Edge protection profiles
Edge protection seal profiles
Protective edge trim profiles and protective edge seal profiles

Introduction

Protective edge trim profiles are installed on the front-side edge of metal sheets and plates. They protect the surfaces from damage through sharp edges. Furthermore, protective edge seal profiles feature a seal profile in order to offer additional sealing for doors, covers and hatches.

Uses and applications

With the use of protective edge trim profiles the risk of cuts or abrasions is reduced to a minimum when handling equipment and machine parts made of sheet metal. In these applications the profiles provide an optical “decorative effect” as a positive side-effect. Further areas of application include cable and tube laying, where openings and edges of divider plates need to be bypassed. This provides reliable protection from flaking or worn-down cables and tubes.

In general, using protective edge trim profiles can reduce the need for further treatment such as burring and chamfering of cut or laser-cut metal sheets.

Protective edge seal profiles provide the same benefits as protective edge trim profiles, however, they are recommended for use in cases where doors, covers and hatches require additional sealing in order to prevent the emission of dust, warm air or noise for example, or in order to prevent water spray from entering.

Structure

Protective edge trim profiles consist of an extruded clamping profile which forms the base of the structure and is used on the edge of sheet metal in order to affix protective edge trim profiles.

In order to increase the clamping force, the clamping profile is strengthened through a reinforcement, preventing the profile from detaching itself after assembly.

The clamp insert is available as a steel clamping band or as a steel wire polyester clamping band. Steel clamping bands have a higher clamping effect, while steel wire clamping bands allow a smaller assembly radius, also enabling a more even alignment of the edges.

The seal profile is affixed to the top or the side of the clamping profile and is significantly “softer”. It can be made from the basic material of the clamping profile but it can also be made from particular materials for specific applications. In order to attain optimum sealing, the seal profile needs to be prestressed and/or formed to enable it to adapt precisely to the countersurface.

The sealing lips in the interior of the clamping profile ensure the sealing of the edge protection seal profile with the edge of the sheet.

Assembly

Side cutters and scissors that are suitable for cutting the metal clamping insert can be used to align the profiles. Any end parts of the clamp insert that protrude from the cutting area are to be removed in order to prevent injuries. The profile ends and cants can be subsequently sealed and/or glued as required.

Affixing the profiles to the edges is secured via the clamp insert. Glue or other adhesives are not usually required.

The profiles can generally be assembled by applying pressure by hand. If necessary, the profile can additionally be affixed by lightly applying a soft-face hammer.
Minimum placement radii

In order to ensure a consistent seal for the profile and to prevent the profile from detaching, the placement should not be set below the minimum radii. This additionally makes the profile assembly easier.

The radii are listed on the corresponding standard sheets and should be seen as a guideline. Depending on the direction of application a distinction is made between cut or curved radii, or rather interior or exterior seal profiles.

Shaping

Ideally, protective edge seal profiles should maintain a deformation of approximately 30 - 50% of the maximum value in order to ensure reliable sealing.

Deformation of over 50% can impair seal tightness and reduce the resilience of the sealing material due to plastic deformation.

Basic materials, characteristics

Profiles can be made from various basic materials depending on the application. The table to the right summarizes the general characteristics to facilitate the choice.

Due to the multitude of chemicals, solvents etc. exact specifications are not possible as basic materials that are fundamentally unstable can be durable in combination with specific materials and vice versa. Concentration, temperature and exposure time also play a crucial role. The customer is advised to test resistance when putting the respective materials in contact with one another.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>PVC</th>
<th>NBR</th>
<th>EPDM</th>
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<tbody>
<tr>
<td>Operational temperature min.</td>
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* = resistant, o conditionally resistant, – non-resistant

UL certification (Seal profiles as EPDM)

UL (Underwriters Laboratories) is an independent global company operating in safety science, similar to TÜV in Germany. Their testing is required as a priority in the US-American and Canadian market.

The GN 2180 protective edge seal profiles made of EPDM possess a “UL-recognized component” mark. This states that the profiles can be used as components in finished products which are also intended for use according to UL certification.

For customers and companies, the need for these types of certification is becoming increasingly important, as it guarantees high quality, reliable processing, long durability as well as reliable product safety.
**GN 2180**

**Edge protection seal profiles**

**Specification**

Types

- **A**: Upper seal profile
- **D**: Side seal profile

Clamping profile / Sealing profile

Ethylene propylene diene rubber **EPDM**

- Black

Clamping profile hardness 65 ±5 Shore A

Sealing profile hardness 25 ±5 Shore A

Temperature resistant -40 °C to 100 °C

Acrylonitrile butadiene rubber **NBR**

- Only for sizes h1 = 20.5 and 13
- Black

Clamping profile hardness 60 ±5 Shore A

Sealing profile hardness 25 ±5 Shore A

Temperature resistant -30 °C to 100 °C

Clamp insert

Steel wire polyester clamping band

**Information**

GN 2180 edge protection seal profiles can be used to seal doors, covers and hatches. The profiles are pressed by hand onto the front of metal sheets and plates. The embedded clamp insert prevents detachment. Glue or other adhesives are not required. When assembled, the profile should deform slightly according to w2. This ensures an optimal seal. Adherence to the guideline placement radii (r1...r4) is recommended in order to ensure a tight profile seal and to make assembly easier. The NBR profiles are recommended for use in cases where contact with fuels, oils or coolants can occur.

EPDM profiles are certified according to UL 50 and UL 94-HB and are therefore approved for the US-American and the Canadian market.

Edge protection seal profiles GN 2182 (see page 6)

Edge protection profiles GN 2184 (see page 8)
<table>
<thead>
<tr>
<th>Description</th>
<th>h₁</th>
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<th>b</th>
<th>h₂</th>
<th>h₃</th>
<th>h₄</th>
<th>k</th>
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**GN 2182**

*Edge protection seal profiles*

**Specification**

**Types**
- Type A: Upper seal profile
- Type D: Side seal profile

**Clamping profile**
- Polyvinylchlorid (PVC)
  - Hardness 70 ±5 Shore A

**Sealing profile**
- Ethylene propylene diene rubber (EPDM)
  - Hardness 25 ±5 Shore A

**Clamp insert**
- Steel clamping band
  - Black
  - Temperature resistant -40 °C to 90 °C
  - Weather exposure

**Information**

GN 2182 edge protection seal profiles can be used to seal doors, covers and hatches. The profiles are pressed by hand onto the front of metal sheets and plates. The embedded clamp insert prevents detachment. Glue or other adhesives are not required.

When assembled, the profile should deform slightly according to w₂. This ensures an optimal seal. Adherence to the guideline placement radii (r₁...r₄) is recommended in order to ensure a tight profile seal and to make assembly easier.

Edge protection seal profiles GN 2180 (see page 4)

Edge protection profiles GN 2184 (see page 8)
### Type A

- **Description**: Upper seal profile, Clamp insert
- **Figure**: Diagram showing dimensions and profiles

### Type D

- **Description**: Clamping profile, Side seal profile, Clamp insert
- **Figure**: Diagram showing dimensions and profiles

### Table of Specifications

| Description          | Cutting length l in m | a  | b  | h2 | h3 | h4 | k  | r1 | r2  | r3 | r4  | w1 | w2 |  |
|----------------------|-----------------------|----|----|----|----|----|----|----|-----|----|-----|----|----| |
| GN 2182-14.5-A-20    | 14.5                  | 20 | 1-2| 6.5| 8  | -  | -  | 40 | 20  | 10 | -   | 6.5| 5.25|1650 |
| GN 2182-14.5-A-50    | 14.5                  | 50 | 1-2| 6.5| 8  | -  | -  | 40 | 20  | 10 | -   | 6.5| 5.25|2000 |
| GN 2182-9.5-D-20     | 9.5                   | 20 | 1-2| 9  | 8  | 1.5| 4  | 3.25| 15  | 20 | 30  | 50 | 8.75|6.75 |1650 |
| GN 2182-9.5-D-50     | 9.5                   | 50 | 1-2| 9  | 8  | 1.5| 4  | 3.25| 15  | 20 | 30  | 50 | 8.75|6.75 |4100 |
**GN 2184**

**Edge protection profiles**

**Specification**
- **Profile**
  - Polyvinylchlorid (PVC)
  - **black, SW**
- Hardness: 70 ±5 Shore A
- Temperature resistant: -40 °C to 90 °C
- Weather exposure

**Clamp insert**
- Steel clamping band

**Information**
GN 2184 edge protection profiles are installed on the front edge of metal sheets and plates. They protect the surfaces from damage by sharp edges. The edge finish additionally achieves an optical decorative effect, while the need for potential further treatment such as burring and chamfering of cut or laser-cut metal sheets is reduced to an absolute minimum.

Adhering to the guideline placement radii \((r_1...r_3)\) is recommended in order to guarantee permanent profile placement and to make assembly easier. Assembly can be carried out by hand, or alternatively with a soft-face hammer. The embedded clamp insert prevents it from detaching. Glue or other adhesive is not required.

Edge protection seal profiles GN 2180 (see page 4)
Edge protection profiles GN 2182 (see page 6)
Application examples for edge protection profiles GN 2184

<table>
<thead>
<tr>
<th>Description</th>
<th>h₁</th>
<th>Cutting length l in m</th>
<th>α</th>
<th>b</th>
<th>h₂</th>
<th>r₁</th>
<th>r₂</th>
<th>r₃</th>
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Application examples

With their versatility, edge protection profiles and/or edge protection seal profiles can be implemented in various applications, in conjunction with other Elesa+Ganter products. In particular, combinations with product groups 12 (Hinges), 13 (Latches) and 14 (Hook, Toggle and Power Clamps) can achieve a variety of useful constructions.
Edge protection profiles and edge protection seal profiles

Construction example

The construction depicted shows a standard application of edge protection profiles and edge protection seal profiles. The edge protection seal profiles are attached to the door and the fixed frame. The opening for the door is covered with an edge protection profile at its cut edge.

Application examples

Rotary clamping latch
GN 516.1, Type RG

Edge protection profile
GN 2184

Edge protection seal profile
GN 2180 / GN 2182, Type D

Edge protection seal profile
GN 2180 / GN 2182, Type A

Stainless Steel-Plate with tapped holes
GN 5372

Stainless Steel-Spacer plates
GN 2370

Hinge
GN 237 / GN 237.1
The electronic version of the Elesa+Ganter General Catalogue on DVD or on www.elesa-ganter.com offers the design-engineer the possibility to search for the right element for the application either by going through the catalogue pages on the video or by selecting from the menus.

For each product series you can find:
- colour photos
- technical information
- line drawings and related dimension tables
- 2D CAD drawings
- 3D CAD drawings

3D CAD drawings are available on the www.elesa-ganter.com website almost in all formats.

www.elesa-ganter.com