I. Information about the materials and protective coatings of materials of which BAKS products are made.

Table of corrosivity classes according to PN-EN ISO 12944-2:2018-02

Corrosivity classes	C1 very low	C2 low	C3 medium	C4 high	C5 very high (industry grade)	CX extreme (marine)
Reduction in protective coating [μm/year]	**< 0,1**	**> 0,1 to 0,7**	**> 0,7 to 2,1**	**> 2,1 to 4,2**	**> 4,2 to 8,4**	**> 8,4 to 25**
Examples of typical environments for moderate climate (for reference only) ---------- [**W**] - Indoors [**Z**] - Outdoors	**Indoors**: heated buildings with clean atmosphere, e.g. shops, offices, schools, hotels **Outdoors**: –	**Indoors**: non-heated buildings in which condensation may occur, e.g. sports halls, warehouses **Outdoors**: atmospheres with a low degree of pollution - mainly rural areas	**Indoors:** manufacturing premises with a high level of humidity and some air pollution, e.g. food processing plants, laundries, breweries, dairies **Outdoors**: urban and industrial atmospheres, moderate sulfur dioxide pollution; coastal areas with low salinity	**Indoors**: chemical plants, swimming pools, ship repair yard **Outdoors**: industrial zones and littoral areas of medium salinity	**Indoors**: buildings or areas with almost constant condensation and high pollution **Outdoors**: industrial areas with high humidity and an aggressive atmosphere as well as littoral areas with high salinity	**Indoors**: industrial areas with extreme humidity and aggressive atmosphere **Outdoors**: coastal areas with high salinity and industrial areas with extreme humidity and aggressive atmosphere and subtropical and tropical atmosphere

Material table

Material	Type of coating	Coating properties
Steel	[**S**] hot dip galvanizing Sendzimir met. PN-EN 10346:2015-09	Steel sheets up to a thickness of 3 mm that are still in the hot state, are coated with a layer of zinc in the mill by immersion. An even and tightly adherent zinc layer with an average thickness of approx. 19 μm is created (for Z275). In the process of punching holes, cutting into sheets, formats or strips, the entire thickness of the material is cut, resulting in a an edge that is unprotected by zinc. During these operations, a narrow open zone of steel is created, on which spots of red corrosion can occur under the influence of oxygen and ambient moisture. When punching or cutting galvanised sheet metal, a thin layer of zinc is stretched over the cut edge. The durability of such a zinc layer on the cutting edge depends on the thickness of the coating in relation to the thickness of the material. The thinner the material and the greater the thickness of the zinc, the better the edge is protected against corrosion. The appearance of red corrosion on cut edges is a natural process and the resulting corrosion is not a progressive phenomenon. All types of gutters, ladders and most carrier elements (not welded) coated with Sendzimir method are intended for use in dry areas where no chemically aggressive substances occur (e.g. vapours of: chlorine, acids, alkalis). We recommend indoor use in corrosivity categories C1 and C2.
	[**MC**] MAGNELIS PN-EN 10346:2015-09	The innovative MAGNELIS coating is a composition of pure zinc with magnesium and aluminium. Such composition provides excellent corrosion resistance even in harsh environmental conditions (up to 10 times higher than steel galvanized acc. to Sendzimir method). Such coating is less suspectible to white corrosion in comparison to pure zinc. The Magnelis coating naturally has dark grey colour and smooth unspangled aspect. Magnelis has the ability to regenerate itself at the cutting edges - in addition to the standard cathodic protection comparable to that of a zinc coating, Magnelis protects the exposed cutting edges from corrosion with a thin zinc coating with magnesium. Depending on the environment in which Magnelis is used, its use allows a significant, 2-4-fold reduction in coating weight compared to hot-dip galvanizing, additionally providing better anticorrosive properties and cost effectiveness.
	[**F**] Hot-dip galvanized PN-EN ISO 1461:2011	Completely processed parts (after cutting, bending, welding, etc.) are dipped in molten zinc at a temperature of approx. 450-460 °C. The process protects steel from corrosion. The process involves a complicated technology based on diffusion. The process involves zinc atoms penetrating into the outer steel surface to create a new iron-zinc alloy on the surface. Once the element is out of zinc bath, a coating of pure zinc is obtained on its surface. Depending on conditions during zinc coating (dipping time, cooling, quality of basic material surface, chemical composition of the basic material, etc.), the surface of the zinc coating can range from glossy light grey to matt dark grey; however, this does not affect quality of the protective coating. There may be the effect of humidity resulting in white stains on the surface. This is zinc hydroxide, also known as white corrosion, which does not affect the quality of the protective film, but it has an effect on aesthetic quality of the product. All types of cable trays and cable ladders as well as load bearing elements, which are zinc-coated by hot-dipping, are recommended for outdoor use, where vapours of chemically aggressive substances are present. Products undergoing hot-dip galvanizing process are mostly used in environments of category C3 and C4, where high humidity is present (basements, garage rooms, boiler rooms, etc.), and corrosion categories C5 and CX, where vapours of chemically aggressive substances occur, e.g. sea water, fumes from coal burning, etc. (shipyards, chemical / oil / gas processing plants, mines)..
	[**F**] Zinc flake coating PN-EN ISO 10683:2014-09	The base coating is applied in the form of zinc and aluminium flakes. The flakes react with the steel surface to form a well-adhering, conductive and non-toxic zinc-aluminium coating after heat holding. This method is characterised by very high corrosion resistance – up to 1,000 hours in a salt chamber acc. to ISO 9227, till occurrence of red corrosion. The method is accepted worldwide by leading manufacturers in the automotive industry, power sector and aviation; it is commonly applied for threaded items due to problem-free screwing elements together.
	[**G**] electrolytic zinc plating PN-EN ISO 2081:2011	Wire mesh cable trays along with fittings, bolts, nuts, washers are coated in electrolytic baths with a thin and even layer of zinc. The thickness of the coating is approx. 5 - 20 μm.It is bright and shiny..

Type of environment	Very low corrosion risk	Low corrosion risk	Medium corrosion risk	High corrosion risk	Very high corrosion risk
Corrosivity classes	C1	C2	C3	C4	C5, CX
Possible warranty extension	up to 5 years	up to 5 years	up to 5 years	up to 5 years	up to 2 years

Table presenting the relationship between zinc coating thickness and product thickness

Elements and their thickness	Local thickness of coating (minimum value, μm)	Average thickness of coating (minimum value, μm)
Steel > 6 mm	70	85
Steel > 3 mm to ≤ 6 mm	55	70
Steel ≥ 1,5 mm to ≤ 3 mm	45	55
Steel < 1,5 mm	35	45

Material	Type of coating	Coating properties
Stainless steel	[**E**] [**E2**] 1.4301 (304) [**E4**] 1.4401 (316) [**E5**] 1.4571 (316Ti)	For corrosion protection, acid resistant steels prove to be very good materials, e.g. 1.4301 (US Code 304). In a very aggressive environment, acid resistant steels are used as they contain more chemical elements such as nickel, chromium and molybdenum – 1.4401 (US Code 316). Systems made of acid resistant steels very often outclass alternative structures made of plastics. Elements of acid resistant steel are mostly used in highly chemically aggressive environments (refineries, treatment plants, plastic processing plants). Poorly envisaged savings can in time lead to interrupted operation of the PV installation due to the need to replace the load-bearing structure of the installation. Application of individual grades: 1.4301 (304) – main applications include the food industry, gas tanks, equipment in nuclear power plants, structures operated at low temperatures. 1.4016 (430) - mainly used like the grade described above (steel not suitable for welding) 1.4401 (316) – main applications include sewage treatment plants, sea environments, refining industry.
Aluminium alloys	[**A**] Stopy wg. PN-EN 573-3:2014-02	Aluminium in EN AW-6063 and EN AW-6005A grades is characterized by high strength and good corrosion resistance. It is suitable for anodising, which increases the corrosion resistance even more.
Steel + Stainless steel + Aluminium	[**L**] Powder coating	Polyester and epoxy powder coating (for internal coating). Coating thickness ranges from 80 μm to 120 μm; no primer or solvent is used. Powder coating on elements made of steel sheets, which are galvanized acc. to the Sendzimir method, provide smooth surfaces, which are free of cracks, runs and creases. Powder coating on elements made of hot-dip galvanized steel sheets does not provide perfectly smooth surfaces because hot-dip galvanized elements feature increased surface roughness, compared with the elements galvanized acc. to the Sendzimir method. Prior to painting, hot-dip galvanized elements undergo shotblasting to increase possibly adhesion of the paint to walls of the zinc-coated elements and remove zinc oxide, whose presence on the element prior to painting could result in coating spalling. Powder coating is characterised by high corrosion and chemical resistance, very good mechanical properties as well as water resistance. This solution is applied when improvement of corrosion resistance (by powder coating on galvanized sheets) is required. Coating durability depends on compliance with rules relating to transport, storage, installation method, chemical environment, where the structure is to be installed, and maintenance. The standard offer includes 14 colours (please see the pallet below). It is possible to order non-standard colour painting; however, this results in a higher price and longer time for completion of the purchase order. The paint is applied directly on the metal.

RAL 1015	RAL1023	RAL 2004	RAL 5012	RAL 5015	RAL 7016	RAL 7024	RAL7032	RAL7035	RAL9002	RAL9003	RAL9005	RAL9006	RAL9010
light ivory	traffic yellow	pure orange	light blue	sky blue	anthracite grey	graphite grey	pebble grey	light grey	grey white	signal white	jet black	white aluminium	pure white

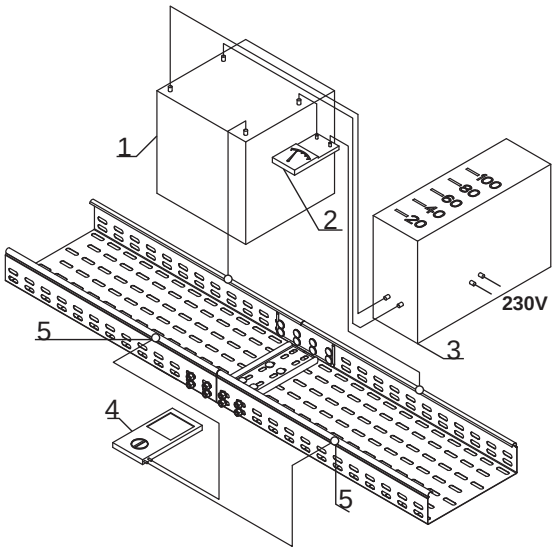
Electrical continuity

Cable routing systems meet the requirements of electrical continuity, which, through correct installation and earthing, ensure the safe operation of the route including cabling.

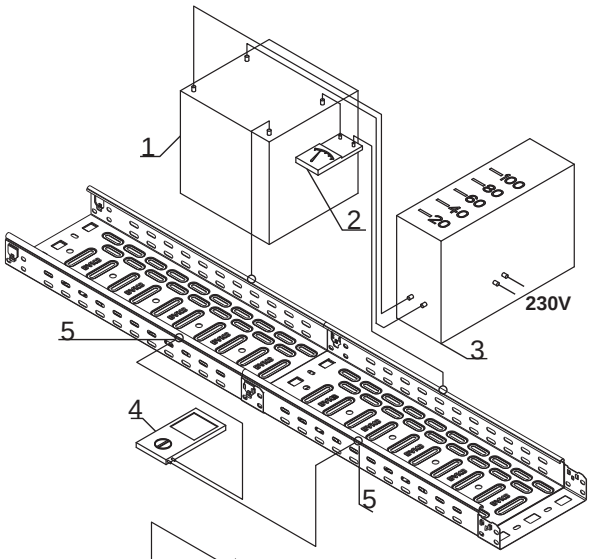
Norm EN 61537: 2007 presents a methodology for conducting strength tests on cable trays and ladders, brackets, ceiling brackets and other accessories. In addition to mechanical requirements, the Norm also specifies a methodology for testing electrical continuity and also indicates the electrical parameters that cable trays and connectors must meet. The impedance must not exceed Z ≤ 50 mΩ with a connector and Z ≤ 5 mΩ/m without a connector..

Measuring systems for testing the continuity of an electrical circuit

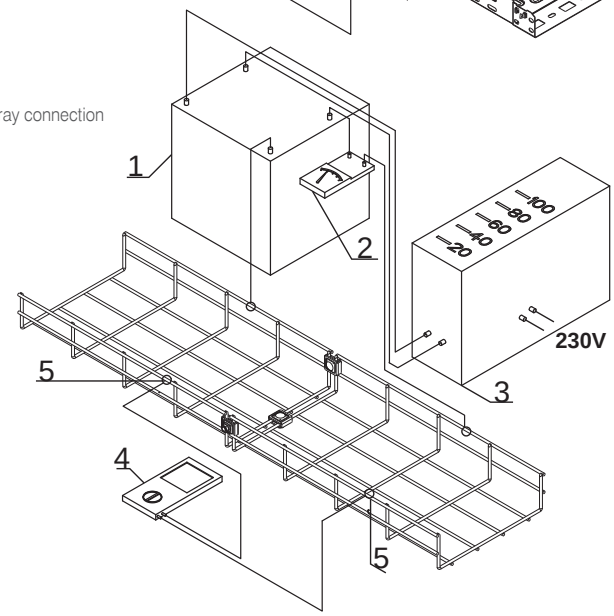
Standard tray connection



CLICK tray connection



Wire mesh tray connection



1. 220V/12V transformer
2. ammeter
3. autotransformer
4. voltmeter
5. measuring electrodes

The obtained Certificate No. TM 61000551.001 issued by TÜV Rheinland Poland, as well as the VDE Certificate relating to the test report No.: 5018795-5430-0001/219753 confirm the following fulfilment of the requirements of PN-EN 61537: 2007 in the mechanical as well as electrical field. BAKS carried out additional tests for electrical continuity in the test laboratory at the Building Research Institute in Warsaw. The test reports are presented on the BAKS website.