Technical Specifications

Rebound International Ltd

APPROVED & CERTIFIED

WORLD SQUASH FEDERATION

England Squash & Racketball

Contents

Specification and Application Instructions

Introduction

Rebound has been in successful use since the mid-seventies in squash courts throughout Europe, Asia & the World and has earned the approval of Squash England, ESRF, & WSF.

It has become clear over the years that, despite the efforts of bodies like Squash England to standardise specifications, basic errors are still common. It is the purpose of this paper to provide guidance for specifiers of Rebound, and, we hope, to act as a source of more general information.

Rebound

Rebound is glass-fibre reinforced cement composite, developed specifically to withstand the constant impact of squash balls and rackets.

Rebound brings together the high tensile strength of glass-fibre and the high compressive strength of a cement matrix. Its most crucial ingredient, E-glass fibre strands, form and interface with the propagation. The fibre-matrix bonding provides a monolithic layer of tough and flexible material capable of withstanding:

- Impact
- Pressure
- Shrinkage

Wall Construction

We are concerned here with the inner skin of the court walls above DPC. It is essential that the correct specifications are achieved to ensure a suitable substrate to receive a single coat of material no less than 6mm thick and no greater than 8mm thick.

The play walls may be constructed of either brick or block work. Because of differential coefficients of expansion, it is inadvisable to mix material or to introduce concrete stanchions or beams into the actual play walls.

Mortar

Cement should comply with BS/EN 12. Sand should be clean, sharp river or pit sand and comply with BS/EN 1198-1200. Lime should comply with BS/EN 890.

For brickwork, the mix should be 1:1:6 or 1:2:8 by volume.

Bricks

Bricks should be common, preferably plain dense fair-faced concrete bricks, to ensure minimum shrinkage. Bricks must be stacked on site for at least seven days before use.

Blocks

Blocks must be concrete, dense aggregate Class A to BS/EN 6073 Part 1 and have a minimum average compressive strength of 7 KN. The blocks should be well cured before use and covered to reduce water absorption. The use of lightweight blocks is not recommended as lightweight aggregates usually have a higher drying shrinkage and moisture expansion than heavy concretes, and they are more prone to shrinkage cracking. Moreover movement joints are needed at 6m intervals, which make this kind of block unsuitable for squash play walls.

As the work proceeds, it is essential that it is uniformly square, absolutely straight and plumb with flush struck joints, and free from mortar snots.

To conform to Squash England's specification for a Championship standard court, the walls should be plumb within 10mm in 4000mm. The surface tolerances of the rendering should be no greater than 3mm in 2000mm.

Other Materials

Cast concrete walls require greater preparation than conventional brick and block work. It is essential that they be well cleaned, free of mould oil, grease and laitance. The surface should be scabbled to provide a good mechanical key. This may be done by a variety of methods:

a) Wire brushing and washing before the final set. A set retarder may be applied to formwork to expose aggregate up to 3mm if necessary.

b) On set concrete, the surface should be pin-hammered.

c) Other alternatives are acid-etching and sand-blasting.

Advice may be sought from your professional on the use of suitable treatments and on the use of any other construction material as a substrate for Rebound.

Preparatory Work

Before the application of Rebound, it is essential that the following conditions prevail on site:

a) Good lighting conditions should be available on court. Preferably the permanent lighting should be installed--an average illumination of 380 lux for standard courts or 500-600 lux for Championship standard.

b) The building should be weather tight and the walls completely dried out. Residual moisture may result in delayed shrinkage cracking. If drying conditions are poor, dehumidifiers should be used.

c) Power and clean water should be readily available.

Storage

Rebound must be stored under cover in dry, warm conditions at a temperature of no less than 4-5C. It must be stacked off the ground on wooden pallets to prevent contact with water and dirt. Any extreme storage conditions of temperature and humidity are to be avoided.

Surface Preparation

The walls must be free of dust, loose particles, oil and grease. Mortar droppings and surface protrusions must be removed.

Walls must be checked for any holes or cracks (especially when constructed of poured concrete) and patched where necessary with strong mortar, which must be allowed to dry thoroughly before rendering begins.

Brickwork and block work walls must be flush-pointed and any gaps properly filled.

Smooth concrete surfaces must be hacked or scored with an angle-grinder or combing-chisel to provide a mechanical key.

Scaffolding and Tools Required

TOOLS REQUIRED: Scaffolding should be used and platform height adjusted as necessary.

Mixing should be carried out in a portable electric 3/2 half-bag type mixer. Alternatively mixing can be done by hand using a large tub and plasterer's larry. A mortar mill must not be used.

Other tools required are:

- 12" stainless steel plasterer's float.
- 6 ft long aluminium derby (straightedge)
- 8 ft long aluminium straightedge
- 2 No. 2 ft square spot boards
- 1 No. 4 ft x 3 ft spot board

- Clean 8 gallon buckets
- Concreting shovel
- 2 litre measuring jug
- 2 or 3 large, clean, smooth-sided plastic drums (130 litre capacity or thereabouts).
- 12 inch paint roller and extension, or brush
- Plasterer's hawk board.

Wall Priming

Walls must be thoroughly dampened and the excess water removed.

Slurry comprising one part of Rebound SBR (i.e. the liquid bonding agent) and one part white cement is mixed in a bucket and applied generously by brush or roller to the section of the wall to be rendered. This should be done immediately prior to the application of Rebound render coat. If the slurry coat dries out before rendering is applied, a second coat should be applied.

The slurry coverage rate is approximately 5 sq m per litre

Mixing of Render

A supply of clean, cold tap water should be available close to the court.

Two large, clean, smooth sided plastic containers (volume approximately 130 litres) should be placed in the rear of the court next to the mixer and materials, and filled with 50 litres of water each and 25 litres of Rebound SBR (i.e. one drum). Proportions are therefore 1 litre of Rebound SBR to every 2 litres of water.

A third drum should be filled with clean water to keep tools and mixer clean.

Plant set up should allow speedy and efficient work, as workability times are limited.

The contents of one bag of Rebound should be emptied into the mixer, which should be put in motion for 30 seconds or so.

Between 3.5 and 4 litres of the gauging liquid should then be added slowly and allowed to mix for 2 minutes until a rich, creamy consistency is achieved. Thin, runny mixtures should be avoided, as should dry and stiff ones.

This mix should then be turned out onto the mortarboard and taken to the plasterer for application.

Rendering Application

The sequence of application is side walls (one day), front and back walls (one day).

Rebound is applied in a single coat to the playing surface only 6-8 mm thickness with a stainless steel trowel. Each 25 kg mix should be turned out onto a clean wooden spot board 2 ft square, placed on the scaffolding.

Having applied the bonding agent in a 2-3 m area, the Rebound render should be applied within a short time (15 minutes), in sections. Coverage per bag is approximately 1.5-2 sq m.

After the whole wall has been completed it should be levelled with a 6ft straightedge and left to set. The correct thickness must be attained at this stage. The entire wall must be completed in one session as Rebound cannot be "pieced up" the next day like conventional plaster.

The wall should be checked at regular intervals after completion to see whether the set has begun. If so the final trowelling can begin to produce a smooth surface. This final trowelling must not be carried out if the material is still wet. The surface is still too wet if trowelling causes the surface to "tear". Nor should it be over-trowelled – this will bring too much water to the surface, compact and segregate the fibres and significantly weaken the product.

A dampened sponge float can be used before the final trowelling to pass over the surface to bring up some "fat". Once this has been completed and around 5 mins later a dampened steel trowel should be used over the surface to close it up and leave flat.

Due to the great impact and stress on the front wall under playing conditions, it is most important that great care be taken in preparing, priming and rendering the front play wall correctly.

Out of Play Battens and Door Frames

These should be fixed in accordance with WSF recommendations before the rendering commences. (Layout and detail sketches see pg 12). Rebound is applied in one coat to a maximum thickness of 8mm. Battens should therefore be no greater than 8mm thick, door frames should be fixed to protrude this distance into the court.

Glass Walls

Where glass walls are specified, the metal fixing channels should be fixed before the application of Rebound, bearing in mind once more that Rebound is applied 8m thick. It is important that the glass-wall manufacturers are advised that Rebound is to be used.

Curing Process

Rendering which dries out prematurely loses strength. Ensure a slow cure. This can be done by mist spraying in intervals, which should be done for first three days as soon as the surface is hard enough.

It is essential that the day after completion the walls should be kept damp by spraying liberally with water for short periods throughout the day. This should continue everyday for the next five days.

In excessively dry and hot conditions it is recommended that the walls be completely covered in Hessian or polythene sheeting to retain as much moisture as possible.

Court Flooring

Rebound application is a wet trade. Complete rendering prior to floor fitting.

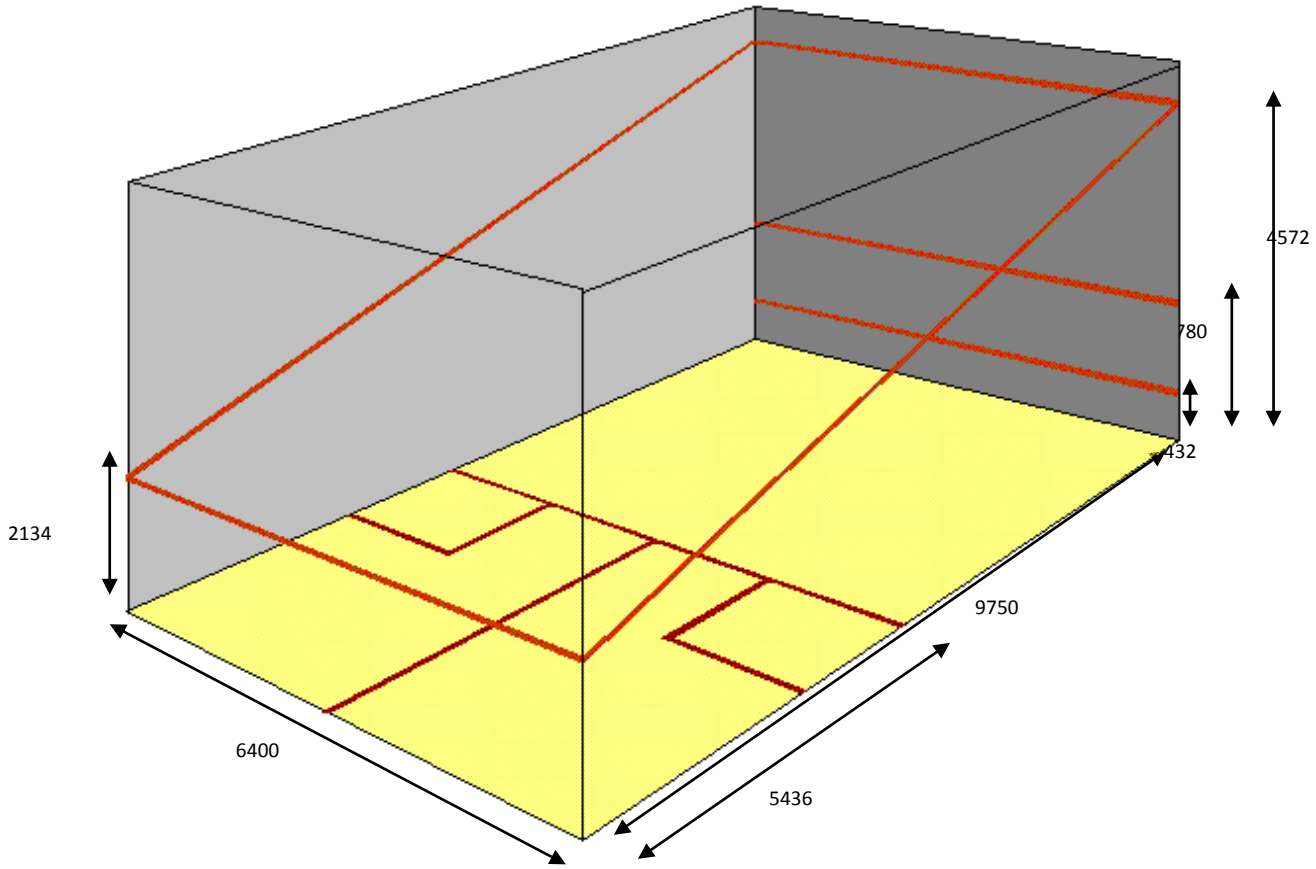
Material Requirements

Rebound is a one-coat system applied monolithically to each wall, at a nominal thickness of 8 mm.

The area of plastered playing surface in a full squash court is 105 meters squared. In a glass -backed court it is 93 meters squared

The number of bags of material usually varies from as little as 40 to 70 depending upon how plumb the walls are and the degree of surface undulation and imperfection. The above amounts include a small allowance for wastage and surface imperfections.

Squash Court Dimensions



Technical Data

General Information

Rebound is a high performance, white façade system. It is manufactured from white cement, alkali resistant glass fibres and carefully selected aggregates.

It is suitable for use in public places especially where resistance to high impact is a primary requirement, for example in squash court walls. It is suitable for use on high impact surfaces and meets the specifications of the World Squash Federation.

Rebound is accredited to ISO: 9001 and ISO: 14001 and meets the requirements of the UK Home Office for use in custodial suites.

The glass fibre reinforcement ensures a high density and excellent flexural/tensile ratio (40 N/SqM) and compressive strength (40 N/SqM). This results in superior resistance to cracking, rain penetration and abrasion.

Its high performance and resistance to shrinkage cracking mean that REBOUND can be applied to a solid backing as a one coat system in all exposure zones.

Rebound provides superior durability and resistance to air-borne pollutants.

The through coloured white finish of Rebound requires little or no maintenance. This can result in lower whole life costs compared with white painted renders.

Rebound is supplied pre-mixed and only requires the addition of a clean water bonding agent admixture.

This specification complies with the general format of Section M20 of the NBS Model Specification, Standard Works Version.

Information Sources

BS/EN 5262 Code of practice for external rendering

BS/EN 5492 Code of practice for internal plastering

www.squash.org

www.reboundsquash.com

Backing

- Backing coat for brickwork, block work and concrete
- High suction backing
- Backing coat for moderate to high suction surfaces such as lightweight or medium strength block work and calcium silicate brickwork
- Recommended preparation as designated in BS 5262: 1991 tables 4-5 and section 8 of general guidance notes to NBS M20

Thickness of Rendered Coats

- The recommended nominal overall thickness for one coat of Rebound is 8mm.
- The choice of backing coat is dependent on the surface to which it is applied.
- Rebound is generally applied as a monolithic system

Specification Clauses

a) Location

As shown in architects drawing.

b) Background

The structure will normally be based on concrete block work or brickwork of clay, concrete or calcium silicate. Soffits will normally be dense concrete or suspended. Other backgrounds may be specified at the Architect's discretion.

c) Preparation

- Remove all loose dust and other surface contaminants.
- All paint work must be removed using grit blasting or needle gun attrition.
- All mortar joints should be raked lightly to provide a key.
- Where necessary consolidate and seal using Rebound Bonding Agent

d) Application

- Apply Rebound Bonding Agent slurry coat in accordance with the manufacturers written instructions before coating.

- Backing coat: post dubbing out the render may be coated within 2 hours at normal ambient temperature.
- Rebound should not be applied if the air or background temperatures are at or below 5ºC or above 25ºC.
- Apply each coating firmly to achieve good adhesion and in one continuous operation between angles and joints.
- A suitable mask must be worn during the mixing process.
- Ensure all coatings are not less than the specified thickness and are of even and consistent appearance, free from rippling hollows and ridges.
- The maximum dimension in any direction between joints should not exceed 7 meters.
- Finishing coats must be ruled and finished as described in NBS M20.

General Requirements for Workmanship

Workmanship should comply with the relevant sections of BS/EN 8000: Part 10: 1995 and NBS M20 Clause 410

Curing

It is essential that a newly rendered surface be prevented from drying out too rapidly. Depending on the weather, adequate curing of backing coats can be achieved by lightly spraying the render with water and protecting it from adverse conditions. Adequate curing of a final decorative coat should be more stringent with consideration given to applying a curing membrane. For further information, refer to NBS Clause M20 a nd BS/EN 5262: 1991.

Packaging

Rebound Plaster is available in 25 kg bags

Rebound Bonding Agent is available in 25 Litre Drums

Health and Safety

Contact between cement powder and body fluids (for example sweat and eye fluids) may cause irritation, dermatitis or burns. Cement is classified as an irritant under the Chemicals (Hazard Information and Packaging) Regulations.

The diameter of the glass fibres is greater than the respirable range of 3 microns or less.

Please refer to the Health and Safety section.

Finishing

Finishing must be complete within 24 hours.

Conditions of Use

Colour tone and texture appearance can vary slightly due to natural aggregates.

Markings

1) Rebound Plaster

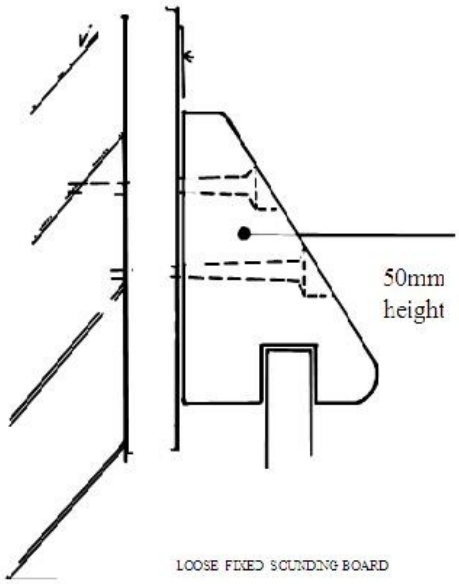
- "Rebound" WSF Hard Plaster System For Squash Court
- 25 kg
- WSF Approved
- Made in UK by Rebound Ltd.
- Must be stored in dry conditions

2) Rebound Bonding Agent

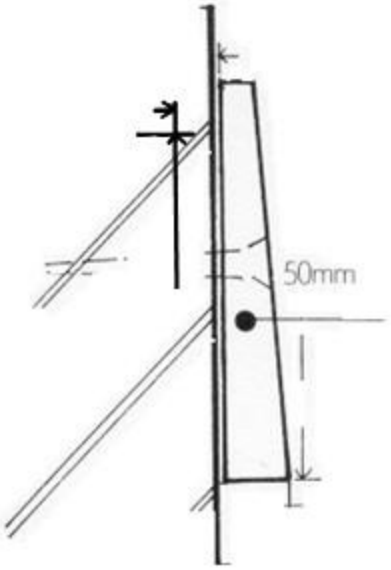
- "Rebound" Bonding Agent 25 Litres
- WSF Approved
- Made in UK by Rebound Ltd.
- Must be stored away from Direct Sunlight

Tin and Batten Details

Standard Details

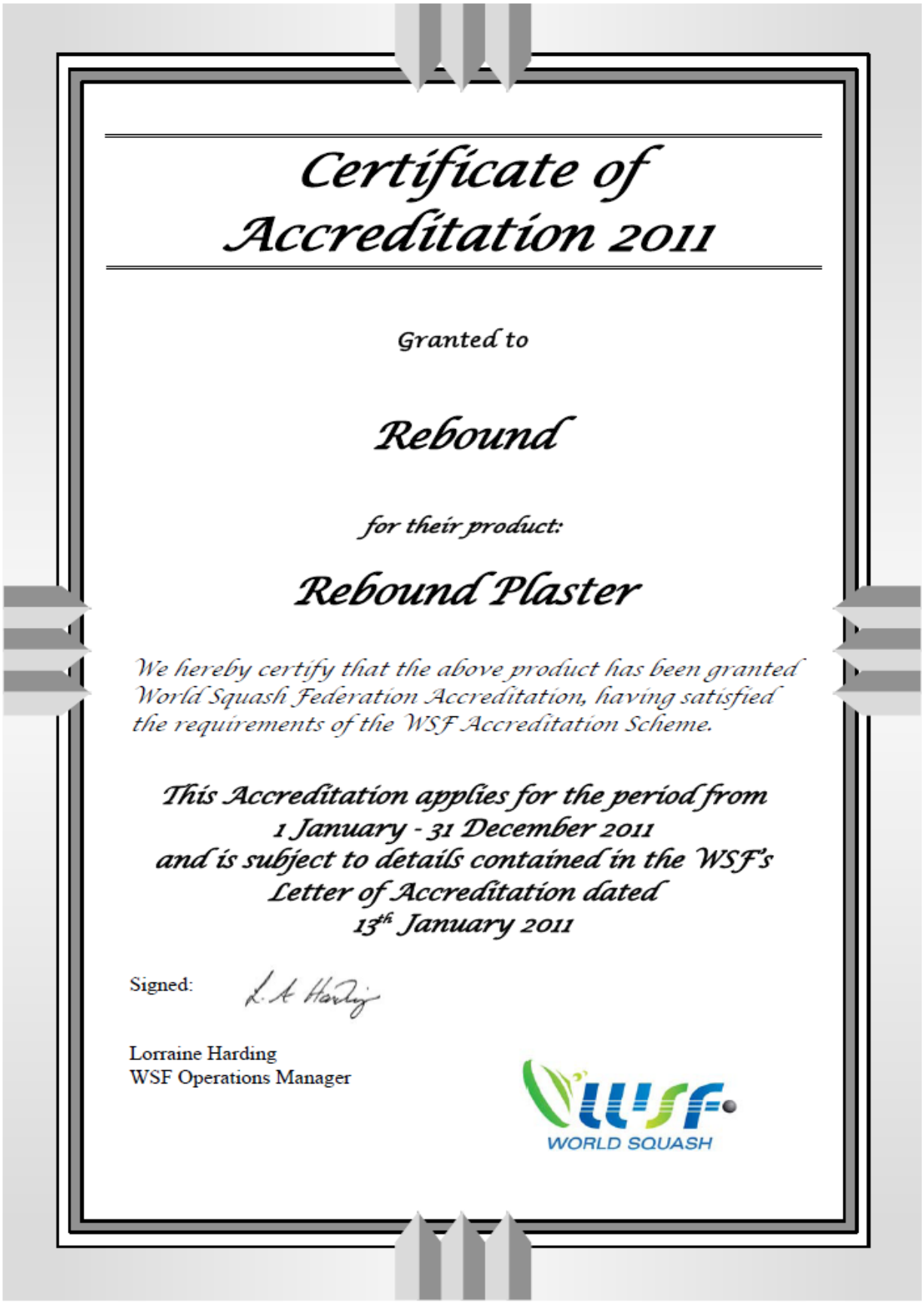


Alternative A



Alternative B

World Squash Federation certificate



Certificate of Accreditation 2011

Granted to

Rebound

for their product:

Rebound Plaster

We hereby certify that the above product has been granted World Squash Federation Accreditation, having satisfied the requirements of the WSF Accreditation Scheme.

This Accreditation applies for the period from
1 January - 31 December 2011
and is subject to details contained in the WSF's
Letter of Accreditation dated
13th January 2011

Signed: L. A Harding

Lorraine Harding
WSF Operations Manager

WORLD SQUASH

Rebound International Ltd.
Copley Square
2nd Floor
4 Stamford Road
Bowdon
Cheshire

Telephone:	+44 (0) 161 929 7758
Fax:	+44 (0) 161 929 7786
Mobile:	+44 (0) 779 441 9777
Email:	rebound@copley.co.uk
Web:	www.reboundsquash.com