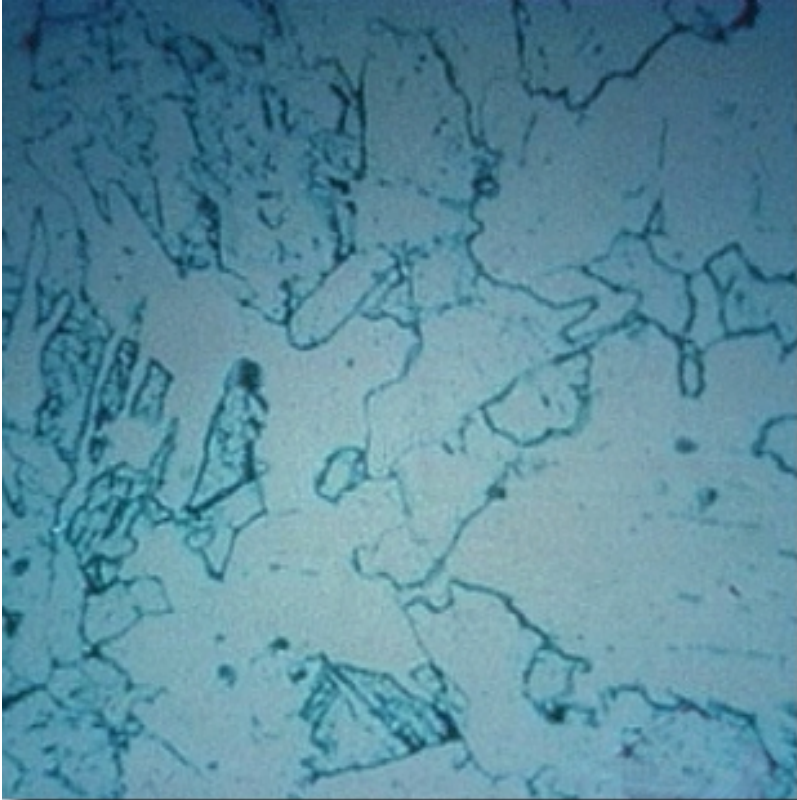


Mild Steel



- Easily formed
- Easy to work
- Used for structural parts
- Increase in strength when formed
- Less sensitive to heat

◀ B-1

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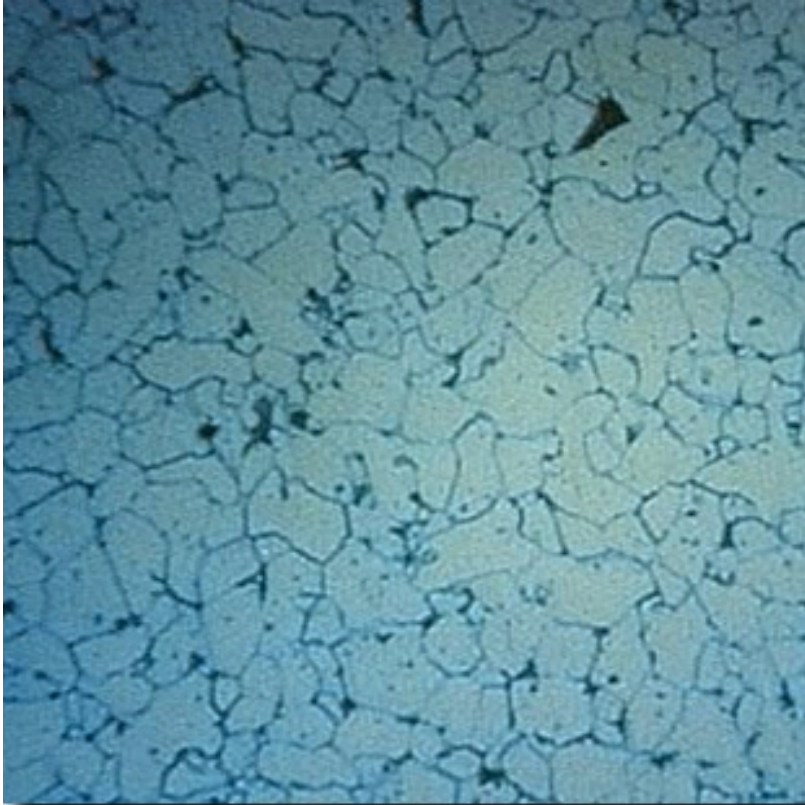
B-9 ▶

Topic A **B** C D E

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High-Strength Steel (HSS)



- Higher strength
- Heat sensitive
- Straightened cold
- Used for load-carrying parts
- Used in thinner gauges
- Can be HSLA

◀ B-1

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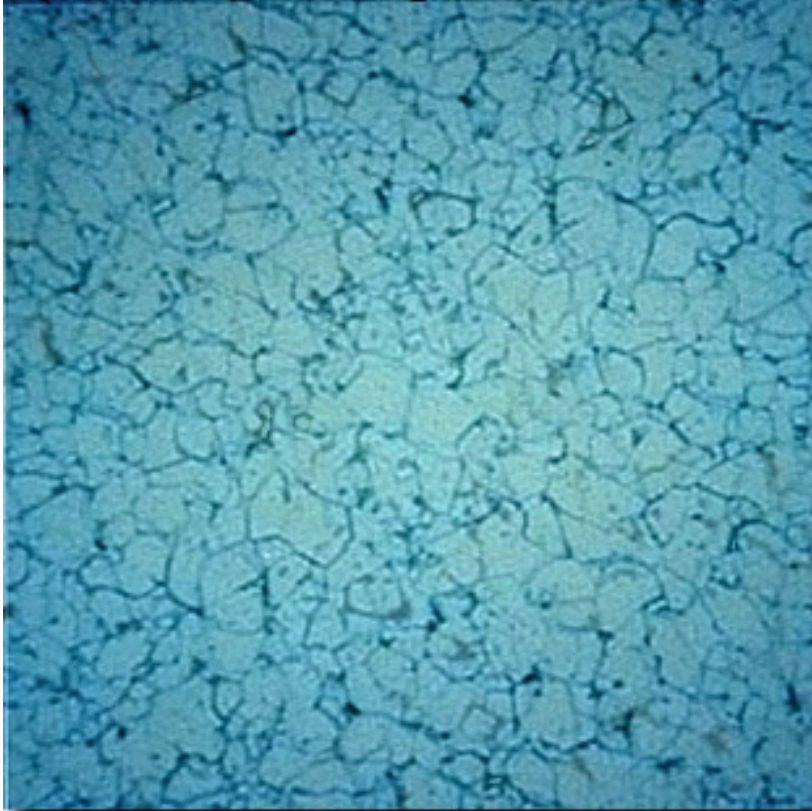
B-9 ▶

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Ultra High-Strength Steel (UHSS)



- **Intrusion beams and bumper reinforcements**
- **Strength destroyed by heat**
- **Typically not straightened**
- **Usually replaced if damaged**

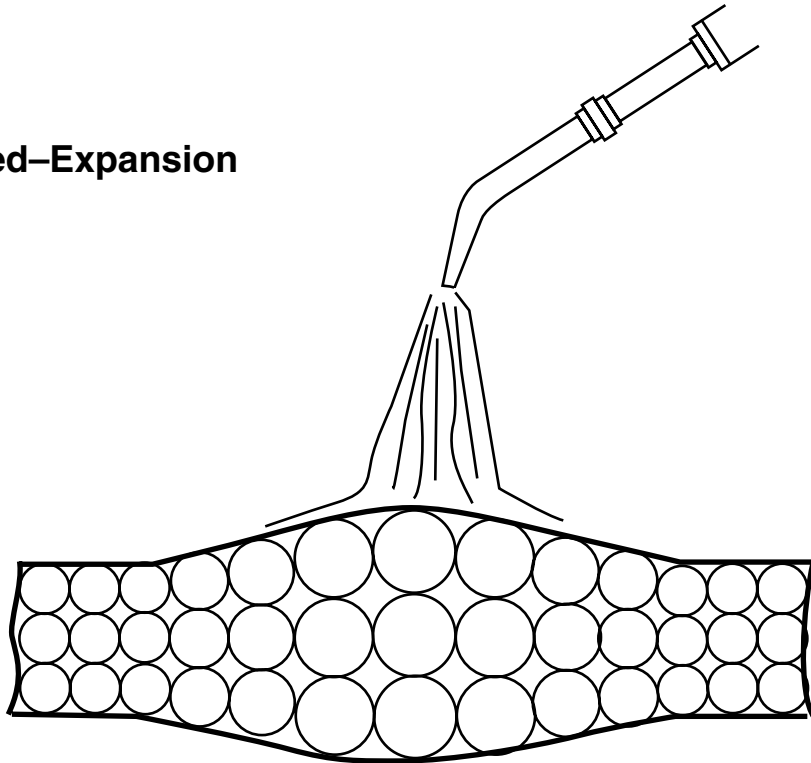
◀ B-1 B-2 **B-3** B-4 B-5 B-6 B-7 B-8 B-9 ▶

Topic A **B** C D E



OEM Recommendations For Heat Use

Heat Applied—Expansion



- Most recommend cold straightening
- Heat is typically used as a last resort
- Check for guidelines when heating steel

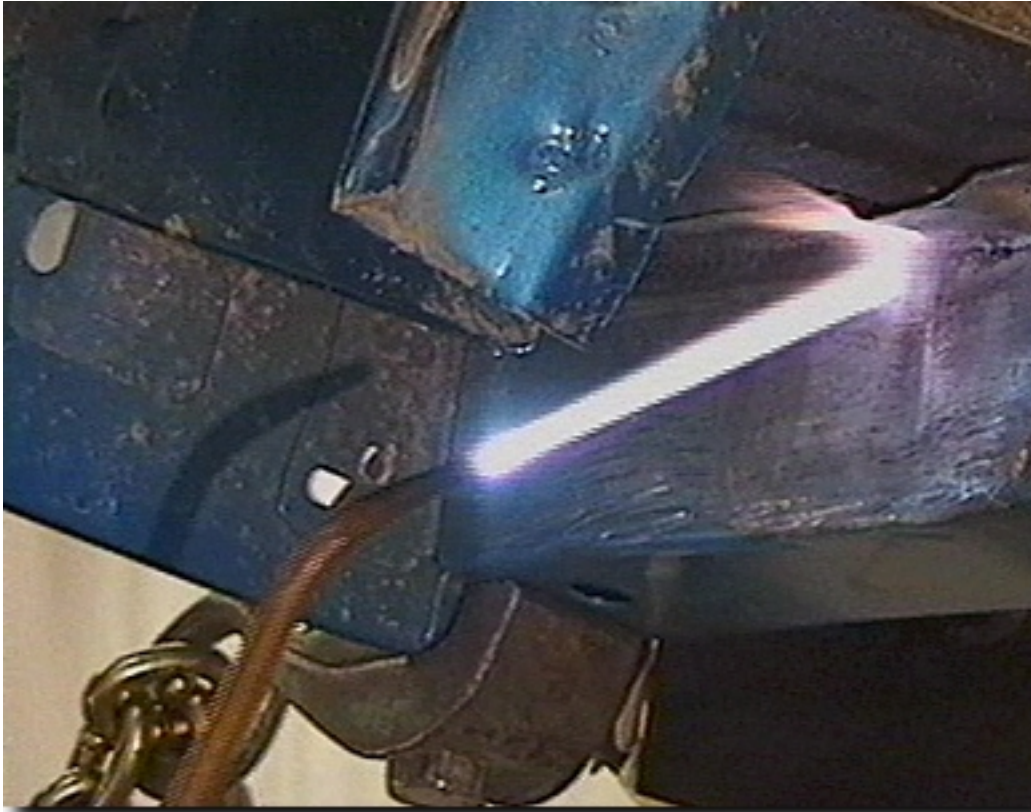
◀ B-1 B-2 B-3 B-4 B-5 B-6 B-7 B-8 B-9 ▶

Topic A B C D E



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Heat For Stress Relieving



- Check recommendations
- If heat is allowed, follow temperature and time recommendations
- Heating time is cumulative



Temperature Indicators



- Determine temperature of part being heated
- Are available in a variety of types and temperature ranges

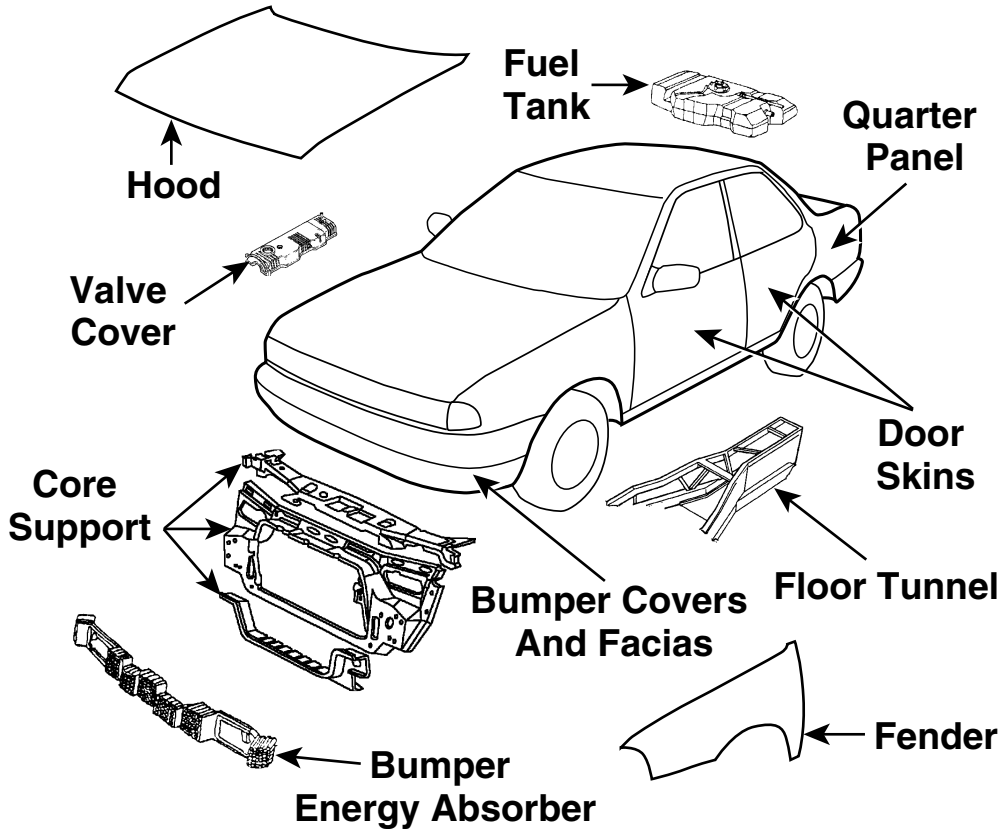
◀ B-1 B-2 B-3 B-4 B-5 **B-6** B-7 B-8 B-9 ▶

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Plastic



- Increased use
- Used in structural and non-structural parts
- Special repair techniques

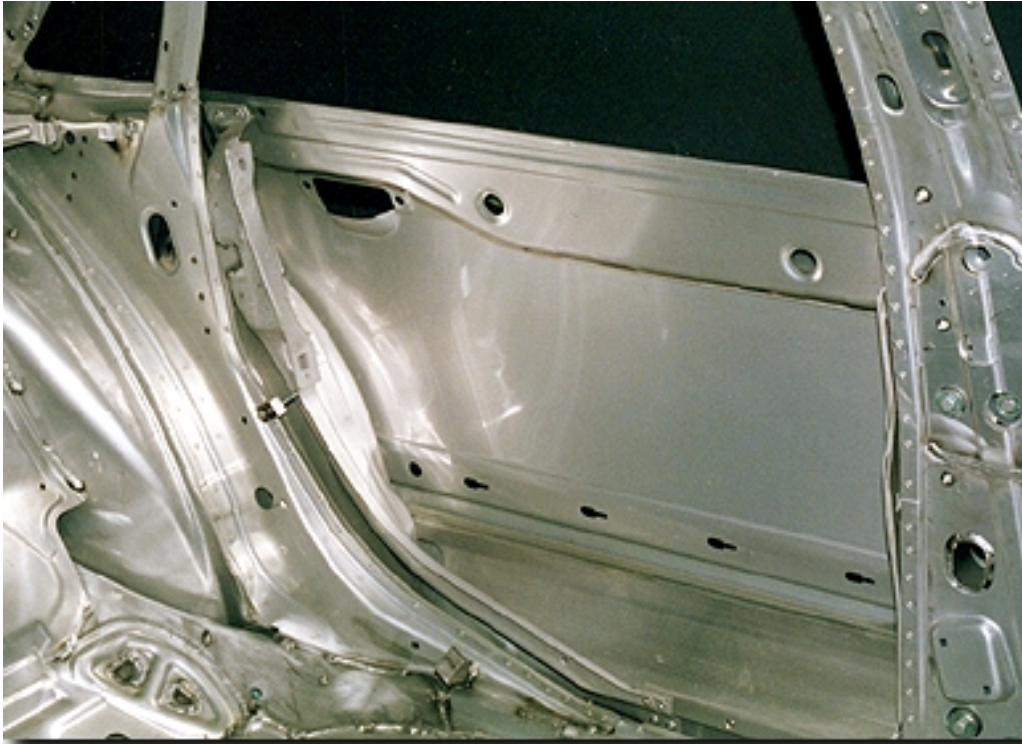
◀ B-1 B-2 B-3 B-4 B-5 B-6 B-7 B-8 B-9 ▶

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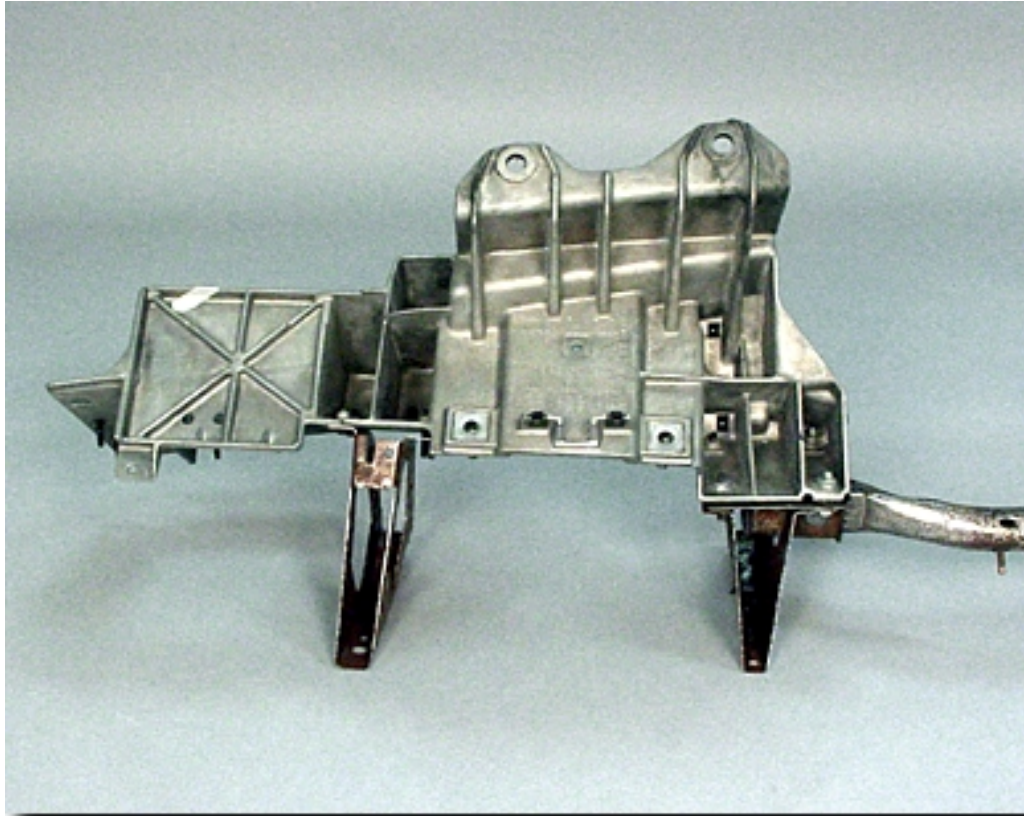
Aluminum



- Structural and non-structural parts
- Sheet metal, extrusions, and castings
- Varies in strength
- Must know type for welding



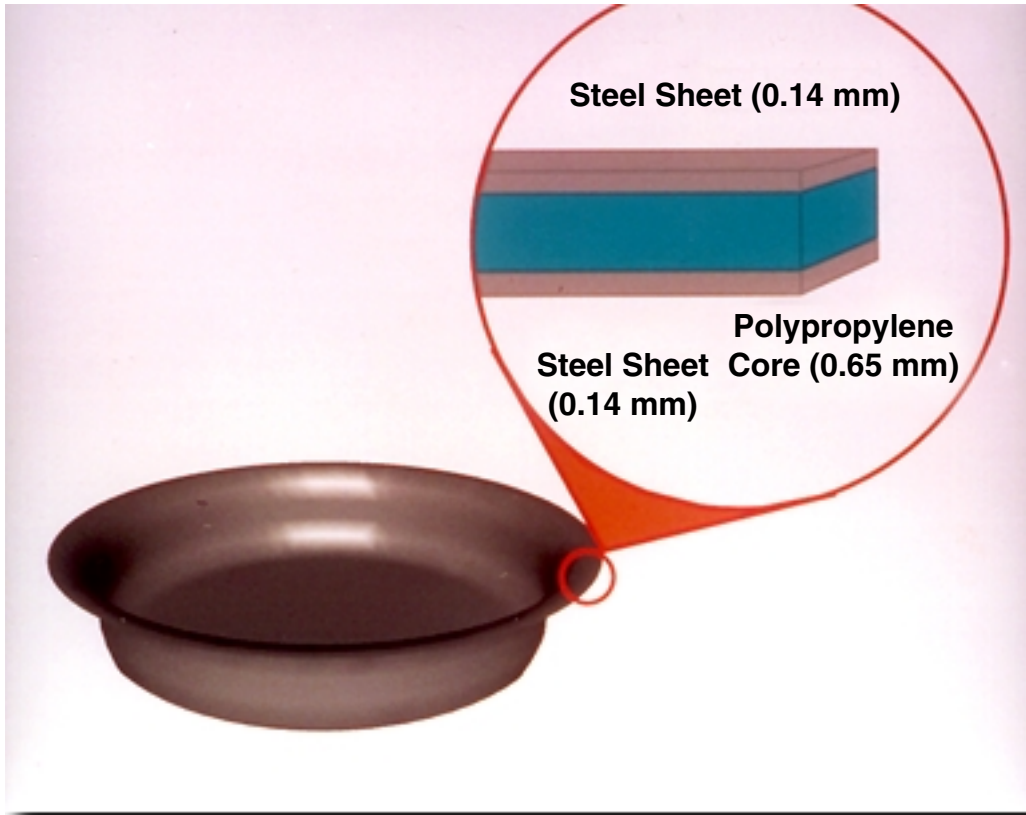
Magnesium



- Used where weight must be reduced and strength maintained
- Difficult to repair
- Typically replaced if damaged



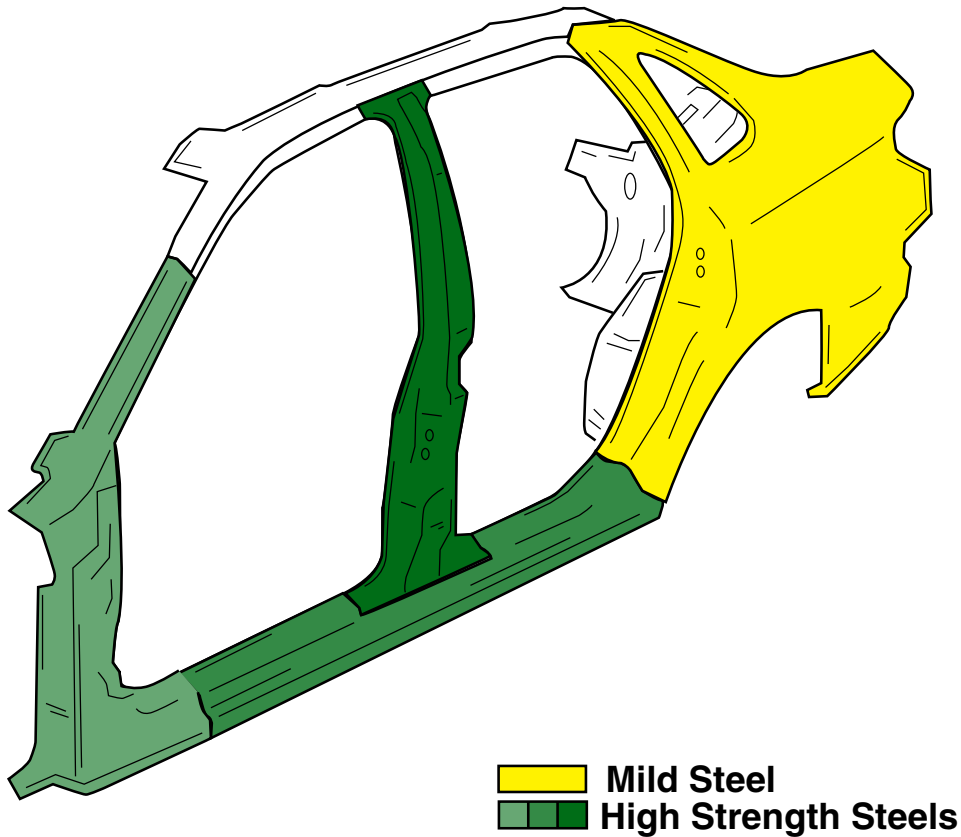
Ultra-Light Steel Autobody



- Tailor-welded blanks
- Steel sandwiched parts



Tailor-Welded Blanks



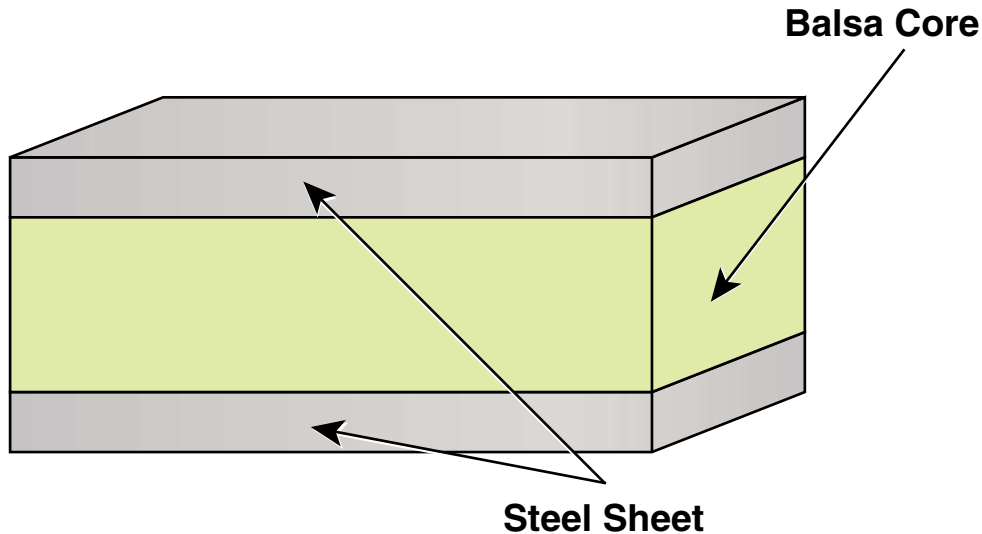
- Different strengths and thicknesses of steel
- Laser welded
- Reduces number of flanges and spot welds
- Used on some late model vehicles

◀ B-10 **B-11** B-12 ▶

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Steel Sandwich



- Polypropylene core between two steel skins
- Reduces weight up to 50%

