ADPRUFE® AP3

Advanced admixture for integrally waterproof concrete structures

Product Description

ADPRUFE® AP3 is an innovative liquid admixture that significantly reduces the water absorption of concrete together with some effect on the reduction of drying shrinkage. By uniquely combining water repellence and shrinkage reduction technologies Adprufe AP3 provides a hydrophobic and pore blocking system together with a proven and award-winning chemistry that reduces the surface tension of the menisci in the millions of pores in the hardened concrete, thus reducing the shrinkage strain. Lower shrinkage results in reduced incidence of cracking in restrained concrete, improving the water resistance of the structure.

Enhanced Concrete Performance

This enhanced concrete performance is achieved by:

- Significantly reduced water absorption and penetration
- Reduction in drying shrinkage which produces fewer and thinner cracks
- A low water-cement ratio, which reduces capillary paths in the cured concrete
- High slump, workable concrete mix for ease of placement

When Adprufe AP3 is used with ADVA® high performance concrete admixtures, highly effective integrally waterproof concrete is achieved.

System Components

- Adprufe AP3 — liquid waterproof concrete admixture
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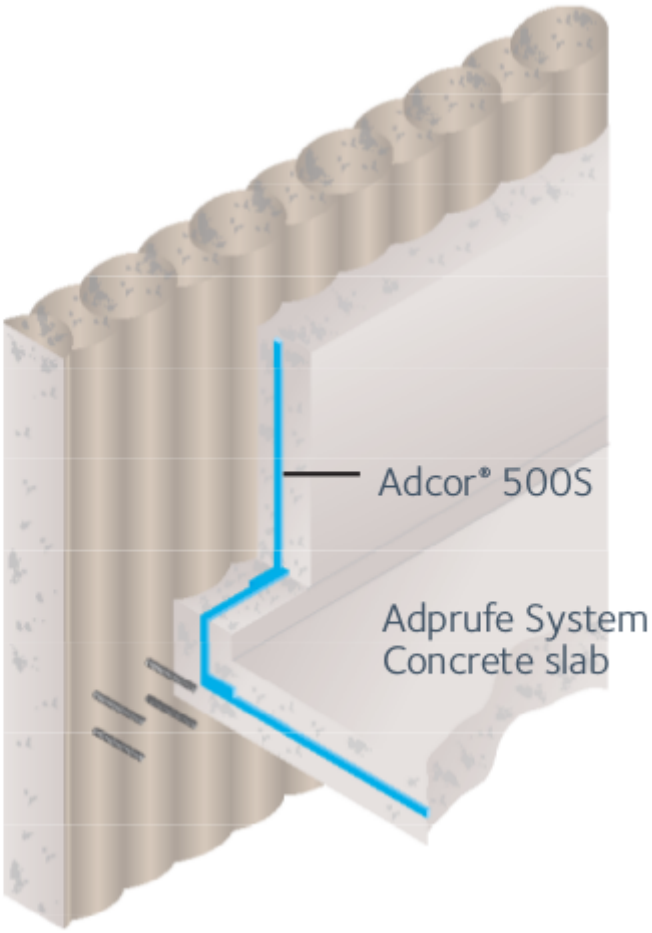
- ADCOR® 500S — hydro-expansive waterstop system for construction joints and penetrations
- BETEC® 350 — cementitious compound for sealing tie-bar holes
- SERVISEAL® AT — PVC/hydrophilic co-extruded waterstop for designed movement joints


Adcor® 500S
Adprufe System
Concrete slab

Advantages

	MAIN CONTRACTOR	ARCHITECT	CONCRETE PRODUCER	DEVELOPER/ OWNER
Reduces permeability and drying shrinkage of concrete		●	●	●
Improved workability resulting in easier, more complete compaction	●		●	
Can be used in all types of concrete, with all types of cementitious binders	●	●	●	
No expansive agents	●	●	●	
Can be combined with GCP membranes or cavity drain systems for enhanced protection in critical applications	●	●		●

Applications

- Adprufe provides structurally integral waterproofing (Type B construction) as defined in BS 8102 1990 and is suitable for Basement grades 1 to 4
- Water-retaining structures
- Swimming pools
- Lift pits
- Tunnels

Adprufe is not intended or recommended for use in areas where concrete is expected to be exposed to repetitive freeze-thaw cycling, unless the concrete has been air-entrained. Consult GCP for further advice.

Design Criteria

Concrete structures must be designed in accordance with BS 8110 1997 Part 1, or a comparable code. A maximum design crack width of 0.3mm must be used in the reinforced concrete design.All water-retaining structures must be designed in accordance with BS 8007 1987, or a comparable code. A maximum design crack width of 0.2mm or less must be used in the reinforced concrete design.Additional design guidance for dwellings is given in the Approved Document, Basements for Dwellings.

Properties

Appearance: Straw coloured clear liquid
Air Entrainment: The product does not entrain additional air
Chloride Content: Nil
Specific Gravity: Approx. 0.86

Compatibility

With cements: Adprufe AP3 can be used with all types of Portland Cements, including sulphate-resisting cements. It is compatible with concrete containing pulverised fuel ash (pfa), ground granulated blast furnace slag (ggbfs) and microsilica. For other cement types consult GCP.
With other admixtures: As with all concrete admixtures, Adprufe AP3 should not be pre-mixed with other admixtures or chemicals. The product is engineered to be used with superplasticisers from GCP Applied Technologies, but must be added separately. Physical properties of the concrete may be adversely affected if Adprufe is used with other admixtures and chemicals.

Mix Design

Adprufe AP3 is engineered for use in concrete with medium to high workability and with a maximum water-cement ratio of 0.4. For best water absorption result, keep the concrete water-cement ratio at 0.40 or below. However, if a higher water-cement ratio is used, depending on project requirements, it is necessary to ascertain results through trial mixes. Adprufe AP3 admixture reduces the water absorption of hardened concrete. It is possible there may be compressive strength variances ranging from 0% to 15%, however the figure is typically less than 10%; mix designs should take this into account.
In mix designs proportioned for high strength concrete or durability, this level of strength reduction is typically not an issue. For established concrete mixtures where strength must be maintained, superplasticisers may be used to cut water to offset the strength reduction.
GCP recommends the use of ADVA superplasticiser (see separate product data sheet). Where alternative superplasticisers are used, ensure they produce the specified workability and maximum water-cement ratio, at the equivalent cement content. When non-GCP superplasticiser is being considered we recommend trial mixes to ensure compatibility. For further advice consult GCP Applied Technologies.

Adprufe Concrete Typical Properties

PROPERTIES	PLAIN CONCRETE	ADPRUFE AP3
Adprufe AP3 dosage rate (L /m^3)	-	3.5
ADVA dosage rate (litre % B.W.C)	-	1.3
Typical Portland Blast Furnace Content (kg/m^3)	400	400
Free water-cement ratio	0.45	0.38
Concrete slump (mm)	70	130
Air content (%)	1.7	2.8

Compressive strength (MPa)

PROPERTIES	PLAIN CONCRETE	ADPRUFE AP3
7 days	36.5	42.0
28 days	50.5	59.5
Water absorption @ 28 days (BS1881 Pt122)(%)	2.5	0.55
Water Permeability@28 days (DIN 1048 Pt5)(mm)	27.4	8.0
Drying Shrinkage@28 days (ASTM C157)(%)	0.045	0.038

Addition Rates

	ADDITION	PER
Adprufe AP3 for waterproof concrete	2.5 - 5.0L*	m^3

* Addition rate can vary, depending on project requirements. Please consult your local GCP representative.

Curing

Concrete should be cured in accordance with the recommendations given in BS 8110 1997 Part 1, or a comparable code.

Packaging and Storage

Adprufe AP3 is supplied in bulk and 205L non-returnable containers or in 1,000L transi-tanks. Store under cover and protect from frost. If the product freezes, contact GCP Applied Technologies for advice.

Dispensing Equipment

Please contact your local GCP representative for further information regarding the dispensing equipment for this product.

Concrete Placement

Place concrete in accordance with the recommendations of BS 8000-9:2003, or a comparable code. Fully compact all concrete using best practices. Do not place concrete when ambient temperatures are 5ºC or less. Refer also to Material Safety Data Sheet for guidance.

Health and Safety

Read the product label and Material Safety Data Sheet before use. Users must comply with all risk and safety phrases.

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