



TOTALFIX SYSTEM: KRU-01-10-N – TECHNICAL DATA SHEET

Component Materials:

- 1. Mastic filler:** two component epoxy resin saturated by insertion of steel particles, with high corrosion resistance and industrial mechanical strength, mixable by hand.
- 2. External and strengthening tape (reinforced wrap):** fiber-glass reinforced tape saturated with polyurethane that polymerizes in a wet (H₂O) environment.

Use: The **TOTALFIX KRU-01-10-N** systems are designed to perform with composite materials, structural repairs of steel, copper, iron, aluminum, polyethylene, polypropylene and PVC pipes. In terms of the carried agent these types of applications are suitable for oil field pipe repairs, gas, water, most chemicals, resisting at a maximum heat of 150° Celsius.

The systems can be used in the case of a 80% loss of the pipe's wall thickness, on surfaces up to 150 sq. cm, due to a process of corrosion or mechanical external intervention (hitting, scratching, abrasion, etc.) or for small or medium sized holes of max 120 sq. mm due to corrosion, cracks, etc.

The repairing system can be applied for longitudinal defects of pipes, bends, branch joints, corner defects, welding defects and defects in the sealing areas of sectioning valves or flange joints, defects of mechanical or welded joint fittings.

1. Mastic filler

Properties:

- Repair time shortened to a max. of 20 min.
- Applicable for filling leaks, fill holes and cracks in the material
- Presented in a premixed formula (ready for use)
- Adhesive to PVC, fiberglass, metal, wood, polyethylene, etc.
- Nontoxic material.
- Does not contain solvents
- Does not require special equipment for application (open flame, electrical equipment, etc.)
- After setting, there are no breaks, shrinkage or loss of adhesion
- Withstands temperatures of 150° Celsius
- Repaired area can be painted or insulated against corrosion by cold applied materials
- Supports processing by drilling, blasting, grinding, milling, etc.
- Usable for the repair of drinking water pipes
- Usable in high humidity or submerged environments

Technical parameters:

Parametru	Valoare	Standard
Mixing time	3 – 5 minutes	
Curing time: initial/final	20 min / 75 min at 4 ⁰ C 15 min / 60 min at 16 ⁰ C 10 min / 45 min at 25 ⁰ C 5 min / 30 min at 32 ⁰ C	
Application temperature	4 – 50 ⁰ C	
Compression resistance	12.000 PSI – 820 bar	ASTM D 695
Tensile resistance	6.000 PSI – 410 bar	ASTM D 688 -111
Shear strength	900 PSI – 62 bar	ASTM D 688
Hardness Shore D	80	ASTM D 790-1-B
Elasticity	6 x 10 ⁵ PSI	ASTM D 638
Dielectrical resistance	300 V/mm	ASTM D 149
Temperature of use	5 – 150 ⁰ C	

Chemical resistance:

The product resists following types of chemical compounds:

- Drinking water, waste water, steam
- Solvents - acetone, toluene, ethyl alcohol
- Acids - hydrochloric acid, sulfuric acid
- Chemicals - ethylene glycol, xylene, ammonia
- Hydrocarbons
- Fuels - oil, diesel, gasoline
- Gas - Natural, LNG, LPG
- Organic salts

2. External Reinforcing and Strengthening Tape

Properties:

- No open flame, electric or adhesives needed for application
- Product intended for use in hazardous environments and emergency situations
- Does not require special equipment
- Does not require additional pre-processing application - product is "ready for use"
- Ease of use and reduced application time
- High flexibility in application - can be applied to irregular shapes
- Fast curing in moist atmosphere and slow curing in open air

- Usable on submerged pipes
- Operating temperatures up to 150° Celsius
- Adhesion to rubber, PVC, polyester, metal, fiberglass, concrete
- Hardness that allows further processing by abrasion
- Resistant to pressures up to 10 bar
- High electrical resistance
- Usable for the underground or overhead piping
- Nontoxic, non caustic product with high resistance to corrosion
- 3 years warranty and shelf life
- Does not require maintenance activities
- Resistant to UV radiation
- After curing the repair can be protected against corrosion by coating or insulating with cold applied materials (tapes)

Technical parameters:

Parametru	Valoare	Standard
Application time	2 minutes	
Curing initial/final	4 min / 90 min at 16 ⁰ C 3 min / 60 min at 25 ⁰ C 2 min / 45 min at 32 ⁰ C	
Compressive strength	300 N	ASTM D 695
Tensile strength - vertical	≥ 12 Mpa	ASTM D 688 -111
Tensile strength - orizontal	≥ 32 Mpa	ASTM D 688
Impact resistance	≥ 30 Kj/m ²	ASTM D 790-1-B
Rezistence to exfoliation layer/layer	≥ 20N/25mm	ASTM D 638
Dielectric strength	300 V/mm	ASTM D 149
Temperature of use	5 – 150 ⁰ C	

Chemical resistance:

The product resists following types of chemical compounds:

- Drinking water , waste water, steam
- Solvents - acetone, toluene, ethyl alcohol
- Acids - hydrochloric acid, sulfuric acid
- Chemicals - ethylene glycol, xylene, ammonia
- Hydrocarbons
- Fuels - oil, diesel, gasoline
- Gas - Natural, LNG, LPG
- Organic salts
- Fungicides
- Alkali

Content and packaging of Repairing set KRU-1-10-N:

1pc. Mastic filler bar - 20 grams wrapped in polyethylene foil

1pc. External resistance tape 125 x 4,5 m, color black, sealed in tin foil

2 pairs of rubber or polyethylene gloves

All repair system elements are packed in an individual marked cardboard box.

Application:

Application surface should be cleaned of corrosion marks, paint, insulation scraps or other items that could contaminate the work area.

Cleaning will be done with abrasive/grinding tools or pickling solutions, depending on the existing situation. During repairs of pipes carrying flammable agents (oil, gas, etc.), anti-ex tools and materials shall be used for cleaning and surface preparation, according to the internal specifications and repair procedures of the service operating the pipe network in question.

Surface roughness is needed to be obtained during cleaning and surface preparation in order to get a good grip/adhesion of the mastic and glass fiber band.

The mastic filler shall be mixed in the palm of the worker's hands, a pair of disposable gloves being used for this operation. When mixing the two components the temperature will rise, confirming the polymerization reaction. Release will not exceed the temperature of 25 Celsius degree. The operation of mixing the components is considered to be over when the material acquires a homogeneous color. The block of sealant shall be applied directly over the hole or loss of material. When area subject to repair presents a material loss but without piercing the wall of the tubular material, the sealant is applied by pressing and stretching it on the affected area, aiming at restoring the original exterior surface. After application, the outer surface of the sealant must remain smooth, without roughness or pronounced unevenness.

During the pipe wrapping the operator shall use protective gloves.

Fiberglass tape shall be removed from the sealed tin foil then sunk into a pot of water for a period of 1 to 1.5 minutes. After moisturizing, loosen the tape roll end and start wrapping. Time of application is limited to 2 minutes from the moisturizing of the tape roll. Application shall be made by overlapping the tape in spiral successive turns, with at least 50% of its width. Throughout the application the tape has to be periodically wet in order to sustain the polymerization process and for maintaining a smooth, continuous, without air bubbles surface.

There shall be at least 4 layers (two windings with 50% overlap) to achieve the technical parameters of the application.