



## Bending Performance of MS, SAE 1010, SAE 1015, SAE 1018, and IS 2062 E250 – A Practical Comparison

### Description

When it comes to bending operations in fabrication, forming, and machining industries, **selecting the right steel grade** can make a noticeable difference in output quality, rejection rates, tool life, and operator effort.

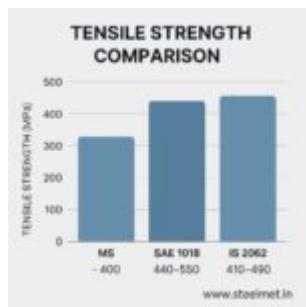
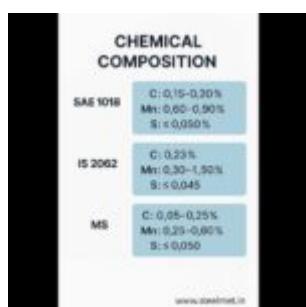
This article compares the **bending behavior** of five commonly used low-carbon steels:

- Mild Steel (MS)
- SAE 1010
- SAE 1015
- SAE 1018
- IS 2062 E250

## Steel Grades Compared: Bending Properties

Property / Grade	MS (Generic)	SAE 1010	SAE 1015	SAE 1018	IS 2062 E250 (Fe410W)
Carbon Content (%)	~0.15 max	~0.08–0.13	~0.13–0.18	~0.15–0.20	~0.20 max
Ductility	High	Very High	High	Moderate	Moderate

Property / Grade	MS (Generic)	SAE 1010	SAE 1015	SAE 1018	IS 2062 E250 (Fe410W)
<b>Tensile Strength (MPa)</b>	~350â??410 (approx)	~330â??420	~380â??450	~440â??500	â?¥410
<b>Yield Strength (MPa)</b>	~250 max	~170â??250	~200â??280	~250â??320	â?¥250
<b>Cold Bending Suitability</b>	Very Good	Excellent	Very Good	Good	Moderate (lot-dependent)
<b>Springback After Bend</b>	Low	Very Low	Low	Moderate	Moderate to High
<b>Crack Risk at Tight Radius</b>	Low	Very Low	Low	Medium	Medium to High
<b>Surface Finish After Bend</b>	Depends on source	Good	Good	Good	Moderate (scaly finish)
<b>Availability in Bright Form</b>	Limited	Available	Available	Widely Available	Mostly hot rolled
<b>Typical Uses</b>	General bending, brackets	Automotive parts, deep draw	Tubes, mild bend parts	Shafts, CNC precision parts	Structural fabrication





## ð?§ What the Data Means for Bending Applications

### â? 1. Best for Tight Radius Bending: SAE 1010

- Lowest carbon content â?? high ductility
- Minimal springback
- Highly suited for sharp, deep, and small-radius bends

### â? 2. General Purpose Bending: MS and SAE 1015

- **Mild Steel (MS)** is easy to source, economical, and ductile

- SAE 1015 has slightly higher strength but retains good bendability

Use these when:

- You're forming medium-radius parts
- Cost is a constraint
- Bright finish is not critical

#### • 3. Use with Caution: SAE 1018

- Cold drawn 1018 may be harder and exhibit springback
- May crack under tight radius unless annealed
- Great dimensional control, but not ideal for sharp bends unless softened

Best used for:

- Precision forming, CNC bending, or applications requiring higher strength after bending

#### • 4. Least Preferred for Critical Bends: IS 2062 E250

- Designed as a structural steel, not optimized for forming
- Surface is rougher and ductility is variable across heats
- More prone to **cracking or wrinkling** at tight bend radii

Use this for:

- Gradual bends
- Heavy fabrication where tolerances are relaxed

## Ø??• Cold Drawn vs Hot Rolled Impact on Bending

- **Bright Bars (cold drawn):** Higher strength → more springback → risk of surface cracks in tight bends

- **Black Bars (hot rolled):** Softer, easier to bend, but lower dimensional accuracy and poorer finish

Ø??; For tight bends using bright bars like 1018: **annealing before bending** is strongly recommended.

## Ø??? Conclusion

Choosing the right steel grade for bending is about **understanding the trade-off** between:

- **Strength vs Ductility**
- **Surface finish vs Formability**
- **Cost vs Performance**

Application Type	Best Grades
Sharp bends, deep draw	SAE 1010, SAE 1015
Manual bending	Mild Steel (MS), SAE 1010
CNC / Precision press brake	SAE 1018 (annealed)
Structural bending	IS 2062 E250

Ø???. When in doubt, always validate with a **trial bend** and check the **heat-specific test certificate (TC)**.

### Category

1. Posts

### Tags

---

- 1. CNC bending
- 2. forming steel bars
- 3. is2062
- 4. mild steel bending
- 5. SAE 1015
- 6. steel bending
- 7. steel grade comparison

**Date**

23/01/2026

**Author**

admin

*Steelmet Industries - Bright Bars, Alloy Steels, Free Cutting Steels, Stainless Steels*