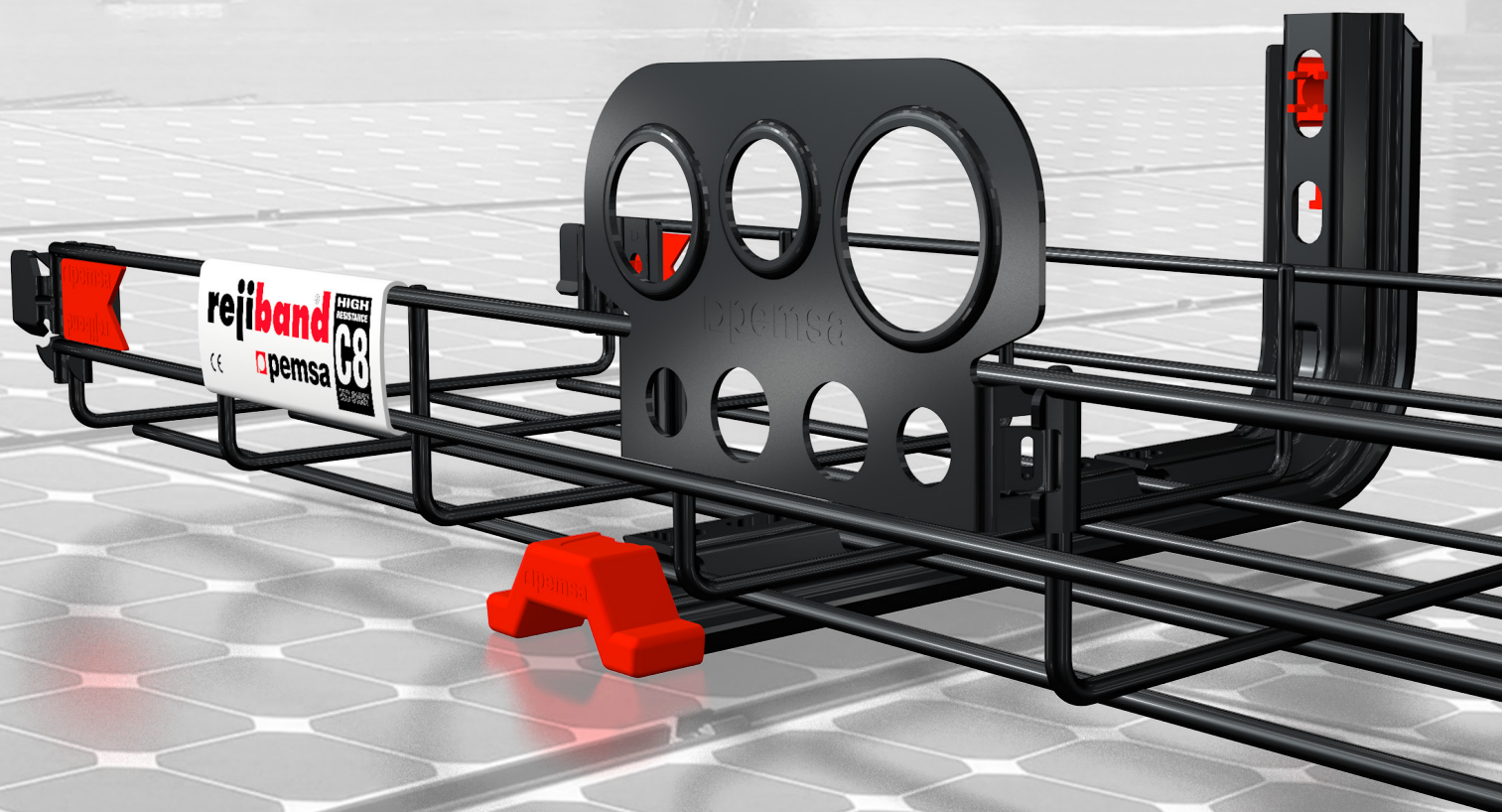




BLACK C8® PROTECTION SYSTEM
HIGH CORROSION RESISTANCE
TECHNICAL FEATURES AND APPLICATIONS



*Black C8® is an innovative
high-resistance
protection system*

*A unique coating,
best technical performance,
and distinctive aesthetics*

Characteristics and properties of the system

Resistance against corrosion

Black C8® is a metallic protection system with a high corrosion resistance of Class 8, the maximum classification established in the IEC 61537 standard, equivalent to a minimum resistance of 850 hours in a continuous salt spray test, according to ISO 9227.

*Excellent behaviour with a duration, in a saline mist chamber, of more than **1,500 hours**.*



Resistance class protection systems according to IEC 61537												
BLACK C8												C8
GC						C6	C7	C8				
EZ	C3											
Hours	100	200	300	400	500	600	700	800	900	1,000	...	+1,500

Fig. 1: Classification against corrosion of Rejiband® metal coatings according to IEC 61537.

Cyclical trials:

The added value of innovation

The innovative formulation of Black C8® has been developed to perform well according to the new and demanding corrosion resistance regulations, based on combined cyclical tests, developed by leading sectors such as automotive or aeronautics.

In this way, the PEMSA R&D Department has carried out cyclic corrosion tests in collaboration with accredited laboratories, based on the ISO 11997-1 standard. Figure 2 includes the conditions of these tests where results (more than 2,600 hours) place it among the most resistant coatings on the market:



10 steps **A + B + C** = 1,680 hours

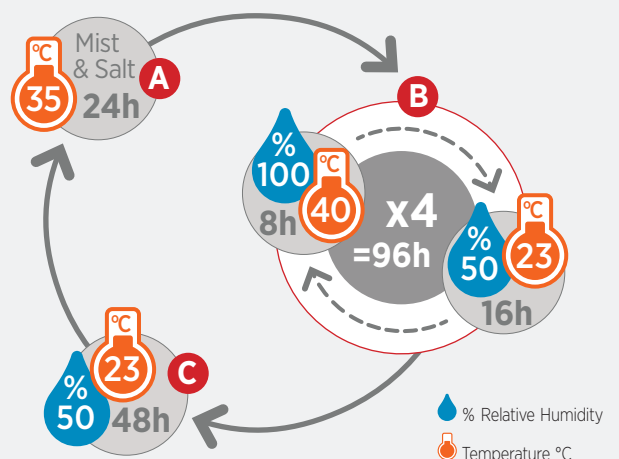


Fig. 2: Cyclical test according to ISO 11997-1 (Cycle B). Scheme of steps that make up a cycle.

Electrical conductivity

Adequate electrical continuity to guarantee safety at all times in any electrical installation specified in the international product standard IEC 61537 and the American standard NEMA VE-1.

This characteristic allows equipotential connection with other conductive elements, as well as the evacuation of induced currents, and in the event of a fault, to Earth.

Figure 3 shows the maximum impedance values established by the applicable regulations that must be met by cable tray systems:

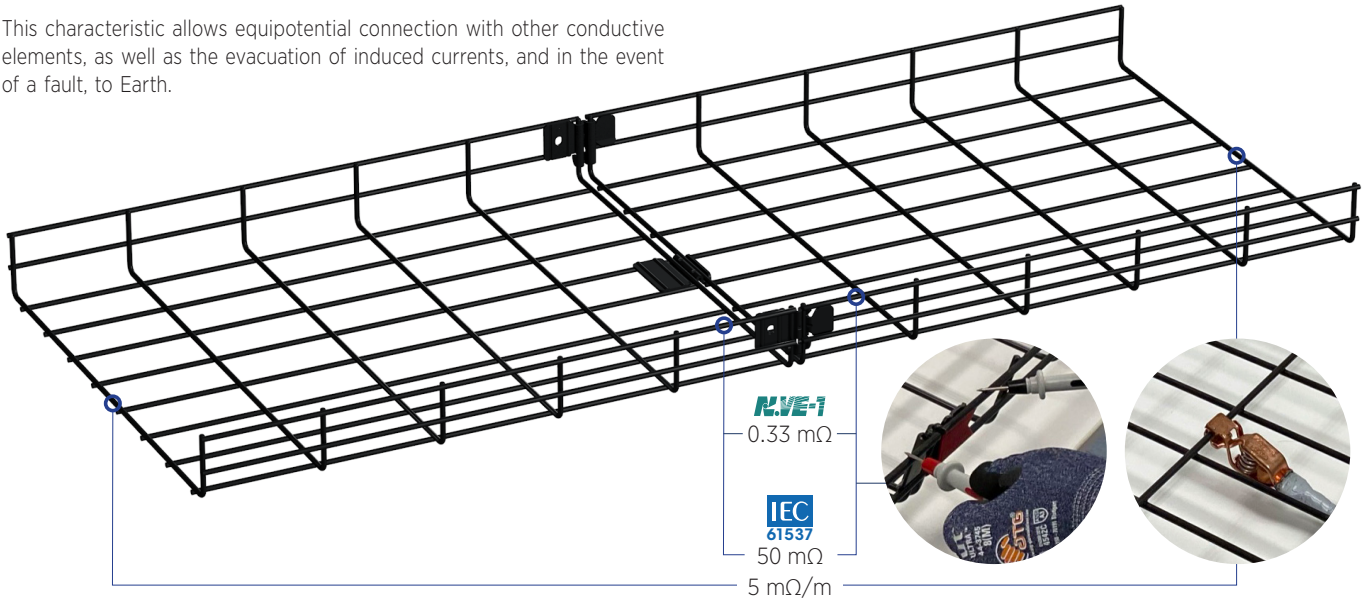


Fig. 3: Electrical conductivity test scheme according to IEC 61537 and NEMA VE-1.

Protection against zinc whiskers

The phenomenon known as zinc whiskers is caused by microscopic filaments that appear in certain zinc coatings which, when detached, can interact with electronic equipment (eg: CPD's or Data Centers) and eventually cause problems in its operation.

The Black C8® system is a multilayer coating, developed with an innovative formula, whereby its composition intrinsically blocks the appearance of these zinc filaments..



Zinc Whiskers

VS



BK8
IEC 61537

Multilayer structure
Zinc Whiskers Free

- Sealing layer
- Conversion layer
- Zinc layer
- Steel base



*The most appropriate solution
for white rooms in Data Centers*



**Aesthetic and safe coating.
Black Colour, no paint**

Perfectly smooth and homogeneous surface which guarantee the safety of the system during handling and installation.

Decorative and differentiating, the black metallic coating contains no paint and provides safety and aesthetics in multiple environments.

Complete high strength system

The Black C8® system consists of a full range of accessories with the same features and performance in all of them.

In addition, there are a wide variety of supports which adapt to any load requirement and demand of the installation that come with all the advantages and guarantees of PEMSAs Rejiband® system.

Capacity to self repair

The characteristics of self-healing, or self regeneration, on scratches, minor defects or in the cutting of the wire, are remarkably better than that of the zinc.

Excellent ductility

The Black C8® protection system applied to Rejiband® type mesh trays has good ductility that allows the forming of accessories, such as bends, risers etc., without damaging the finish.

A system with all the quality and safety guarantees

PEMSA guarantees the quality of the Black C8® system through the wide portfolio of product certifications issued by accredited institutions of international prestige, supporting compliance of the product with the applicable regulations:



Underwriters Laboratories (UL):
Certified E-305934
(Safety use in USA y CA),
according to NEC / NFPA 70
Regulation and NEMA VE-1
standard.



AENOR Internacional:
AENOR N mark certificate,
according to IEC 61537.
Rejiband®, N° 030/002090
Rejiband Rapide®, N° 030/002503
Supports, N° 030/002089



IECEE CB SCHEME
Rejiband Rapide®
Certificate No. ES-2265A1,
according to IEC 61537.



EU Declaration of Conformity
(CE marking),
according to UNE-EN 61537
and Low Voltage Directive
2014/35 / EU.



Low Voltage Directive (LVD):
2014/35 / EU.



RoHS Directive: 2011/65 / EU.



REACH Regulation: 1907/2006.

Applications and installation recommendations

The Black C8® is a metal protection system with high resistance to corrosion (class 8, according to IEC 61537), which makes it the most suitable product solution for installation in the following indoor and outdoor environments and locations. It is defined in the ISO 14713-3 and the ISO 9223 and that are classified in the Categories C1 to C5 and CX. The following table shows the appropriate corrosivity categories for the BLACK C8 finish.



Corrosivity Category	Level	Typical locations related to corrosivity categories	Recommended systems and materials
C1	Very low	Museums, Art Galleries, Schools, Universities, Libraries, Shopping Centres, Exhibition Halls, Restaurants, Bars,...	BK8 IEC 61537, PG, EZ, BC, PO
C2	Low	Logistics centres, Warehouses, Sports halls, Car parks, Fairgrounds	BK8 IEC 61537, PG, EZ, BC
C3	Medium	Food processing plants, Data Processing Centers (DPC's), Manufacturing industry, Photovoltaic parks (inland dry environment), Hospitals	BK8 IEC 61537, BC, GC, AISI 304, AISI 316L, AL
C4	High	Industrial plants, Warehouses, Rail or road tunnels, Heated sports pools, Pig farms, Photovoltaic parks (inland humid environment),	BK8 IEC 61537, GC, AISI 304, AISI 316L, AL

Table. 4: Corrosivity categories according to ISO 9923

Applications by sector:



Renewables: Solar roofs, photovoltaic plants and wind turbines.



Tunnels: road and rail.



Agriculture installations and food processing plants (dairy), meat industry (poultry farms and pig industry with ventilation)



Industry: distribution warehouses and general basic factories



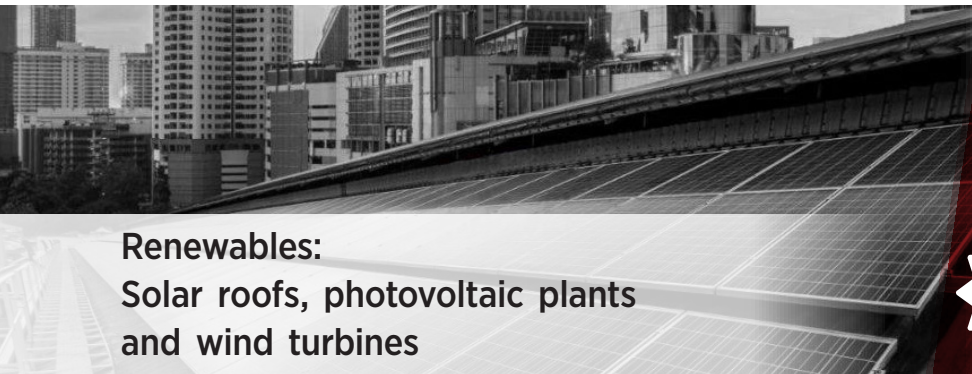
Telecommunications: Data Processing Centers (Data Centers).



Public Premises: shopping malls, sports centres, offices, universities, museums and swimming pools.



Applications by sector:



Renewables:
Solar roofs, photovoltaic plants and wind turbines



Roofs and photovoltaic plants are an excellent application for the BLACK C8 system due to its corrosion resistance and good behaviour in the open, especially in urban and inland locations of the country.

C3 Exterior
(ISO 9223)

Outdoor location in areas with medium / high humidity in rural areas, inland areas of the country or coastal situations with low salinity. Urban areas with medium / high contamination.

C4 Exterior
(ISO 9223)

Outdoor location in areas with medium / high humidity in rural areas, inland areas of the country or coastal situations with low salinity. Urban areas with medium / high contamination.



Tunnels:
road and rail



Rail tunnels have interior spaces containing high humidity, leaking water and, in the case of road tunnels, a concentration of exhaust gas fumes from vehicles that generate important corrosivity in the environment where the BLACK C8 system provides adequate behaviour.

C4 Interior
(ISO 9223)

Indoor spaces with high relative humidity and frequent high condensation. High pollution produced by combustion of gases.

C3 Interior
(ISO 9223)

Indoor spaces with medium relative humidity and condensation. Medium or low productivity of contamination.



Agriculture installations and food processing plants



Agricultural holdings, including ventilated animal and pig farms, are locations ideal for the application of BLACK C8. This protection system can also give an excellent performance when installed in food processing plants where the auxiliary industrial areas are not subjected to cleaning processes.

C3 Interior
(ISO 9223)

Industrial facilities with medium condensation and a medium / low productive pollution. Absence of corrosive chemical compounds.

C3 Exterior
(ISO 9223)

Outdoor agricultural sites, rural and inland areas of the country with low / medium pollution and good ventilation.

Applications by sector:



Industry:
distribution warehouses
and general basic factories



The BLACK C8 presents excellent behaviour in basic industrial processing facilities, Biomass, Solid Waste Treatment Centres and Distribution / Logistics Warehouses with non-aggressive chemical environments.

C3 Interior
(ISO 9223) Industrial facilities with medium condensation and a medium / low production of pollution. Absence of corrosive chemical compounds.

C4 Exterior
(ISO 9223) Industrial facilities with condensation. Medium/ high production of pollution. Absence of corrosive chemical compounds.



Telecommunications:
Data Processing Centers
(Data Centers)



BLACK C8 system is suitable in telecommunication infrastructures such as data centers where clean atmospheres are demanded along with high requirements for protection and aesthetics.

C2 Interior
(ISO 9223) Spaces with variances of Temperature and Relative Humidity. Low condensation frequency. Low / very Low production of contamination.

C3 Interior
(ISO 9223) Spaces with 50/50 condensation and a low production of pollution where equipment technology requires rigorous control of the environment, temperature and relative humidity.



Public Premises:
shopping malls, sports centres,
offices, universities, museums



Thanks to its smooth and uniform black finish, the BLACK C8 is highly recommended in spaces with needs to be decorative or aesthetic and architectural projects requiring design plus style.

C1 Interior
(ISO 9223) Heated spaces with a certain relative humidity and zero contamination.

C2 Interior
(ISO 9223) Spaces with variable Temperature and Relative Humidity. Low frequency of condensation. Low / very low production of contamination.



Technical specification

Black C8® system, consisting of Rejiband Rapide® integral coupling wire mesh cable tray, brackets and installation accessories with the same system and classification against corrosion designed by PEMSA. Homogeneous black metallic coating with high resistance to corrosion classified with the maximum Class 8 (according to IEC 61537), a coating that maintains electrical continuity and guarantees safety thanks to its smooth and uniform surface, totally free from irregularities and that also prevents the appearance and detachment of zinc whiskers in Data Centers.

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