

**CORROSION CLASSIFICATIONS STANDARDIZED GUIDE****MATERIAL AND COATING RECOMMENDATIONS METAL ENCLOSURES**

Use this guide to select a suitable enclosure material and coating system for the corrosivity of the installation site. The C-category describes the environment; the final specification should also account for exposure details, fabrication, service life, maintenance, and the coating supplier's approved system.

Corrosivity Categories & Recommendations

Category	Typical environment	Recommended enclosure material and coating
C1 Very Low	Heated interiors such as offices, schools, and hotels. Dry, clean air. Indicative corrosion rate: < 1.3 µm/year.	Electrogalvanized (EG) steel with pure polyester powder coating; or aluminum with a suitable decorative coating.
C2 Low	Unheated or occasionally humid interiors such as warehouses and sports halls; low pollution. Indicative rate: 1.3–25 µm/year.	Galvanized iron (GI) with epoxy-polyester powder coating; zinc-aluminum coated steel with polyester coating; or mild steel with a standard primer-and-topcoat system.
C3 Medium	Urban or industrial areas with moderate sulfur dioxide pollution, and coastal areas with low salinity. Indicative rate: 25–50 µm/year.	GI or zinc-aluminum coated steel with a robust epoxy-polyester or polyester coating (minimum 60–80 µm); or mild steel with zinc-rich primer and suitable topcoat (total DFT 110–120 µm). Stainless steel 304 may be used where appropriate.
C4 High	Industrial areas, including chemical or process plants, and coastal areas with moderate salinity. Indicative rate: 50–80 µm/year.	Preferred: mild steel with hot-dip galvanizing (HDG) and a compatible epoxy-polyester or polyurethane topcoat. Alternatives: mild steel with high-build zinc-rich primer, epoxy intermediate, and durable topcoat (total DFT 200–250 µm); or stainless steel 304/316.
C5-I Very High Industrial	High humidity and aggressive industrial atmospheres, such as chemical processing and pulp and paper mills. Indicative rate: 80–200 µm/year.	Mild steel with HDG and a high-performance coating system, such as epoxy intermediate with polyurethane topcoat. Stainless steel 316 is a premium option.
C5-M Very High Marine	Coastal and offshore locations with high salinity and frequent saltwater spray. Indicative rate: 80–200 µm/year.	Stainless steel 316 is recommended for its improved pitting resistance. A robust alternative is mild steel with HDG and a coating system specifically rated for marine exposure.

Material Compatibility at a Glance

Material	Key characteristic	Indicative suitability and notes
Mild steel (MS)	Requires a protective coating system.	C2–C5, depending on the coating system and exposure. For C4/C5, HDG before painting is a strong protective option.
Electrogalvanized (EG)	Thin electroplated zinc layer; typically, uniform.	C1–C2. Its thinner zinc layer offers less sacrificial protection than HDG or GI.
Galvanized iron (GI)	Zinc-coated sheet steel.	C2–C3 with a coating system suitable for the surface.
Zinc-aluminum coated steel	Often offers stronger corrosion resistance than a comparable pure-zinc coating.	C3–C4 with a compatible coating system.
Stainless steel 304	Good general corrosion resistance.	C3–C4; may pit in high-chloride marine exposure.
Stainless steel 316	Molybdenum improves resistance to pitting and crevice corrosion.	C4 and selected C5-I/C5-M applications; validate for the actual chemistry and exposure.
Aluminum 1100	Protective oxide layer; suitable for many environments.	C3–C4 in suitable applications; isolate from dissimilar metals where galvanic corrosion is possible.

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**CORROSION CLASSIFICATIONS STANDARDIZED GUIDE****Coating System Examples for Mild Steel**

The examples below summarize the specified systems in this guide. Confirm the full system, surface preparation, compatibility, and measured dry film thickness (DFT) with the coating supplier before production.

Category	Base material	Primer / preparation	Intermediate / topcoat	Total DFT	Indicative life
C3	MS	Zinc-rich primer, 60 µm	Epoxy-polyester topcoat, 50–60 µm	110–120 µm	Medium (5–15 years)
C4	MS	Zinc-rich primer, 60–80 µm	Epoxy intermediate + polyurethane topcoat	200–250 µm	High (up to 15+ years)
C4	HDG MS	T-wash or sweep blast	Epoxy-polyester topcoat, 75–100 µm	75–100 µm	High (15+ years)
C5-I/M	MS	Zinc-rich primer, 75–100 µm	Epoxy intermediate, 120–150 µm + fluorocarbon/polyurethane topcoat, 50–80 µm	≥ 230 µm	High (15+ years)
C5-I/M	HDG MS	T-wash or sweep blast	Epoxy intermediate + high-performance topcoat (e.g., polyurethane)	≥ 150 µm	Very high

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