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Understanding 316 Stainless Steel Composition and Applications - HPLC Primer

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Grade 316 stainless steel is a high-quality, corrosion-resistant alloy widely used across industries, including laboratory environments. At MicroSolv, we utilize 316 stainless steel in our laboratory tubing, fittings, and HPLC columns due to its superior performance characteristics.

What Is Grade 316 Stainless Steel?

According to Atlas Steels Australia, Grade 316 is the standard molybdenum-bearing grade among austenitic stainless steels. It is second only to Grade 304 in commercial importance. The addition of molybdenum enhances its resistance to:

- Pitting and crevice corrosion, especially in chloride-rich environments
- General corrosion, making it ideal for harsh chemical and marine conditions

Key Properties of 316 Stainless Steel:

- Excellent corrosion resistance in a wide range of environments
- Superior formability and weldability, suitable for complex shapes and assemblies
- No post-weld annealing required for thin sections
- High strength and durability, even at elevated temperatures

These properties make Grade 316 stainless steel a preferred material in industrial, architectural, transportation, and laboratory applications.

Additional Notes on Material Designations:

- Tempering is a heat treatment process used to increase the toughness of iron-based alloys. It differs from titanium designations such as Ti1 or Ti2, which refer to the percentage of pure titanium in an alloy. Generally, a higher number indicates a greater titanium content and improved performance in specific applications.

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