

DATA SHEET

NEWTON RUBBERFLEX

Podium Deck & Flat Roof Waterproofing System

Rev 3.2 - 09 March 2012

INTRODUCTION

Newton RubberFlex is a BBA Certified single part liquid waterproofing material, which forms an elastomeric polyurethane membrane, resisting UV rays and capable of handling severe building movements and deformations.

Newton RubberFlex is guaranteed against deterioration for 25 years and is supported by BBA Certification Certificate Number 11/4840.



Newton RubberFlex can be specified as a UV stable waterproofing membrane with high resistance to impact and abrasion or can be the primary waterproofing barrier when used with Newton 207 Deckdrain drainage membrane to create a complete drained waterproofing solution.



Newton RubberFlex is available in three variants, the choice of which would be dependent on the required speed of application between coats as well as on the temperature and humidity at the time of installation and the type and height of up-stand to be installed. For rule-of-thumb curing times, please see page 6.

Newton 201 RubberFlex

Self levelling with standard cure times used for horizontal surfaces and up-stands of up to 250mm with reinforcement.

Newton 202 RubberFlex-QC

Quick Curing derivative with fast cure times used for horizontal surfaces and up-stands of up to 250mm with mesh reinforcement.

Newton 203 RubberFlex-V

Thixotropic variant for larger vertical areas.

Newton RubberFlex can be applied both either as a reinforced or a non-reinforced system depending on substrate type or substrate quality. See reinforcement section on page 5 for further details.

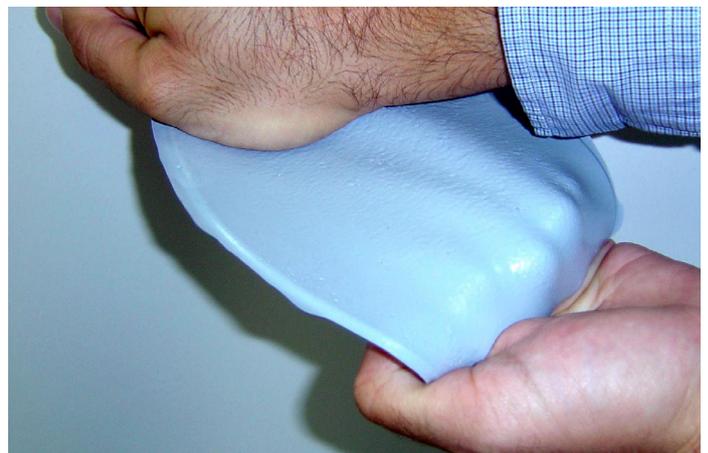
NEWTON RUBBERFLEX			
RubberFlex Variant	201	202QC	203V
Newton Product Code	RF201	RF202	RF203
Colour	Grey		
Solids Content	90%	85%	90%
Specific Gravity	1.35	1.30	1.50
Viscosity at 20°C (mPa/s)	4000	4000	6500
Flash Point (closed cup)	37°C	45°C	37°C
Vapour Transmission (EN 1931)	20g/M²/24 hours		
Application Temperature (°C)	10-30	5-25	10-30
Curing time at 20°C & 80% RH	16 hrs	2 hrs	16 hrs
Service Temperature	-50°C to 90°C		
Watertightness (EOTA TR-003)	Watertight		
Hardness (Shore A) (ASTM D2240)	70	67	70
Elongation (EN ISO 527-3)	421%	421%	421%

All technical data stated herein is based on tests carried out under laboratory conditions.

Application is by roller, brush, squeegee or airless spray (requires specialist machine and training) to a large variety of different surfaces such as concrete, screed, brick, ceramics, steel, zinc, asbestos, existing bituminous and single ply membranes, and aluminium to provide a continuous membrane which resists weathering, has excellent adhesion and is completely UV stable.

Compared to traditional liquid waterproofing membranes, it offers the following advantages:

- **Water resistant** suitable for situations where the product may be in permanent contact with water (does not emulsify).
- **Potable Water Certified** to EU Directive 98/83/CE.
- **Fast and controlled curing** even in low temperatures with use of Newton 202 RubberFlex-QC.
- **Pedestrian trafficable** allows for light pedestrian transit directly onto the product, without a need for special protection. Use 205 ColorSeal for heavy foot-traffic areas.
- **Strong and resilient**, can be used with or without a reinforcement layer, depending on substrate.



KEY BENEFITS

- Durable - Has 25 year BBA & ETA certification.
- 100% waterproof, but allows vapour diffusion.
- Flexible - Resistant to movements and fissures in substrates.
- Excellent adhesion to most substrates.
- Resistant to impact, abrasion and completely UV stable.
- Applied with airless spray, squeegee, brush or roller.
- Resistant to temperature variations maintaining its characteristics between -50°C & 90°C.
- Excellent resistance to chemical agents (cleaning products, etc.).

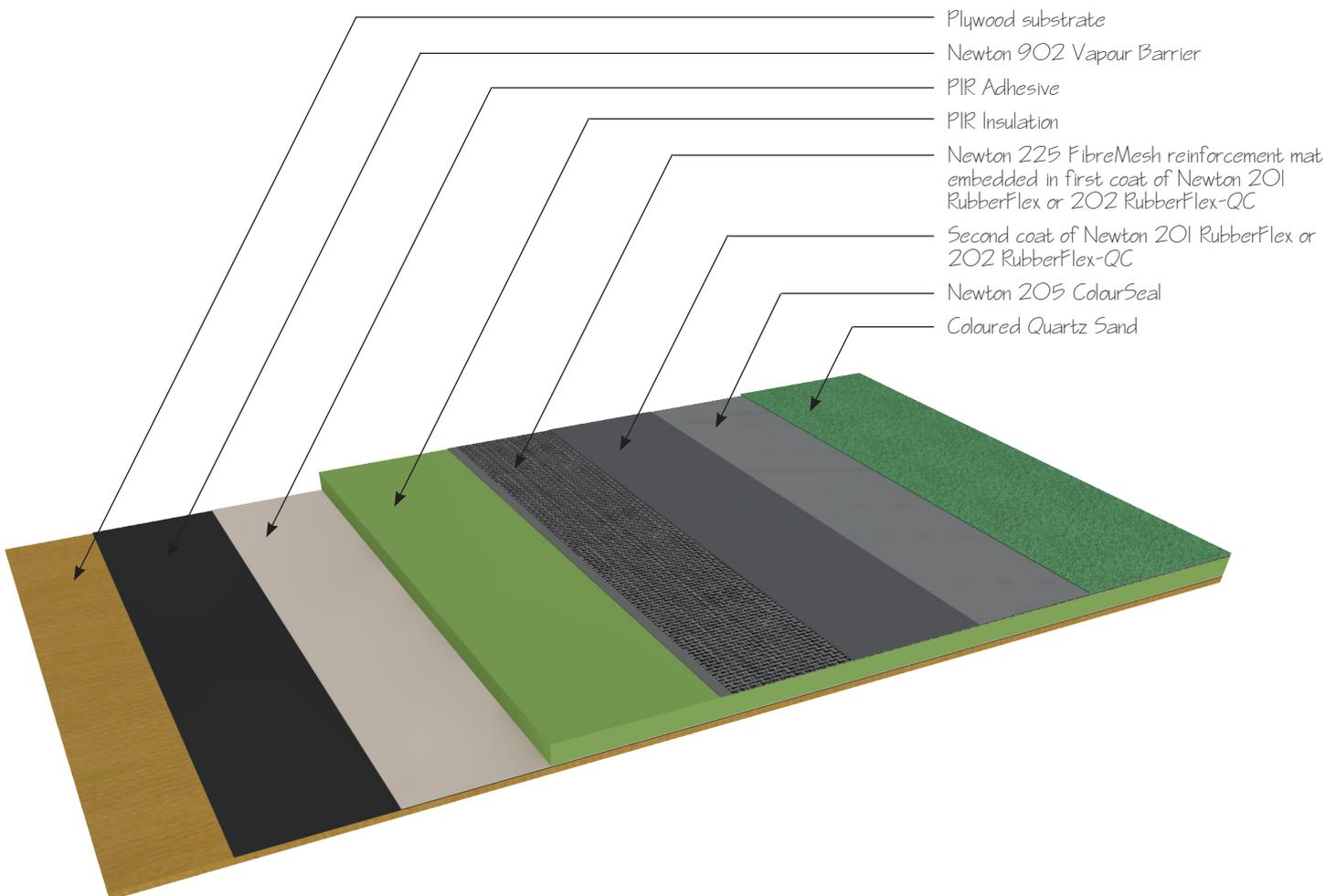
TYPICAL APPLICATIONS

To provide a BBA certified, high quality, flexible and durable waterproofing membrane for:

- Balconies and terraces.
- Flat and inverted roofs.
- Podium decks.

TYPICAL DETAIL

This detail shows an insulated warm-roof build-up above a plywood deck. Please call our technical department for site specific drawings and details.



- Plywood substrate
- Newton 902 Vapour Barrier
- PIR Adhesive
- PIR Insulation
- Newton 225 FibreMesh reinforcement mat embedded in first coat of Newton 201 RubberFlex or 202 RubberFlex-QC
- Second coat of Newton 201 RubberFlex or 202 RubberFlex-QC
- Newton 205 ColourSeal
- Coloured Quartz Sand

SUITABLE SUBSTRATE

- Concrete
- Metal
- Glass
- Oriented Strand Board
- Asphalt
- Failed bituminous membranes
- Failed single ply membranes
- Masonry
- Asbestos
- Ceramics
- Plywood
- Roofing Felt

SPECIFICATION

John Newton & Company 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 <http://newton-membranes.co.uk/nbs-plus-live-feed>

Our web site has drawings available for download at <http://newton-membranes.co.uk/technical-drawings> and a selection are also available via FastrackCad at http://www.fastrackcad.com/CAD.ASP?Company_id=251

TRAINING & COMPETENCY OF USER

Newton RubberFlex should be installed only by those with experience of deck or roof waterproofing. It is recommended that Newton RubberFlex be installed by contractors trained by John Newton in the correct use and specification of the product and it should be noted that this is a requirement of the BBA Certificate.

TOOLS REQUIRED

- Power operated mixing device with suitably sized mixing paddle.
- Short pile roller, squeegee or brush for 201 RubberFlex and 202 RubberFlex-QC.
- Short pile roller, trowel or brush for 203 RubberFlex-V.
- Spiked Roller for removing any trapped air that may have formed in the Newton RubberFlex during mixing.
- OPTION - 201 RubberFlex and 202 RubberFlex-QC can be sprayed with a Graco GH833 machine, 3/8" hose reduced for the last metre to 1/4". Stico Gun with 531 nozzle.

CONSTRUCTION

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

CONSTRUCTION - NEW CONCRETE

New concrete should be designed by a Structural Engineer to EN 1992 (Formally BS8110) and have a surface finish to Class of finish U3 as documented in 'General Specification for Civil Engineering Works' section 14: 'Formwork and Finishes to Concrete', namely a "Uniform, dense and smooth surface" with float marks of no more than 3mm. A U5 power floated finish with no float marks is also suitable but not required. U1 (Abrupt irregularities permitted) or U2 (Tamp marks of up to 10mm) finishes are not suitable and should be avoided.



CONSTRUCTION - TIMBER

A timber deck or roof should be designed and built so as to be structurally stable to imposed dead loads and wind loads in accordance with BS6399. All board edges should be supported by joist and noggins. Unless the design specifies closer centres, oriented strand board and plywood board fixing centres should not exceed 100mm. Movement gaps at abutment with rigid up-stands should be not less than 10mm and gaps between square edge boards should not exceed 3mm.

NOTE: IT IS VERY IMPORTANT THAT NO MOVEMENT EXISTS BETWEEN BOARDS AND NEWTON RUBBERFLEX SHOULD NOT BE INSTALLED UNLESS THE DECK OR ROOF IS CHECKED AND CONFIRMED AS BEING STRUCTURALLY STABLE.

SURFACE PREPARATION - GENERAL

Surface preparation is very important. Cracks, joints, changes in direction from horizontal to vertical surfaces, substrate damage and deterioration should be reinforced or repaired prior to installation of the primer and the waterproof membrane.

Generally the surfaces to be waterproofed must be structurally stable, clean, dry and free from dust, laitance, oils, paints or other forms of contamination. Grit blasting or jet washing can be used to remove laitance and surface contamination. Adding a mild biocide to the jet wash water will inhibit bacterial growth below the membrane.

SURFACE PREPARATION - CONCRETE

- Holes or indentations should be filled with a suitable concrete repair product.
- Deep or structural cracks should be inspected to confirm if they are live or dormant. Suitable repair by qualified personnel is recommended.
- Hairline surface cracks should be filled with a suitable filler such as Newton FlexProof-X1. Where the surface quality is even slightly questionable, the use of the reinforced system should be considered. Please see details of the reinforced options on page 5.

SURFACE PREPARATION - STEEL

Steel surfaces should be shot blasted or grit blasted. All dust and grease shall be removed prior to coating application.

SURFACE PREPARATION - REFURBISHMENT

Where Newton RubberFlex is used to refurbish existing failed membranes, the preparation of the substrate is even more important than with new construction. RubberFlex must be fully bonded to the substrate and preparation will require:

- Complete removal of all loose and debonded materials.
- Making good where materials have been removed.
- Vigorous cleaning and/or sand blasting of the surface.
- Coating of a suitable Newton Primer or surface activator.
- A fully reinforced RubberFlex System.

CONSTRUCTION JOINTS

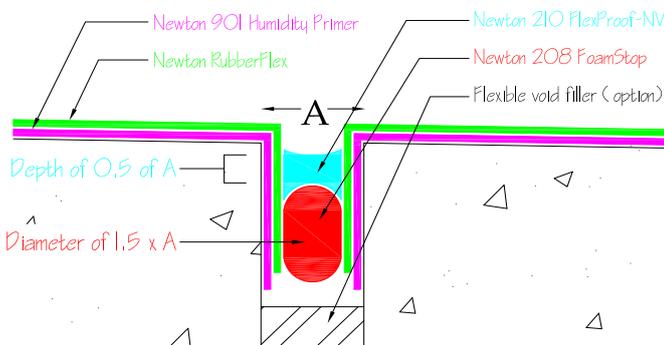
Construction joints should be filled flush with a flexible sealant such as Newton 210 FlexProof-NV.

MOVEMENT JOINTS

Movement joints should be detailed as shown in the detail below with the 210 FlexProof-NV continuing into the joint above a packer of Newton 208 FoamStop.

208 FoamStop should be sized to be 150% the width of the construction joint and should be inserted into the joint so that it is 50% the width of the joint below the surface of the deck or flat roof.

For further information on the waterproofing of movement joints to decks, flat roof and balconies, please see the data sheet **Newton 210 FlexProof-NV - Waterproofing of Movement Joints**.



DECK & FLAT ROOF DRAINAGE DESIGN

Decks, flat roofs (and balconies functioning as roofs) should be engineer designed to provide adequate rainwater disposal to suitable drainage outlets. The design fall should be 1:40 to ensure a finished fall of at least 1:80.

Rain water should move freely to the drainage outlets either by the surface coating, a drainage membrane below a permeable surface coating, or by a combination of surface coating and drainage membrane. The deck or roof design should not trap water above the Newton RubberFlex membrane. The following are examples of good design that allows free drainage of rain water with no risk of water being trapped above the RubberFlex waterproofing membrane:

Newton RubberFlex as the finished surface

Water moves freely by fall to the drainage outlets.

Trafficable roof - Newton 205 ColorSeal as the finished surface

Water moves freely by fall to the drainage outlets.

Paved surface using paving pedestals

Pedestals are placed directly above the RubberFlex membrane creating a void. Most water will move freely by fall above the paving to the drainage outlets and water that passes through the paving will also move freely to the drainage outlets though the void created by the pedestals.

Paved surface bedded on sand above Newton 207 DeckDrain drainage membrane

Most water will move freely by fall above the paving to the drainage outlets and water that passes through the paving will also move freely to the drainage outlets though the drainage voids created by the Newton 207 DeckDrain.

Extensive Green Roof using Newton 220 Reservoir

Newton 220 Reservoir provides water holding cups so that mosses, sedum and grasses to green roofs have a plentiful water supply. Surplus water passes through the membrane to the drainage void created by the 20mm water cups so that water will move freely by fall to the drainage outlets.

Intensive Green Roof or Planter above Newton 207 DeckDrain

All water will permeate through the soil to the Newton 207 DeckDrain and then move freely to the drainage outlets through the drainage voids created by the Newton 207 DeckDrain.

The following are examples of poor design of the waterproofing and drainage system and should be avoided as they create a scenario where water could be permanently trapped above the RubberFlex waterproofing membrane:

Screed placed directly above the RubberFlex membrane

Screed is porous and will become saturated when exposed to rainwater, potentially resulting in moisture being trapped above the waterproofing membrane. **Solution:** If a screed is used to create a fall, always apply the waterproofing membrane above the screed.

Paving bedded directly above the RubberFlex membrane

Rain water will pass between the joints in the paving and saturate the sand, potentially resulting in moisture being trapped above the waterproofing membrane. **Solution:** Bed paving above Newton 207 DeckDrain.

PRIMING

Porous surfaces must be primed with Newton 901 Humidity Primer prior to the installation of Newton RubberFlex.

- Newton 901 Humidity Primer is supplied in kits of 5, 10 or 20kg (A+B) and is applied in one coat of approximately 300 microns which gives a total coverage ratio of approximately 0.3kg/m². Newton 904 HP Accelerant significantly lowers the curing period for 901 Humidity Primer and provides further options for speed of application of Newton RubberFlex. Apply Newton RubberFlex within 36 hours of priming.

Nonporous substrate should be primed with Newton 903 PU Primer.

- Newton 903 PU Primer is supplied in kits of 4, 9 or 20kg and is applied with a coated rag or cloth with a usage rate of approximately 0.1kg/m². Apply Newton RubberFlex within 4 hours of priming.

If circumstances are such that it may not be possible to apply the Newton RubberFlex above the primer within the times stated above, a mechanical key should be incorporated into the primer to assist the diminished chemical key. Add a light sprinkling of quartz sand (particle size 0.4 to 0.7mm) to the just applied first coat of primer. When trafficable, apply a second coat of primer to the same specification as the first coat.

See Newton Data Sheets on Newton 901, 903 and 904 for further information.

APPLICATION - VAPOUR BARRIER - WARM ROOF

With an insulated warm roof build, a vapour control layer is required below the insulation (please see drawing on page 2 as an example). **Newton 902** is a liquid membrane that provides full gas (including radon and methane) and vapour control and should be included below the insulation when RubberFlex is applied above the insulation in a warm roof build.

REINFORCED OR NON-REINFORCED SYSTEM?

Newton RubberFlex has a 25-year BBA certificate for a non-reinforced system comprising of two coats of product. The system can be further reinforced by the placing of Newton 225 FibreMesh matting within the first coat of Newton RubberFlex.

The reinforced system has the following advantages over the non-reinforced system:

- Is more forgiving over questionable substrate.
- Is more forgiving with regards to the competency of the applicator.
- By saturating the Newton 225 FibreMesh into the first coat of Newton RubberFlex, the minimum required coating depth of the first coat is guaranteed.
- If Newton 225 FibreMesh is continued to changes in direction such as to up-stands, further reinforcing of the change in direction is not required.

The reinforced system should always be used in the following circumstances:

- Where the system is applied above a timber deck or roof where joints exist between the timber boards.
- Above an existing membrane during refurbishment.
- Where the system is applied directly above insulation.
- Use of the reinforced system ensures that Newton RubberFlex is always applied at the correct coverage.
- Where the substrate is of questionable quality and/or finish such as where hairline cracks exist or where the concrete has a tamped finish.

MIXING

It is important to mix the product well before its application with an electric mixer, at low rpm (avoiding that too much air enters the product).

Once Newton RubberFlex has been mixed, decant into another vessel and re-stir. This is to allow full mixing of the solids and additives to gain a smooth finish. Again, leave to stand for 2-3 mins to allow any trapped air to surface.

Newton 204 Thinner is a Xylene based additive that can be mixed to Newton RubberFlex to decrease the viscosity of the product for the spraying of Newton RubberFlex or where Newton RubberFlex is too thick to apply by roller on very cold days. Up to 5% of RubberFlex volume can be added.

Please see Newton 204 Thinner data sheet for further information.

APPLICATION - VERTICAL, CURVED OR STEEPLY SLOPING SURFACES

Newton 201 RubberFlex and Newton 202 RubberFlex-QC are self levelling products and will run when applied to steeply sloped or vertical surfaces. **Newton 203 RubberFlex-V** should be used in these scenarios.

APPLICATION - HORIZONTAL/VERTICAL JUNCTION

NON-REINFORCED SYSTEM

Apply a coat of 201 RubberFlex or Newton 202 RubberFlex-QC at 1kg/m² using short haired nylon roller or brush, to 80mm either side of where horizontals meet verticals.

Bed Newton 200 FlexiTape equally into the first coat of RubberFlex or Newton 202 RubberFlex-QC.

If the up-stand or down-stand is greater than 80mm, use Newton 203 RubberFlex-V to increase the size of the vertical application as required.

To further reinforce internal corners, a fillet of Newton 107 QuickFillet can be applied prior to application of the primer.



APPLICATION - HORIZONTAL SURFACES

NON-REINFORCED SYSTEM

Apply two coats, each of 1kg/m² of 201 RubberFlex or 202 RubberFlex-QC to the horizontal surface using either a roller, short haired brush or squeegee. The first coat should be trafficable dry (can be walked upon without material being transferred to the sole of a boot) before the application of the second coat. Overlap to the previously reinforced detail at the horizontal/vertical junction Use the spiked roller shortly after laying to avoid pinholes and remove air bubbles.

REINFORCED SYSTEM

Apply a first coat of Newton 201 RubberFlex or Newton 202 RubberFlex-QC at 1.5kg/m² and immediately bed in the reinforcement layer of Newton 225 FibreMesh. Lap to vertical changes in direction by a maximum of 200mm. Use additional material to ensure complete saturation of the 225 FibreMesh mat and consolidate with a roller.

When the first coat is trafficable dry, apply a second coat of either 201 RubberFlex or 202 RubberFlex-QC at 1kg/m². Use the spiked roller to remove any air bubbles and pinholes.

If the up-stand or down-stand is greater than 250mm, use Newton 203 RubberFlex-V to increase the size of the vertical application as required.

APPLICATION - AIRLESS SPRAY

Use the above mixing guidelines for the airless spraying of 201 RubberFlex or 202 RubberFlex-QC. Reduce the viscosity by adding Newton 204 Thinner at between 5% & 10% of volume depending on temperature and humidity. Continue to agitate the product during spraying. Under usual spraying conditions the optimum set up is: Graco GH833 machine, 3/8" hose reduced for the last metre to 1/4". Stico Gun with 531 nozzle. Pressure is dependent on conditions and should be set by the experienced operative. Apply in three coats each of 0.7kg/m².

POT LIFE & CURING

Curing is hugely dependent on temperature and humidity. The curing has two distinct stages: When 'Touch Dry' the product is unaffected by rain; When 'Trafficable' the product can be walked upon without breaking the skin of the membrane and no material is transferred to the sole of a boot. Further coats should not be applied until the previous coat is trafficable.

Using Newton 202 RubberFlex-QC can significantly reduce the curing times in cooler weather but can lead to curing being too quick in dry and hot conditions. The table below provides rule of thumb information on the curing times of the three variants of Newton RubberFlex. **Times in orange are close to being unworkable. Times in red are unworkable.** Use the alternative variant instead.

5°C & 80% R/H	Pot Life	Touch Dry	Trafficable
201 RubberFlex & 203-RubberFlex-V	20 hours	30 hours	36 hours
202 RubberFlex-QC	3 hours	4 hours	5 hours
10°C & 80% R/H			
201 RubberFlex & 203-RubberFlex-V	14 hours	20 hours	24 hours
202 RubberFlex-QC	2 hours	3 hours	4 hours
15°C & 80% R/H			
201 RubberFlex & 203-RubberFlex-V	11 hours	16 hours	20 hours
202 RubberFlex-QC	1 hour	2 hours	3 hours
20°C & 80% R/H			
201 RubberFlex & 203-RubberFlex-V	4 hours	12 hours	16 hours
202 RubberFlex-QC	0.5 hours	1.5 hours	2 hours
25°C & 80% R/H			
201 RubberFlex & 203-RubberFlex-V	2 hours	8 hours	12 hours
202 RubberFlex-QC	20 Minutes	45 Minutes	1 hour

The pot life is also dependent on the humidity and temperature at application. If the product starts to skin, the pot life can be extended by removing the thin skin and it is safe to continue application. If a thick skin has formed, this can also be removed, but the product will require agitating as per the mixing instructions above prior to further application.

NEWTON 205 COLORSEAL

Newton 205 ColorSeal is a UV stable, single component, protective polyurethane resin top-coat that provides a much more durable top coat for where a permanent trafficable walkway is required over the RubberFlex System.

Newton 205 ColorSeal can have quartz sand coloured granules added to a tacky 1st coat of ColorSeal to give a nonslip finish. Please see Newton 205 ColorSeal Data Sheet for more information.

LIMITATIONS

Do not apply to damp, wet, non-primed or uncured surfaces. Do not apply at temperatures within 3 °C of the dew point temperature.

COVERAGE

Non-Reinforced System

25 kg is sufficient to coat 12.5m² of surface with the recommended two coat treatment of 2kg/m² providing an overall membrane thickness of 1.5mm.

Reinforced System

25 kg is sufficient to coat 10m² of surface with the recommended application of 1.5kg/m², for the first coat and 1kg/m² for the second coat, providing an overall membrane thickness about 2mm.

CLEANING

Thoroughly clean all tools and equipment with Newton 204 Thinner.

PACKAGING

- 200 FlexiTape - 25m x 150mm
- 201 RubberFlex - 10kg, 25kg
- 202 RubberFlex-QC - 10kg, 25kg
- 203 RubberFlex-V - 10kg
- 204 Thinner - 4kg, 9kg, 20kg
- 205 ColorSeal - 4kg, 9kg, 20kg
- 208 FoamStop - 10, 15, 20, 25, 30, 35, 40, 50, 75, 90mm
- 210 FlexProof-NV - 7.5kg
- 225 FibreMesh - 110m x 950mm
- 901 Humidity Primer - 5kg, 10kg, 20kg
- 902 Radon, Gas and Vapour Primer - 5kg, 10kg, 20kg
- 903 PU Primer - 4kg, 9kg, 20kg
- 904 HP Accelerant - 1kg

STORAGE

Store in dry conditions at temperatures between 10 °C and 25 °C. Do not expose to freezing conditions. Newton 201 RubberFlex has a 12 months shelf life when stored in original, unopened containers in accordance with manufacturers instructions.

HEALTH & SAFETY

Newton 201 RubberFlex is flammable. It is important to observe usual precautions with flammable products.

Product should only be used as directed. We always recommend that the Material Safety Data Sheet (MSDS) is carefully read prior to application of the material. Our recommendations for protective equipment should be strictly adhered to for your personal protection. The MSDS is available upon request from John Newton or online via our web site. Please see contact details below.