How to Identify Genuine Special Steels: A Buyerâ??s Checklist

Description

In todayâ??s global market, verifying that you are purchasing genuine special steels is critical to preventing premature component failure, machining scrap, and safety liabilities. Use this 8-point buyerâ??s checklist to verify authenticity and metallurgical quality on every order.

1. Verify Material Test Certificates (MTCs)

Always require an EN 10204 3.1 (or 3.2) Mill Test Certificate showing heat number, melting route, chemical analysis, and mechanical test results matching your specified grade standard (IS, EN, DIN, ASTM, or JIS).

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2. Confirm Chemical Composition via Spectrometer (OES)

Perform incoming Optical Emission Spectroscopy (OES) or PMI checks to confirm key alloying elements (C, Mn, Cr, Mo, Ni, V) match the MTC within standard tolerances.

3. Check Mechanical Properties & Hardness

Verify tensile strength, yield strength, elongation, Brinell/Rockwell hardness, and Charpy impact energy against the delivery condition (annealed, normalized, cold-drawn, or quenched & tempered).

4. Inspect Surface Quality & Roughness

Examine bars for seams, rolling laps, pitting, rust, and decarburization. Precision bright bars should exhibit a clean, scale-free surface (typically Ra 0.8â??1.6 Âµm for cold-drawn/peeled stock).

5. Audit Batch Numbers & Physical Traceability

Confirm that heat/cast numbers stamped on larger bars or metal tags on bundles match the MTC, packing list, and dispatch documents.

6. Use Non-Destructive Testing (NDT) for Critical Parts

Specify Ultrasonic Testing (UT) for internal soundness and Magnetic Particle Inspection (MPI) or Eddy Current testing for surface crack detection on critical shafts and forgings.

7. Evaluate Supplier Quality Systems

Partner with ISO 9001-certified suppliers with NABL-accredited laboratory testing access and transparent documentation.

8. Beware of Unrealistic Below-Market Pricing

Prices far below prevailing alloy surcharge and mill benchmarks often signal ungraded substitutes, mixed heats, or non-VD material sold as VD route.

Conclusion

Applying this checklist protects your production line from costly rejections. Visit Steelmet Industries to source certified, fully traceable special and alloy steel bars.

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