

Ceramic Backing

REDUCE COSTS USING ONE-SIDED WELDING



Product range 2018

Contents

Ceramic Backing

Higher melting capacity through higher welding currents	4
Simpler seam preparation	4
Elimination of grinding out the root laye	4
Reliable penetration with good visual seam quality	4
Forming effect on underside of seam	5
Economic viability	5
Cross-section models	5
Flat ceramics	5
Cylindrical ceramics	5
Fastening options	6

Product Overview

Ceramic backing on self-adhesive aluminium foil with semi-circular/concave recess	7
Ceramic backing on self-adhesive aluminium foil with trapezoidal recess	7
Cylindrical backing on self-adhesive aluminium foil	7
OK Backing Concave/Rectangular 13	8
OK Backing Concave 13	9
OK Backing Rectangular 13	9
OK Backing Pipe 9 / Pipe 12	10

Product Details

PZ 1500/29	12
PZ 1500/50	12
PZ 1500/51	12
PZ 1500/52	13
PZ 1500/54	13
PZ 1500/56	13
PZ 1500/70	14
PZ 1500/72	14
PZ 1500/73	14
PZ 1500/80	15
PZ 1500/81	15
PZ 1500/87	15
OK Backing Concave 13	16
OK Backing Rectangular 13	17
OK Backing Pipe 9	17
OK Backing Pipe 12	17
Brown ceramic	18
Grey ceramic	18
ESAB backing: Tested quality	18



ONE-SIDED – BUT SMART!

Ceramic backing for single-sided welding is opening up ever more applications. Something which began in the shipbuilding industry is now also becoming increasingly important for pressure vessel, tank, bridge and plant construction. The advantages of this process have been recognised in many welding companies. But what exactly are the special advantages of one-sided welding using ceramics?

Ceramic Backing

HIGHER DEPOSITION RATE THROUGH HIGHER WELDING CURRENTS

The backing allows higher welding currents to be used in the root layer. With the MAG process, for example, this means spatter-free welding when spray arc welding and the possibility of working with larger electrode diameters with MMA welding.

SIMPLER SEAM PREPARATION

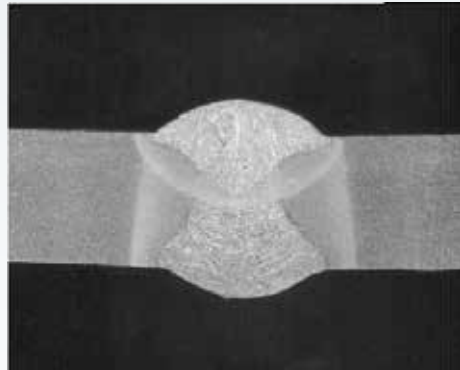
Wide recesses in the ceramics allow adaptation to varying gap dimensions. Root gap widths of up to 10mm can be accomplished with some types of ceramics. This reduces the time required for aligning the metal plates.

NO NEED TO GRIND THE ROOT LAYER

Welding on ceramic backing creates a very good root quality, so that in contrast to the conventional method, the root remains part of the seam with a capping layer and the joint does not have to be ground out. Further advantages are reduced welding consumables consumption and reduced welding time.

RELIABLE PENETRATION AND HIGH OPTICAL SEAM QUALITY

Higher welding currents in the root layer result in deep penetration with a significantly reduced risk of defects. The good root formation functions as a capping layer. After removing the backing, a glossy underside of the seam can be seen with a notch-free transition into the base material.



Highly productive:
2 layer weld with metal cored wire
OK Tubrod 14.13 on ceramic backing PZ 1500/70 seam preparation
I-joint; wall thickness 8 mm

Ceramic Backing

ECONOMIC VIABILITY

The combined effect of the mentioned process advantages contribute to reducing welding costs. The savings potential lies particularly in the reduction of unproductive processes such as grinding and straightening. Ceramic backing therefore enables a significant increase in the duty cycle for manual and MAG welding. In contrast, the material costs for the ceramics are comparatively modest. ESAB has a wide range of ceramic backing for almost every conceivable application. Whether for a K, X, V or HV seam, whether a circumferential seam, flat butt joint or T-joint, ESAB offers the most suitable ceramic.

CROSS-SECTION MODELS

The product range includes flat ceramics with semicircular and trapezoidal recesses as well as cylindrical types of various diameters.

FLAT CERAMICS

Flat ceramics are offered in different designs. They are to be distinguished according to the type of recess for receiving the weld metal and any quantities of slag. Semicircular concave recesses are suitable for the use of welding consumables that do not have any or only slight amount of slag, such as solid wire electrodes and basic flux-cored wires. Flat ceramics with trapezoidal shaped recesses should be used in combination with more slag-bearing welding consumables such as rutile flux cored wire electrodes.

CYLINDRICAL CERAMICS

Cylindrical ceramics are particularly suitable for DV and DHV seams on butt joints and T-joints. The ceramic diameter is selected according to the size of the root gap to be bridged and the opening angle of the seam.



Cylindrical ceramic PZ 1500/52 in use in bridge construction. Process : MAG

Ceramic Backing

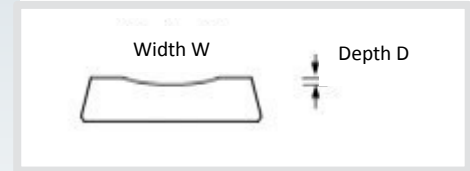
FASTENING OPTIONS

Self-adhesive aluminium foil has established its position for fastening ceramic backing. The corresponding types with semicircular / concave and trapezoidal recesses can be found in the following product overview.



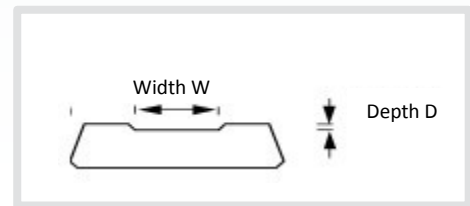
Fastening the ceramic backing under the sheet metal using self-adhesive aluminium foil.

Product Overview



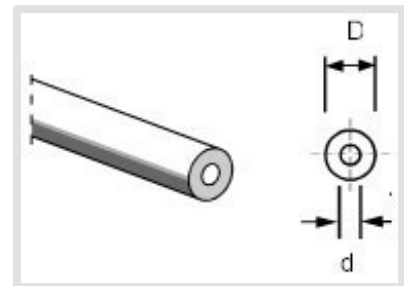
CERAMIC BACKING ON SELF-ADHESIVE ALUMINIUM FOIL WITH SEMI-CIRCULAR/CONCAVE RECESS

Name	Ceramic type	Width W	Depth D	Length	Division
PZ 1500/70	grey	13.2	1.3	500	5 X 100 mm
PZ 1500/72	grey	10	1.5	500	20 X 25 mm
PZ 1500/73	brown	12.5	1	500	20 X 25 mm
PZ 1500/80	grey	16	1.5	600	24 X 25 mm
PZ 1500/87	grey	6	1	500	20 X 25 mm
OK Backing Concave 13	grey	12	1.2	600	24 X 25 mm



CERAMIC BACKING ON SELF-ADHESIVE ALUMINIUM FOIL WITH TRAPEZOIDAL RECESS

Name	Ceramic type	Width W	Depth D	Length	Division
PZ 1500/54	grey	16	0.9	600	24 X 25 mm
PZ 1500/81	grey	13	1.5	600	24 X 25 mm
OK Backing Rectangular 13	grey	12	1.2	600	24 X 25 mm



CYLINDRICAL BACKING ON SELF-ADHESIVE ALUMINIUM FOIL

Name	Ceramic type	Outer Diameter	Inner Diameter D	Length D	Division
PZ 1500/50	brown	7	0	500	25 X 20mm
PZ 1500/51	brown	9.5	0	500	20 X 25mm
PZ 1500/52	brown	12	0	500	20 X 25mm
PZ 1500/56	grey	9	0	500	20 X 25mm
OK Backing Pipe 9	grey	9	0	600	24 X 25mm
OK Backing Pipe 12	grey	12	0	600	24 X 25mm

Product Overview



Useful details: Centring aids on both sides and tongue and groove system on the face

OK BACKING CONCAVE/RECTANGULAR 13

Weld pool backing on self-adhesive aluminium foil
Welded on one side - save costs!

The new ESAB weld pool backing OK Backing Concave / Rectangular 13 are used on butt joints with a wall thickness of 5mm or more. They can be securely fastened in all welding positions with minimum effort using the self-adhesive aluminium foil. They are suitable for general structural steels, stainless CrNi steels and non-ferrous metals.

Reduced welding time

The backing allows higher welding current to be used in the root layer. With the MAG process, for example, this means spatter-free welding when spray arc welding and the possibility of working with larger electrode diameters when MMA welding.

Simpler seam preparation

OK Backing Rectangular 13 and Concave 13 allow adaptation to varying root gap sizes of 4-7mm.

No need to grind out the root layer

In contrast to the conventional method the root remains part of the seam with a capping layer and the joint does not have to be ground out. This reduces the consumption of welding consumables and the welding time.

Reliable penetration and seam quality

Higher welding currents at the root layer result in deep penetration with a significantly reduced risk of bonding defects. The good root formation functions as a capping layer.

Forming effect on underside of seam

The self-adhesive aluminium foil on the weld pool backing has a forming effect on the underside of the seam, which is particularly useful when processing stainless steels. The use of backing gases can often be omitted.

For faultless welding results

OK Backing Concave / Rectangular 13 are provided with a centre line on both sides, which greatly simplifies the alignment of the backing material. Even longer seam sections can be completely covered with backing: The backing has a tongue and groove system on the front sides. The protective paper is overlapped on one side of the aluminium adhesive foil to facilitate easy removal. This simplifies handling, especially when working with safety gloves.

Product Overview

OK BACKING CONCAVE 13

The semicircular shaped recess (WxD: 12X1.2mm) of the backing is particularly suitable for MIG/MAG welding with welding consumables that do not have any or have only a slight amount of slag, such as solid wire, metal cored wire or basic flux-cored wire. The backing is also suitable for circumferential seams with a minimum radius of curvature of 200 mm.

OK BACKING RECTANGULAR 13

The trapezoidal shaped recess (WxD: 12X1.2mm) of the backing is particularly suitable for MMA welding with rod electrodes or MIG/MAG welding with slag-carrying rutile flux-cored wire. The backing is also suitable for circumferential seams with a minimum radius of curvature of 200mm.

Instructions for use

Welding on ceramic backing requires a certain amount of practice. A trailing torch position and a minimum air gap of 4-5mm must be used as well as careful welding parameter selection. ESAB offers application-related product training in which the customer gains knowledge of the entire potential of welding on backing. Request a quote!

Name	Item no.	Length	Width	Quantity per box/pallet
OK Backing Concave 13	212400TC13	600 mm (24 X 25 mm)	26.5 mm	60/3360 piece
OK Backing Rectangular 13	212400TR13	600 mm (24 X 25 mm)	26.5 mm	60/3360 piece

Product Overview



OK BACKING PIPE 9 / PIPE 12

Weld pool backing on self-adhesive aluminium foil
Welded on one side - save costs!

The new ESAB weld pool backing OK Backing Pipe 9 / Pipe 12 are used on butt joints with a wall thickness of 10mm or more. They can be securely fastened in all welding positions with minimum effort using the self-adhesive aluminium foil. They are suitable for general structural steels, stainless CrNi steels and non-ferrous metals.

Reduced welding time

The backing allows higher welding current to be used in the root layer. With the MAG process, for example, this means spatter-free welding when spray arc welding and the possibility of working with larger electrode diameters when MMA welding.

Simpler seam preparation

OK Backing Pipe 9 and Pipe 12 allow adaptation to varying root gap sizes of 4-8mm.

No need to grind out the root layer

In contrast to the conventional method the root remains part of the seam with a capping layer and the joint does not have to be ground out. This reduces the consumption of welding consumables and welding time.

Reliable penetration and good visual seam quality

Higher welding currents at the root layer result in deep penetration with a significantly reduced risk of bonding defects. The good root formation functions as a capping layer.

Forming effect on underside of seam

The self-adhesive aluminium foil on the weld pool backing has a forming effect on the underside of the seam, which is particularly useful when processing stainless steels. The use of backing gases can often be omitted.

Product Overview



OK BACKING PIPE 9 / PIPE 12

The protective paper of the backing is overlapped on one side of the aluminium adhesive foil to facilitate easy removal. This simplifies handling, especially when working with safety gloves.

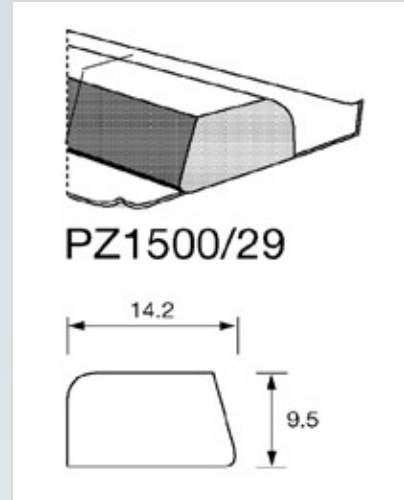
Instructions for use

The weld pool backings are suitable for MMA and MIG processes (solid wire and flux-cored wire). Welding on ceramic backing requires a certain amount of practice. A trailing torch position and a minimum root gap of 4-5mm must be used as well as careful welding parameter selection. ESAB offers application related product training in which the customer gains knowledge of the entire potential of welding on backing. Request an offer!

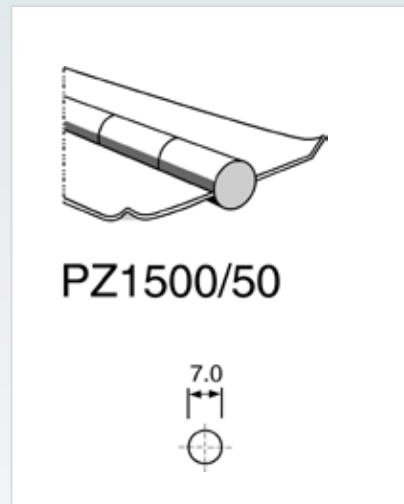
Name	Item no.	Length	Ø mm	Quantity per box/pallet
OK Backing Pipe 9	212400TP09	600 mm (24 X 25 mm)	9	140/7840 pieces
OK Backing Pipe 12	212400TP12	600 mm (24 X 25 mm)	12	100/5600 pieces

Product Overview

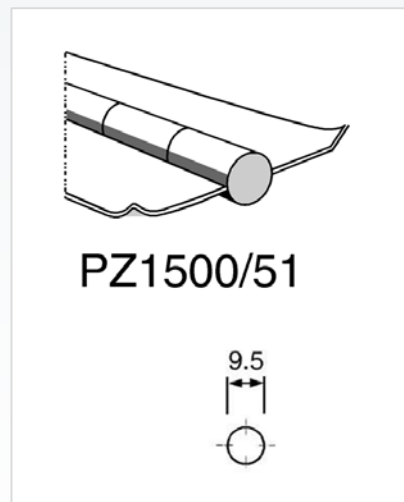
PZ 1500/29	
Type	Ceramic on self-adhesive aluminium strip
Item no.	2150029000
Length	500 mm (division: 20 x 25 mm)
Fastening	on self-adhesive aluminium strip
Colour	grey
Application	straight and curved T-joints min. radius of curvature: 200 mm
Packaging	Quantity per box: 48 pieces Quantity per pallet: 2016 pieces Weight per box: 9.2 kg



PZ 1500/50	
Type	Ceramic on self-adhesive aluminium strip
Item no.	2150050000
Length	500 mm (division: 25
Fastening	on self-adhesive aluminium strip
Colour	brown
Application	straight and curved butt and T-joints min. radius of curvature: 200 mm
Packaging	Quantity per box: 100 pieces Quantity per pallet: 4200 pieces Weight per box: 5.0 kg

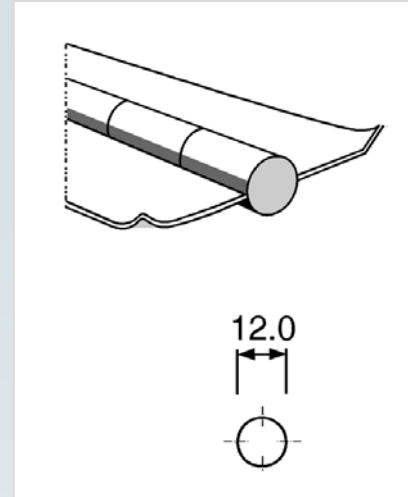


PZ 1500/51	
Type	Ceramic on self-adhesive aluminium strip
Item no.	2150051000
Length	500 mm (division: 20 X 25 mm)
Fastening	on self-adhesive aluminium strip
Colour	brown
Application	straight and curved butt and T-joints min. radius of curvature: 250 mm
Packaging	Quantity per box: 72 pieces Quantity per pallet: 3024 pieces Weight per box: 6.5 kg

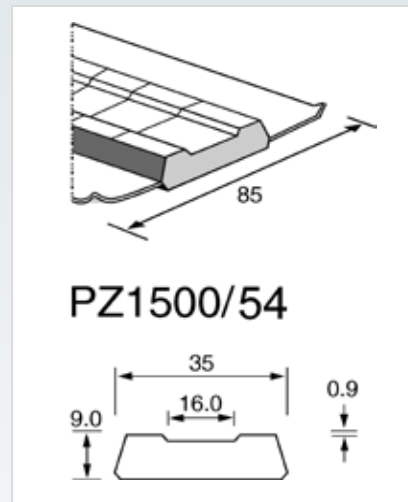


Product Overview

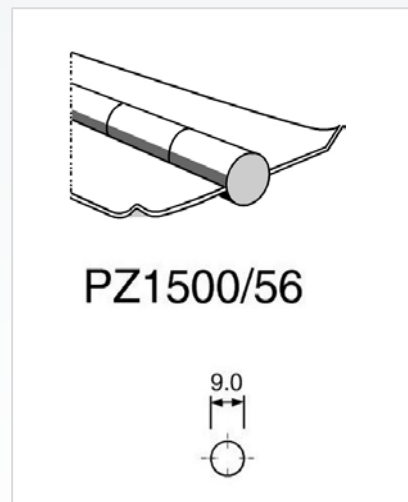
PZ 1500/52	
Type	Ceramic on self-adhesive aluminium strip
Item no.	2150052000
Length	500 mm (division: 20 X 25 mm)
Fastening	on self-adhesive aluminium strip
Colour	brown
Application	straight and curved butt and T-joints min. radius of curvature: 250 mm
Packaging	Quantity per box: 60 pieces Quantity per pallet: 2520 pieces Weight per box: 8.5 kg



PZ 1500/54	
Type	Ceramic on self-adhesive aluminium strip
Item no.	2150054000
Length	600 mm (division 24 X 25 mm)
Fastening	on self-adhesive aluminium strip
Colour	grey
Application	straight butt joint
Packaging	Quantity per box: 30 pieces Quantity per pallet: 1050 pieces Weight per box: 13.5 kg

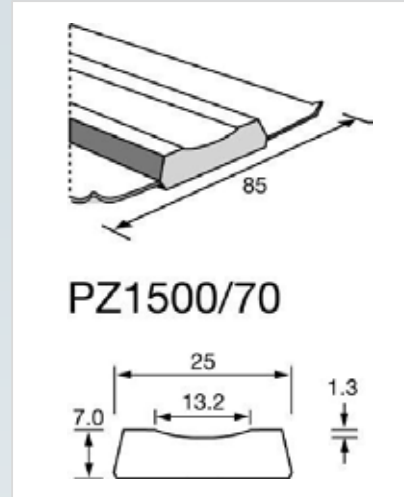


PZ 1500/56	
Type	Ceramic on self-adhesive aluminium strip
Item no.	2150056000
Length	500 mm (division: 20 X 25 mm)
Fastening	on self-adhesive aluminium strip
Colour	grey
Application	straight and curved butt and T-joints min. radius of curvature: 200 mm
Packaging	Quantity per box: 72 pieces Quantity per pallet: 3024 pieces Weight per box: 7.0 kg

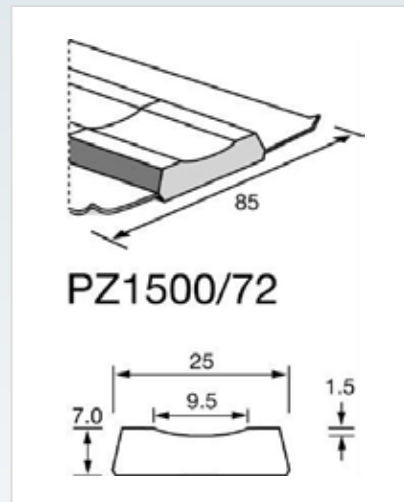


Product Overview

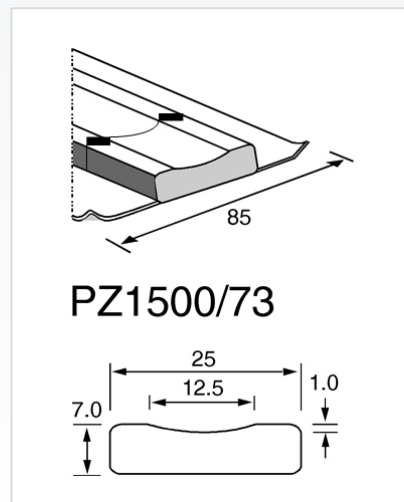
PZ 1500/70	
Type	Ceramic on self-adhesive aluminium strip
Item no.	2150070000
Length	500 mm (division 5 X 100 mm)
Fastening	on self-adhesive aluminium strip
Colour	grey
Application	straight butt joint
Packaging	Quantity per box: 56 pieces Quantity per pallet: 2352 pieces Weight per box: 11 kg



PZ 1500/72	
Type	Ceramic on self-adhesive aluminium strip
Item no.	2150072000
Length	500 mm (division 20 X 25 mm)
Fastening	on self-adhesive aluminium strip
Colour	grey
Application	straight and curved butt joints
Packaging	Quantity per box: 56 pieces Quantity per pallet: 2352 pieces Weight per box: 13 kg

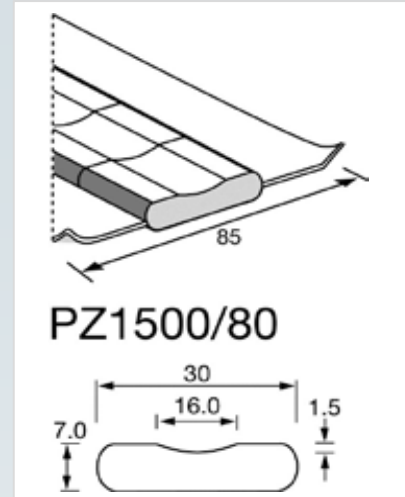


PZ 1500/73	
Type	Ceramic on self-adhesive aluminium strip
Item no.	2150073000
Length	500 mm (division 20 X 25 mm)
Fastening	on self-adhesive aluminium strip
Colour	brown
Application	straight and curved butt joints min. radius of curvature: 200 mm
Packaging	Quantity per box: 56 pieces Quantity per pallet: 2352 pieces Weight per box: 10 kg

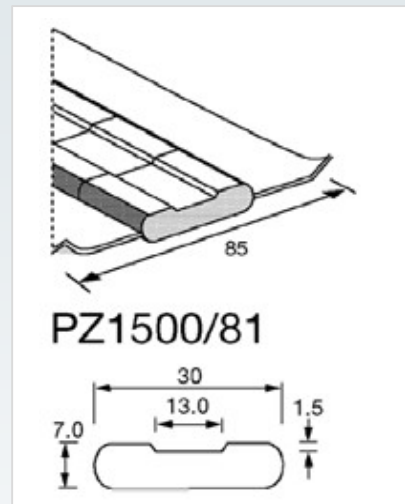


Product Overview

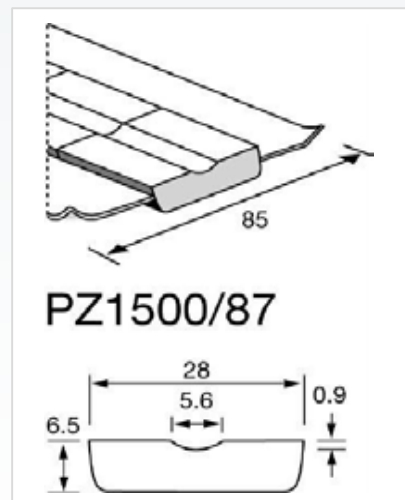
PZ 1500/80	
Type	Ceramic on self-adhesive aluminium strip
Item no.	2150080600
Length	600 mm (division: 24 X 25 mm)
Fastening	on self-adhesive aluminium strip
Colour	grey
Application	straight and curved butt joints min. radius of curvature: 200 mm
Packaging	Quantity per box: 48 pieces Quantity per pallet: 1680 pieces Weight per box: 15 kg



PZ 1500/81	
Type	Ceramic on self-adhesive aluminium strip
Item no.	2150081600
Length	600 mm (division: 24 X 25 mm)
Fastening	on self-adhesive aluminium strip
Colour	grey
Application	straight and curved butt joints min. radius of curvature: 200 mm
Packaging	Quantity per box: 48 pieces Quantity per pallet: 1680 pieces Weight per box: 15 kg



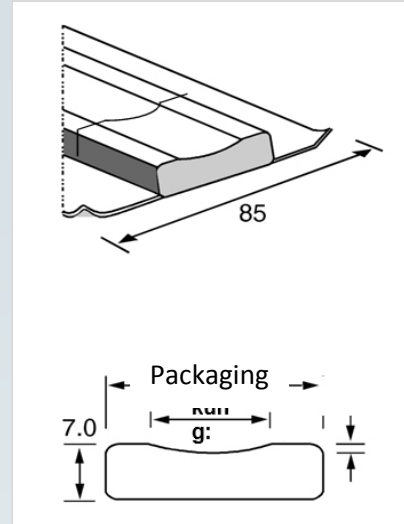
PZ 1500/87	
Type	Ceramic on self-adhesive aluminium strip
Item no.	2150087000
Length	500 mm (division 20 X 25 mm)
Fastening	on self-adhesive aluminium strip
Colour	grey
Application	straight and curved butt joints min. radius of curvature: 200 mm
Packaging	Quantity per box: 54 pieces Quantity per pallet: 2268 pieces Weight per box: 12.5kg



Product Overview

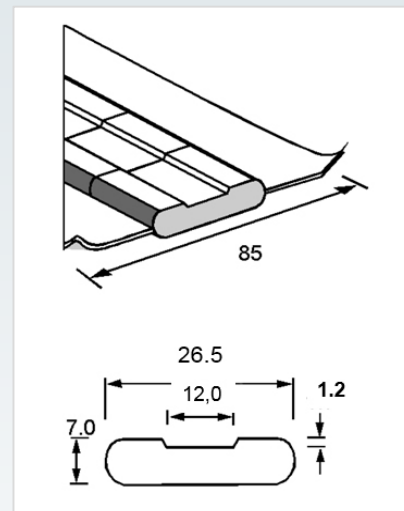
OK Backing Concave 13

Type	Ceramic on self-adhesive aluminium strip
Item no.	212400TC13
Length	600 mm (division 24 X 25 mm)
Fastening	on self-adhesive aluminium strip
Colour	grey
Application	straight and curved butt joints min. radius of curvature: 200 mm
Packaging	Quantity per box: 60 pieces Quantity per pallet: 3360 pieces Weight per box: 14kg



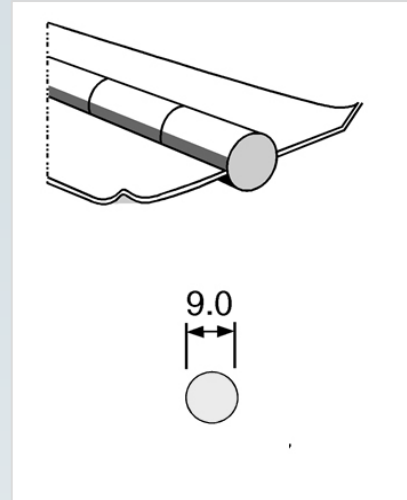
OK Backing Rectangular 13

Type	Ceramic on self-adhesive aluminium strip
Item no.	212400TR13
Length	600 mm (division 24 X 25 mm)
Fastening	on self-adhesive aluminium strip
Colour	grey
Application	straight and curved butt joints min. radius of curvature: 200 mm
Packaging	Quantity per box: 60 pieces Quantity per pallet: 3360 pieces Weight per box: 14kg

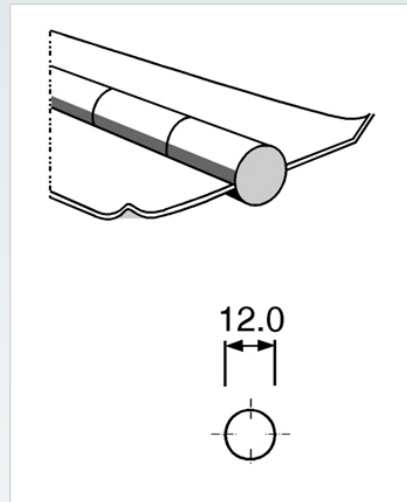


Product Overview

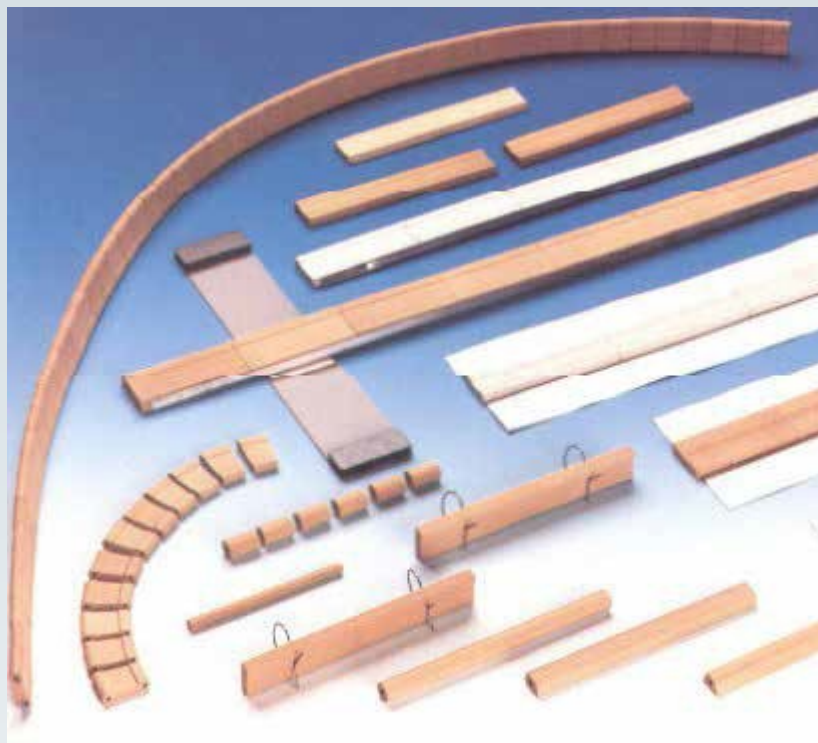
OK Backing Pipe 9	
Type	Ceramic on self-adhesive aluminium strip
Item no.	212400TP09
Length	600 mm (division: 24 X 25 mm)
Fastening	on self-adhesive aluminium strip
Colour	grey
Application	straight and curved butt and T-joints min. radius of curvature: 250 mm
Packaging	Quantity per box: 140 pieces Quantity per pallet: 7840 pieces Weight per box: 14.0kg



OK Backing Pipe 12	
Type	Ceramic on self-adhesive aluminium strip
Item no.	212400TP12
Length	600 mm (division: 24 X 25 mm)
Fastening	on self-adhesive aluminium strip
Colour	grey
Application	straight and curved butt and T-joints min. radius of curvature: 250 mm
Packaging	Quantity per box: 100 pieces Quantity per pallet: 5600 pieces Weight per box: 14kg



Storage and processing recommendations



ESAB ceramic backings are available in two different colours as grey or brown ceramics.

Brown Ceramic

The brown ceramic elements are generally not hygroscopic, i.e. they have no long-term capacity to store moisture. In direct contact with water or when stored in high relative humidity (< 70%), however, the ceramic will become damp for a short time and should not be used directly.

If subsequently stored at temperatures of around 20°C and a max. relative humidity of 60%, the ceramic will completely release the moisture within approx. 6 hours and can then be used. Raised drying temperatures of 100-200°C will significantly accelerate this process.

Brown ceramics should be stored in climate-controlled welding consumables stores (central stores, electrode drying cabinets, etc.).

Construction site use under damp weather conditions is recommended only to a limited extent.

Grey Ceramic

Grey ceramic is also not hygroscopic. Even in direct contact with water, it does not absorb any significant moisture (beading effect). It does not require any drying and is therefore also suitable for use on construction sites. Grey ceramic can be stored under conditions similar to solid wire electrodes.

Tested Quality

ESAB's ceramic backings have been tested for their chemical neutrality with respect to the weld metal. Ether-free water-based adhesives are used for the ceramics on self-adhesive aluminium foil, which are not a danger to health. Any odour formation during welding on ESAB adhesive ceramics by the evaporating adhesive is harmless and not a danger to health (investigation by the Dutch TNO Institute). On request we would be happy to send you safety data sheets for the ceramic backing.

UNRIVALLED SERVICE AND SUPPORT

All ESAB products are backed by our commitment to superior customer service and support. Our skilled customer service department is prepared to quickly answer any questions, address problems, and help with the maintenance and upgrading of your machines. And our products are backed with the most comprehensive warranty in the business.

With ESAB, you can be sure you purchased a product that will meet your needs today and in the future. Product and process training is also available. Ask your ESAB sales representative or distributor for a complete ESAB solution.

For more information visit **esab.com**.



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