing ratio	A: B=4:1 by weight or volume
Specific gravity (at 25°C)	1.050 kg/l (mixed)
Bonding strength	2.5 MPa
Compressive strength	55MPa (7 days)
Flexural strength	35 MPa(7 days)
Service temperature	-35 to +65°C
Full cure	After 14 days (at 25°C)
Working Time / Pot life	40 min. (25°C)

Important note

Waker products are guaranteed against defective materials and are sold subject to its standard conditions for the supply of Goods and Service.

Advantages:

- Excellent adhesion to concrete and most construction materials.
- Tolerant of moisture before, during, and after curing.
- Excellent early and final mechanical strengths.
- Excellent chemical resistance.
- Impact and shock resistance (hard but not brittle).
- Very low viscosity .
- Good wetting properties, can penetrate in to very narrow cracks.
- Easy to use.
- Low odor.
- Shrinkage free while hardening.
- Will not corrode reinforcement.
- Suitable for use in both, dry and damp conditions.

Surface preparation:

Preparation of cracks for injection depends on injection method. In each method of injection, all cracks to be treated should be cleaned by vacuum cleaner or flushed out with clean, dry, and oil free compressed air. This should be done after drilling of injection holes or fixing nipples.

Mixing:

Stir each component separately. Add component "B" to Component "A" and mix them thoroughly using a low speed drill (max. 400 rpm) fitted to the suitable paddle at least for 2 to 3 minutes or until a uniform color is obtained. For partial mixing, pour 1 part of component "B" and 4 parts of component "A" by weight into a clean pail and mix them thoroughly. Mix only required quantity which can be used within the pot life.

Malarial consumption:

As a sealer: 250 to 350 g/m², depending on surface roughness. As an injection resin: depending on cracks condition.

Application method:

Thoroughly mixed W.K-SEALLIR200 should be injected using an injection gun or an air less pump. Injection should be started from the lowest injection point (nipple or packer). Inject material until it seeps out from upper injection point. Block the first injection point and continue the injection process upward. Continuing the process until the whole length of the crack has been injected.

It is strongly recommended to allow injection specialist and proper equipment be implemented for any injection job.

Limitations:

Width of cracks to be injected: 0.1 to 9 mm

Minimum permissible substrate temperature: + 5°C. Maximum permissible substrate temperature: + 35°C.

Do not thin W.K-SEALLIR200 by solvent. Solvent will prevent proper curing.

Age of concrete must be 21-28 days, depending upon curing and drying conditions.

Cleaning:

Application tools and equipment should be cleaned after completion of each job or at break time. Uncured material can be washed with approved solvent. Cured material can only be removed mechanically.

Storage Shelf life:

Store out of direct sunlight, and protect from extreme heat and rain fall. The shelf life for originally unopened package is 12 months from date of production.

Packaging:

W.K-SEALLIR200 is available in 1.0 or 3.0 kg Total units.

Safety precautions:

Product may cause skin irritation. Use personal safety devices such as gloves and goggles. If contacted with eyes or mucous membrane, wash immediately with plenty of warm water and seek medical attention.

W.K-Adhesive 321

General purpose structural paste based on selected epoxies

Introduction:

W.K-Adhesive 321 is a two-component, solvent free, fine aggregate filled, non-sagging epoxy paste and adhesive use for bedding and repairing concrete surfaces, gap filling and surface preparation for FRP applications.

Where to use:

W.K-Adhesive 321 is a general purpose repair mortar and adhesive which is fast curing and nonshrink while curing. It provides excellent bonding on many construction materials. The product has high mechanical properties and excellent chemical resistant which makes it ideal for a variety of applications. W.K-Adhesive 321 can be used in following applications:

- Bedding bridge beams or steel bridge bearings .
- Repairing surface defects or honeycombing concrete in horizontal, vertical or overhead conditions.
- Fixing slip bricks to concrete.
- Securing bolts into walls.
- Dowel bars anchoring.
- As a gap filling adhesive.
- Filling bolt pockets.
- Bedding tiles.
- Fixing of surface nipples for crack injection.
- Bonding steel plates, composite strips and laminates to concrete or other masonry materials.

Important note

Waker products are guaranteed against defective materials and are sold subject to its standard conditions for the supply of Goods and Service.

Technical information:

Appearance	Grey paste (mixed)
Mixing ratio	A: B=3:1 by weight or volume
Specific gravity (at 25°C)	1.750 kg/litr (mixed)
Bonding strength	2.5 MPa (concrete failed)
Compressive strength	65MPa (7 days)
Flexural strength	20 MPa
Service temperature	-35 to +65°C
Full cure	After 7 days (at 25°C)
Working Time / Pot life	60 min. (25°C)

Advantages:

- Excellent adhesion to concrete and most construction materials.
- Excellent early and final mechanical strengths.
- Excellent chemical resistance.
- impact and shock resistance.
- Color coded components to ensure proper mixing control.
- No primer or bonding agent is required on dry substrate.
- Stiff but easy workable.
- Does not shrink while curing.
- Will not corrode embedded reinforcement.
- Suitable for use in vertical and overhead applications .

Surface preparation:

The substrate must be sound and free of loose particles. Remove dust, laitance, oil, grease, curing compounds, waxes, disintegrated and other bond inhibiting materials from the surface. Surface can be prepared by blasting methods, grinding, or chipping. Substrate must be dried before application

Mixing:

Mix each component separately. Add component "B" to Component "A" and mix them thoroughly using a low speed drill (max. 400 rpm) fitted to the suitable paddle for at least 3 minutes or until all striations have disappeared and a uniform color is obtained. For partial mixing, add 1 part of component "B" to 3 parts of component "A" by weight or volume into a clean pail and mix them thoroughly. Mix only required quantity which can be used within the pot life.

Application method:

Thoroughly mixed W.K-Adhesive 321 should be applied on substrate using a trowel or spatula. Remove excess materials by moving trowel or spatula in the right angle of application direction. The external strengthening can be done after 4 hours. The epoxy paste will reach designed strength after 7 days .

Material consumption:

Approximately 1.750 kg/m² for 1mm layer thickness.

Limitations:

Suitable thickness for each layer: 5 mm

Do not apply W.K-Adhesive 321 at temperatures less than +5 °C.

Do not thin W.K-Adhesive 321 by solvent. Solvent will prevent proper curing.

Age of concrete must be 21-28 days, depending upon curing and drying conditions.

Cleaning:

Application tools and equipment should be cleaned after completion of each job or at break time. Uncured material can be washed with approved solvent. Cured material can only be removed mechanically.

Storage/ Shelf life:

Store out of direct sunlight, and protect from extreme heat and rain fall. The shelf life for originally unopened package is 12 months from date of production.

Packaging:

W.K-Adhesive 321 is available in 4.0 kg. Total unit Pails.

Safety precautions:

Product may cause skin irritation. Use personal safety devices such as gloves and goggles. If contacted with eyes or mucous membrane, wash immediately with plenty of warm water and seek medical attention.