

# DE NEEF<sup>®</sup> INJECTO<sup>®</sup> SIS Tube

Groutable hose waterstop system

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## Product Description

The Small Injection System (SIS) DE NEEF<sup>®</sup> INJECTO<sup>®</sup> is an injectable waterstop system that provides a conduit for the placement of DE NEEF<sup>®</sup> chemical grouts. Like its big brother the DE NEEF<sup>®</sup> INJECTO<sup>®</sup> hose, the SIS hose is a permeable tube designed to ensure even distribution of grout throughout the injection zone. The SIS tube's small diameter (3/8") allows it to be placed in a sawed concrete slot or wrapped around a pipe penetration; while its heat shrink fittings allow for maximum flexibility in hose placement and injection.

## Product Application

- Sealing cold and construction joints
- Sealing pipe penetrations
- Retrofit sealing of joints

DE NEEF<sup>®</sup> SIS INJECTO<sup>®</sup> Tube may be used with the following chemical grouts:

- DE NEEF<sup>®</sup> Flex SLV PUnE with 1% DE NEEF<sup>®</sup> Flex Cat PUnE
- DE NEEF<sup>®</sup> Flex LV PUnE with 1% DE NEEF<sup>®</sup> Flex Cat PUnE
- DE NEEF<sup>®</sup> Superflex AR Acrylate

## Product Advantages

- Small hose diameter
- Fast, simple installation
- No special tools required
- Low pressure injection
- Permanent seal after injection
- Injectable anytime after concrete cure

## Packaging & Handling

DE NEEF<sup>®</sup> SIS INJECTO<sup>®</sup> Kit Contains:

- Green SIS INJECTO Tube: 100 ft.
- Clear PVC Packer Tubing : 18 ft.
- Heat Shrink fittings: 12 pieces
- Anchoring clips: 100 pieces

Unlimited shelf life when stored in a dry place.

## Installation Guidelines

### Cold Joint Procedure:

The green DE NEEF<sup>®</sup> SIS INJECTO<sup>®</sup> Tube is installed onto the hardened concrete during formwork installation. In case of rough surfaces, any gap between DE NEEF<sup>®</sup> SIS INJECTO<sup>®</sup> Tube and the surface should be filled with SWELLSEAL<sup>®</sup> WA.

The green DE NEEF<sup>®</sup> SIS INJECTO<sup>®</sup> Tube is cut to the required length on the job site. (Recommended length 15 ft. or less). The cut ends are inserted into the black heat shrink sleeves. Apply sufficient heat with a hair dryer or hot air gun to allow sleeves to shrink onto the tube. Use caution not to melt the sleeve. Torches or other open flames are not recommended. Pull gently on the clear plastic tubing to insure the sleeve is snug.

The green DE NEEF<sup>®</sup> SIS INJECTO<sup>®</sup> Tube is attached to the concrete with the anchoring clips between the inner and outer reinforcing bars. Attach the anchoring clips to the concrete every 12 inches with concrete anchors or nails applied with a powder actuated system.

When beginning the next 15 ft run of DE NEEF<sup>®</sup> SIS INJECTO<sup>®</sup> Tube, line up the ends of the two black sleeves so that the green DE NEEF<sup>®</sup> SIS INJECTO<sup>®</sup> Tubes are parallel to each other, but do not touch. Provide a space between the two hoses of 2-3 inches. This will help avoid cross contamination of the two green DE NEEF<sup>®</sup> SIS INJECTO<sup>®</sup> Tubes during the grouting operation.

Always terminate the green DE NEEF<sup>®</sup> SIS INJECTO<sup>®</sup> Tube into heat shrink sleeve and allow for a minimum of 2-1/2" of concrete cover. **Do not run the green DE NEEF<sup>®</sup> SIS INJECTO<sup>®</sup> Tube outside the form work.**

Cut packer tubing to length as required to reach a formholder packer or to extend outside the formwork. The clear packer tubing should be secured with tie wire to the rebar to prevent movement during the pour.

The formholder packers can be either nailed to wooden formwork or attached to the rebar with steel tie wire if metal forms are used.

If formholder packers are used, attach the clear packer tubing directly to them. If the clear packer tubing is being run outside the form work, protect the open ends with a plastic cap or tape and take measures to protect them from damage during formwork installation and stripping.

### CAUTIONS:

1. The green DE NEEF<sup>®</sup> SIS INJECTO<sup>®</sup> Tube must be installed in direct contact with the joint over its full length, to allow proper and complete distribution of the injection resin. If the concrete is not smooth enough to allow full contact, use SWELLSEAL<sup>®</sup> WA to create a smooth surface. Press DE NEEF<sup>®</sup> SIS INJECTO<sup>®</sup> into the SWELLSEAL<sup>®</sup> WA.
2. Do not cross the green SIS INJECTO Tubes. Green should never touch green or cross contamination could occur during the grouting operation.

## Saw Cut Procedure:

1. With a concrete cutting blade, create a slot in the cold joint to a depth of at least 2". (Always use proper PPE; goggles, respirator, gloves, etc. when cutting concrete.)
2. Clean all concrete dust out of the slot with water or compressed air.
3. Install DE NEEF<sup>®</sup> SIS INJECTO<sup>®</sup> Tube into bottom of joint (maximum 15 ft. lengths). Make sure injection fittings are properly attached to the tube.
4. Extend the clear packer tubes to the surface of the wall or floor and allow enough excess tubing to protrude for easy access during pumping. DO NOT ALLOW GREEN SIS INJECTO TUBE TO EXTEND OUT OF THE SAW CUT!
5. Place an open cell backer rod or dry (uncoiled) oakum into the saw cut to a depth equal to twice the width of the saw cut. Example: in a 3/8" saw cut, push the backer rod to a depth of 3/4".
6. Fill the gap over the backer rod cover material such as Deneplug hydraulic cement, DENEPOX<sup>®</sup> Gel 125, or DENEPOX<sup>®</sup> Rapid Gel epoxy gels.
7. Allow sufficient time for the epoxy or hydraulic cement to fully cure.
8. Inject with desired injection resin per injection instructions.

## Injection Procedure:

1. Test the system for conductivity by attaching a water pump to the end of the first clear packer hose (inlet). Pump water until flow is detected at the next clear packer hose (exit).
2. If a hydro active resin is to be used, crimp off the exit hose and pressure the system to 200 psi. This will "wet out" the injection area and any adjacent cracks. If a two component acrylate is to be injected, this step is unnecessary.
3. Mix resin per instructions on the Data Sheet for the specific product used.
4. Conduct a cup test to insure proper reactivity of the resin.
5. Connect the resin pump to the clear packer hose (inlet) of the first tubing run.
6. Pump resin until it is observed at the exit hose.
7. Crimp off the exit hose and slowly raise pump pressure as required to get grout flow. Depending on the resin selected, injection pressures will vary; however, it is not recommended that pump pressures exceed 600 PSI.
8. Consult project specifications for injection termination criteria. This may be a specific pump pressure, a volume of grout pumped, or pump to refusal.
9. After reaching grout termination criteria, crimp off the injection tube and repeat the procedure at the next tube run.
10. Repeat with all tubes until all tube runs are injected.
11. After injection resin has cured, cut off clear packer tube ends flush with concrete surface and patch with Deneplug hydraulic cement, DENEPOX<sup>®</sup> Gel 125, or DENEPOX<sup>®</sup> Rapid Gel epoxy gels.

## Injecto Tube Construction

A high strength spiral wire coil (1) prevents collapse during concrete placement, while the non-woven filter membrane (2) prevents the tube from being clogged with concrete particles. A bright green reinforced mesh sleeve (3) protects the tube and allows for easy inspection before the pour. Wherever challenging applications for injection hose, the DE NEEF<sup>®</sup> SIS INJECTO<sup>®</sup> Tube system can provide maximum flexibility for your injection needs.

## Health and Safety

Always use protective clothing, gloves and goggles consistent with OSHA regulations during use. Avoid eye and skin contact. Do not ingest. Refer to SDS (Safety Data Sheet) for detailed safety precautions. SDS's can be obtained from GCP Applied Technologies or from our web site at [gcpat.com](http://gcpat.com).

## Limitations

The DE NEEF<sup>®</sup> SIS INJECTO<sup>®</sup> Tube system is designed to provide a delivery system for waterproofing resins, which are injected into the structure in accordance with the instructions found in the selected injection resins technical data sheets. Consult with the DE NEEF<sup>®</sup> Technical Department for assistance in selecting the appropriate sealing resin for each condition.

## Properties

### TYPICAL PROPERTIES

Outside Diameter	3/8 inch
Inside Diameter	3/16 inch
Length	Maximum 15 ft.
Weight	1.25 lbs per 25 ft.
Operating temperature	Up to 158 °F
Tensile strength steel wire	Approx. 261,000 psi
Diameter filter pores	35 microns

**Note:** The data shown above reflects typical results based on laboratory testing under controlled conditions. Reasonable variations from the data shown above may result.

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