CLIFFS

HOT-DIPPED GALVANIZED/ GALVANNEALED DUAL PHASE

DP 590 / 780 / 980 / 1180

- **B-Pillar**
- **Bumper**
- **Cross Beam**
- **Front Roof Rail**

DUAL PHASE STEELS are a great option for an application that demands high strength and high formability. Dual Phase steels' microstructure consists of a mixture of soft phase ferrite and hard phase martensite and/or bainite. The combination of these two phases results in high strength with improved ductility specifically compared to High Strength Low Alloy (HSLA) steels. New developments are focused in making steels with higher yield strengths, and better flange stretchability.

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Product Description

The mechanical behavior of Dual Phase steels is characterized by continuous yielding, low yield strengths, high work hardening rate, and high stretch formability, characteristics that make Dual Phase steels excellent choice for demanding automotive applications. The strong bake hardening behavior of Dual Phase steels add significant strength to a part after paint baking. The low carbon contents of Dual Phase steels make them a friendly option for all welding options including resistant spot, resistant seam, arc and laser methods. All these features make Dual Phase steel a great choice for demanding automotive applications.

POTENTIAL APPLICATIONS

TABLE 1 – PRODUCT COMPARISON

	DP 590	DP 780	DP 980	DP 1180
Yield Strength (MPa)	390	500	700	855
Tensile Strength (MPa)	620	860	1040	1220
Tensile Elongation (%)	25	17	13	9.9

Typical properties based on ASTM testing. Products are available as galvanized and galvannealed. Please contact your Cleveland-Cliffs representative for cold roll availability.

TABLE 2 – SIZES

GRADE	GAUGE, MM	WIDTH, MM
DP 590	0.9 – 2.0	1145 – 1850
DP 780	0.9 – 2.0	1145 – 1600
DP 980	1.0 – 2.0	1145 – 1440
DP 1180	1.2 – 2.0	1000 – 1350

For sizes outside of these limits, please contact your Cleveland-Cliffs representative.

ADVANTAGES

- **High Tensile Strengths**
- **High Stretch Formability**
- **Continuous Yielding Behavior**
- **Low Yield to Tensile Stress Ratio**
- **High Elongation**
- **High Work Hardening Rate**
- **High Bake Hardening Behavior**
- **Low Carbon**
- **New Developments have been made to improve yield strengths and stretch flange range**

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About Cleveland-Cliffs Inc.

Cleveland-Cliffs is the largest flat-rolled steel producer in North America. Founded in 1847 as a mine operator, Cliffs also is the largest manufacturer of iron ore pellets in North America. The Company is vertically integrated from mined raw materials and direct reduced iron to primary steelmaking and downstream finishing, stamping, tooling, and tubing. The Company serves a diverse range of markets due to its comprehensive offering of flat-rolled steel products and is the largest steel supplier to the automotive industry in North America. Headquartered in Cleveland, Ohio, Cleveland-Cliffs employs approximately 25,000 people across its mining, steel and downstream manufacturing operations in the United States and Canada.

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