





## Recommended GM Steel Reparability Matrix

Steel ID Stamping Symbols <sup>4</sup>	Grade	GM Specifications	Welding Method			Cold repair	Use of Heat for repair	Temp. Range	Maximum Heat
			MIG	RSW	MIG Braze <sup>1</sup>				
	Mild Steel	GM6409M (all) GMW2M (all)	Yes	Yes	Yes	Yes <sup>2</sup>	Yes	Up to 1200 °F (650 °C)	90 sec. x 2
	Laminate steel		NO	Yes	NO	Yes <sup>2</sup>	NO		
	Bake Hardened	GM6093M (all) GMW3032M(all)	Yes	Yes	Yes	Yes <sup>2</sup>	Yes	Up to 1200 °F (650 °C)	90 sec. x 2
	Solid Solution-Strengthened		Yes	Yes	Yes	Yes <sup>2</sup>	Yes	Up to 1200 °F (650 °C)	90 sec. x 2
	High Strength, Low Alloy	GM6208M (all), GM6218M(all), GM3032M(HR CR grades)	Yes	Yes	Yes	Yes <sup>2</sup>	Yes	Up to 1200F (650 °C)	90 sec. x 2
	Dual Phase ≤779 MPA min. UTS	GMW3032M (HR DP and CR DP grades) GMW3399M (HR DP, CR DP and HR HE grades with TS≤779MPa)	Yes	Yes	Yes	Yes <sup>2</sup>	No	N/A	N/A
<b>DPX</b>  <b>≥780MPA</b>	Dual Phase ≥780 MPA min. UTS <sup>3</sup>	GMW3399M(all other HR DP, CR DP and HR HE Grades)	Yes <sup>3</sup>	Yes	Yes <sup>3</sup>	No	No	N/A	N/A
<b>MP</b>  <b>M</b>  <b>B</b> 	UHSS <sup>3</sup> Martensitic <sup>3</sup> Boron (PHS/Hot-Stamped) <sup>3</sup>	GM6123M (all) GMW3399M (all MS & MP grades) GMW14400	Yes <sup>3</sup>	Yes	Yes <sup>3</sup>	No	No	N/A	N/A

<sup>1</sup> Must use 8mm x16mm slotted holes

<sup>2</sup> Cold repairs can be performed if damage excludes kinks.

<sup>3</sup> Mig Plug Only, NO STITCH WELDING. These steels may NOT be used as a backer for stitch welding. NOTE. Deviation from this chart is ONLY allowed if there has been a crash analysis completed by the Design Engineer and a Service procedure has been written. NOTE number values are tensile strength

<sup>4</sup> ISO Symbol for repair.

**Note: GM does not endorse repair of door impact beams.**

**Dual phase Steels up to DP 780 may be sectioned with an approved service procedure.**

Revised 11-4-2011

Descriptions of GM Steel

Grade	Alloy Content	Heat Treatment	Typical Applications	Comments
Mild Steel, Bake Hardened, Solid Solution Strengthened	Low	Fully Annealed/Dead Soft	Body Panels (Closures, floor pan, dash panel, etc.)	
High Strength Low Alloy	Low	Fully Annealed/Dead Soft	Rails, Structural Members	Strengthened with fine particles and small grain size
Dual Phase	Medium (Manganese, Silicon, Molybdenum, Chromium)	Fully Annealed/Partially Hardened	Rails, Structural Members	15-50% of structure is "hard" martensite
Ultra High Strength Steel (Martensitic, Boron)	Low	Fully Hardened	Rocker reinforcements, door beams, bumper beams	100% of structure is "hard" martensite
TRIP (Transformation Induced Plasticity) Steel	High (Manganese, Phosphorus, Silicon, Aluminum)	Fully Annealed/Partially Hardened	TBD	Complex microstructure for high strength and ductility