

# Pipe Doctor

For the permanent and watertight repair of damaged pipework, without excavation.

## Pipe Doctor

NO-DIG PIPE REPAIR SYSTEM



The Pipe Doctor No-Dig Pipe Repair range offers contractors and engineers the materials needed for permanent and watertight finish to damaged pipes, every time.

### Introduction

The Pipe Doctor system was created for the permanent and watertight repair of belowground pipes, without the need for excavation.

This trenchless repair method saves time and cost on-site and reduces disruption to the surrounding area.

### Benefits:

- No costly, time-consuming, disruptive, excavation work.
- Excellent bonding to virtually any substrate.
- Cures in the presence of water.
- 50-year expected life of all patches correctly installed.
- Available in bulk form or in kit format.

### Development of Pipe Doctor

The Pipe Doctor system was originally developed by Flexseal and sold to merchants.

It was decided that a direct route to market, enabling closer control over distribution and an input into the installation of the product, would be preferred. S1E was established in 2007 (as Fernco Environmental) to sell Pipe Doctor and other complementary products to the drainage sector.

Pipe Doctor was one of the first no-dig patch repair systems to be supplied in kit form, including all of the items needed for a single repair. All developments in the range have been made in-house, mostly at S1E in the UK.

# Information Pack

## Patch Repair Kits



The system includes all of the products necessary for this type of repair, from the compressor to the resin and matting and everything in between.

Pipe Doctor products create a professional repair to damaged straight pipes and to swept bends, up to an angle of 90°.

The original kit format provides everything needed for a single repair, however, materials can also be purchased in bulk. Resin formulations are available in Summer, Winter and Rapid compositions, to suit the conditions at the time of installation.



## The Original Kit Format:

Available in Straight, Rapid and Radius versions, Pipe Doctor Patch Repair Kits include everything needed to create a single, professional repair:

- Protective gloves
- Pre-measured fibre glass matting
- Protective groundsheet
- Plastic cable ties and wire ties
- Two-part resin bag
- Packer protection
- Resin spreader



## Original patch kit: For straight repairs.



- WRc approved system: PT/484/0421
- For pipes from DN70 - DN560.
- Available in 550mm and 1000mm lengths.
- Available with summer or winter resin, for the best working and curing times for the ambient temperature.

*Please note: Bespoke kit sizes or larger sizes are available on request – please call the S1E Team on 01226397015 to discuss your requirements.*

## Rapid patch kit: For faster cure times.



- WRc approved system: PT/485/0421
- Includes a fast-curing resin, and is for straight repairs only. Recommended for use within 15 metres of the manhole.
- For pipes of DN100, DN150 and DN225.
- Available in 550mm and 1000mm lengths.

*Please note: Bespoke kit sizes or larger sizes are available on request – please call the S1E Team on 01226397015 to discuss your requirements.*

## Radius patch kit: For repairs to bends.



- For pipes of DN100 and DN150.
- Patches of 600mm lengths.
- Especially designed for a smooth patch repair on a radius.
- Available with summer or winter resin, for the best working and curing times for the ambient temperature.

*Please note: Bespoke kit sizes or larger sizes are available on request – please call the S1E Team on 01226397015 to discuss your requirements.*

**\* Only to be used with a Radius Packer.**

**Please contact [sales@s1e.co.uk](mailto:sales@s1e.co.uk) for full product sizing listing.**

## Contractor Packs



Various sizes available for the complete pack and includes independently certified training.

All the equipment needed to start out in no-dig patch repair or to kit out a new van. Includes training for up to two operators, with the WRC-approved Pipe doctor training course.

### Contractor Packs Include:

Includes all the equipment needed to begin professional no-dig patch repairs:

- WRC-approved Pipe Doctor repair kits
- DN100/150 standard packer
- Air push rods (10, 15 or 20)
- Flexible adaptor
- Pressure regulator
- Oil free compressor
- Flexible extension hose
- WRC-approved training for two operatives

## Benefits:

- Everything needed to start out or kit out a new van.
- The perfect starter bundle containing essential equipment to install patch repairs.
- Independently certified training included.
- Includes WRC-approved kits for straight repairs.
- Available with 10, 15 or 20 push rods.
- High quality equipment: Includes high quality equipment, such as a compressor, packer and push rods, and Pipe Doctor Kits.

*Please note: Bespoke packs and other bundles can be compiled as required, containing the contractor's choice of equipment. Please call the S1E team on 01226 397 015 or email [contact@s1e.co.uk](mailto:contact@s1e.co.uk) to discuss your requirements.*

## Resin Selection

Resin is available as three formulations: Winter (W), Summer (S) and Rapid (R). The distinction is only a difference in the working and cure times.

These resins are called Winter (W), Summer (S) and Rapid (R). The 'S' Resin has an extended working time and longer cure time. The 'R' Resin has a reduced working time and reduced cure time.

The approximate working times and cure times are stated on the packaging. Note that these figures are based upon ambient conditions. Cure times will be accelerated in warm conditions and delayed in cold conditions (see tables provided).

*Please note: In regards to Pipe Doctor resin, as of 24th August 2023, anyone handling, mixing, using any chemical product that contains Diisocyanate in levels of 0.1% or above, adequate training is required before industrial or professional use of this product.*

## Curing Times and Temperatures: - A guide only.

Winter Resin (W):		
Temperature	Working Times (mins)	Curing Time (mins)
8°C (33 °F)	20-22	100-120
13°C (55°F)	18-20	90-110
18°C (64 °F)	16-19	75-100
23°C (73°F)	15-17	60-70
28°C (82 °F)	10-12	45-55
33°C (91 °F)	7-9	40-45

Summer Resin (S):		
Temperature	Working Times (mins)	Curing Time (mins)
8°C (33 °F)	45-48	150-300
13°C (55°F)	41-45	130-150
18°C (64 °F)	32-35	120-135
23°C (73°F)	30-32	90-100
28°C (82 °F)	20-23	70-85
33°C (91 °F)	14-16	65-75

Rapid Resin (R):		
Temperature	Working Times (mins)	Curing Time (mins)
20°C (64 °F)	6-7	26-30

Rapid resin gives a very fast cure. As with Winter and Summer resins, the working and curing times are affected by ambient temperature. It is not recommended to use Rapid resin when the ambient temperature is higher than 20°C.

## Unique pre-measured resin bag (supplied in Pipe Doctor Kits):

- Always the correct mix - guaranteed.
- No contact with unmixed resins.
- Double-sealed secure bag.
- No wastage.
- Safe disposal of bag.
- Transparent bag for visual check when mixing the resin.
- Supplied in two sections, separated by a plastic sealing clip - working time only begins when actively mixed by removing clip.

## Silicate Resin

Pipe Doctor silicate resin for point repair is available in pre-measured bags, within our Patch repair kits, or in bulk. Pipe Doctor resin is supplied in two parts – silicate resin and sodium waterglass – which are activated on mixing. Three types of resin are available: Winter (W), Summer (S) and Rapid (R).

Bulk Resin comes as a 42kg Kit:

- 26kg drum of Component B – Silicate Resin
- 16kg drum of Component A – Sodium Waterglass

It is mixed in the ratio of 2:1 i.e. 2 parts of Component B to 1 part of Component A.

One Bulk Resin Kit is sufficient to cover, for example, 39 x 100mm diameter x 550mm long repairs or 20 x 100mm diameter x 1m long repairs. Resin coverage is c. 1.6ltr per square metre.

*Please note: In regards to Pipe Doctor resin, as of 24th August 2023, anyone handling, mixing, using any chemical product that contains Diisocyanate in levels of 0.1% or above, adequate training is required before industrial or professional use of this product.*

## Benefits:

- High temperature resistance.
- Excellent chemical resistance compared to all other pipe repair resins.
- Water-glass based polysilicate resin for strength and flexibility due to unique cross-linked molecular formula.
- Able to cure in the presence of water, for no washout during installation.
- Excellent bonding properties to most materials.
- Excellent migration properties between the resin and fibreglass mat, for consistent impregnation.
- Non-flammable, so ideal for airports, hospitals, stations and other public places.
- Non-hazardous, so no transport or disposal problems.
- Odourless, so ideal in confined spaces.

## Bulk Materials & Accessories

Pipe Doctor materials are available in bulk form as rolls of matting or containers of resin & water glass (sold separately). Cutting & measuring of the items is the responsibility of the customer. Fibre glass matting is available on rolls for straight repair patches or for radius repair patches (for swept bends).

Straight matting is available in widths of 1250mm (for 550mm repairs) or 2500mm (for 1m repairs). Radius bulk matting is available at a width of 1250mm.

In addition to the materials above, all the necessary accessories for no-dig repair are also available within the Pipe Doctor range, which can be purchased as individual products or within a Contractor Pack, which provides all the equipment needed in one bundle.



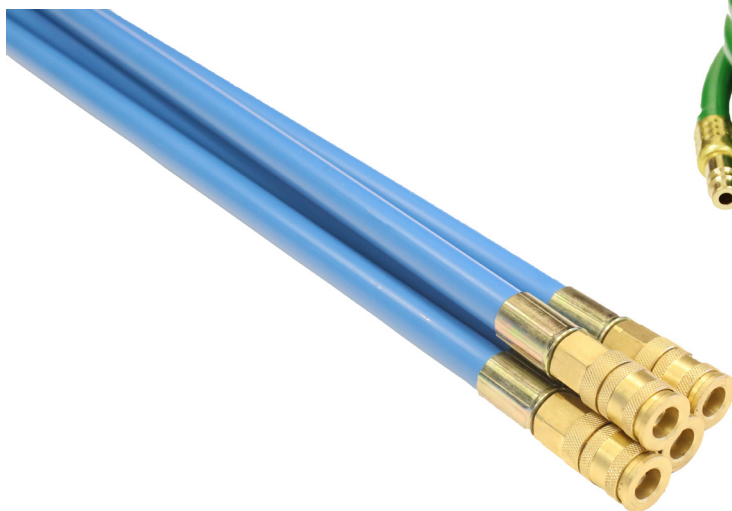
**Please contact [sales@s1e.co.uk](mailto:sales@s1e.co.uk) for full product sizing listing.**

### Accessories:

### Pipe Doctor Push Rods, Gauges, Adaptors, Inflation Hoses, etc.

To compliment the Pipe Doctor bulk materials all the necessary accessories for no-dig repair are also available within the Pipe Doctor range.

- Press Reg, Gauge & Isolating Valve 0-4 BAR
- Regulator with or without Manometer protection 0-10 BAR
- Check Gauge
- Flexible Adaptor for Packer
- Packer Drain Rod Adaptor
- Series 25 Male Air Con 1/4" & Lock Ring for Packer
- Series 25 Female Air Con 1/4" & Lock Ring for Packer
- 25 Litre Portable Compressor (230v)
- 24L Air Compressor 110v
- 1m C/Hose with Series 25 Male Fitting for Compressor
- Hand Pump
- Inflation Hose - Available in 5m - 100m lengths in green.
- Inflation Hose Reel
- Groundsheet
- Layflat Tubing
- Patching Accelerator
- Packer Wrap (Bulk Wrap)
- Lithium Cutting Shears for Bulk Matting
- Lithium Cutting Blades for Shears
- Copper Binding Wire Roll
- Impregnation Spatula
- Plastic Cable Ties 780 x 9.0
- Air Push Rod Blue 1.5m Long



**Please contact [sales@s1e.co.uk](mailto:sales@s1e.co.uk) for full product sizing listing.**

### Selection of Packers

Packers are essential equipment for no-dig patch repair – used for positioning the patch and holding it during curing. Pipe Doctor packers are available for purchase or hire from S1E.

### Circular Packers

A comprehensive range of traditional Packers to be used with the Pipe Doctor no-dig patch repair system.

A wide range of sizes and types are available, including those for both straight and radius repairs.

### Benefits:

Wide range of sizes available for straight repair:

- For diameters between 25mm & 1200mm.
- Lengths between 600mm & 5000mm.

Packers are available for radius repairs around a 90° bend for DN100 and DN150 pipes.



### Five types of circular packer are available:

- Standard Packers are the lowest cost.
- Wheeled Packers offer greater manoeuvrability.
- Flow-through Packers allow the repair to take place without stopping the flow through the pipe.
- Multi Size Packers achieve up to 3 or 5 different diameters.
- Radius Packers are used for repairs on bends, with the Radius Kits.

*\* Quality hire service available, with every packer cleaned, checked and maintained for every hire period.*

**Please contact [sales@s1e.co.uk](mailto:sales@s1e.co.uk) for full product sizing listing.**



### Pillow Packer

A fold-flat, oblong inflatable packer for repairs to larger diameter infrastructure. Pillow packers are easy to manoeuvre, for an easier installation of the patch.

#### Benefits:

- Available in four sizes: 300-600mm, 600-1000mm, 1000-1400mm and 1200-1800mm.
- Can be manufactured to bespoke sizes.
- Flexible to manoeuvre.
- Approx. 30% lighter weight than standard packers of the equivalent size.
- Folds flat for easy transportation.
- Inflates to fit the shape of the damaged infrastructure; repair ovoid as well as circular pipes.
- Repair is structural, dependent on layers installed.
- Quality hire service available, with every packer cleaned, checked and maintained for every hire period.



*Bulk matting and resin available for use with Pillow Packers  
- please call 01226 397015 for more details.*

### Pipe Stoppers

A range of multi size pipe stoppers, used for blanking off a pipe for air testing, water testing or flow stopping for a repair.

#### Benefits:

- Allowable Back Pressure 0.5 bar \*\* (5m head of water).
- Inflation Pressure 1.5 bar.
- Standard Series 26 Connectors.
- Wide expansion range will work in all types of pipe.
- Lightweight : most sizes can be installed by one man.
- Reinforced Synthetic Rubber: maximum durability.
- Available in Nitrile for Hydrocarbon applications.
- Compressor or hand-pump inflation accessories.
- Special sizes on request.
- Stoppers with 2.5 bar and/or bypass are available on request, please contact the S1E team for more details.

*\* Maximum inflation and back pressures are for stoppers fully inserted into the pipe and mechanically braced against slippage*



**Please contact [sales@s1e.co.uk](mailto:sales@s1e.co.uk) for full product sizing listing.**

## Information Pack

### Pipe Doctor Training

Training is offered in no-dig patch repair, providing an opportunity for operators to gain confidence in this technique. The course is approved by the Water Research Centre (WRC). Training can take place either at S1E's Head Office or at customers' depots.

#### Benefits:

- Practical hands-on course, including trainees making their own repair to a damaged pipe.
- Drainage layout at our Head Office for practise use.
- Can be conducted at customers' depots, if this is more convenient.
- Can be tailored to first-timers or as part of a refresher session
- Training from experienced trainers, specialists in the field of drainage.
- Independent accreditation from WRC for the course in installing the WRC Approved Pipe Doctor.
- Trainees receive a recognised certificate and identity card to prove their proficiency.



### Installation Instructions

**For full, detailed installation instructions, please see the Pipe Doctor Installation Manual.**

#### Before installation

All preparation work should be carried out prior to mixing the resin, including checking all equipment is present and working correctly, the kit is of the right size and that the resin is within date.

A CCTV survey should be carried out to identify the repair location. The pipe should be cleaned and cleared of any obstructions noted from the survey.

### Installation



**Step 1.** Protect the packer with the polythene hoses (Straight/Rapid) or polythene wrap (Radius)

**Step 2.** Unfold the disposable protective groundsheet and lay on a suitable surface.

**Step 3.** Open out the fibreglass mat and place it with the shiny/woven side facing upwards (straight repairs). For Radius repairs, it does not matter which side is placed facing upward.



**Step 4.** Put on the protective gloves, one pair over the other, and the goggles and unwind the two wire ties.

Ensure you have the correct tools available to cut open the resin bag and to trim the wire when fitted.

**Step 5.** Remove the 2 black safety caps from each end of the sealing clip on the resin bag.

Mix thoroughly until all the resin is a uniform colour.

**Step 6.** Pour half of the contents onto the fibre glass mat. Evenly spread the resin over the surface of the mat.

*(continued on next page)*

### Installation Instructions Cont'd.



**Step 7.** Fold the mat along the right hand coloured stitch guideline and spread more resin evenly over the mat. Fold along the left hand coloured stitch guideline and spread resin evenly over this surface.



**Step 8.** Turn over the folded wetted mat and pour the remaining resin onto this surface. Spread evenly. Ensure that the resin coats all surfaces and soaks into the matting.



**Step 9.** Position the packer onto the edge of the mat. The folds in the mat should be facing the ends of the packer. Also ensure that the mat is positioned centrally on the packer.

Place the packer on the mat with the air connection and flexible adaptor facing to the right.



**Step 10.** Roll the fibreglass mat around the packer. Two wire ties are positioned 25mm from the end of the fibreglass mat to secure it. For Radius repairs, a third wire tie is placed at the centre of the mat.

**Step 11.** If the wires have not been tightened sufficiently, the packer can be inflated slightly to tighten onto the wires.

### Installation Instructions Cont'd.



**Step 12.** Attach the flexible adaptor, air push rods and extraction rope to the packer. Ensure all the locking rings are secured against the release mechanism of the quick release air connectors and air push rods.

**Step 13.** Introduce the packer assembly into the pipe.

**Step 14.** Inflate the packer to the required pressure. Always use the minimum pressure required to inflate the packer.

This is the pressure that fills the internal bore without putting excessive stress on the pipe body.

**Step 15.** Monitor the packer pressure at regular intervals during the curing period to ensure that the target pressure is maintained.

**Step 16.** Leave the packer in place until the resin is cured. The resin left in the bag and on the ground sheet will give an indication of when the resin has cured.

**Step 17.** Deflate the packer and remove it from the pipe line using the attached extraction rope.

**Step 18.** The repair should be inspected using CCTV surveillance equipment.

**Step 19.** Remove the protection hoses from the packer. These should not be reused and should be removed from site and disposed of in an appropriate manner.

## Frequently asked questions

### 1. What are the size ranges for each Pipe Doctor Kit?

S1E can supply kit sizes ranging from 100mm to 525mm diameter.

- DN100 @ up to 103mm diameter (max)
- DN150 @ up to 154mm diameter (max)
- DN225 @ up to 230mm diameter (max)
- DN300 @ up to 315mm diameter (max)
- DN375 @ up to 400mm diameter (max)
- DN450 @ up to 480mm diameter (max)
- DN525 @ up to 560mm diameter (max)

Larger sizes available on request (up to 1200 dia).

The Radius size range;-

- DN100 @ up to 103mm diameter (max)
- DN150 @ up to 154mm diameter (max)

### 2. What is the maximum length of repair?

Standard Pipe Doctor kits come in 2 lengths, 500mm and 1000mm. S1E can provide multiple Pipe Doctor Kits that can overlap each other if a system is required for longer repairs. The Radius system is available in 1m at this stage.

### 3. Will the Pipe Doctor resin cure in the presence of water?

Yes. The resin will cure in the presence of water and will cure whilst submerged in water. On pipes that require a continual flow, i.e. a live drain, a Wheeled or Flow-Through Packer can be supplied. (DN150mm and above)

### 4. What is the “working” time of the resin?

Three types of resin are available:

- 2-3 hour cure resin has a working time of a maximum of 45 minutes (Summer)
- 1-2 hour cure resin has a working time of a maximum of 30 minutes (Winter)
- 30 minute cure resin has a working time of a maximum of 6-7 minutes (Rapid)

### 5. Is the cure time affected by the ambient temperature?

Yes. As the ambient temperature increases, the curing and working time decreases. Likewise, as the temperature decreases, the curing and working time increases. The Pipe Doctor does cure at below freezing temperatures; however, we do recommend that once preparation starts, the resin is at ambient temperature. In extreme cold weather, it can often be colder above ground than in the sewer.

### 6. What effluent temperatures can Pipe Doctor withstand?

The temperatures in contact with the cured resin must not exceed 85°C (185°F)

### 7. Does the pipe need to be cleaned prior to repair?

Yes. Before a repair takes place it is recommended that the pipe is usually jetted and cleared of any debris, solids and grease. In order to ensure a smooth bore, obstacles including tree roots, rocks and stone may need to be removed using standard cutting equipment. S1E supplies cleaning & cutting equipment, if required. It is recommended that inspection of the pipe is carried out prior to and after cleaning in order to establish the condition of the sewer.

### Frequently asked questions cont'd.

#### 8. What training is available regarding Pipe Doctor Installation?

There is a one-day training qualification available.

#### 9. How will I know which resin and matting combination is suited for a particular job?

In addition to the training provided, all information is contained in the literature and on the packaging. Technical support will be continuously provided to all customers.

#### 10. Will the pipe doctor withstand jetting?

In-house testing reported the following information: An initial pressure of 2600psi (as recommended by WRc for plastic pipes) was used and the jetting head left in position and at pressure for 2 minutes. The pipe was examined and the repair had been totally undamaged. A second test was carried out as above but at a greater pressure of 4200psi. Again the repair was totally undamaged. The jetting machine's maximum output of 4200psi had been reached and so no further tests were carried out.

#### 11. What is the maximum distance from point of entry to the repair?

If CCTV survey can detect the damaged area, then the Pipe Doctor can repair it regardless of the distance. Consideration should be taken with regards to the working time and distance required to get to the damaged area. When using Rapid resin, a maximum distance of 15m is recommended.

#### 12. How many crew members are required to install the Pipe Doctor?

The standard installation crew should comprise of 2 or 3 people depending on the size of the repair and the difficulty in installation.

#### 13. Are there any special disposal measures that need to be considered?

The mixed resin is totally inert and non-toxic and any waste material can be disposed of in the same manner as with domestic waste. It is advisable to allow any unused resin to cure before being disposed of.

#### 14. Is the Pipe Doctor resistant to the aggressive chemicals found in Sewers e.g. sulphuric acid and methane?

Both the fibre glass mat and resin are highly resistant to chemicals (pH1 up to pH13.5) and if the resin were abraded, the fibre glass matt would not be destroyed. However, please refer to our resistance chart for guidance or contact our Technical Department for further advice if your sewer has a special combination of chemicals flowing through the drain.

#### 15. Are there any storage requirements?

The Pipe Doctor should be stored in a dry place, away from UV light. If stored in freezing conditions, the water in the clear liquid part of the resin can freeze. But once the normal temperature has resumed, the resin will not be affected and will go back to its regular state.

In the unlikely event of exposure to extremely high temperatures (70°C) in confined spaces, the isocyanate (brown liquid in resin) may be affected.

#### 16. Will the Pipe Doctor patch be affected by shrinkage?

No. The repair patch will only be affected by a maximum of 0.06%.

### Frequently asked questions cont'd.

#### 17. What is the shelf life of the Pipe Doctor Kit?

The kit has a shelf life of 2 years.

#### 18. What affects could areas in a high water table have on the repair?

None. The Pipe Doctor has been hydrostatically tested at 25m head of water (2.5bar)

Other considerations must include:

- Downward loading (heavy traffic vibration)
- Depth
- Pipe material, diameter and condition
- Soil Conditions

Additional layers of matting may be required on pipes of 300mm diameter or above. S1E can provide a liner thickness design calculation test.

#### 19. Does the resin bond to all pipe materials?

The resin bonds to most pipe materials including UPVC, clay, cast iron, ductile iron, pitch fibre, and concrete but excludes polyethylene and polypropylene. The resin will not provide a chemical bond on these two pipe materials although a mechanical bond can be produced once the resin has cured in the damaged area.

\* We have been asked in the past if the system is suitable for GRP. Providing the pipe is not used for potable water and the coating is of a rough nature, the Pipe Doctor will bond. Specific details will need to be supplied to S1E for approval.

#### 20. Will the Pipe Doctor adhere to stainless steel?

Yes. Pipe Doctor can be used in a stainless steel application.

#### 21. Does the Pipe Doctor have any form of WRc certification or approval?

Yes. The Pipe Doctor was the first patch repair system to have full WRc approval for the kits and bulk, in addition to short-term, long-term hydrostatic test and 1000 hour modular test. It also passed the 10,000 hour Specific Ring Stiffness & Dry Creep Factor test. The certificate No. is PT/484/0421.

The system using Rapid resin has its own approval - Cert No. PT/485/0421.

#### 22. Does the resin release any high odours and is it dangerous?

The odour emission is extremely low and is not harmful. No safety mask or breathing apparatus is required.

#### 23. Can the Pipe Doctor be used to repair a bend?

Yes. In March 2007 the Radius system was launched, which can repair a bend up to 90°. The kits are available for 100mm and 150mm diameter pipes and come in the standard 600mm length.

**Please contact [sales@s1e.co.uk](mailto:sales@s1e.co.uk) for any further questions.**



## Chemical Resistance

Chemical	Resistance	Chemical	Resistance	Chemical	Resistance
<b>Organic Compounds</b>		Furfurylalkohol	++	Lubricant greases	++
Acetone	-	Glutaraldehyd	++	Shock Absorber Oil	++
Aneline	++	Glycol	++	Styrene	++
ASTM-Fuel A	++	Glyoxal	++	Cooking Oil	++
ASTM-Fuel B	++	Glycerol	++	Tetrachlormethane	++
ASTM-Fuel C	++	Hydraulic Oil	++	Tetrahydrofuran	-
Petrol (90 Oct.)	++	Isocatane	++	Toluene	++
Benzin (95 Oct.)	++	Heating Oil	++	Transformer Oil	++
Benzene	+	Isopropyl alcohol	++	Trichlorethene	+
Benzylbenzoate	++	Kerosene	++	<b>Inorganic Compounds</b>	
Buty acetate	+	Firnis	++	Calciumchlorid, ≤50%	++
Cracker Oil	++	Methanol	+	Potash	++
Cyclohexanol	++	Methylethylketon	+	Seawater	++
Cyclohexanon	++	Methylene chloride	+	Sodium Chloride, ≤30%, watery	++
Dibutylphthalat	++	Mineral Oil, choice refind	++	Caustic Soda, ≤40%	++
Diesel fuel	++	Mineral Insulating Oil	++	Phosphoric Acid, ≤10%	++
Dimethylformamid	-	Lactic Acid, 90%	++	Nitric Acid ≤40%	++
Diocetyl	++	Motor oil	++	Hydrochloric Acid, ≤40%	+
Acetic Acid, 10%	++	Perchlorethylene	+	Sulfuric Acid, ≤40%	++
Acetic Acid, 96%	++	Petrolether	++	Drinking Water	++
Ethyl acetate	+	Phenol	+	Distilled Water	++
Ethylene carbonate	++	Propylene carbonate	++		
Fluorocarbon	++	Quenchoil	++		
Furfural	++				

### Legend:

++	resistant
+	partly resistant
-	long term not resistant
--	short term not resistant

### Municipal Sewage:

- pH 2–14
- Winterdienstnotizen A-200.
- Safeway SD.

### Hot Liquids:

- Greases and Oils up to 100°C, short time.
- Watery Solutions up to 200°C, long time.

## Independent Testing

### WRc approval

The Pipe Doctor was first granted WRc approval in March 2011. This was for the whole system in kit and bulk form, but the approval does not specifically mention the Radius products. It was the first trenchless system to gain WRc approval.

The range was re-approved in April 2021. All elements were re-tested and found to exceed WRc's approval levels. The WRc approval no. is PT/484/0421.

The Rapid system was separately approved in April 2021. Its approval no. is PT/485/0421. It was the first system featuring fast-curing resin that gained WRc approval.

**WRc plc** – Frankland Road, Blagrove, Swindon SN5 8YF

- WRc Approval - Certificate no. PT/484/0421; April 2021 (first approved March 2011)
- WRc Approval for Pipe Doctor Rapid - Certificate no. PT/485/0421; April 2021
- WRc Approval for Pipe Doctor Patch Repair Training Course - Certificate no. PT/514/0323; March 2023

Pipe Doctor is available in kit form, including everything needed for a single repair. Bulk materials can also be purchased. With three types of resin available, for the best working and curing times for the ambient temperature: Summer, Winter and Rapid.

The Pipe Doctor system, and Rapid system, are WRc approved, as is the Pipe Doctor Patch Repair Training Course.

### Summer (S) & Winter (W)

### Rapid (R)

### Training



### Independent Testing cont'd.

#### Other independent tests

##### Exova ( UK ) Limited

- Initial specific ring stiffness & dry creep factor, 10,000 hour; August 2013.
- Initial specific ring stiffness & dry creep factor, 1,000 hour; August 2012.
- Compression testing of the Pipe Doctor glass reinforced silicate resin; January 2013.
- Tensile strength and modulus testing with Posissons Ratio; May 2013.
- 3 x Tensile strength and modulus testing.

##### ATV-M 127-2

- Design check certificate, in accordance with the German design code ATV-M 127-2.
- Endorsed by University of Applied Sciences, Corrensstraße 25, 48149, Münster, Germany; April 2013.

##### BRE Global

- Fire Test; September 2013.

##### Lanes for Drains

- WRc approval for the installation by Lanes Group plc of the Pipe Doctor system for both kits and bulk products; February 2013.

##### Thames Water

- Approval for use; August 2004.

##### Dublin City Council

- Approval for use; April 2004.

##### Pipe Doctor Chemical Resistance Chart

- Please contact S1E Ltd on +44 (0)1226 397015 or [contact@s1e.co.uk](mailto:contact@s1e.co.uk) for a full list detailing the chemical resistance of Pipe Doctor products.



## S1E Limited Specialist Suppliers of Trenchless Technology

### No-dig Pipeline Repair

S1E Limited is a specialist supplier of trenchless technologies to the drainage repair industry. The company focuses on sourcing quality products for professional use. They are all tried and tested in the field to produce impressive results. S1E distributes high-quality products from market-leading manufacturers for the drainage repair industry. Products include camera inspection systems, cutting and cleaning tools, CIPP lining equipment and consumables, mechanical point repair devices, rat blockers and other site consumables.

S1E Limited is committed to being a quality supplier, with a focus on customer service. S1E is proud to be an active member of the UK Society for Trenchless Technology.

First established in 2007 as Fernco Environmental, the company's mission was to seek out repair products for the infrastructure repair and water management markets. Since 2016, it has re-focused its ranges to the specialist field of trenchless repair, with a growing portfolio in this specialist area.

The company is owned by Cooper Companies Inc, a US-based leader in the production of pipe couplings. The Group also owns companies in Canada, Mexico, Brazil, Germany and France, as well as the UK-based sister company to S1E, Fernco (previously, Flexseal).

It is accredited to ISO 9001: 2015 for its Quality Management System. It is also accredited to ISO 14001: 2015 for its Environmental Management System.



+44 (0)1226 397 015



contact@s1e.co.uk



www.s1e.co.uk



Cooper House, Unit 2, Springhill Road, Grimethorpe, Barnsley, S72 7BQ

