

Rev 1.1 - 6 September 2019

PRODUCT CODE - 324

INTRODUCTION

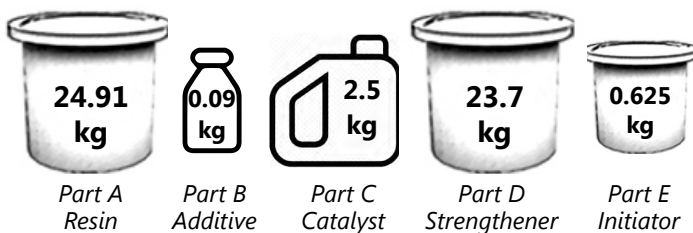
Newton 324-SR is a high-performance, five-part resin that after injection by conventional packers, reacts to form a very durable and flexible acrylic-rubber that exhibits exceptional adhesion, ensuring the comprehensive sealing of water leaks in structures that are subject to settlement or movement. Newton 324-SR is one of a range of injection resins that form the [Newton ReSeal System](#) for the sealing of water leaks.

Unlike most acrylic resins, the Initiator (Part E) is not dissolved in water, but within a solution that contains a strengthening polymer and it is this unique chemistry that produces a chemically resistant resin that also has exceptional flexibility and adhesion to most substrates, making Newton 324-SR ideal for the sealing of movement joints.

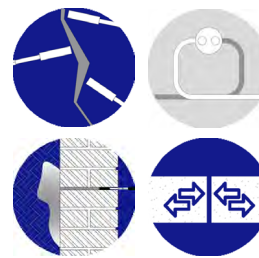
By adjusting the volume of the Part E Initiator, the reaction speed is controllable and very linear, with reaction times ranging from just 18 seconds to 18 minutes. This, coupled with an extremely low viscosity, guarantees deep penetration into fine cracks, even when dry. The cured resin is hydrophilic, swelling in the presence of water, and has outstanding moisture retention so it does not dry or shrink, even under the influence of temperature and seasonal water level fluctuations.

Newton 324-SR is a specialist product that should only be applied by trained waterproofing professionals and is injected using a stainless steel three-component pump.

PACKAGING



APPLICATION



SEALING STAGES*



PROPERTIES

E - Expansion; F - Flexibility; V - Viscosity; A - Adhesion; - R¹ - Reaction Time (Quickest) - R² - Reaction Time (Longest)



Green is longer or greater, red is less or lower

ATTRIBUTES

- Extremely low viscosity
- Hydrophilic
- Non-foaming
- Very flexible with high strength
- Controlled and very linear reaction times
- Very high adhesion to the substrate
- High levels of chemical resistance
- Non-corrosive

TYPICAL APPLICATIONS

Where waterproofing the structure imposes difficult requirements on the physical properties of the cured resin, such as where the structure is subject to fluctuating groundwater levels or settlement or where high performance sealing is required to construction joints, expansion joints and even movement joints.

*See page 4 for explanation.



KEY BENEFITS

- Penetrates deep into fine and dry cracks
- Swells in contact with water and retains that moisture even at high temperatures

NEWTON 324-SR

Flexible Acrylic-Rubber Injection Resin

NEWTON RESEAL SYSTEM - TECHNICAL DATA

| PROPERTIES | 320-FP | 321-FSP | 322-SP | 323-SA | 324-SR |
|----------------------|---|---|--|---|--|
| MAIN USE | Stage 1 stemming of high flow water leaks | Stage 1 stemming and Stage 2 sealing of water leaks | Stage 2 sealing of water leaks & Injection Hoses | Stage 2 sealing of water leaks, Injection Hoses & Curtain Injection | Where movement or settlement is expected. Movement joints. |
| Material | Polyurethane | Polyurethane | Polyurethane | Acrylic | Acrylic Rubber |
| Foaming | Yes - with water | Yes - with water | Yes - with water | No | No |
| Sealing | No | No | Yes - No water | Yes | Yes |
| Parts | 2 | 1 | 2 | 4 (one being water) | 5 |
| Catalyst | Yes | No | No | Yes | Yes |
| Pack size - kg | 25 + 2.3 | 25 | 12 + 13.2 | 25 + 2.5 + 0.06 | See pages 1 & 3 |
| Part A | Polyurethane | Polyurethane | Polyurethane - A | Acrylic resin | Acrylic resin |
| Part B | Catalyst | N/A | Polyurethane - B | Catalyst | Additive |
| Part C | N/A | N/A | N/A | Initiator | Catalyst |
| Part D | N/A | N/A | N/A | Water | Strengtheners |
| Part E | N/A | N/A | N/A | N/A | Initiator |
| Viscosity at 20°C | 111 mPa/s | 280 mPa/s | 103 mPa/s | 60 mPa/s | 25 mPa/s |
| Viscosity Category | Low | Medium - low | Low | Very low | Very low |
| Is water required | Yes - to foam | Yes - to foam | No - Yes to foam | No - hydrophilic | No |
| Water source | Within substrate | Within substrate or added | Within substrate | Added | N/A |
| Controlled reaction | Yes - by catalyst | No | No | Yes - by initiator | Yes - by initiator |
| Final form | Rigid open cell foam | Flexible closed cell foam | Flexible closed cell foam or resin | Flexible & elastic hydrophilic resin | Very flexible & elastic rubber gel |
| Final performance | Stable | Stable | Stable | Swells with water | Stable |
| Shrinkage | No | No | No | Slight | Slight |
| Flexibility | None | Some | Good | Very good | Extremely good |
| Working time | Use immediately | Use immediately | 60 mins | Working day | Working day |
| Reaction time | 15 sec to 4 min | 2 minutes | 6 hours to 5 days | 44 sec to 20 min | 18 sec to 18 min |
| Rate of expansion | 1700-2200% | 300% | 10% | 290% | 120% |
| Adhesion | Good | Good | High | High | Very high |
| SUBSTRATES | 320-FP | 321-FSP | 322-SP | 323-SA | 324-SR |
| Concrete | Yes | Yes | Yes | Yes | Yes |
| Steel | Yes | Yes | Yes | Yes | Yes |
| Mortar | No | Yes | Yes | Yes | Yes |
| USES | 320-FP | 321-FSP | 322-SP | 323-SA | 324-SR |
| Running water | Stage 1 | Stage 1 & 2 | Stage 2 | Stage 2 | Stage 2 |
| Large dry cracks | No | Yes* | Yes | No | Yes |
| Fine wet cracks | No | Stage 1 & 2 | Stages 1 & 2 | Yes | Yes |
| Fine dry cracks | No | Stage 1 & 2 | Yes | Yes | Yes |
| Voids/porosity - wet | Stage 1 | Stage 1 & 2 | Stage 2 | No | No |
| Voids/porosity - dry | No | Stage 1 & 2 | Yes | Yes | Yes |
| Injection hoses | No | No | Yes | Yes | No |
| Curtain injection | No | No | No | Yes | Yes* |
| Penetrations - wet | Yes | Yes | Yes | Yes | Yes |
| Penetrations - dry | No | Yes* | Yes | Yes | Yes |
| Structural repair | No | No | No | No | No |
| Movement expected | No | Yes* | Yes | Yes | Yes |
| Movement joints | No | No | No | No | Yes |

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

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Flexible Acrylic-Rubber Injection Resin

TECHNICAL DATA

| Parts | Part A | Part B | Part C | Part D | Part E |
|--------------------|---------------|--------------|--------------|---------------|--------------|
| Form | Resin | Additive | Catalyst | Strengtheners | Initiator |
| Appearance | Purple liquid | Clear liquid | Clear liquid | White liquid | White powder |
| Viscosity at 20° C | 18 mPas | 5 mPas | 22 mPas | 25 mPas | N/A |
| Density | 1.173 | 0.931 | 1.11 | 1.014 | N/A |
| pH | 5 - 6 | 10 - 11 | 11 - 12 | 7 - 8 | N/A |
| Shelf life | 6 months | | | | |

| Mixed Liquid Resin | Result | Units |
|-------------------------|-------------------------------|-------|
| Colour | Whitish pink | |
| Viscosity | 25 | mPas |
| Flash point | None | V |
| Density | 1.09 | g/ml |
| Solids | 40 - 50 | % |
| Corrosiveness | Not corrosive | |
| Pot life / Working time | Dependent on amount of Part E | |

| Cured Resin | Result | Units |
|---------------------|-----------------|-------|
| Watertightness | 2×10^5 | Pa |
| Tensile strength | < 0.5 | MPa |
| Elongation at 20° C | > 250 | % |

Reaction times dependent on weight of Part E (Initiator) within Solution 2 when mixed with Solution 1*

| At 20° C | Solution 1 fully mixed with packaged weights of Parts A, B & C | |
|--|--|----------------------|
| Solution 2 Part D mixed with varying weights of Part E | 1.14 kg | 18 seconds |
| | 0.912 kg | 19 seconds |
| | 0.684 kg | 21 seconds |
| | 0.57 kg | 27 seconds |
| | 0.456 kg | 36 seconds |
| | 0.228 kg | 1 minute 15 seconds |
| | 0.114 kg | 2 minutes 54 seconds |
| | 0.057 kg | 7 minutes 10 seconds |
| | 0.028 kg | 18 minutes |

*To create the resin, ready for injection, two separate solutions must be created. Solution 1 is a mixture of the packaged weights of Parts A, B & C. Solution 2 is a mixture of Part D plus varying weights of Part E (INITIATOR). Reaction times decrease in higher temperatures, and increase in colder temperatures.

SUITABLE SUBSTRATE

- Concrete
- Masonry
- Steel

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, Newton 324-SR has a service life that can be equal to the design life of the structure.

PACKAGING

- Part A - Resin - 24.91 kg
- Part B - Additive - 0.09 kg
- Part C - Catalyst - 2.5 kg
- Part D - Strengtheners - 23.7 kg
- Part E - Initiator - 0.625 kg

METHOD OF APPLICATION

Pressure injected by pump into packers secured into holes drilled into the substrate.

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Flexible Acrylic-Rubber Injection Resin

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 a wide choice of downloadable [Technical Drawings](#), and a large selection are also available either via [FastrackCAD](#), or as BIM objects on the [National BIM Library](#) and/or [BIMobject.com](#)



SPECIALIST TOOLS REQUIRED

- Hammer drill
- Drill bits for the size of the packers to be used and of sufficient length to reach just past the crack or void
- Three-component stainless steel pump

For this kind of application, the use of a three-component pump is absolutely necessary. Because of practical limitations related to the ease of use and low flow rate of the injection materials, a three-component, air driven, stainless steel pump should be used.

ACCESSORIES

Newton steel packers, Nipple-Head & Pan-Head in various sizes held in stock - Special sizes by request.

TRAINING & COMPETENCY OF USER

Newton 324-SR should only be used by those with an understanding of the requirement to waterproof retained structures and the knowledge and training to use the product as part of a coordinated approach to the waterproofing of the structure. In many cases this approach will also require further waterproofing products so as to achieve the desired internal environmental grade as defined within BS 8102:2009.

Newton 324-SR is a highly specialist injection waterproofing product that should only be installed by experienced and fully trained resin injection specialist companies.

CHOOSING THE CORRECT RESIN

Ensure you use the correct resin for the desired application. Some problems can only be solved by using a combination of products. To determine what product should be used in which situation, please consult the matrix on page two.

CONSTRUCTION

Newton 324-SR is designed to seal joints and cracks, it is not a repair product.

If the concrete is subject to spalling or is structurally not sound, it must be repaired so that the injected resin is confined, to allow the expansion of the resin to seal the water leaks.

The concrete must have the ability to withstand the forces exerted by the injection process.

INSTALLATION TECHNIQUES

Ensure that the correct resin for the desired application is used. Some leaks can only be solved by using a combination of products. To determine the correct product or combination of products for each situation, please consult the Technical Data Sheets.

Sealing of active leaks is usually a two-stage process:

STAGE 1

[Newton 320-FP](#) is a fast-foaming, polyurethane injection resin that reacts with water to form a rigid and hydrophobic seal against water ingress and should be used to stem the water flow.

STAGE 2

Once the water flow has been stemmed/stopped, Stage 2 sealing is carried out to permanently seal the leak.

Newton 324-SR penetrates deep into the substrate to permanently seal the leaks.

PREPARATION

Remove all obstructions so that the area to be treated can be clearly seen and accessed so that the drilling patterns for the injection holes can be determined.

Clean the surface to remove dirt, debris and loose and friable material. Make repairs using [Newton 203-RM](#) as required.

DRILLING

- Locate the rebar if possible and plan the pattern to minimize damage to the drill bit during drilling
- Drill with an angle of approximately 45° or less to the surface and towards the crack
- Ensure that the depth of the hole intersecting the crack passes close to and past the centre of the crack
- The distance of the drilled holes varies from 100 mm to 250 mm, according to the width of the crack (the wider the crack, the further apart the drill holes)

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INSTALL PACKERS

Use suitable packers.

Place the packers in the holes so that the top of the rubber sleeve is below the concrete surface. Tighten the packer with a wrench or spanner to ensure that the packer is tightly fitted.

Leave some adjacent holes open so you can follow the route of the gel.



CREATING THE TWO SOLUTIONS

Before installation, the five components are mixed to prepare two solutions. Please refer to the table on page 3 for quantities and reaction times:

- Solution 1: Part A - Resin, Part B - Additive & Part C - Catalyst
- Solution 2: Part D - Strengthener & Part E - Initiator

With Solution 1, mix full quantities of the three parts - at 1/1/1. To vary the reaction time, vary the volume of the Part E Initiator in Solution 2 as described on Page 3.

Consider the temperature when mixing and injecting the solutions, as an increase in temperature will accelerate the reaction times, whilst colder temperatures will reduce the reaction time.

Agitate the mixed products for 30 seconds to ensure a good mix. Stand for 5 minutes and then agitate again for 30 seconds. Only make as much of the two solutions as can be used in the working day.

Ensure that:

- You have correctly selected a gel time according to the ambient temperature (start with gel times that are very slow and decrease the gel time by adding more initiator).
- You have prepared the two solutions correctly and the parts that make the solutions are mixed well
- You have been accurate with the dosing
- You have tested the gel time
- Containers are never switched

INJECTION OF THE RESIN

- Begin the injection at the lowest point on a vertical crack and the narrowest area on a horizontal surface
- Holding the pressure line allows the operator to feel the pump pulsations. If a pressure gauge is available, the pressure should be monitored and kept in a range suitable enough to allow a good flow of material
- When resin is directly emerging from the crack when starting to inject the first packer, pause for a few minutes so the resin can react with the water. The reacted resin will form a surface seal and will allow the injected resin to penetrate fully into the crack
- If the resin still emerges freely after the pause, stop pumping and apply a surface seal over the crack with rapid-setting cement
- Proceed pumping until the resins emerges from the hole of the next packer
- Stop pumping, disconnect pressure line and proceed to the next packer
- Continue the procedure until the crack is completely filled

POT LIFE & FURTHER USE

The two mixed solutions must be used within the reaction times confirmed on Page 3.

When used with a three-component pump and so not mixed, unused resin can be stored within the supplied and sealed container and must be used within three months of opening.



REMOVING THE PACKERS

- Wait until all resin has reacted
- Remove packers according to standard procedure
- Close the drill hole with a fast-setting mortar
- Overflowing resin can be easily removed by scraping once cured

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CLEANING

Clean the pump and equipment every time there is a stop of more than 15 minutes using clean water, or whenever necessary.

Once all works have been completed, the pump should be flushed with clean water. Dispose of in accordance with local waste regulations.

STORAGE

Store in dry conditions at temperatures between +10°C and +30°C. Do not expose to freezing conditions.

SHELF LIFE



12 months after production date in original, unopened and undamaged packaging.

Once opened, the shelf life is greatly diminished and the product should be used as soon as possible.

HEALTH & SAFETY

Use appropriate PPE for the environment the system is installed within. Use products only as stated within this Data Sheet and the [Safety Data Sheet](#) which is available upon request from Newton Waterproofing Systems or via our website or mobile app. Please see contact details below.

- Avoid contact with the skin and eyes
- Wear safety glasses, gloves and overalls
- In case of contact with the skin, wash with lots of water and soap. Rinse well afterwards
- In case of contact with the eyes, rinse the eyes for several minutes with clean water. Consult a doctor
- Absorb spilled product with sand and dispose of according to the local regulations

|  |  | Newton Waterproofing Systems Newton House 17-20 Sovereign Way Tonbridge Kent TN9 1RH | PC 509 Rubber Acryl Newton product: 324-SR EN 1504-5:2004 0749 Concrete grouting product in accordance with EN 1504-5:2004, category S, U(S1)W(1)(1/2/3/4)(5/30) |
|--|--|--|--|
| Essential characteristics | Declared Performance | Test Standard | Harmonised Technical Standard |
| Watertightness | $\geq 2 \times 10^5$ Pa | EN 14068 | BS EN 1504-5:2004 |
| Workability - Viscosity | ≤ 60 mPas | EN ISO 3219 | |
| Corrosion behaviour | NPD | | |
| Expansion ratio and evolution in the event of water storage | $\pm 120\%$ | EN 14498 | |
| Durability - sensitivity to water | The expansion reaches a constant level | EN 14498 | |
| Durability - sensitivity to wet / dry cycles | No change in the expansion ratio | EN 14498 | |
| Durability - compatibility to concrete | Successful | EN 12637-1, 6.2 & 7.3.1 | |
| Dangerous substances | In accordance with 5.4 of EN 1504-5:2004 | | |
| NPD: No Performance Declared | | | |

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