



GUIDE TO SELECT RIGHT FINISH

Guide to select the right finish:

In order to choose the right prepainted finish for each use, the planner responsible for the design of the project must take into account both the incidence of UV rays and the exposure to corrosive environments of the building or project.

- **Corrosion resistance of the paint system**

To determine the corrosion resistance of a paint system, it is subjected to the salt spray test. This test evaluates the appearance of corrosion after a number of hours in a saline mist chamber. The results provide each paint scheme with an RC corrosion resistance value, from RC1 to RC5, with RC1 being the lowest value. This means that those RC3 rated paint schemes have shown their suitability for environments rated C3 or lower.

- **Resistance to UV radiation of the paint system**

To determine the UV resistance of a paint system, it is subjected to the QUV accelerated aging test. This test evaluates the loss of gloss and colour over time due to UV rays. The results provide each paint scheme with a UV resistance value RUV, from RUV1 to RUV4, with RUV1 being the lowest value.

- **Classification of environments**

DESCRIPTION OF CORROSIVE CATEGORIES FOR EXTERNAL ENVIRONMENTS

- C1** Very low
- C2** Low: Areas with low level of contamination. Mainly rural or industrial areas without incidence by sulphur dioxide.
- C3** Moderate: Urban and industrial areas with low sulphur dioxide (SO₂) pollution and coastal areas with low salinity (from 10 km to 20 km from the sea).
- C4** High: Industrial areas with moderate contamination by sulphur dioxide (SO₂) and coastal areas with moderate salinity (from 3 km to 10 km from the sea).
- C5 I** Very high: Industrial areas with very aggressive atmospheres and high contamination by sulphur dioxide (SO₂)
- C5 M** Very high: Coastal and maritime areas with high salinity (from 1 km to 3 km from the sea).

| Corrosive environment category | Environment type | | | |
|--------------------------------|------------------|-------|--------------------------|------------|
| | Rural | Urban | Industrial | Marine |
| C1 - very low | | | | |
| C2 - low | | | | |
| C3 - moderate | | | SO ₂ low | (10-20 km) |
| C4 - high | | | SO ₂ moderate | (3-10 km) |
| C5 I - very high | | | SO ₂ high | |
| C5 M - very high | | | | (1-3 km) |

DESCRIPTION OF THE CATEGORIES OF UV RESISTANCE FOR EXTERNAL ENVIRONMENTS

- Area 1:** Areas not exposed to UV radiation. Indoor use without any radiation.
- Area 2:** Areas with low exposure to UV radiation or without special colour maintenance requirements.
- Area 3:** Areas with moderate exposure to UV radiation.
- Area 4:** Areas with high exposure to UV radiation or with special colour maintenance requirements.

Choice of finishes for different environments

Once the category of the environment is known, the person responsible for the design must decide on the painting system:

- 1) The suitable paint system needs to be determined in terms of corrosion. The following table can be used as a guide.

| | | | | Poliéster | PVDF | PU55 |
|--------------------------------------|------------|------------------------|----|-----------|------|------|
| Categoría de resistencia a corrosión | | | | RC3 | RC4 | RC5 |
| Exterior environment type | Rural | | C2 | ✓ | ✓ | ✓ |
| | Urban | | C3 | ✓ | ✓ | ✓ |
| | Industrial | Low contamination | C3 | ✓ | ✓ | ✓ |
| | | Moderate contamination | C4 | X | ✓ | ✓ |
| | | High contamination | C5 | X | X | ✓ |
| | Marine | 10 - 20 km | C3 | ✓ | ✓ | ✓ |
| | | 3 - 10 km | C4 | X | ✓ | ✓ |
| | | 1 - 3 km | C5 | X | X | ✓ |

- 2) The suitable paint system in terms of UV radiation have to be determined. The following table can be used as a guide.

| | | | | Polyester | PVDF | PU55 |
|-----------------------------|--------|--|--|-----------|------|------|
| Categoría de resistencia UV | | | | RUV2 | RUV4 | RUV4 |
| Exterior environment type | Area 1 | | | ✓ | ✓ | ✓ |
| | Area 2 | | | ✓ | ✓ | ✓ |
| | Area 3 | | | X | ✓ | ✓ |
| | Area 4 | | | X | ✓ | ✓ |

- 3) A suitable paint system should be chosen in terms of both corrosion resistance and UV resistance. The following cases can be used as a guide..

| Corrosion resistance category | UV resistance category | Choice |
|-------------------------------|------------------------|-----------|
| C3 | area 2 | Polyester |
| C4 | area 4 | PVDF |
| C5 | area 3 | PU55 |

The data stated in the tables is informative and does not constitute a guarantee of the material. You should contact Masterpanel about any applications which require a guarantee for the steel in the panels.

DESCRIPTION OF CORROSIVE CATEGORIES FOR AMBIENCES

The ambience in buildings may be classified in different categories according to the corrosivity.

The following corrosion conditions should be taken into account to establish such a classification

- The aggressivity of the ambience including when applicable, the conditions for cleaning the interior walls of the building, e.g. frequency of cleaning, aggressivity of the cleaning solutions and use of disinfecting treatments.
- The risk of condensation, i.e. risk of occasional condensation, frequent condensation, permanent condensation.

AGGRESSIVITY CRITERIA

| | |
|------------------------------------|--|
| Non-aggressive ambience: | Ambience for which each of the following conditions is fulfilled: no chemical aggressivity; periodicity of cleaning operations with neutral cleaning products: not more than once a month. |
| Low-aggressive ambience: | Ambience for which each of the following conditions is fulfilled: no chemical aggressivity; periodicity of cleaning operations with neutral cleaning products: not more than once a week. |
| Medium-aggressive ambience: | Ambience for which one of the following conditions is fulfilled: low chemical aggressivity; periodicity of cleaning operations with cleaning products of pH between 5 and 9: not more than once a week |
| Aggressive ambience: | Ambience for which one of the following conditions is fulfilled: chemical aggressivity or risk of moulds; periodicity of cleaning operations with cleaning products of pH between 5 and 9: not more than once per day. |
| Very aggressive ambience: | Ambience for which each of the following conditions is fulfilled: high chemical aggressivity or high risk of moulds; periodicity of cleaning operations with cleaning products of pH between 5 and 9: once or more per day. |

CLASSIFICATION OF TYPES OF AMBIENCE

Taking into account the corrosion conditions related to aggressivity and risk of condensation, types of ambience may be globally classified into five categories:

| Aggressivity of the ambience | Risk of condensation | | |
|------------------------------|-------------------------|------------------------|------------------------|
| | Occasional condensation | Frequent condensation* | Permanent condensation |
| Non aggressive | A1 | A2 | A5 |
| Low aggressive | A2 | A3 | A5 |
| Medium aggressive | A3 | A4 | A5 |
| Aggressive | A4 | A5 | A5 |
| Very aggressive | A5 | A5 | A5 |

* Condensation is considered as frequent when it can be detected on interior surfaces daily but the time of wetness is generally short (< 2 h).

EXAMPLES FOR TYPICAL TYPES OF AMBIENCE

| Ambience category | Examples for typical ambiances |
|-------------------|--|
| A1 | <ul style="list-style-type: none"> – Office buildings – Schools – Residential (except kitchens and bathrooms) – Dry storage buildings |
| A2 | <ul style="list-style-type: none"> – Sport halls – Cinemas, theatres – Cold stores – Supermarkets |
| A3 | <ul style="list-style-type: none"> – Kitchens and bathrooms – Food processing – Industrial buildings with dry processes |
| A4 | <ul style="list-style-type: none"> – Swimming pools – Factory buildings with wet processes (e.g. breweries, wine cellars) |
| A5 | <ul style="list-style-type: none"> – Mushroom culture – Intensive livestock buildings – Dairies – Sea food processing – Paper mills |

NOTE The examples given are for general guidance only since some building types and applications may be associated with several categories of ambience e.g. cold stores.

SELECT THE RIGHT FINISH FOR DIFFERENT AMBIENCES

Below is a guide to select the coating on the internal face depending on the type of ambience to which it will be exposed.

| Ambience | FINISHES | | | |
|----------|-----------|------|-------|---------|
| | POLYESTER | PVDF | PU 55 | PVC 120 |
| A1 | ✓ | ✓ | ✓ | ✓ |
| A2 | ✓ | ✓ | ✓ | ✓ |
| A3 | X | X | ✓* | ✓ |
| A4 | X | X | X | ✓ |
| A5 | X | X | X | ✓ |

* For better performance, recommend PVC 120

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Polígono Industrial La Cárdena
Camino de Toledo, s/n • 45221 Esquivias / Toledo / Spain
Tfno.: +34 925 519 926
www.magon.es
masterpanel@magon.es

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Polígono Industrial La Cárdena
Camino de Toledo, s/n • 45221 Esquivias / Toledo / Spain
Tfno.: +34 925 519 926
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