



**Coating Systems for potential explosive atmosphere
(ATEX)**



What is the ISO reference to take in consideration?

ISO 80079-36:2016

Explosive atmospheres — Part 36: Non-electrical equipment for explosive atmospheres
— Basic method and requirements

What is the group and its gas to pay particular attention to?

Group II are:

- IIA, a typical gas is propane;
- IIB, a typical gas is ethylene;
- IIC, a typical gas is hydrogen;

The equipment of Group II, in which the parts are susceptible to electrostatically charge, must be designed in such a way as to avoid ignition due to electrostatic charge in the conditions of use, maintenance and cleaning.

This requirement shall be satisfied by one of the following:

A) Suitable selection of the material so that the surface resistance of the enclosure, measured according to 8.4.8 does not exceed $10^9 \Omega$ at $(23 \pm 2) ^\circ\text{C}$ and $(50 \pm 5) \%$ relative humidity or $10^{11} \Omega$ measured at $(30 \pm 5) \%$ relative humidity at $(23 \pm 2) ^\circ\text{C}$.

B) The non-conductive material in Group II equipment is a coating on a grounded metal or conductive surface that can become charged, the thickness is limited to no more than 2 mm in the case of Group IIA and IIB gases and vapors, or not more than 0,2 mm in the case of gases and vapors of Group IIC provided that in both cases no propagating brush discharges can occur.

Option A means putting in place all necessary field activities to remove the potential surface electrostatic charge before proceeding with the equipment activities. The equipment manufacturers indicate this on the nameplate and the action is by local staff in the field.



Option B is an option that provides ATEX compatibility with a specific painting system that guarantees the absence of electrostatic charge on the equipment. The conductive coating must be less than $200\mu\text{m}$ thick. The system presented in the following slide has two non-conductive layers and a Topcoat with a structure of $75\mu\text{m}$ NDFT.

Paint system description

Here the description of a painting suitable for use in a gas environment that is part of group IIB+H2 or IIC

Primer

AL
Epoxy Polyamide type
CARBOGUARD 893ESD @
50-100 µm (NDFT 50 µm)

CS
Zinc rich epoxy based type
CARBOZINC 858 @
50-150 µm (NDFT 75 µm)



Intermediate

AL & CS
Epoxy mastic type
CARBOMASTIC 15LT ATEX @
100-250µm (NDFT 170 µm)



Topcoat

AL & CS
Polyurethane Acrylic type
CARBOTHANE 134 HP @
50-150 µm (NDFT 75 µm)



According to ISO19840 **Total Dry Film Thickness:**
AL 295-500 µm
CS 325-550 µm

In-house painting capabilities

- Paint shop with resident NACE & FROSIO Inspector
- Wide range of painting systems C4 to Cx high durability and complete final top coat colour capabilities

QTY	MACHINES	MAIN FEATURES
3	BLASTING MACHINES	Automatic (2) – Manual (1) With 2/4 turbines Max load: 2 Ton
2	AUTOMATED GUIDED VEHICLES	Max load: 6 Ton Equipped with 10 skid
2	AUTOMATIC PAINTING CHAINS	Mono-rail jointed chain with 300 hooks Max load: 200 Kg
3	PAINT MIXERS	For primer paint (2) For final paint (1)





THANK YOU FOR YOUR ATTENTION!

Please find the complete range of solutions on the [Biffi website](#).

