

ATECH PLUS

Waterproofing Solutions

Aquaphobe S

Waterproof Impregnating Agent for Concrete, Brick, Stone & Concrete Products

Chemical Type

Silane-Siloxane solution

Description

AQUAPHOBE S deposits a silicone polymer inside the pore walls of porous building materials. This prevents the movement of liquid water but does not inhibit drying out through water vapour movement. The product when applied is tack free, shows no gloss and unlike film forming acrylic sealers does not permanently block the pores leading to loss of thermal insulation.

Tests carried out in Australia showed that a vertical wall made of concrete blocks and treated with a 290S type siloxane impregnation was able to resist water penetration through the wall at a flow rate equal to 140 mm of rain per hour at an air pressure equal to a 100 km wind for a period of 72 hours. Under these conditions an untreated wall would show leakage within an hour and be saturated within a day.

Major Application

1) Impregnation of the surface of concrete, pavers, roof tiles, brick and concrete building products.

Porous building products absorb water which then leads to further damage. Waterlogged facades and pavers support the growth of unsightly moss and mildew. This growth of biological matter then exerts pressure leading to crack formation and further decay. Accumulation of dirt contributes to an overall unsightly appearance.

Application of AQUAPHOBE S can prevent many of these problems. When applied to concrete, brick and natural stone facades it provides a protective, waterproof finish without changing the outward appearance. Such a treated facade is still water repellent after 10 years of service.

AQUAPHOBE S treatments are effective wherever an unsealed porous surface capable of absorbing the impregnating agent exists. The surface must be free of cracks wider than 300 microns and the surface must not be subject to hydrostatic pressures greater than 3 kPa. An impregnated surface will resist water entry from wind driven rain and ponding water on a car park roof but is not suitable for waterproofing internal basement walls with a head of 1 metre of groundwater.

2) Injection of walls to prevent the rising of groundwater by capillary movement. i.e. the formation of a chemical dampcourse.

Injection of AQUAPHOBE S will provide protection against rising damp as a result of capillary absorption for a minimum of 10 years. Such injection is usually carried out where it is impractical or cost prohibitive to lay a conventional physical sheet dampcourse. The structure must be rehabilitated to ensure that water entry is not due to hydraulic pressures as a result of cracks, cavities and fissures.

Chemical Properties

The dried polymer of AQUAPHOBE S is highly resistant to UV attack and protects treated surfaces from deterioration as a result of acid rain. Unlike many commercially available siloxane treatments, AQUAPHOBE S is alkali resistant thereby being suitable for fresh alkaline mortars as well as the brickwork itself. This is critical for use on new brickwork and fresh concrete based surfaces. AQUAPHOBE S does not deposit alkali salts that crystallize and cause unsightly white deposits that are difficult to remove. Formation of the water repellent surface is caused by water evaporation and subsequent chemical reaction with the substrate surface. Unlike older salt based siliconates, formation of the water repellent surface is not dependant on absorption of carbon dioxide.

Surface Preparation

Siloxane impregnation can only work if structural defects have been repaired and the surface is clean. Algae and moss growth must be removed, soiled surfaces should be steam cleaned. Cracks of width greater than 300 microns need to be filled with a suitable filling compound. Damaged expansion joints have to be repaired and resealed. Construction joints, gaps between walls and roof, walls and floor, windows, doors and service penetrations need to be made waterproof. Faulty mortar joints have to be recaulked. The roof must be sound and waterproof. Water penetration from the ground by way of backfilled soil needs first to be addressed. Before applying as an injected dampcourse, highly porous rubble type walls need to be injected with a liquid cement to block all voids and fissures.

Protection Preparation

AQUAPHOBE S is ready to use and needs no preparation. Care must however be taken to ensure that the containers are tightly sealed and no water entry has occurred. Damaged product will not be clear and a milky deposit may be observed. All contaminated product is to be discarded.

Application

1) Surface Application - Long term durability of a siloxane impregnation is dependant upon correct application. The more active ingredient is absorbed and the deeper the absorption depth the better will be the performance. Correct application is geared to achieving this end in addition to health and safety and environmental concerns. The effectiveness of impregnation depends on product choice and the depth of penetration. For satisfactory results the product needs to be applied as a flood coat using airless spray equipment or alternative units allowing the application of low pressure flood coats. It is very important that the product is applied as a liquid and not as a mist. The nozzle of the application unit is held 5 – 10 cm from the wall and product is applied until no more will penetrate the wall, the overflow liquid starting to run 50 cm down the wall. This method applies the product in both a horizontal and vertical direction. A second application is carried out once the surface no longer shows a wet look. Multi application is critical to success. For areas around windows and penetrations application by brush or roller is possible. Great care must be taken to ensure that adequate product is applied and many coats may be necessary. To avoid missing any areas, impregnation should proceed in defined preselected areas before work is interrupted.

2) Dampcourse Injection - Fundamental to the success of chemical injection is the penetration of sufficient injection fluid. This is a factor of injection pressures, material porosity and distance between injection points.

Generally the distance between injection points should be around half the penetration depth. Diameter of the injection hole should be around 12 - 18 mm with a drilling angle of around 30 degrees. The drill holes should be in the centre of the brick and be deep enough to penetrate at least one layer of mortar. Very dense brickwork may require injection through the mortar joint. The drill hole is plugged with a specially designed injection packer complete with nozzle. Injection fluid is then pumped in under pressure using suitable pumps and delivery wands. Applied pressures in the 200 - 700 kPa region are usually acceptable, giving a good balance between application time and required fluid absorption.

Coverage

Material cost is a small portion of the total cost of impregnation, the maximum amount of material that can be made to penetrate should be applied. Porosity of the surface to be impregnated is the major determinant of material usage. Concrete will take around 0.3 litres/ sqm. Brickwork and natural stone tends to vary from 0.5 to 1 litre/sqm but can in exceptional circumstances take as much as 3 litres/sqm. To determine more accurately for a sample trial of 1 - 2 square metres should be carried out.

When used for dampcourse injection a usage rate of 3 litres / meter of single brick wall is a useful guideline.

Advantages

AQUAPHOBE S has 3 times the active content of conventional water repellants, improving its effectiveness, particularly where chloride corrosion of reinforcement in concrete is a possible issue.

Packaging

Available in 4 litre, 20 litre and 200 litre containers.

Indicative Specifications

Active Ingredient	alkyl silane-siloxane concentrate, 15% in odourless mineral spirit.
Protective Measures	Splashes on glass, glazed surfaces and cars must be avoided as these cannot be removed other than by mechanical sanding. Plants may die if allowed to come in contact with impregnating solution. Do not allow to come into contact with plastic or bitumen.
Drying Time	Surfaces become water repellent after 6 hours at 20 deg. Do not apply below 10 deg. or above 30 deg or if rain is expected within 8 hours.
Approvals	Complies with APAS specification GPC - M-168, silicone water repellants part 2
Fire Hazard	Contains flammable solvents, keep away from direct sources of ignition
Personal Safety	Do not allow spray to come in contact with eyes and wear protective breathing masks if working in confined spaces.
Active Ingredient	

Field Support

Field support where provided, does not constitute supervisory responsibility. Suggestions made by ATECH either verbally or in writing may be followed, modified or rejected by the owner, engineer or contractor since they and not ATECH are responsible for carrying out procedures appropriate to a specific application.

Customer Responsibility

The technical information and application advice given in this publication is based on the best information available at time of print. As the information herein is of a general nature, no assumption can be made as to the products suitability for a particular use or application and no warranty as to its accuracy, reliability or completeness either expressed or implied is given other than those required by Commonwealth or State Legislation. The owner, his representative or the contractor is responsible for checking the suitability of products for their intended use.

Safety Precautions

These products may cause allergic reactions through skin contact, goggles, protective gloves and overalls must be worn. Ensure that there is adequate ventilation and avoid breathing the vapour.

Exclusion Clause

1. The information contained in this data sheet is based on many years experience and is correct to the best of our knowledge. ATECH will be under no liability whatsoever whether in:
 - a) Contract or tort (including, without limitation, negligence)
 - b) Breach of statute
 - c) Any other legal or equitable obligation other than the quality of the product at the time of despatch.
2. Any queries about specification use or application should be directed to our technical service department immediately.
3. This exclusion clause does not operate to exclude any warranty that by law may not be excluded.



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