

Rev 0.1 - 01 JAN 2023

PRODUCT CODE - 500C

INTRODUCTION

Newton X500 is a 50 mm deep, closed-cell thermal insulation board made from rigid extruded polystyrene foam (XPS).

Newton X500 boards are used to form a 50 mm insulated spacer adjacent to the Basedrain and Floordrain drainage channels within the Newton System 500 Cavity drain waterproofing system, where it remains dimensionally stable even when fully immersed.

The insulation boards can also be used as a protection for Newton System 100 & 400 applied waterproofing membranes applied externally to new earth retained structures or retained walls, providing protection, insulation and drainage within one product.

KEY BENEFITS

- Excellent thermal insulation characteristics with a very low coefficient of thermal conductivity
- Closed cell structure with no connecting capillaries resulting in extremely high resistance to water absorption and diffusion of water vapour
- Capable of permanent submersion in water
- Fully inert when subjected to climatic variations
- High mechanical and compressive strength and high dimensional stability
- Can be used on floors, roof, deck insulation or other places where high load capacity is required
- Easy to transport, cut and apply
- Completely rot proof and does not develop any mould or other efflorescence
- No nutritional value for rodents, insects, etc
- Good resistance to acids, alkalines, aggressive ground containments and inorganic gases

TYPICAL APPLICATIONS

- As the spacer below Newton System 500 flooring membranes
- Protection of externally applied Type A waterproofing membranes
- Insulated support below Newton 403 waterproofing membrane
- Insulating of subterranean structures sited permanently within the water table

SUITABLE SUBSTRATE

- Compacted, clean, and level surfaces
- Basement concrete floor slabs and rafts
- Earth retained walls of concrete, mortar or ICF
- Compacted blinding



Product Data

NEWTON X500 PROPERTIES	
Ref. Density(Kg/CBM)	37~40
Thermal Conductivity(W/m.k)	≤0.028
Compressive Strength (Kpa) at 10% deflection	500~540Kpa
Water absorption(%) by immersion for 96h	≤1.0
Water vapor permeability (23°C,50%RH) g/Pa.s.m ²	4.8x10 ⁻⁸
Dimension Stability (%)70°C±2°C, 48h	≤1.5
Fire classification	B2/B1/B3
Temperature limits(°C)	+75/-50

CORRECT DESIGN - FLOTATION RISK

The Basedrain and Floordrain drainage channels that the insulated spacer is placed adjacent to, can develop a maximum of 50 mm of water pressure when at full capacity. To prevent flotation of the floor the floor build must exert a force (weight) that is greater than 50 mm of water pressure. The weight is calculated by multiplying the density of the floor elements by the height of the floor elements. For example:

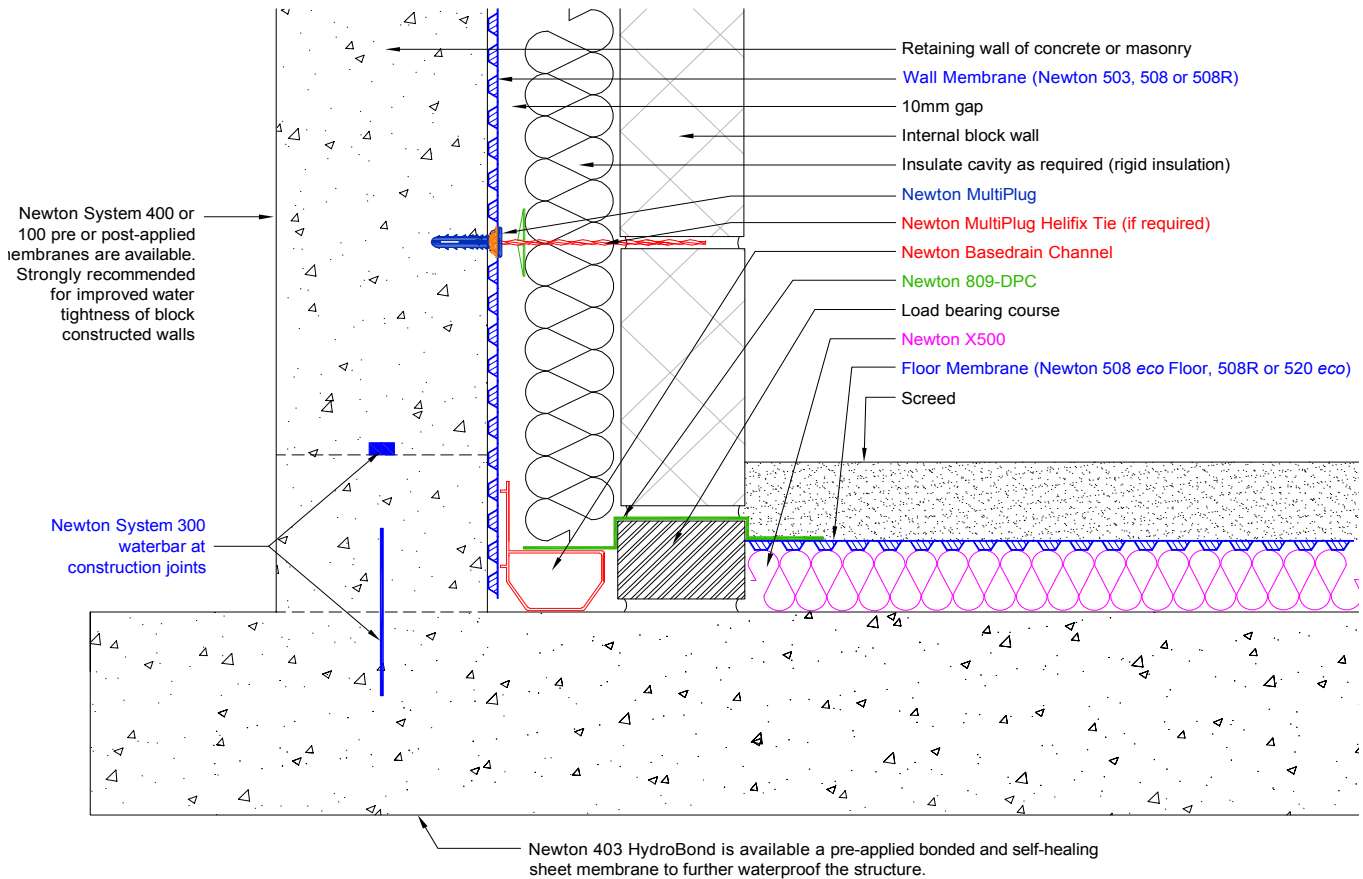
65 mm of Screed - Screed density is 1.7. Multiply by the thickness: 1.7 x 65 mm = 110 mm. The downward force of the weight of screed is more than twice the upward thrusting force of the water pressure and so flotation cannot occur.

18 mm of T&G Chipboard - Chipboard density is 0.65. Multiply by the thickness: 0.65 x 18 mm = 11.7 mm. The downward force of the weight of chipboard is not sufficient to prevent flotation. To prevent flotation, addition downwards force is required, which can be achieved by mechanically fixing the boards to the slab with Newton Insulation Fixings (Product Code IF90), 5 fixings per board, one at 100 mm in from each corner and one in the centre of the board.

Where higher loads are required, a localised concrete plinth will need to be used to transfer the load through the slab or raft.

TYPICAL DETAIL

The drawing below shows a typical Newton System 500 application where the floor membrane is supported above the Newton X500 to ensure the membrane is above the Basedrain drainage channel sited within the cavity.



ANCILLARIES

Newton Insulation Fixings - Box of 200 - Code IF90

TOOLS REQUIRED

Saw, knife or hot wire device.

TRAINING AND COMPETENCY OF THE USER

When used as the spacer within Newton System 500, the insulation should be installed by or under the supervision of the Newton NSBC registered contractor who is installing the waterproofing system.

Other applications do not need specialist training.

INSTALLATION

- The shrink film should be removed immediately before application of Newton X500
- Stagger boards
- Cut to size with a saw, knife or hot wire device

LIFE EXPECTANCY

When specified, installed and protected in accordance with the Data Sheet, fully and permanently isolated from UV light and physical damage or wearing, and only to those substrates confirmed within this Data Sheet, Newton X500 has a service life that can be equal to the design life of the structure (estimated 50 years).

LIMITATIONS

- Sensitive to materials containing solvents
- Possible incompatibility with some adhered PVC waterproofing membranes - please test prior to application

STORAGE

Newton X500 boards can be stored outdoors, on a clean and smooth surface, or in an enclosed, ventilated space.

They are insensitive to rainwater and snow, but not to ultraviolet radiation. The shrink film is UV resistant for up to 6 months. After this period the boards should be protected against UV with a protective blanket.

Newton X500 boards should be stored away from flammable materials, fire or other ignition sources.

The boards should not come into direct contact with high concentrations of solvents such as gasoline, coal tar and formic acid, or gases such as methane, ethane, propane and butane. **NOTE:** When installed, the boards are unaffected by diluted solvents within contaminated ground water or naturally occurring ground gases.

The appearance or structure may become damaged when stored in direct contact with mineral and vegetable oils, paraffin, phenol, and fats.

SHELF LIFE

The product has an unlimited shelf life if stored internally or protected against contact with UV light by a tarpaulin or similar. If stored externally, without UV protection, the shelf life is six months.

HEALTH & SAFETY

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

During the cutting of boards, always use respiratory protective masks and eye protection.