

Standard Resin & Hardener

ThistleBond 'Standard Resin and Hardener' is a high performance, solvent free epoxy system designed for onsite repairs to metal, wood, glass and synthetic materials.

ThistleBond 'Standard Resin and Hardener' consists of a unique blend of epoxy resin combined with polyamino amine adducts, which have been specifically selected to provide the optimum adhesions and mechanical and physical strength.

ThistleBond 'Standard Resin and Hardener' is simple and easy to use and when used in conjunction with ThistleBond reinforcement products such as glass cloth, glass tapes or glass mat will result in an excellent repair medium having inherent strength and integrity.

Before proceeding please read the following information carefully to ensure that the correct proper application procedure is fully understood.

SURFACE PREPARATION

All surfaces must be clean, dry and free from oil, grease and loose material.

Metal Surfaces: All loose material, rust and surface contaminants, including existing coatings, must be removed and the surface roughened by using an angle grinder, needle gun or abrasive blasting. Where grinding or needle gunning is used, the surface should be cross-scored to improve adhesion. Care must be taken, when angle grinding, to avoid polishing rather than roughening metal surfaces.

GRP and Wooden Surfaces: All loose or rotten material must be removed to a sound edge. Flaking paint or lacquer scraped clear and sound paintwork thoroughly sanded to provide an effective key.

Where it is not possible to clean the surface thoroughly the application of a coating of **ThistleBond 'A & B Cement'** could possibly improve the bond of the final repair.

MIXING

ThistleBond 'Standard Resin and Hardener' is a two component material consisting of a resin component and liquid hardener component. The resin component should be poured into a suitable mixing container and the hardener added and thoroughly stirred until a homogeneous mix is obtained.

The mixed material should be used within 30 minutes of mixing at 20°C. This time will be reduced at higher temperatures and extended at lower temperatures.

APPLICATION

ThistleBond 'Standard Resin and Hardener' should be applied to the prepared surface by stiff brush or roller to give a uniform even coating taking care to avoid excessive build up and ponding. On rough, pitted surfaces the product should be worked into the surface to ensure complete wetting of the substrate. To maximise the strength of the repair, it is essential that a complete coating of the resin mix is applied prior to the laying up of each layer of glass fabric. By doing so, a homogeneous glass fibre resin laminate will be achieved.

Laying up of Glass Fabrics: The principal strength of the glass fibre resin laminates lies in the Tape or Cloth layers which are either wound or laid on the surface of the repair. when using Tape, this should be wound on with half overlap and care must be taken to ensure that it is applied evenly and flat. This will eliminate a possible cause of weakness in the laminate. When applying multiple layers of Tape each subsequent layer should be applied in the reverse direction and the Tape should not be cut at the end of each pass.

It will sometimes be found difficult to keep the winding smooth, e.g. when the repair is on a bend in a pipe. In these instances, it is better to cut short lengths of Tape and lap them one on the other.

The same comments generally apply when Glass Cloth is being used.

Application of Glass Mat: The purpose of Glass Mat is to provide a rigid backing layer to a repair which has been effected using Glass Tape. To achieve this result, it is essential that the Glass Mat is thoroughly saturated with the resin mix. This can best be achieved by working the Resin Mix into the Mat, by stippling with a brush before applying it to the repair.

NOTE: The ideal film thickness prior to the Glass Tape or Glass Mat is 450 microns. This thickness is required to soak into the Tape or Mat. The coverage rate of the Mat or Tape per 225g unit is 0.35m².

Application of Sealer Filler Resin Mix: Sealer Filler is a non-asbestos powder supplied with sufficient material to add to one unit of **ThistleBond 'Standard Resin and Hardener'**. Mix the **ThistleBond 'Standard Resin and Hardener'** then transfer to a clean mixing vessel. The Sealer Filler should be added to the resin mix and stirred until the Filler is thoroughly dispersed. The resultant paste should be applied to the repair, as required, using a trowling tool.

The mix can be applied to operate at temperatures upto approximately 180°C. When it is applied as a pre-coat, prior to carrying out a repair, it will help to insulate the resin laminate from the operating temperatures of the parent body.

Application of Fairing Compound Resin Mix: Fairing Compound is a filler which consists of glass fibre strands supplied with sufficient material to add to one unit of **ThistleBond 'Standard Resin and Hardener'**. The methods of mixing and application are similar to the Sealer Filler Resin Mix. The main purpose of this mix is to fill in undulations prior to the application of a ThistleBond repair.

Theoretical Coverage Rate

0.6 m²/unit at 200 microns dft. (12.75 ft²/unit at 4 mils dft).

Recommended Film Thickness

Wet 100 microns (4 mils)

Dry 100 microns (4 mils)

PHYSICAL CONSTANTS

Mixing Ratio 2 parts base to 1 part activator by volume.

Appearance Base Clear Liquid
Activator Clear Liquid

Drying & Cure Times at 20°C/68°F

Usable Life	30 Mins
Touch Dry	2 Hours
Hard Dry	16 Hours
Minimum Overcoating	2 Hours
Maximum Overcoating	24 Hours
Full Cure	7 Days

These times refer to **ThistleBond 'Standard Resin and Hardener'** only. When the product is blended for other uses times will be extended and will depend on the final quantities of the mix.

Volume Solids 100%

V.O.C. Nil

Shelf Life Use within 5 years of purchase. Store in original sealed containers at temperatures between 5°C (40°F) and 30°C (86°F).

PHYSICAL PROPERTIES

***Low Pressure Repair** 35kg/cm²
(500 psi)

***High Pressure Repair Bandage** 112kg/cm²
(1600 psi)

* (See application Manual for full details)

Tensile Strength (without bandage) 633kg/cm²
ASTMD1002 (900 psi)

Flexural Strength (without bandage) 956kg/cm²
ASTMD790 (13600 psi)

Compressive Strength (without bandage) 1019kg/cm²
ASTMD695 (14500 psi)

Maximum Working Temperature
(in conjunction with glass tape) 170°C (338°F)

The maximum working temperature in conjunction with sealer/filler resin mix is 180°C (356°F).

HEALTH AND SAFETY

As long as normal good practice is observed **ThistleBond 'Standard Resin and Hardener'** can be safely used.

Protective gloves should be worn.

A fully detailed **Material Safety Data Sheet** is either included with the material or is available on request.

PACKAGING

Supplied in 225gms and 5kg packs.

The information provided in this Product Data Sheet is intended as a general guide only and should not be used for specification purposes. The information is given in good faith but we assume no responsibility for the use made of the product or this information because this is outside the control of the company. Users should determine the suitability of the product for their own particular purposes by their own tests. Detailed specifications are available on request from the company.

FOR FURTHER INFORMATION PLEASE CONTACT



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A & B Cement

ThistleBond 'A & B Cement' is a high performance multi purpose epoxy adhesive specifically developed for repairs where difficult adhesion conditions exist.

ThistleBond 'A & B Cement' is formulated on a complex range of epoxy resins combined with a polyamino curing system reinforced with inert fillers to enhance the adhesion properties of the whole system.

ThistleBond 'A & B Cement' can be applied to virtually any surface to form an effective bond. In addition to being used as an adhesive ThistleBond A&B Cement can also be used to fill cracks in components and castings prior to application of ThistleBond Resin Repair Systems.

Before proceeding, please read the following information carefully to ensure that the correct application procedure is fully understood.

SURFACE PREPARATION

Heavy contamination due to oil or grease must first be removed using **ThistleBond 'Cleaner'**.

All loose material, rust and surface contaminants, including existing coatings, must be removed and the surface roughened by using an angle grinder, needle gun or abrasive blasting. Where grinding or needle gunning is used, the surface should be cross-scored to improve adhesion. Care must be taken, when angle grinding, to avoid polishing rather than roughening metal surfaces.

Where possible, abrasive blasting is the preferred surface preparation.

MIXING

ThistleBond 'A & B Cement' is a two component solvent free material comprising resin and hardener components which must be mixed together prior to use.

Measure 1 volume of resin component and 1 volume hardener component onto a clean mixing board or other suitable surface. The two components should then be thoroughly mixed until completely streak free.

The mixed material should be used within 20 minutes of mixing at 20°C (68°F). This time will be reduced at higher temperatures and extended at lower temperatures.

APPLICATION

The mixed material should be pressed firmly onto the prepared area, working the material into any cracks and surface defects.

When **ThistleBond 'A & B Cement'** is being used to bond two surfaces together, both surfaces should be coated with the material. The two pieces should then be pressed firmly together and clamped in position until the product has set, any excess material squeezed out should be scraped away before the **ThistleBond 'A & B Cement'** begins to cure.

Where a **ThistleBond** repair is to be carried out on a cracked pipe or plate then **ThistleBond 'A & B Cement'** should be trowelled into the crack before proceeding with the repair. Where the crack is still leaking a little, then it is recommended that **ThistleBond 'A & B Cement'** should be left to cure partially before being retrowelled into the crack.

Once **ThistleBond 'A & B Cement'** has cured for a minimum of 2 hours at 20°C (68°F), sanding, grinding and machining etc. can be carried out.

Volume Capacity

740cc(45.2 cu ins) per kilo

PHYSICAL CONSTANTS

Mixing Ratio	Resin	Hardener	
	1	1	By Volume
	1	1	By Weight

Appearance	Resin	Black Paste
	Hardener	Light Grey Paste

Drying & Cure

Times at 20°C	Usable Life	20 minutes
	Initial Set	60 minutes
	Full Cure	3 days

Volume Solids 100%

V.O.C. Nil

Shelf Life Use within 5 years of purchase. Store in original sealed containers at temperatures between 5°C (40°F) and 30°C (86°F).

PHYSICAL PROPERTIES

Corrosion Resistance	5000 hours
ASTMB117	
Flexural Strength	210g/cm ² (3000 psi)
ASTM D 790	
Hardness (Rockwell R)	100
ASTMD785	
(Post Cured 24 hrs at 100°C/212°F)	
Tensile Shear Adhesion	37kg/cm ² (525 psi)
ASTMD1002	
(Aluminium)	
Tensile Strength	258kg/cm ² (3670 psi)
ASTM	

HEALTH AND SAFETY

As long as normal good practice is observed **ThistleBond 'A & B Cement'** can be safely used.

Protective gloves should be worn during use.

A fully detailed **Material Safety Data Sheet** is either included with the material or is available on request.

PACKAGING

Supplied in 176gm and 1kg packs.

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PlasSteel

ThistleBond 'PlasSteel' is a high performance, rapid curing synthetic metal repair compound in the form of a stick which has been specifically developed for on site repairs to metal components such as castings, worn threads, jigs and mould patterns.

ThistleBond 'PlasSteel' is based on a unique epoxy resin system co-reacted with an organo sulphur / amine blend which are then interspersed with specially chosen pigments and fillers which allow the base and activator components to be packed in intimate contact with each other. The reaction only occurs when the two components are hand mixed and the resultant blend produces a repair material with high physical and mechanical strength.

ThistleBond 'PlasSteel' also has the ability to set underwater which makes it highly suitable for submerged conditions.

Before proceeding, please read the following information carefully to ensure that the correct application procedure is fully understood.

SURFACE PREPARATION

Heavy contamination due to oil or grease must be removed using **ThistleBond Cleaner**.

All loose material, rust and surface contaminants, including existing coatings, must be removed and the surface roughened by using an angle grinder, needle gun or abrasive blasting. Where grinding is used, the surface should be cross-scored to improve adhesion. Care must be taken, when angle grinding, to avoid polishing rather than roughening metal surfaces.

Surfaces should be carefully degreased again using **ThistleBond Cleaner**. Cloths should be frequently changed to avoid spreading contamination. On deeply pitted surfaces or porous castings, **ThistleBond Cleaner** should be worked into the surface by brush and washed off using excess cleaner.

MIXING

Before mixing, hands should be treated with barrier cream or lightweight disposable gloves should be worn.

Sufficient product to complete the repair should be cut or broken from the stick. This should then be twisted and kneaded until a uniform colour is achieved with no streaks. The two components are colour coded to ensure complete mixing is achieved when the colour is uniform.

ThistleBond 'PlasSteel' should be used within 6 minutes of mixing at 20°C (68°F).

This time will be reduced at higher temperatures or extended at lower temperatures.

APPLICATION

Prepared surfaces should be dry. The mixed material should be pressed firmly onto the prepared area, working the material into any cracks and surface defects.

When **ThistleBond 'PlasSteel'** is being used to repair leaking pipes, the flow through the pipe should be discontinued until the repair is made and the **ThistleBond 'PlasSteel'** is set. Any leaking fluid must be wiped from the prepared surface to render the surface as dry as possible before undertaking the repair.

When being used underwater it is important that **ThistleBond 'PlasSteel'** is applied direct to the parent material and not to a film of water. This can be achieved by applying finger pressure to the centre of the repair and moving the pressure progressively outwards towards the periphery, thereby excluding the moisture film between the repair and the parent material.

Volume Capacity

66 cc (4 cu. in) per unit.

PHYSICAL CONSTANTS

Mixing Ratio	Supplied ready to use.	
Appearance	Concentric coloured stick of putty consistency.	
Drying & Cure times at 20°C/68°F	UsableLife	6 minutes
	InitialSet	15 minutes
	Machining	30 minutes
	FullMechanical	2 hours
Volume Solids	100%	
V.O.C.	Nil	
Shelf Life	Use within 5 years of purchase. Store in original sealed containers at temperatures between 5°C (40°F) and 30°C (86°F).	
Food Contact	Meets FDA requirements CFR 21.175.300 for food contact. Meets USDA requirements for incidental food contact.	
Operating Temperature	Maximum	Continuous
Dry Heat	250°C (480°F)	120°C (248°F)
Wet Heat	120°C (248°F)	70°C (158°F)

PHYSICAL PROPERTIES

Flexural Strength	230kg/cm ² (3250 psi)
ASTMD790	
Compressive Strength	350kg/cm ² (5000 psi)
ASTMD695	
Tensile Shear Adhesion	45kg/cm ² (650 psi)
	(Grit Blasted)
ASTMD1002	
Heat Distortion	40°C (96°F)
ASTMD648	
Hardness (Shore D)	85
ASTMD2246	
Corrosion Resistance	5,000 hrs
ASTMB117	

FOR FURTHER INFORMATION PLEASE CONTACT

HEALTH AND SAFETY

As long as normal good practice is observed **ThistleBond 'PlasSteel'** can be safely used.

Keep skin contact to a minimum. Use barrier cream or disposable gloves. Wash off areas of contact with soap and water.

A fully detailed **Material Safety Data Sheet** is either included with the material or is available on request.

PACKAGING

Supplied in 0.125 kg units.

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Rapid Setting Super Metal Repair Paste

ThistleBond 'Rapid Setting Super Metal Repair Paste' is a high performance rapid curing metal engineering grade repair compound specifically developed for rapid turn round of metal repairs where excellent mechanical strength and easy machining properties are required.

ThistleBond 'Rapid Setting Super Metal Repair Paste' is formulated on a complex blend of polyether and polyester urethane resins combined with a polyamine catalyst curing system reinforced with a phosphor steel alloy which enhances the corrosion and chemical resistance of the whole system.

ThistleBond 'Rapid Setting Super Metal Repair Paste' can be applied to any damaged metal component as well as glass, fibreglass and composites and is ideal for rapid repairs to pipes, tanks, radiators, threads, sumps, casings and ducting.

Before proceeding, please read the following information carefully to ensure that the correct application procedure is fully understood.

SURFACE PREPARATION

Heavy contamination due to oil or grease must first be removed using **ThistleBond Cleaner**.

All loose material, rust and surface contaminants, including existing coatings, must be removed and the surface roughened by using an angle grinder, needle gun or abrasive blasting. Where grinding or needle gunning is used, the surface should be cross-scored to improve adhesion. Care must be taken, when angle grinding, to avoid polishing rather than roughening metal surfaces.

Where possible, abrasive blasting is the preferred surface preparation, especially in fluid flow repairs.

Surfaces should finally be carefully degreased using **ThistleBond 'Cleaner'**. Cloths should be frequently changed to avoid spreading contamination. On deeply pitted surfaces or porous castings, **ThistleBond 'Cleaner'** should be worked into the surface by brush and washed off using excess cleaner.

Parts (for example, threads or bearing surfaces) which must remain in position during application must not adhere to **ThistleBond 'Rapid Setting Super Metal Repair Paste'** must be coated with **ThistleBond 'Release Agent'** prior to application of the **ThistleBond 'Rapid Setting Super Metal Repair Paste'**.

MIXING

ThistleBond 'Rapid Setting Super Metal Repair Paste' is a two component solvent free material comprising resin and hardener components which must be mixed together prior to use.

Measure 1 volume of resin component and 1 volume hardener component onto a clean mixing board or other suitable surface. The two components should then be thoroughly mixed until completely streak free.

The mixed material should be used within 3 minutes of mixing at 20°C (68°F). This time will be reduced at higher temperatures and extended at lower temperatures.

APPLICATION

Prepared surfaced should be clean and dry. The mixed material should be pressed firmly onto the prepared area, working the material into any cracks and surface defects.

When a reinforcing tape is being used to strengthen the repairs the tape should either be impregnated with **ThistleBond 'Rapid Setting Super Metal Repair Paste'**, or the tape should be layed over the **ThistleBond 'Rapid Setting Super Metal Repair Paste'** surface and stippled into the material before it cures, then additional **ThistleBond 'Rapid Setting Super Metal Repair Paste'** applied over the surface.

Once the **ThistleBond Rapid Setting Super Metal Repair Paste** has reached initial set, the material can be separated from the surfaces treated with **ThistleBond 'Release Agent'**.

When **ThistleBond 'Rapid Setting Super Metal Repair Paste'** is being used to repair leaking pipes, the flow through the pipe should be turned off until the repair is finished. Any leaking liquid must be wiped off the surface to ensure the surface is completely clean and dry before application commences.

All equipment must be cleaned IMMEDIATELY after use, with **ThistleBond 'Cleaner'**.

Volume Capacity

570cc (34.7cu ins) per kilo

PHYSICAL CONSTANTS

Mixing Ratio	Resin	Hardener
	1	1 By Volume
	4	3 By Weight

Appearance	Resin	Black Paste
	Hardener	White Paste

Drying & Cure Times at 20°C (68°F)	Usable Life	3 minutes
	Initial Set	10 minutes
	Machining	30 minutes
	Full Mechanical	2 hours

Volume Solids 100%

V.O.C. Nil

Shelf Life Use within 5 years of purchase. Store in original sealed containers at temperatures between 5°C (40°F) and 30°C (86°F).

Food Contact Meets FDA Requirements CFR 21.175.300 for food contact.

Operating Temperature

	Maximum	Continuous
Dry Heat	250°C (480°F)	120°C (248°F)
Wet Heat	120°C (248°F)	70°C (158°F)

FOR FURTHER INFORMATION PLEASE CONTACT

PHYSICAL PROPERTIES

Flexural Strength	500 kg/cm ² (7100 psi)
ASTMD790	
Compressive Strength	860 kg/cm ² (12200 psi)
ASTMD695	
Tensile Shear Adhesion	175 kg/cm ² (2500 psi)
ASTMD1002	Grit Blasted Steel
Heat Distortion	52°C (125°F)
ASTMD648	
Hardness (Shore D)	80
ASTMD2246	
Corrosion Resistance	5,000 hrs
ASTMB117	

HEALTH AND SAFETY

As long as normal good practice is observed **ThistleBond 'Rapid Setting Super Metal Repair Paste'** can be safely used.

The wearing of rubber gloves is advisable during use.

A fully detailed **Material Safety Data Sheet** is either included with the material or is available on request.

PACKAGING

Supplied in 0.175kg packs

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ThistleWrap Pipe Repair Tape

ThistleBond 'ThistleWrap Pipe Repair Tape' is a high performance rapid curing moisture activated repair bandage, specifically developed for the repair of leaking pipes.

ThistleBond 'ThistleWrap Pipe Repair Tape' is a specially selected woven polyester fabric impregnated with a polyurethane resin, which is activated by immersion in water.

ThistleBond 'ThistleWrap Pipe Repair Tape' is ideal for pipe repairs to low pressure systems. As a general guide, a repair built up to a thickness of approximately 12mm (½") will withstand a maximum service pressure of 10 bar (150 psi). Higher pressures, up to 50 bar, can be achieved by first applying a 'plug' of **ThistleBond 'PlasSteel'** over the leak.

Pipes up to a nominal diameter of 65mm may be repaired using **ThistleBond 'ThistleWrap Pipe Repair Tape'** with holes approximately 3mm to 6mm diameter, although slightly larger pipes and holes can be effectively repaired using a plug of putty as described herein, always at users discretion.

ThistleBond 'Thistlewrap Pipe Repair Tape' is simple, safe and easy to use, and when activated by immersion in water is ideal for the repair of pipes on all types of surfaces.

Before proceeding, please read the following information carefully to ensure that the correct application procedure is fully understood.

SURFACE PREPARATION

All pressure within the pipe should be released. For leaks where pressure cannot be removed, holes should be stopped using a pipe repair clamp.

Remove all oil, grease, loose rust scale, sealant tape and paint from the repair area. Rough score a 10 cm (4 inch) patch around the pipe centering on the leak site.

If the pipe surface is pitted by rust, surfaces must be wire brushed to remove the loose scale. If the surface is smooth, as with copper or stainless steel, surfaces should be roughened with a coarse file, rasp or saw blade.

For plastic pipe, the external mould release must be removed. Abrade surfaces with a coarse grit sandpaper. A saw blade may also be used to create a cross hatch pattern. This is particularly useful on polypropylene and PVDF piping.

APPLICATION

During mixing and during application, lightweight disposable gloves should be worn to protect the hands.

ThistleBond 'ThistleWrap Pipe Repair Tape' is a single component material which should be immersed in water and squeezed two or three times for about 5 seconds prior to use.

Remove roll from water and wrap quickly and tightly as follows.

Centre tape over leak site, wrap from bottom of roll, pulling firmly throughout application. After 5-7 plies, resin foam will come through the tape, which is desirable and aided by pulling tightly. Continue until entire roll is applied, building to a minimum thickness of ½ inch (12 mm), use a second roll if necessary. Firmly press and smooth end of roll into wrap in the direction of application. Wet gloves in water, smooth and firmly press the wet resin back into the wrap.

When used in conjunction with a plug of **ThistleBond 'PlasSteel'** repeat the above instructions but having first plugged the hole. Knead a small bead of putty in gloved hand and flatten into a disc centrally over the hole pressing gently and feathering out the edges. Leave to semi-harden (full cure 30 minutes) before applying tape, although tape may be applied immediately if necessary.

KEEP HANDS MOVING QUICKLY AND WET GLOVES FREQUENTLY TO AVOID STICKING.

Continue rapid hand movement pressing and polishing resin in motions around and parallel to the pipe. Continue process until resins are no longer tacky. The repair should now have a smooth, hard surface and an enamel-like appearance with no fabric protruding through the surface.

After application dispose of gloves.

NOTE: If a thicker application is needed, spend a little less time finishing the first roll and immediately begin the application of the next. Finish the final roll as if a single roll application.

PHYSICAL CONSTANTS

Mixing Ratio	Supplied ready for use.	
Appearance	Resin impregnated bandage.	
Drying & Cure Times at 20°C (68°F)	Usable Life	2-3 minutes
	Initial Set	5 minutes
	Full Mechanical Strength	30 minutes
Volume Solids	100%	
V.O.C.	Nil	
Shelf Life	Use within 12 months of purchase. Store in original sealed containers at temperatures between 5°C (40°F) and 30°C (86°F).	
Potable Water	Water Regulations Advisory Scheme - Approved product.	

PHYSICAL PROPERTIES

Flexural Strength	32 N/mm ² (4640 psi)
ASTMD790	
Tensile Strength	19 N/mm ² (2755 psi)
ASTMD6382	
Hardness (Shore D)	82
ASTMD2240	
Adhesion (Bond Strength)	14 N/mm ² (2000 psi)
Maximum Heat Resistance	270°C (500°F)
Maximum Service Pressure	
(½ inch/12 mm thick repair)	10 bar (150 psi)
(1 inch/25 mm thick repair)	27.5 bar (400 psi)

HEALTH AND SAFETY

As long as normal good practice is observed **ThistleBond 'ThistleWrap Pipe Repair Tape'** can be safely used.

Keep skin contact to a minimum. Use disposable gloves. Wash off areas of contact with soap and water.

A fully detailed **Material Safety Data Sheet** is either included with the material or is available on request.

PACKAGING

Supplied as a rolled bandage in an air tight sachet in the following 4 sizes:

TRK19601 -	50mm x 1.5 metres
TRK19603 -	50mm x 3.6 metres
TRK19604 -	75mm x 3.6 metres
TRK19605 -	100mm x 3.6 metres

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