SAINT-GOBAIN

durarep HS

High Strength

SINGLE-COMPONENT, STRUCTURAL GRADE, POLYMER-MODIFIED, CONCRETE REINSTATEMENT MORTAR

DESCRIPTION

durarep HS is a one-component polymer modified cementitious blend of Portland cement, fine aggregates and chemicals requiring only the addition of clean water to produce a high- strength concrete reinstatement mortar. When fully cured, **durarep HS** exhibits excellent compatibility with concrete in terms of movement. Due to the mortar's low water requirement it cures quickly to a dense durable finish with its surface being impervious and water repelling.

USES

- Dams, weirs, flumes, bridges, concrete reservoirs and building structures
- Potable water retaining structures
- Silos and water cooling towers
- Reinstatement of large or small patch repairs
- Specifically designed for repairs where good abrasion resistance and high compressive strengths are required
- Elements requiring high chloride and carbon dioxide resistance
- Harbour wharf repairs

ADVANTAGES

- Alkaline properties provide protection to thereinforcing steel
- High levels of early strengths
- High abrasion resistance
- Applied by the wet or dry spray process for fast, exceptionally high-build repairs with enhanced characteristics
- Extremely low permeability provides maximum protection against carbon dioxide and chlorides ingres
- Excellent bond to the concrete substrate
- Compensates for shrinkage in the plastic and hardened phase
- Constant quality and performance (pre-blended)
- Non-toxic
- Contains no chloride

TYPICAL PHYSICAL PROPERTIES	
Compressive strengths – Mpa ASTM C109	
24 hours	20
28 days	50
Flexural strengths – Mpa	
28 days	9
Equivalent thickness of concrete – CO_2 barrier	
10 mm thick	>200 mm
Coefficient of thermal expansion	9 to 12 x 10^{-6}/°C
Setting time @ 20 °C	
Initial set	2 hours
Final set	4 hours
Average density	2 300 kg/m^3

SURFACE PREPARATION

The substrate must be sound, firm and clean, free of oil, grease, loose particles and cement laitance, old layers of paint, or other contaminants. All edges to be repaired must be square cut to a minimum of 10 mm deep, perpendicular to the surface, followed by the removal of all unsound material. When using compressed air for cleaning, the air must be clean and oil free.

Never feather edge the product. Where breaking out is not required, roughen the surface and remove any laitance by light scabbling or grit-blasting.

All metal to be coated must be clean, mechanically sound and dry. Expose all corroded reinforcing steel and grit blast. A clean bright finish is required ensuring that all corrosion products are removed particularly behind the steel. The anchor pattern should be approximately 40 to 60 microns from peak to valley. Prime before flash rusting occurs, see data sheet **durarep ZR** primer.

BONDING/PRIMING

The substrate should be thoroughly soaked with clean water and any excess removed prior to applying one coat of **durabond GP** primer and scrubbing it well into the surface. **durarep HS** can be applied as soon as the primer becomes tacky. If the **durabond GP** is too wet, vertical build up of the **durarep HS** mortar may be difficult. In exceptional circumstances, e.g. where a substrate/ repair barrier is required or where the substrate is wet or likely to remain permanently damp, **epidermix® 345** bonding aid should be used. Contact the **a.b.e.®** technical department for further information.

MIXING

A suitable size mixing vessel that will accommodate full bag lots using a pan mixer or a heavy duty mechanical drill type mixer and spiral paddle stirrer that operates around 400 - 500 r/min is recommended. Tumble type mixers are not recommended. For normal applications, place 2.5 to 3 liters of drinking quality water into the mixer and, with the machine in operation, add one full 25 kg bag of **durarep HS** and mix for 3 to 5 minutes until fully homogeneous. The powder must always be added to the water. Dependent

on the ambient temperature and the desired consistency, the amount of water required may vary slightly but should not exceed 3 liters per 25 kg bag of **durarep HS**.

COVERAGE

25 kg of **durarep HS** powder mixed with 2.7 liters of water yields approximately 12 litres.

APPLICATION

Apply the mixed **durarep HS** to the prepared substrate by gloved hand or trowel. Thoroughly compact the mortar onto the primed substrate and around the exposed reinforcement.

durarep HS can be applied up to 10 mm thickness in vertical sections but up to 100 mm thickness in smaller pockets or with the use of formwork. If formwork is used, it should have properly sealed faces to ensure that no water is absorbed from the repair material. In horizontal locations, **durarep HS** can be applied up to 100 mm thickness.

If sagging occurs during application to vertical surfaces, **durarep HS** should be completely removed and reapplied at a reduced thickness onto the correctly reprimed substrate.

Note: the minimum applied thickness of **durarep HS** is 5 mm.

durarep HS can be applied by the wet or dry spray process. In circumstances where large areas of repair are required, the rapid placement and higher build attainable by these methods offer economic advantages over hand-trowelling. This type of repair generally provides better density to the product in place with enhanced bonding characteristics.

The yields offered are theoretical and will vary based on water demand changes for different application methods. **durarep HS** is finished by striking off with a straight edge and closing with a steel float. Wooden, plastic floats, or damp sponges may also be used to obtain different surface textures. Do not overwork the surface.

CLEANING

Clean tools with water before the mortar hardens. Hardened material can only be removed by mechanical means.

PROTECTION ON COMPLETION

Like all cement based materials **durarep HS** must be cured immediately, as soon as the surface will not be marred. This is carried out by applying, by brush or spray, a suitable curing compound like **durabond GP** or as recommended by **a.b.e.**®'s technical department. Large areas should be cured as trowelling progresses (0.5 m^2 at a time) without waiting for completion of the entire area. In rapid drying conditions caused by high winds or direct sunlight additional precautions should be included like sealing with polythene sheeting having the edges taped down.

This may include damp hessian behind the sheeting to prevent moisture loss. Similarly in cold conditions, the repaired area must be protected from freezing. For additional protection properties, **durarep HS** is fully compatible with the **duracote** range of protective coatings.

TEMPERATURE AND RELATIVE HUMIDITY

Surface and ambient temperatures must be at least +5 °C and rising, ideally between 20 °C and 30 °C.

MODEL SPECIFICATION

High-strength cementitious mortar for horizontal and vertical concrete repairs.

The repair mortar will be **durarep HS**, a single-component, high-strength, polymer-modified cementitious mortar applied in accordance with the recommendations of **a.b.e.**®, including **durarep ZR** steel primer and **durabond GP** acrylic bonding agent or **epidermix**® **345** where necessary. The mortar will have a minimum 28-day compressive strength of 50 MPa.

PACKAGING

durarep HS is supplied in 25 kg polyethylene lined paper bags.

HANDLING & STORAGE

This product has a shelf life of 12 months if kept in a dry cool place in the original packaging. In more extreme conditions this period might be shortened.

HEALTH & SAFETY

durarep HS is alkaline and must not be allowed contact with skin and eyes. Avoid inhalation of dust during mixing by wearing dust masks. The use of gloves, eye protection and dust masks is advised. Immediately wash with water in the event of contact with skin.

Splashes into eyes should also be washed immediately with plenty of clean water and medical advice sought thereafter.

IMPORTANT NOTE

This data sheet is issued as a guide to the use of the product(s) concerned. Whilst **a.b.e.**® endeavours to ensure that any advice, recommendation, specification or information is accurate and correct, the company cannot accept any liability for application – because **a.b.e.**® has no direct or continuous control over where and how **a.b.e.**® products are applied.

FURTHER INFORMATION

Where other products are to be used in conjunction with this material, the relevant technical data sheets should be consulted to determine total requirements.

a.b.e.® has a wealth of technical and practical experience built up over the years in the company's pursuit of excellence in building and construction technology.

Please consult our website for our latest datasheets.

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