

BUILDING CHEMICALS SPECIALISTS

FORMULA S

Plaster Formulation for Squash Courts

The squash court plaster with the S.R.A. approval for Championship Play

FORMULA S was developed specifically to overcome many of the problems arising from the long-established custom of using sand and cement renders with hard plaster finishing coats in squash courts.

In recent times the Plastering Trade found it increasingly difficult to exercise the many disciplines required to achieve lasting results using the original system incorporating sand and cement backings.

More often than not basic materials of the right quality were not available.

FORMULA S was therefore introduced in 1969 to provide a material manufactured under strict quality control with as near uniform quality, both in consistency and appearance as it is possible to achieve with finishing materials of this type.

Since its introduction **FORMULA S** has been used successfully on over 8500 courts including many championship courts. It has many advantages over the old sand/cement tender system including anti-condensate properties, speed of application, good adhesion and the ability to be very easily repaired when maintenance work is eventually required.

What is FORMULA S and what are its qualities?

1. **FORMULA S** is a retarded plaster formulation consisting of a Base Screed and Finishing Coat both containing polymeric additives.
2. Its adhesion to most standard building materials is excellent and no special keying systems are required on the structural walls, all joints should be left flush.
3. It consists of a base screed normally applied at a minimum thickness of 9 mm.
4. The finishing coat is applied monolithically with the screed at a thickness of 3 mm.
5. It is possible to apply the complete system to a squash court wall in one day although in practice most plasters apply Base Screed in one day and Finishing Coat the following (the shorter the intercoat time lag the better).
6. The base screed and finishing coat thus form a monolithically layer from structural wall to face of plaster, and as both base screed and finishing coat have identical coefficients of expansion the use of **FORMULA S** correctly applied eliminates stress cracking, lamination between coats and hollowness which are the major problems when using sand/cement render prior to a hard plaster finish.

What are the advantages of FORMULA S?

1. Adequate working time (about 2 hours) before the irreversible set occurs.
2. Eliminates stress cracking by eliminating shrinkage associated with cure.
3. Excellent adhesion to a wide range of building surfaces without the need of additional “keying” aids.
4. It provides an excellent anti-condensate surface.
5. Easily maintained with our **FORMULA S** repair material.
6. For application of **FORMULA S** in hot climates.

Substrate

GENERAL

The Squash Court Wall to receive FORMULA S may be constructed from high quality dense common clay brick (maximum compressive strength 21 N/mm²), dense aggregate concrete block (minimum compressive strength 7 N/mm² or correctly prepared insitu concrete. Sandlime, flintlime, or calcium silicate bricks, lightweight aggregate blockwork, concrete brickwork, or hollow clay pots should be avoided wherever possible. If these or other forms of construction have been used, take advice from Prodorite of the local SRA.

PREPARATION

The substrate must be free from dust, laitance, or other impurities, such as oil, grease or salts. Such impurities could lead to poor adhesion and/or staining of the completed FORMULA S. With dry surfaces, suction should be reduced by continuous damping down until there is just enough suction to give “hold” to the Base Screed. Very dry or porous surfaces must be primed with Prodorite G.S. Primer (See Working Instructions for the repair and maintenance of FORMULA S squash court surfaces).

DISSIMILAR MATERIALS

The application of FORMULA S onto dissimilar substrates within the same wall should be avoided. Dissimilar materials expand and “flex” differently causing cracks. Examples found in practice have been mixed brickwork or blockwork in the wall. If court construction makes avoidance of such features impossible, we suggest the following method which can be considered a good palliative but not a cure. The use of the RB System should reduce the likelihood of serious cracks developing in use.

Apply a 1 – 2 mm layer of Resilient Bonding System over the joint and approximately 150 mm on either side. Place a 200 – 300 mm wide strip of our G.W. Membrane (a woven glass cloth) into the still wet R.M. Layer so that it bridges the joint. Sandwich the G.W. Membrane with another 1 – 2 mm layer of Resilient Bonding System, ensuring the membrane is thoroughly impregnated and not rucked.

Overcoat with FORMULA S Base Screed as soon as initial set occurs, i.e. after approximately 2 hours. If left overnight or longer, apply a thin “scratch coat” of Resilient Bonding System and then overcoat with FORMULA S Base Screed within 1 – 4 hours, i.e. as soon as the initial set occurs is the “scratch coat”.

MIXING

FORMULA S is NOT a conventional wall plaster. Therefore it is vital that mixing instructions are strictly followed. Failure to do this can mean an unacceptable finish, early failure of the FORMULA S system and the consequential spending of additional, unnecessary amounts of YOUR MONEY.

Both FORMULA S Base Screed and FORMULA S Finishing Coat materials must be mixed by means of a slow speed electric drill – 500 – 600 r.p.m. and a Prodorite peddle. Slow addition of powder to clean cold water with mechanical mixing must be observed.

The Finishing Coat must be mixed in clean 25 – 30 litre plastic bucket. Place 7 – 8 litres of clean water in the bucket and add slowly with mixing 15 – 20 kg of FORMULA S Finishing Coat powder until a smooth creamy mix is obtained. If FORMULA S Finishing Coat is made too thick it cannot satisfactorily be let down with further water. The mix must then be discarded.

It is essential to maintain all mixing and application utensils in a clean, uncontaminated condition as set material causes acceleration of the set of fresh batches i.e. the reaction is auto catalytic. Mixing buckets should be washed regularly and at least once every hour. The use of new plastic buckets or containers is preferred as set of partly set material is then easily removed.

APPLICATION

THICKNESS

The maximum thickness of FORMULA S Base Screed is 9 mm. Greater thickness may be applied dependent on site requirements.

The minimum thickness of FORMULA S Finishing Coat is 3 mm. It is not usual to require thicknesses greater than 6 mm.

DAILY WORKING

It is essential to complete the FORMULA S Base Screed or FORMULA S Finishing Coat to any given wall in one day thereby AVOIDING DAY JOINTS.

FORMULA S BASE SCREED

FORMULA S Base Screed is applied to the correctly prepared surface from a hawk or bucket using a trowel. The minimum thickness of 9 mm is normally attained in 2/3 trowel applications. This minimum thickness can be achieved either by working from fixed timber grounds or by forming grounds using FORMULA S Base Screed or by the plumb and dot system. A 12 mm ground at floor level is recommended to prevent the risk of a scooping effect leading to reduced thicknesses at low level. Temporary grounds must be removed the same day as the FORMULA S Base Screed is applied and the voids made good with FORMULA S Base Screed that day.

It is not necessary or desirable to trowel FORMULA S Base Screed to a polished finish. In fact over-trowelling should at all times be avoided. The purpose of FORMULA S Base Screed is to provide a level, plane surface with a closed texture. This is obtained by building up the FORMULA S Base Screed to a sufficient thickness so that it can be ruled off. Stainless steel or aluminum straight edges should be used as timber is unsuitable owing to somewhat sticky nature of FORMULA S Base Screed. Any open textured area of FORMULA S Base Screed must be closed using the minimum amount of trowelling. The FORMULA S Base Screed must be checked to see that it is plumb and free from undulations before its sets.

When fixing grounds, these should be 12 mm thick at the top and bottom of the play area (normally a deflection board forms the ground at the top of the play area) with a choice of intermediate grounds fixed at 9 mm in order to allow ruling off procedures. It is essential, therefore, that walls are built as true and accurate as possible to achieve economy of materials.

SETTING TIME

The normal working time on the hawk for FORMULA S Base Screed is approximately 1½ – 2 hours depending on the conditions prevailing. The surface will have set sufficiently for overcoating with FORMULA S Finishing Coat after 4 – 7 hours depending on the prevailing conditions.

FORMULA S FINISHING COAT

The FORMULA S Finishing Coat must be applied onto set but not dry FORMULA S Base Screed. The use of “plaster planes” to remove surface irregularities in the FORMULA S Base Screed is not normally recommended as this may produce a friable surface which results in adhesion failure of the FORMULA S Finishing Coat. To achieve maximum adhesion the FORMULA S Finishing Coat must be applied within 24 hours of applying the FORMULA S Base Screed and the Base Screed must first be dampened if it has dried. The FORMULA S Finishing Coat is put on as a multi coat system wet on wet by firm trowelling. It is essential that the first coat is applied as a tight scratch coat over the damp FORMULA S Base Screed to expel any trapped air and to ensure good adhesion. The second and subsequent coats are applied thicker than the first coat but still applied with considerable pressure from the trowel to ensure that any trapped air is expelled and to obtain good adhesion between coats.

The aim of the applicator during this part of the operation is to produce a final surface which has a minimum thickness of 3 mm and is smooth, dense and free from entrapped air.

The normal working of the FORMULA S Finishing Coat is 1 – 1½ hours on the hawk depending on the prevailing conditions. The setting time of the Finishing Coat is approximately 2 hours, again depending on the prevailing conditions. Applicators must be aware that FORMULA S has an irreversible set, therefore once the operation of applying the Finishing Coat to a wall has started great care must be taken to attain continuity of work.

The final surface required is smooth, dense and matt. This is achieved by using the minimum of wetting in the final trowel up and also without over-trowelling. Over-

trowelling and/or too much water used in the final trowel-up results in an unsatisfactory polished surface which eventually flakes. Some water may be required in the final trowelling but the water must be used sparingly to dampen the trowel and NOT by splashing water onto the partly finished FORMULA S.

LIGHTING

A FORMULA S surface is not painted after completion. For this reason trowel marks must be reduced to a minimum, which can only be achieved by having first rate lighting at the application stage. It is advisable to wait until the permanent lighting system is available before commencing application.

CURING

When re-surfacing Front Play Walls, it is obviously important to the court owner to return it into use as quickly as possible. Under temperate climatic conditions this can be considerably speeded up by the correct use of dehumidifiers/heaters. The following guidelines should be adopted.

The completed FORMULA S surface i.e. Base/Finishing Coat must be allowed to cure naturally at room temperature for at least 40 hours.

Full strength has been developed and the excess water in the wall can now be safely removed by the use of any dehumidifying or heater system providing:

- ✓ The temperature of the FORMULA S surface is kept below 45°C (113° F)
- ✓ Direct blasts of hot air onto the surface are avoided.

Courts can be returned to play as soon as all obvious damp patches have been removed. This obviously varies with heat/humidity of the building and the efficiency of the dehumidifier/heater, but should be within 7 days of completion of application.

The above techniques can be followed with new courts but the curing time taken is usually considerably longer since the building structures themselves contain large quantities of water. There is also a risk of driving stains from within the wall structure through into the FORMULA S surface.

Usually the setting/drying of the FORMULA S surfaces is not the critical factor preventing the opening of a new building and thus the extra cost of dehumidifiers/heaters is not often necessary.

The average drying time for new courts in temperate climates is approximately 4 weeks.

MATERIAL REQUIREMENTS

FORMULA S BASE SCREED

Assuming the brickwork or blockwork is true and the Base Screed is applied at a minimum thickness of 9 mm over the high spots, you will require for the playing area of a squash court (approximately 106 sq. m) 70 -80 X 25 kg BAGS OF FORMULA S BASE SCREED. 70 – 80 bags is purely an indicative figure and it is the applicators responsibility to assess each court individually, for consumption can be considerably influenced by undulations and imperfections such as crevices, cavities, brick-joints etc. Due allowance should be made for these factors in evaluating each contract. Glass back courts will require 60 – 7 bags of FORMULA S BASE SCREED.

FORMULA S FINISHING COAT

FORMULA S Finishing Coat is applied at 3 mm thickness. For a play area of 106 sq. m 18 X 25 kg BAGS OF FORMULA S FINISHING COAT WILL BE REQUIRED. For the front play wall, where durability is critical a minimum of 6 bags MUST be used. Glass back courts will require 16 bags of FORMULA S FINISHING COAT.

STORAGE

FORMULA S Squash Court Powders are supplied in 25 kg sacks and should be stored off the floor in a dry, warm environment. Under good storage conditions, in unopened bags a life of 6 months can be anticipated.



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