North American Automotive

ArcelorMittal

Ultragal®
Pure Zinc Galvanized Steels

Applications

With its ability to limit development of waviness during deformation, combined with the proven qualities of Extragal® (surface quality, corrosion protection), Ultragal® is a coated steel specifically recommended for exposed part applications in the automotive sector.

With the Ultragal® production process, waviness in steel products can be controlled both before and after forming. In an optimized painting process configuration, Ultragal® results in an improved painted appearance (even better than a standard galvanized substrate). With waviness reduced to a very low value, Ultragal® also contributes to enhanced reproducibility of paint appearance quality.

Technical characteristics

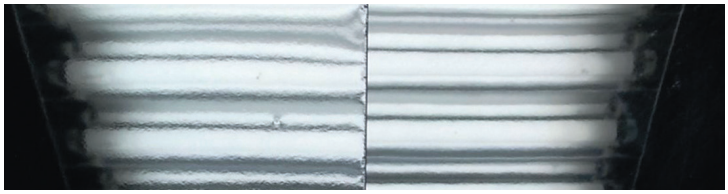
Surface appearance

The crystal structure of Ultragal® is not visible to the naked eye and the product offers optimum surface quality before and after painting. Ultragal® controls the factors amplifying waviness during drawing, further enhancing paint appearance.

A waviness guarantee after forming ensures product quality (expressed as Wa0.8).

	Unformed		Formed (5.0%)
	Ra2.5 (µm)	RPc (#/cm)	Wa0.8 (µm) / Wsa1-5 (µm)
ArcelorMittal Ultragal®	0.9-1.4	≥75	≤0.5 / ≤0.32

The reduced waviness after forming offered by the Ultragal® product results in a crisper reflected image in the painted outer panel than with conventional exposed product



Waviness	Roughness	Waviness	Roughness
0.92 µm	1.3 µm	0.36 µm	1.2 µm

Reflected pattern of parallel lights on black topcoat over steel surfaces of varying waviness with similar roughness.

Hardness

Ultragal® coating is relatively ductile, which reduces the risk of coating damage in the drawing tool.

Coating thickness

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

Exposed only:

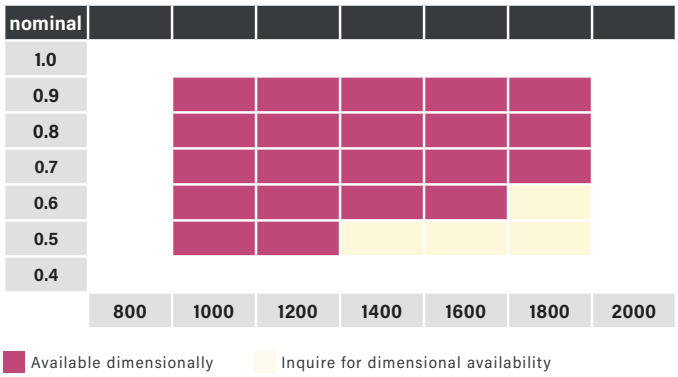
- 50 g/m2 (50G-50G)
- 60 g/m2 (60G-60G)

Other coating thicknesses may be considered. Please consult us.

Substrate availability

Ultragal® can be produced as IF, BH180/210/240/250/260, 180P and DP490/DP500

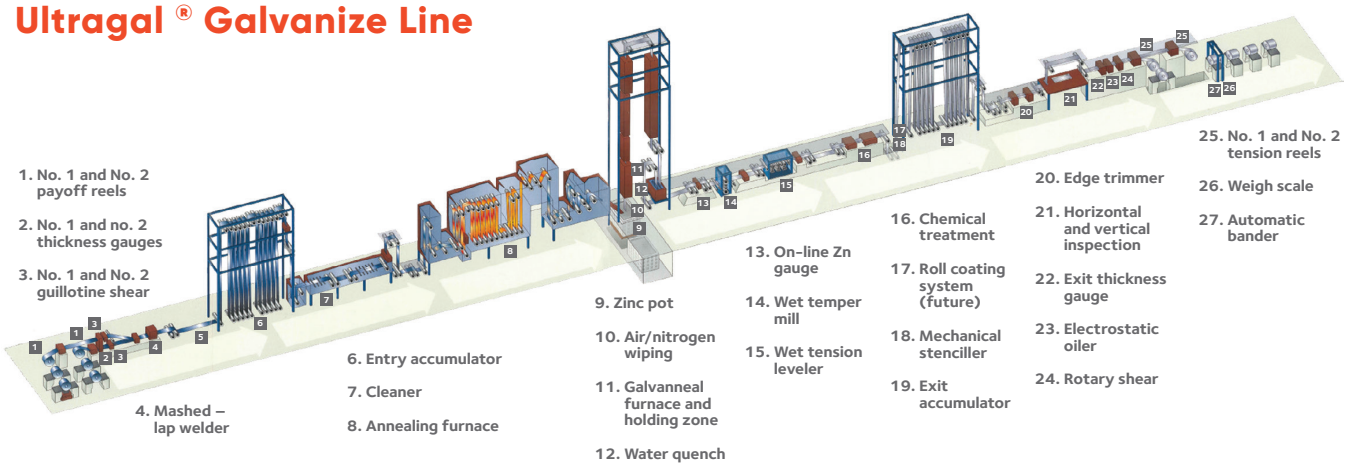
Ultragal® Thick/Width Capability



Coating process

Ultragal® 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 Ultragal® manufacturing process includes unique controls at all stages of the process, from steelmaking to final skin-pass. It is subject to rigorous 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.

Ultragal ® Galvanize Line



Recommendations for use

Corrosion

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

Drawing

Ultragal® offers drawing quality equivalent to that of Extragal®, the galvanized steel product with pure zinc coating on both sides. Ultragal® has friction properties which lend it excellent drawability. The type and quantity of lubricant and the surface texture are obviously 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

Ultragal® 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 customers in optimizing the welding process.

Adhesive bonding

Ultragal® coating has good adhesive bonding behavior, shows good acceptance of zinc phosphate and newer thin film pretreatments, 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

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

Stamping experience

Ultragal® 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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