

Newsletter-37

Material of Construction for Components Used in Hangers and Supports

In industrial applications, the materials used for constructing hanger components play a critical role in ensuring the durability, strength, and functionality of the system. Components in hangers and supports, such as plates, rods, springs, forged components, and fasteners, are selected based on the specific requirements of the operating environment, including temperature conditions, material strength, and corrosion resistance.

Overview of Materials Used in Hanger Components

Below is a comprehensive list of key components used in hangers and supports.

Description	Material
Springs	EN45, EN45A, EN47, IS-4454 Gr.I, II, III, 52 CrMoV4, 51CrV4, 60Si7, SAE9254, SUP 6, 7, 7C, 9,11a and equivalent as per MSS-SP-58 standard.
Plates	IS2062E250GrBR/A36
Hanger Rods	IS2062E250GrBR/A36
Forged components (Eyenut, Turnbuckle, Clevis)	ASTM A105
Profiled components	IS2062E250GrBR/A36
Bolt / Full Nut (Carbon Steel)	IS1367Gr4.6/IS1367Gr4 /A194Gr2H
Bolt / Full Nut (Alloy Steel)	A193GrB7/A193GrB16/A194Gr7
Spreaded Beam / I-Beam / Channel	IS2062E250GrA
Clamp (Carbon Steel) - Plate	IS2062E250GrBR/A36

Description	Material
Clamp (Alloy Steel) - Plate	ASTM A387 Gr.11 / 12 Cl. 2, ASTM A387 Gr.22 Cl. 2 /ASTM A387 Gr 91
Clamp (LTCS) - Plate	ASTM A516 Gr.60/70
Clamp (SS) - Plate	SS304/SS316
Pipe	IS1239/A106 Gr. B

Material Selection and Considerations

1. **Springs:** Springs used in hanger systems are primarily made from both carbon and alloy steels. Smaller springs with lower wire diameters typically use carbon steel materials, while larger springs require alloy steels for better strength and fatigue resistance.
2. **Plates and Hanger Rods:** Carbon steel, specifically IS2062E250GrBR/A36, is commonly used for the construction of plates and hanger rods. These components are vital for load-bearing and structural integrity.
3. **Forged Components:** Components such as eyenuts, turnbuckles, and clevises are made from ASTM A105, a forged carbon steel material. These parts are designed for strength and durability in structural applications.
4. **Clamps and Fasteners:**
 - **Carbon Steel Clamps:** These are generally used for most applications. However, when exposed to elevated temperatures (above 530°C), alloy steels such as ASTM A387 Gr. 11/12/22/91 are preferred for their ability to withstand high heat.
 - **Stainless Steel Clamps:** For stainless steel pipes, clamps are typically made from stainless steel, though carbon steel clamps can be used with stainless steel liners for temperatures under 400°C.

5. Environmental Considerations:

- For components exposed to ambient conditions, carbon steel is generally suitable unless operating in extreme environments with temperatures below -29°C. In these cases, low-temperature carbon steel or other materials like LTCS (Low-Temperature Carbon Steel) are selected to prevent brittleness in freezing conditions.
- For components located inside pipe insulation and exposed to medium temperatures (e.g., internal pipe temperature), stainless steel or high-alloy materials are commonly employed, ensuring resistance to corrosion and maintaining strength at elevated temperatures.

Key Takeaways

- **Temperature Impact:** Material selection is heavily influenced by ambient or operating temperatures. Carbon steel is favored for normal conditions, while alloy steels and low-temperature steels are essential for elevated or subzero temperatures.
- **Durability and Strength:** Components subject to significant mechanical stress or corrosive environments, such as eye nuts and clamps, are made from forged steel or stainless steel for added strength and longevity.
- **Cost-Efficiency:** While alloy steels offer superior performance in specific high-temperature applications, carbon steels provide an excellent balance of cost-effectiveness and strength for many hanger and support components.

In conclusion, the materials used in hanger components are chosen based on their ability to withstand specific environmental and operational conditions, ensuring the reliability and efficiency of the overall structural system. Proper material selection is critical for achieving long-term performance, safety, and cost-effectiveness in hanger and support designs.

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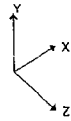
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A Global Solution to Spring Hangers and Supports

We are the leading manufacturer of spring hangers, supports & accessories. Over the past 40 years we have supplied to major power plants, refineries, nuclear installations & process industries in India & several International projects.

Pipe Hangers & Supports Private Limited

Information Req'd by Pipe Support Manufacturer



- 1) Hot Load (Operating Load) in Kgs : _____
- 2) Thermal Movement / Travel (Direction + or -) in mm : UP (+) mm
- 3) Type of Hanger Variable / Constant /Rigid : VariableEffort Support
- 4) For Constant Add Over Travel : Yes No
- 5) For Variable Springs Max Allowable % Load Variation : %
- 6) Horizontal / Lateral Movement (If any) : 'X' Dir mm / 'Z' Dir mm
- 7) Hydro Load (If any) : Kgs
- 8) Model & Type of Support :
- 9) Assembly Length (From BOS/TOS to Pipe CL) : mm
- 10) Operating Temperature : Deg C
- 11) Pipe Insulation Thk : mm
- 12) Pipe Material :
- 13) Require Pipe Shoe for Foot Mounted Support : Yes No
- 14) For Foot Mounted Support Match Height : Yes No
- 15) Attachments like Lugs, Cleats Welded to Pipe in Scope : Yes No
- 16) Operating Load includes Wt of Accessories like
Clamp, Tie Rods, Cleats, Lugs etc. : Yes No
- 17) Preferred Surface Protection / Painting :
- 18) For 'G' Type /Double / Trapeze type Hanger the
Load Given above is for 1 assembly consisting of
2 Hangers / Individual Hanger : Yes No
- 19) Hot load or Cold load Setting

