

System 200

NEWTON 203-RM

Rapid Set & High Strength Repair Mortar



Rev 1.4 - 29 May 2018

PRODUCT CODE - 203-RM

PRODUCT OVERVIEW

Newton 203-RM is a single-component, fast-setting, Portland cement-based structural mortar, used primarily for the durable repair of concrete. Setting in just 10 minutes at 20°C, Newton 203-RM is ideal for areas that cannot be taken out of service for long periods, or where the concrete is subjected to heavy wear such as roads, runways, bridges, decks, floors and footpaths.

Polymer-modified, and fibre-reinforced, Newton 203-RM is physically and chemically compatible with the host concrete, quickly exhibiting high adhesive and compressive strength. As a single component, requiring only the addition of water, the resulting mortar is rapid curing with enhanced polymeric properties and reliable strength development which is not significantly affected by low temperature use. The mortar can be used as supplied up to 100 mm deep, or bulked out with clean, washed, sharp sand to form a high performance screed or for floor or deck repairs up to maximum depth of 300 mm.

APPLICATION



PACKAGING



25kg

Single component

YIELD



13.3 litres. Up to 23 litres when bulked out with aggregate

KEY BENEFITS

- Incorporates the latest proven cement chemistry, fibre and styrene acrylic copolymer technology
- Reliable strength development, even at sub-zero temperatures, gives rapid return to service
- Prepackaged material only requires mixing with clean water. Can be bulked out with clean, washed, sharp sand or aggregate
- High bond strength exceeds tensile strength of concrete, thus ensuring monolithic performance of the repair
- Sets in 10 minutes at 20°C yielding a durable, high strength mortar
- Dense matrix resists 10 bar water pressure. Very high diffusion resistance to acid gases and chloride ions
- Sulphate resistance to class DS-5/5m of BRE Special Digest 1 and ideally suited for sewage and wastewater applications
- Portland cement base with physical properties of cured material similar to base concrete
- Non-toxic when cured and is listed as authorised under Regulation 31 for use in the supply of drinking water
- Economic mortar requiring no substrate or inter-layer priming. Part bags can be mixed



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TECHNICAL DATA

Features	Result	Units				
Form – one component	Powder					
Colour	Grey					
Pack size	25	kg				
Yield per kg	0.53	Litres				
Yield per kg – bulked out – maximum	0.92	Litres				
Shelf life	12	Months				
Pot life @ 20°C & RH of 60%	10	Minutes				
Minimum application thickness	5	mm				
Maximum application thickness – vertical & soffit	50	mm				
Maximum application thickness – decks & floors	100	mm				
Maximum application thickness – bulked out	300	mm				
Application temperature	+5 to +40	°C				
Service temperature	-10 to +180	°C				
Odour	Slight polymer smell when mixing					
VOC content	None	%				
Curing*	5°C	10°C	15°C	20°C	25°C	Units
Ready for next layer	30	25	25	20	15	Minutes
To not be adulterated by rain	60	50	50	40	30	Minutes
Ready for temporary foot traffic / protection boards	6	5	4	3	2	Hours
Fully cured	28	28	28	28	28	Days
Cured Performance	Result	Units	Test Method			
Colour	Grey					
Density/Specific Gravity	2.15					
Compressive bond – Class R4	> 45	MPa	EN 1504-3			
Compressive strength – 1 hour	14	MPa	BS 4551			
Compressive strength – 2 hours	20	MPa	BS 4551			
Compressive strength – 4 hour	30	MPa	BS 4551			
Compressive strength – 1 day	40	MPa	BS 4551			
Compressive strength – 7 days	50	MPa	BS 4551			
Compressive strength – 28 days	60	MPa	BS 4551			
Adhesive bond – Class R4	> 2	MPa	EN 1504-3			
Capillary Absorption	0.108	kg/m-2/h-0.5	EN 1504-3			
Chloride Ion content	1.6	MPa	EN 1504-3			
Carbonisation resistance	Passes		EN 1504-3			
Elastic modulus	26.1	GPa	EN 1504-3			
Thermal Capability – Part 1 – Class R4	> 2	MPa	EN 1504-3			
Dangerous substances	complies with 5.4					
Reaction to fire	Euroclass A2-s1, d0					
Water permeability coefficient	2.60x 10 ⁻¹⁴	m/s	Taywood			

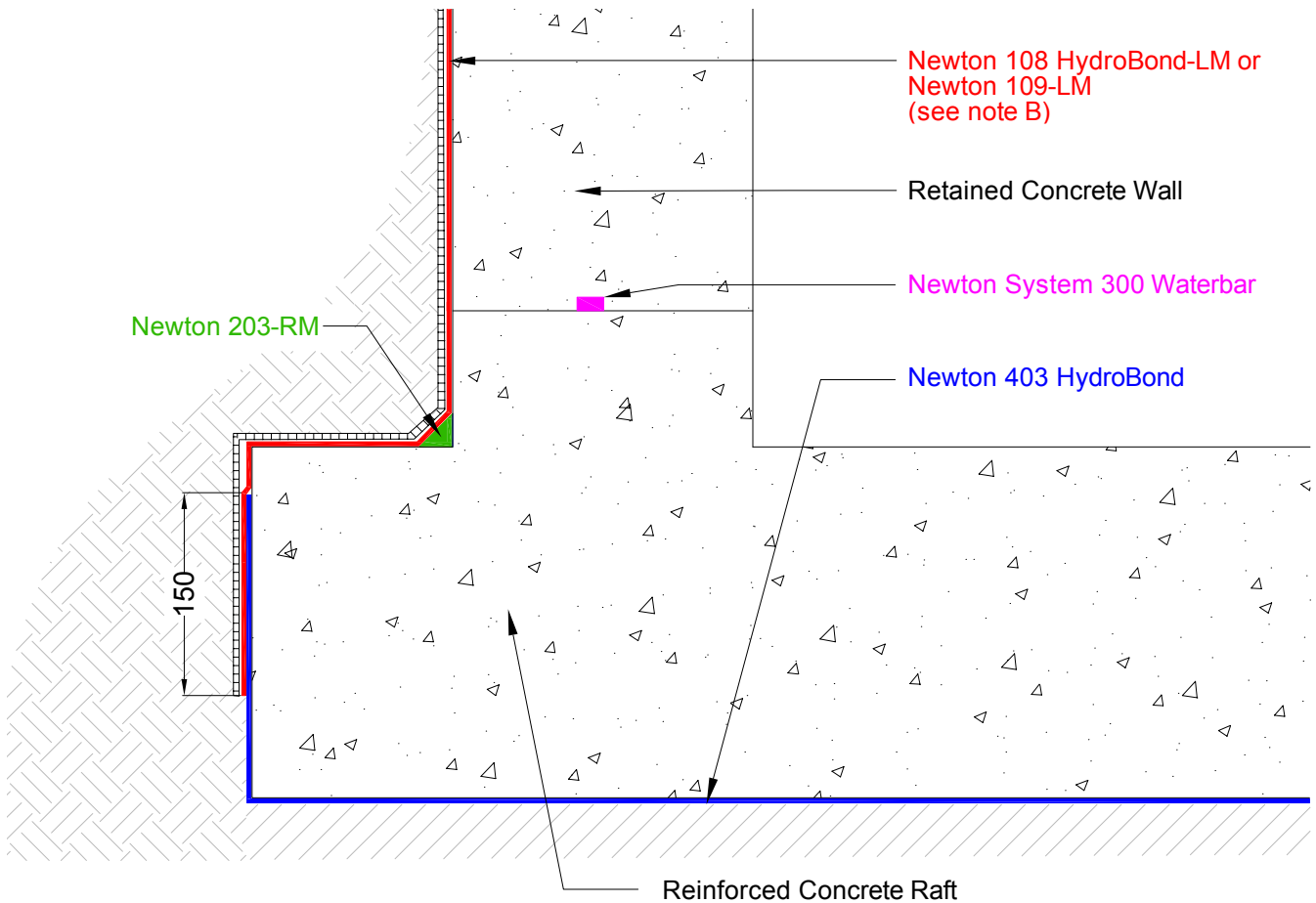
The above data, even if carried out according to regulated tests are indicative and they may change when specific site conditions vary.

*Figures are influenced by humidity also and so are indicative.

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TYPICAL DETAIL



TYPICAL APPLICATIONS

- Rapid, durable and extremely strong repair to concrete including leading edge repairs to step nosings
- Bonded low thickness screed
- Very strong and durable floors to areas subjected to heavy wear such as roads, runways, bridges, decks, floors and footpaths
- High bond and quick drying smoothing fillet for use with [Newton Liquid Waterproofing Membranes](#)

SUITABLE SUBSTRATES

Correctly prepared concrete of at least 20 kN.

METHOD OF APPLICATION

Trowel or putty knife.

COMPLIANCE

- CE-marked in accordance with EN 1504-3. Suitable for repair methods 3.1, 7.1, 7.2 as defined by BS EN 1504-3
- Compliant with Highways Agency Standard BD27/86 for the repair of Highway Structures
- Compliant with LU Standard 1-085 'Fire Safety Performance of Materials'

SPECIFICATION

Newton Waterproofing Systems are in partnership with RIBA NBS who publish details of our products and systems within their specification clause library to allow Architects ease of specification through their NBS Plus interface. NBS clauses can be accessed via the technical resources area of the web site where a live NBS Feed is available at [NBS Plus Live Feed](#)

Our website has drawings available for download in [Technical Drawings](#). A selection are also available via [FastrackCAD](#) as well as a range of BIM objects on the [NBS National BIM Library](#)



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TRAINING AND COMPETENCY OF THE USER

Newton 203-RM should be installed by those with experience of structural waterproofing.

It is recommended that Newton 203-RM and its ancillary products be installed by contractors trained by Newton Waterproofing Systems in the correct use and specification of the product.

SPECIALIST TOOLS REQUIRED

No specialist tools are required.

LIFE EXPECTANCY

When specified, installed and protected in accordance with the Data Sheet and Application Guides, and is protected from physical, Newton 203-RM has a service life that can be equal to the design life of the structure.

The product is extremely strong and hard wearing but it is impossible to state how long it will resist a certain type of wear before repair is required. If the wear expectations are high we suggest the O&M manual requests inspection at appropriate intervals. Please speak with the installing contractor or our Technical Team for advice.



YIELD

One bag of Newton 203-RM produces 13.3 litres of usable product and up to 23 litres when bulked out with aggregate.

When used to create a smoothing fillet, one bag of Newton 203-RM will produce 42.5 linear metres of a fillet that is 25 mm x 25 mm.

ANCILLARY PRODUCTS

[Newton 905-CM](#) - Purchase code 905. Curing membrane to prevent accelerated drying during hot or very windy conditions

CONSTRUCTION

The construction should conform with current Building Regulations, British Standards and relevant Codes of Practice.

SURFACE PREPARATION

Mechanically remove all damaged concrete back to a sound core. Wherever possible, the full circumference of the steel reinforcement should be exposed to at least 25 mm behind the bars and 50 mm beyond the point at which corrosion is visible. On cutting back, feather edges must be avoided.

The perimeter of the repair area should be stepped to a depth of 10 mm by means of saw, disc cutting or preferably using a power chisel. The areas to be repaired must be free from all unsound material, i.e. dust, oil, grease, corrosion by-products and organic growth.

Smooth surfaces should be roughened, all loose material and surface laitance removed, and reinforcement cleaned to bright steel using wet grit blasting techniques or equivalent approved methods. The strength of the concrete sub-base should be a minimum of 20 MPa.

The prepared substrate should be thoroughly soaked with clean water until uniformly saturated without any standing water. In winter, use warm water or a heat source to ensure the substrate temperature is a minimum of +5°C before application.

Application to new horizontal concrete will require the grinding away of surface laitance with specialist grinding equipment.

PRIMING

Priming is generally not required.

Highly porous substrates should be primed with [Newton 908 LiquaBond](#) mixed 1-1 with water. Refer to product data sheet.

MIXING

Newton 203-RM should be mechanically mixed using a forced action pan mixer or in a clean drum using a drill and paddle. A normal concrete mixer is NOT suitable.

For normal applications, typically use 3.5 litres of clean water per 25 kg bag. For part bags, use 5.5 volumes of powder to one volume of water. In cold temperatures tepid water may be used to adjust working life.

For screeding applications or larger pockets in decks up to a maximum depth of 100 mm, a clean, washed, Medium Grade concreting sand can be introduced, up to 50% by weight.

For deep repairs up to a maximum of 300 mm in a single application, or where a pourable concrete is required, coarse, clean aggregates (5-10 mm size) can be introduced into the mix, in up to equal proportions by weight, without adversely affecting its physical performance.

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PLACING

For normal applications, Newton 203-RM should be compacted, using a placing technique to remove entrapped air, in layers not exceeding 50 mm in vertical or soffit situations, or 100 mm deep in pockets.

When bulking out to the maximum of 300 mm, support with shuttering and compact to remove entrapped air.

For repairs which require multi-layer applications, it is important to ensure that the previous layers are well keyed and stable but not fully set (usually 15-30 minutes dependent upon temperature) prior to the application of subsequent layers.

If necessary, support with shuttering to allow for compaction if working to reveals, etc.

Final profiling of a high quality is achieved with a steel float.

When applying material to floors, the area should be divided up and each bay completed within the working life of the Newton 203-RM. Typically bay sizes should be restricted to 1 m² but please consult our Technical Department for further advice.

Do not polish the surface with a steel float, but use a stiff brush on the wet surface to provide a slip-resistant finish.

Internal smoothing fillets should be 25 mm x 25 mm. Push the mortar tightly into the corner to ensure there is no trapped air.

CURING

For curing/drying times please see Technical Data on page 2.

Newton 203-RM is a cement based product and so requires curing. Accelerated drying must be avoided.

Shade the applied material from strong sunlight.

If the conditions are hot, sunny and/or very windy the finished membrane must be protected from accelerated drying with the application of Newton 905-CM, a simple to apply liquid curing membrane, or polythene sheeting, damp hessian or similar.

If required, spray further coats of Newton 905-CM.

POT LIFE & FURTHER USE

Newton 203-RM is a single component powder that is mixed with clean water. Pot life about 10 minutes, depending on the temperature and humidity.

Part bags can be used at 5.5 volumes of powder to one volume of water.

CLEANING

Thoroughly clean all tools and equipment with water immediately after use.

LIMITATIONS

- Do not apply prior to heavy rain - please see information within the curing table on page 2
- Do not apply at temperatures lower than +5° C or higher than +40° C unless the repair is insulated from the extreme temperature
- Do not apply to thicknesses greater than those confirmed within the data table on page two

PACKAGING

25 kg sack.

Pallet: 40 packs (1000 kg).

COLOUR

Grey.

Coloured UV-stable protective finishes available.

STORAGE

Store in dry conditions at temperatures between +5°C and +25°C with containers fully sealed. Do not expose to freezing conditions.



If these conditions are maintained and the product packaging is unopened, then a shelf life of up to 12 months can be expected.

HEALTH & SAFETY

Use appropriate PPE for the environment the system is installed within. Use products only as stated within the this Data Sheet and the MSDS and Application Guides.

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				Newton Waterproofing Systems Newton House 17-20 Sovereign Way Tonbridge Kent TN9 1RH		203-RM EN 1504-3:2005 0086 Class R4 Structural Repair Mortar	
Essential characteristics			Declared Performance	Test Standard	Harmonised Technical Standard		
Compressive strength			≥45 MPa Class R4	BS EN 12190	EN 1504-3:2005		
Adhesive bond			≥2.0 MPa Class R4	BS EN 1542			
Chloride ion content			≤ 0.05%	BS EN 1015-17			
Carbonation resistance			Pass	BS EN 13295			
Thermal compatability			≥2.0 MPa Class R4	BS EN 13687-1			
Capillary absorption			≤0.5 kgm ⁻² h ^{-0.5} Pass	BS EN 13507			
Dangerous substances			Complies	Clause 5.4			
Reaction to fire			F - Not tested	BS EN 13501-1			
Elastic modulus			≥20 GPa Class R4	BS EN 13412			

Newton Waterproofing Systems reserve the right to update product literature at any time. Please always refer to our [website](#) for the latest versions.