



Extragal[®] Pure Zinc Galvanized Steels

Applications

Because of their high corrosion protection capacity and surface quality, Extragal[®] coated products are recommended for any automotive exposed panel applications. The Extragal[®] production process is a continuous single-step operation after cold rolling, which creates the corrosion resistance required for exposed automotive sheet applications.

Technical characteristics

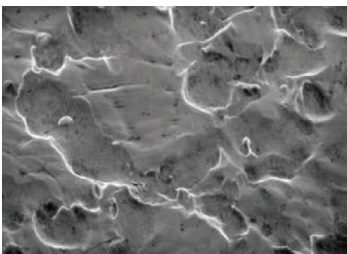
Surface appearance

The crystal structure of Extragal[®] coatings is not visible to the naked eye. The high surface quality leads to a finished paint appearance meeting the severest requirements of the automotive industry for visible panels.

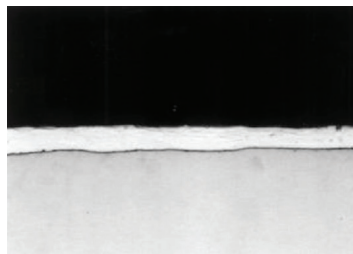
Hardness

Extragal[®] coatings are relatively ductile, with limited risk of damage in the drawing tools.

Morphology



Scanning electron micrograph



Cross section of an Extragal coating.

Extragal[®] coated fender.



Coating thickness

Unless otherwise specified, the standard North American Extragal[®] coating thicknesses offered (per side, measured at three points) are as follows:

Exposed only:

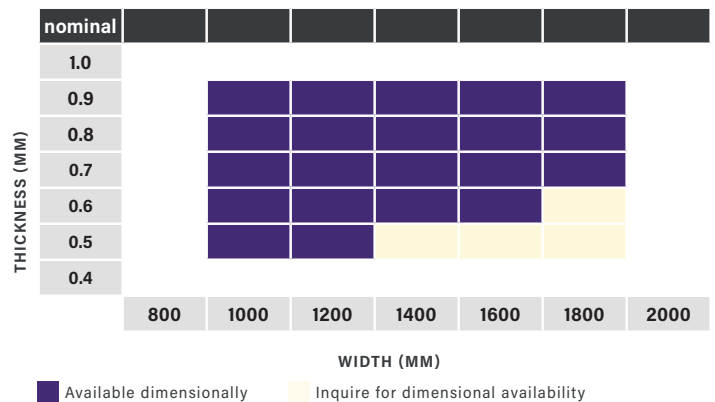
- 50 g/m² (50G-50G)
- 60 g/m² (60G-60G)

Other coating thicknesses may be considered. Please consult us.

Substrate availability

Extragal[®] can be produced as IF, BH180/210/240/250/260, 180P,210P, 220P and DP490/DP500.

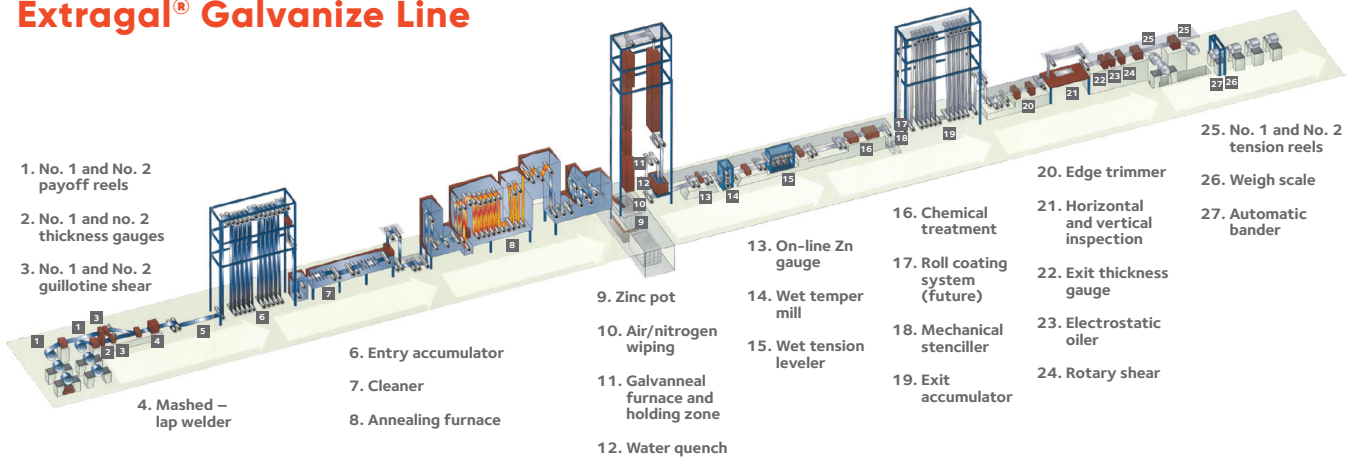
Extragal[®] thick/width capability



Coating process

Extragal[®] coatings are produced by continuous hot dip galvanizing, in which the steel strip is fed through a molten zinc bath. The steel substrate can be almost any of our cold rolled steels**. The Extragal[®] manufacturing process includes adjustments at all stages of the process, from the steelworks to the skin-pass. It is subject to rigorous control and inspection. As a result of these measures, an exceptional galvanized coating with an optimized surface is obtained. This ensures a very high quality, exposed painted appearance in automotive exterior panels.

Extragal® Galvanize Line



Recommendations for use

Corrosion

Extragal® coating provides excellent corrosion protection, even in the event of damage (impact, scratches and gravel impingement), due to the electro-chemical behavior of the Fe-Zn galvanic couple, in which the zinc acts as a sacrificial anode.

Drawing

Industrial experience shows that the drawing performance of Extragal® products is superior to that of other coating systems. Extragal® has a friction coefficient of approximately 0.10 to 0.14 (with standard oiling), which lends it excellent drawability.

The type and quantity of lubricant and the surface texture are of prime importance during sheet-tool contact; any comparison of coatings must be carried out under identical conditions. Furthermore, the ductility of pure zinc limits the risk of powdering in the drawing tools. For parts difficult to stamp, NIT surface treatment use is recommended (See surface treatments page.)

Welding

Extragal® coated products offer a welding range suited to industrial requirements. The welding process, and in particular electrode life (typically greater than 1000 spot welds without current adjustment using welding parameters from AWS D8.9 on 0.65-0.75 mm substrate), can be optimized by fine-tuning electrode composition, geometry and current adjustment frequency as well as welding parameters (current type and intensity, current incrementation, joining pressure, cycle time). ArcelorMittal specialist teams are available to assist clients in optimizing the welding process.

Adhesive bonding

Extragal® coating has good adhesive bonding behavior, good adhesion to the coating, and good adhesion of the coating to the metal and good cohesion of the coating. The most significant parameters determining bond quality remain the type of adhesive, the joining conditions, the nature of the protective oil, and any chemical treatments that may have been performed.

Surface treatment

Extragal® can be pretreated and painted at the user's premises.

Stamping experience

Extragal® has a more reflective surface than other exposed flat rolled steel products. As a result, stamping irregularities can be detected sooner in the stamping/assembly process.

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