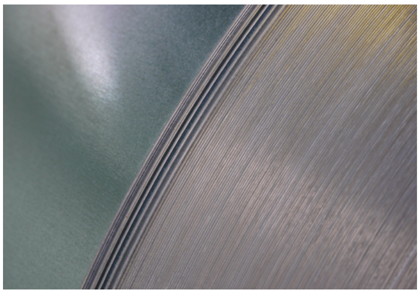
Galvanized Steel



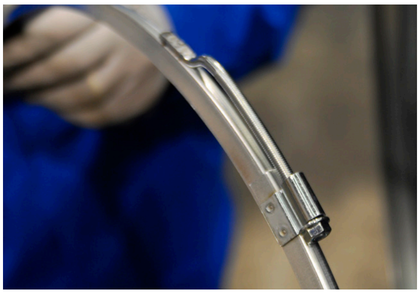
Galvanized slit steel strip

Materials

- DX 51 D × Z 140 MA (DIN EN 10 142).
  Zinc layer thickness ≈ 10 µm on each side.
- DX 51 D × Z 275 MA (DIN EN 10 142).
  Zinc layer thickness ≈ 20 µm on each side.
  Only upon request. Feasibility and min. order quantities apply.

Temperature resistance

Up to max. 200°C. When the zinc coating is subject to temperatures above 200°C on a sustained basis, the so called “Kirkendal” voids between the steel and the zinc layer might occur, leading to the flaking of the zinc surface. For a continuous / sustained use we therefore recommend a maximum temperature of 150°C.



Bent gakvanized steel screw

Electro-galvanized Parts

Some parts, such as screws, nuts, springs, G-clamps, drive-clamps and corner pieces can, because of their fonction, only be electro-galvanized. The zinc layer thickness varies between 5 and 10 µm on each face, and the temperature resistance is limited to a maximum of 80°C. Please take into consideration that the corrosion resistance is also lower.

White rust

Corrosion Resistance

Galvanized Steel Strip

The edges of cut are not galvanized. In a relatively humid environment corrosion might occur on sheet metal thickness of 1,2 mm and above, and already on 1.0 mm sheet metal thickness in very humid or salty environments.

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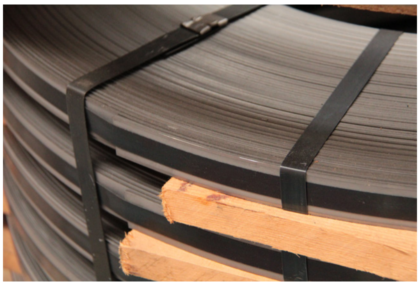
Galvanized Steel



Black Steel

The sheet metal is dip galvanized and the zinc coating thickness is relatively important. Additional parts such as corner pieces, installation elements, nuts and bolts, rivets, curved joining clip bolts, shells, and others are electro-galvanized. Their zinc coating is between 0,008 and 0,010 mm thick, making these parts less resistant to corrosion.

Manufacturing Processes

Also to be noted is that the zinc layer might become damaged through production processes, assembly and/or other operations such as spot welding, welding, the use of rivets and self-drilling screws.

Temperture Influence

The corrosion resistance also depends on the temperature. The zinc coatings can be different depending on the product components (i.e. hot dip galvanized vs. electro galvanized). Higher temperatures can have a negative influence on the coatings and even destroy them. Above 200°C is the corrosion resistance of hot dip galvanized slit stripes no longer guaranteed. Above 80°C the corrosion resistance of electro-galvanized parts (such as bolts and nuts) can be negatively affected, and there is no corrosion resistance above 120°C.

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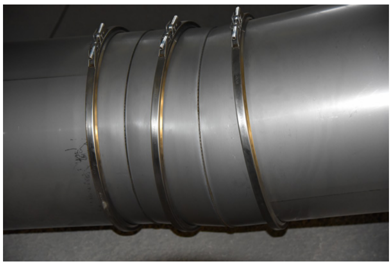
Stainless Steels


Air-ducts mande of stainless steel

Stainless steel is defined as a steel alloy with a minimum of 11,5% chromium content. This chromium part forms a passive film of chromium oxide, which prevents further surface corrosion and blocks corrosion from spreading into the metal's internal structure. The stainless steel might discolor when heated (i.e. along the welds, iron impurities, mixed iron crystals). The products made of stainless steel are not passivated.

Stainless Steel V2A

V2A refers to the below mentioned quality or a comparable stainless steel within the same category.
Material Nr. 1,4301 / X 5 CrNi 18-10 (DIN EN 10 088-2, USA: ASTM 304).
Standard : matt surface 2B (ex III C).
Special upon request: shiny surface 2R (ex III D).
Maximum Operating Temp.: 300°C (temporarily: 450°C).
Data also depend on the gasket and the flow medium.

Applications:
Food and pharmaceutical industries, chemical equipment. V2A is not suitable for swimming pool applications, as this material does not resist to chloride concentrations above 150-200 mg/l.

Stainless Steel V4A

V4A usually refers to the stainless steel 1.4404 (ASTM 316L).
Alternative: grade1.4571 (ASTM 316Ti) or a comparable quality within the same category.

Maximum Operating Temp.: 300°C (temporarily:450°C).
Data also depend on the gasket and the flow medium.

Applications :
Higher resistance against corrosion. Access Doors in Stainless Steel V2A and V4A. The springs, screws, bolts and the metal knobs for the high temperature versions are made of stainless steel V2A.

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EN

Stainless Steels

Assembly Instructions for Products made of Stainless Steel

Stainless steels are harder and more difficult to machine. That creates a rough surface which, in conjunction with the chromium oxide layer, increases the friction dramatically. Unless a suitable lubricant is used, the bolts and nuts are seized : we cannot further tighten and even untighten them. They are as welded. A lubricating, anti-seize compound for stainless steel parts (i.e. TECCEM AHT415) should be used on stainless steel nuts and bolts. The tightening should be carried out carefully and by hand. Common oil and grease are rarely enough and seizure still takes place.

Work Safety

Please be aware that the edges of products made of stainless steel can be much sharper than the ones made of galvanized steel. We therefore recommend to always use protective gloves when handling our products.

Protective Foil

The stainless steel material comes with a self-adhesive protective foil, which also facilitates its processing. Foil residues are unavoidable and do not constitute a reason for a claim

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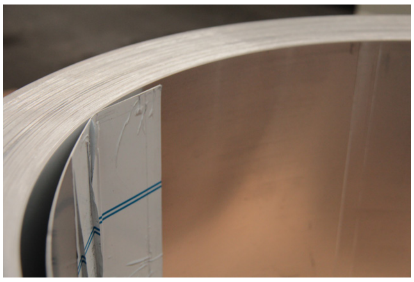
Aluminum



Material

Al Mg3 (EN AW-5754). Ref.: DIN 3.3535
Hardness: H111 (soft), and eventually H22 (medium hardness) /H32 (DIN G22
Maximum Operating Temp.: 200°C (≈ 10 hrs).
Data also depend on the gasket and the flow medium.
Melting Point: ≈ 660 °C

Access Doors made of Aluminum

Bolts, nuts and springs cannot be made of aluminum. This is why, on the aluminum access doors versions, these parts are made of stainless steel V2A. High temperature access doors (temp. above 80°C) are not available in aluminum.

Protective Foil

The aluminum material comes with a self-adhesive protective foil, which also facilitates its processing. Foil residues are unavoidable and do not constitute a reason for a claim.

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Electrogalvanic Corrosion

Hierarchy of metals

What is Galvanic or Electro-Chemical Corrosion?

A natural, electro-chemical process takes place when different metals touch each other. In that process particles of the anodic metal are released (the material is eaten away or corroded; a process also called oxidation) while the cathodic metal remains intact. This phenomenon speeds up as the temperature rises, in humid areas and under water. The greater the potential difference between the metals, the higher the probability and speed at which electrogalvanic corrosion will occur. To prevent electro-galvanic corrosion from taking place one must isolate the different metals from each other.

Cathodic: protected when in contact with a less noble metal

Anodic: corrodes first when in contact with a nobler metal

Surfaces

Due to the different metal batches the surfaces of the products may vary. Depending on the product, the appearance of the part may differ from our pictures. Small scratches and irregularities can occur during the manufacturing process. A uniform surface can therefore not be guaranteed.

Tolerances

There is usually a 10%thickness tolerance for galvanized steel, stainless steel and aluminum. These tolerances can also affect the weight of the products.

Further information are available in on our website www.metu.de

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