

## Material Information



### Coated Steel A653

#### Introduction

Coated Steel A653 refers to steel sheet supplied in accordance with ASTM A653/A653M, which covers hot-dip zinc-coated (galvanized) and zinc-iron alloy-coated (galvannealed) steel sheet. The specification covers material supplied in coils and cut lengths and includes multiple steel designations for different fabrication and performance requirements, including commercial steel, forming steel, deep drawing steel, extra deep drawing steel, structural steel, high-strength low-alloy steel, and other specialized grades. The selected designation and grade determine the specific mechanical and forming characteristics of the steel.

#### Advantages

Good corrosion protection, a wide range of available steel grades, and compatibility with conventional sheet metal fabrication processes make Coated Steel A653 suitable for a broad range of applications. Depending on the selected steel designation, the material can provide good formability, deep-drawing capability, structural strength, or higher strength. The zinc or zinc-iron alloy coating also provides a protective surface that helps improve the steel sheet's resistance to atmospheric corrosion.

#### Disadvantages

Coated Steel A653 does not have one fixed set of mechanical properties because ASTM A653/A653M covers multiple steel designations, grades, and classes. The forming performance, strength, and other characteristics therefore depend on the specific material selected. Fabrication operations that cut, punch, bend, or weld the sheet can also affect the coated surface, so the coating condition should be considered when appearance and corrosion protection are important.

#### Tolerance

We offer tolerances as tight as  $\pm 0.005"$ . Tighter tolerances are available upon manual review.

#### Recommendation

The combination of corrosion protection, material availability, and multiple strength and forming options makes Coated Steel A653 suitable for sheet

metal fabricated parts used in automotive, construction, HVAC, appliances, electrical equipment, industrial equipment, and general manufacturing applications. It is particularly appropriate for panels, enclosures, brackets, covers, ductwork, and other components where a coated steel surface and application-specific mechanical properties are required.

| Material Specifications (For reference only.) |               |
|-----------------------------------------------|---------------|
| Tensile strength                              | 310 to 570MPa |
| Yield strength                                | 230 to 550MPa |
| Elongation at Break                           | 12% to 20%    |

### Attention

ASTM A653/A653M covers multiple steel designations, grades, and coating designations, so the exact material specification should be identified before fabrication. Forming parameters should be selected according to the chosen steel grade because commercial, forming, deep-drawing, structural, and high-strength grades can have substantially different fabrication characteristics. During cutting, bending, punching, and other operations, the coated surface should be protected as much as practical. When welding coated steel, suitable welding procedures and appropriate controls for coating-related fumes should be used. For applications exposed to corrosive environments, the selected coating type and coating designation should be matched to the expected service conditions.

### Applications

3DSPRO finds people using Coated Steel A653 to make functional parts and prototypes in the following industries and applications.

#### *Automotive and transportation:*

Body panels, brackets, supports, protective covers, underbody components, and other fabricated parts requiring corrosion protection and application-specific forming or strength characteristics.

#### *Construction and HVAC:*

Roofing components, wall panels, ductwork, flashing, brackets, enclosures, and other fabricated sheet metal components requiring a protective coated steel surface.

#### *Appliances and electrical equipment:*

Cabinets, housings, panels, covers, mounting components, electrical enclosures, and other fabricated parts where corrosion protection and economical sheet metal production are important.

*Industrial and general fabrication:*

Machine covers, guards, brackets, panels, boxes, frames, supports, and other sheet metal fabricated components that benefit from the combination of a protective zinc or zinc-iron alloy coating and selectable steel grades for different forming and strength requirements.