

Rev 1.2 - 2 January 2015

PRODUCT CODE - M31

INTRODUCTION

Newton 220 Reservoir is a unique drainage and water retention membrane for use where a water reservoir is required for extensive green roofs of sedum, herbaceous plants, mosses or grass above decks and roofs.

Unlike other products of this type, Newton 220 Reservoir has a bonded geotextile that prevents intrusion of the soil into the water holding cups during back-fill and compression. This results in a permanently larger volume reservoir than any other 20mm deep green roof membrane.

When the water holding cups are full, the large drainage holes within the HDPE core allow water to easily pass through to the drainage layer below to prevent saturation and water logging of the green roof above.

KEY BENEFITS

- Unique bonded geotextile does not sag into the water holding cups as is the case with loose laid geotextiles.
- Large drainage holes allow a much higher drainage flow through the membrane than comparative products, ensuring that when the water holding cups are full, the water drains quickly so as not to waterlog the soil.
- Suspended soil particles (fines) are filtered out by the geotextile layer.
- Large drainage layer created by the 20mm HDPE core.
- Tough and durable.
- Quick and easy to install.

TYPICAL APPLICATIONS

As a water holding and drainage layer above a deck, flat roof or pitched roof where shallow planting is used to create an extensive green roof.

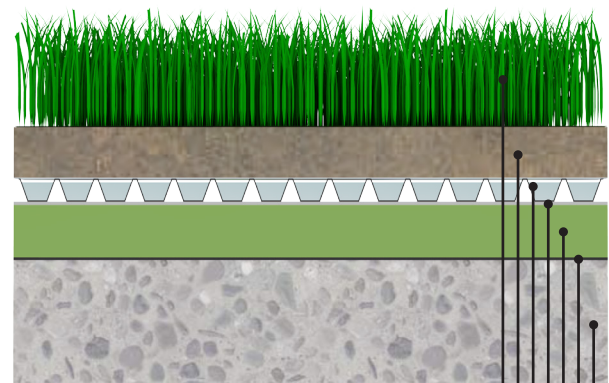
NEWTON 220 RESERVOIR		
Width (mm)	920	
Length (m)	50.00	
Area (m ²)	46.00	
Packaged Weight (kg)	65.00	
Mass (g/m ²)	1370	EN ISO 9864
Thickness at 2 kPa (mm)	21.00	EN ISO 9863-1
Water Flow at 20 kPa - (l/m.sec) 10% HG	3.95	EN ISO 12958
Water Flow at 20 kPa - (l/m.sec) 3%	1.88	EN ISO 12958
Water Flow at 20 kPa - (l/m.sec) 1% HG	0.85	EN ISO 12958
Compressive Strength - Temporary (kPa)	>150	ASTM D1621
Compressive Strength - Constant (kPa)	>50	ASTM D1621
CBR Puncture Resistance (N)	3000	EN ISO 12236
Tensile Strength MD (kN/m)	22	EN ISO 10319
Service Temperature Range (°C)	-40 to +80	
Life Expectancy (Years)	120	
Chemical Resistance (%)	100	EN 14030
Oxidation Resistance (%)	100	EN ISO 13438

STUDED CORE		
Colour	Black	
Material	HDPE	
Density (g/m ³)	1245	
Stud depth (mm)	18.80	
Thickness (mm)	19.80	
Vicat Softening Temperature (°C)	148	

GEOTEXTILE		
Colour	White	
Material	Polypropylene	
Thickness at 2kPa (mm)	1.2	EN ISO 9863-1
Puncture Resistance CBR	1600	EN ISO 12236

NOTES Newton 220 Reservoir is resistant to a wide range of chemicals, rot-proof and unaffected by soil bacteria and fungi. John Newton premium-quality products conform to applicable EN and national standards. The values quoted in the table are typical values and are subject to tolerances. MD = Machine Direction. HG = Hydraulic Gradient.

TYPICAL DETAIL - EXTENSIVE GREEN ROOF



Vegetation - Mosses, herbaceous plants, sedum & grasses
 Growing medium
 Newton 220 Reservoir (shown with water in cups)
 Waterproof membrane - Newton 201 RubberFlex or 210 FlexProof-NV
 Roofing grade insulation
 Optional vapour barrier - Newton 902
 Suitable substrate - concrete shown

NOTE: Root barrier not required with Extensive Green Roof and Newton 201 or 208.

NEWTON 220 RESERVOIR

Extensive Green Roof Drainage Membrane

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.

With concrete construction it is preferable that the fall is created at the concrete pour. If this is not possible or the fall is to be created retrospectively, the fall should be formed with screed. With timber roofs and decks, the timber frame should be constructed to the correct design fall. Drainage falls to warm-decked roofs using tapered insulation should be designed by the insulation manufacturer, with falls of not less than 1:60. They should be laid directly onto the vapour control layer, with the primary waterproofing above. Cross-falls should be achieved using mitred joints.

Allowance for deflection should be made in the structural design where falls are achieved using screeds, particularly on large roofs.

The size and number of outlets should be designed to meet the expected rainfall intensity in accordance with BS EN 12056-3. For flat roofs and decks bounded by parapets at least two outlets (or one outlet plus an overflow) should be provided. Outlets should have a recessed mouth to allow the free flow of water.

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 here [Technical Drawings](#) and a selection are also available via [FastrackCAD](#)

TRAINING & COMPETENCY OF USER

Newton 220 Reservoir should always be used in conjunction with a primary waterproofing membrane such as Newton 201 RubberFlex or Newton 210 FlexProof-NV as part of a designed waterproofing solution for decks, flat roofs, terraces and balconies and should therefore be installed by a competent person with responsibility for the overall design and installation of the waterproofing system.

TOOLS REQUIRED

- Tape measure
- Shears or utility knife

SURFACE PREPARATION

Always use above a primary waterproofing membrane. Please refer to waterproofing membrane data sheet.

CONSTRUCTION & MOVEMENT JOINTS

Newton 220 Reservoir should continue over construction and movement joints and acts as a de-coupling membrane preventing movement from the substrate transferring through to the surface finish.

LIMITATIONS

Should not be used as an Intensive Green Roof membrane. Please use Newton 207 DeckDrain together with Newton 209 RootBarrier.

INSTALLATION

The membrane is rolled out in the direction of the fall with the geotextile surface facing upwards. Cut lengths with a utility knife or shears to suit the dimensions of the surface area.

Subsequent lengths of membrane are placed adjacent to the previously rolled out lengths to form simple butt joints, with the extra flap of geotextile overlapping the joint. It is not necessary to overlap the dimpled cores.

Take the 220 Reservoir into the double entry drainage outlets. There is no need to seal to outlets or protrusions through the membrane.

Lap the membrane down vertical surfaces to suit either high level drainage or to joint to Newton 410 Geodrain, if the drainage is to continue to below the footing of the foundation wall.

There is no need to lap 220 Reservoir up vertical interfaces.

PACKAGING

Newton 220 Reservoir is supplied in wrapped and labelled 50m long x 920mm wide rolls. NOTE: Rolls of Newton 220 Reservoir are VERY HEAVY, each roll weighs 65kg. Rolls should be cut to size at ground level and pieces lifted to the work area, or full rolls should be lifted by mechanical lifting device. Do not attempt to lift full rolls, even with a two-person lift.

STORAGE

Newton 220 Reservoir should be stored away from direct sunlight. Rolls should be stored in the upright position.

HEALTH & SAFETY

Newton 220 Reservoir should only be used as directed. There is no legal requirement for a Material Safety Data Sheet MSDS for this product. PPE should be worn at all times when working on building sites including eye protection when drilling or fixing. Working at height and working within excavations safety procedures should be adhered to for your personal protection. See Newton System 200 Drainage Membranes MSDS for advice on handling and cutting which is available on request from Newton Waterproofing or online via our web site. Please see contact details below.