

ASTM A694 F65 Weld Neck Flanges,ASME B16.5 WN RF Flange NACE MR0175

ASTM A694 F65 Weld Neck Flanges

The ASTM A694 F65 WN RF NACE MR0175, ASME B16.5 flange is a Welding Neck (WN) flange specifically designed for high-pressure pipelines. Its unique long tapered hub optimizes stress distribution, provides a smooth stress transition, and reduces fatigue failure caused by pipeline vibration, thereby enhancing structural stability. Consequently, the ASTM A694 F65 WN RF NACE MR0175, ASME B16.5 flange is suitable for high-temperature and high-pressure environments. Its specially raised face (RF), typically 1.5–2mm high, enhances gasket compression force, effectively preventing media leakage in engineering applications and ensuring project safety.

To meet the requirements of NACE MR0175, the flange is resistant to sulfide stress cracking and hydrogen-induced cracking, making it suitable for sour gas environments. This ensures the flange's durability and reliability in oil and gas operations where hydrogen sulfide (H₂S) is present.

ASTM A694 F65 is a specification for carbon and alloy steel forgings for pipe flanges, fittings, valves, and other high-pressure transmission service components. The chemical composition of ASTM A694 F65 is specified to ensure the material's suitability for its intended application

1.Oil and Gas Transportation:

The excellent mechanical properties of the ASTM A694 F65 WN RF NACE MR0175, ASME B16.5 flange provide a pressure rating of Class 2500. It is used for high-pressure main lines in onshore/offshore pipelines and compressor station valve connections. Its superior resistance to corrosive media prevents corrosion failure in sour service, extending its service life approximately threefold compared to ordinary stainless steel flanges.

2.Offshore Engineering & Liquefied Natural Gas (LNG):

The ASTM A694 F65 WN RF NACE MR0175, ASME B16.5 flange resists Chloride (Cl) corrosion from seawater and high-pressure shocks, making it suitable for subsea pipeline connections. It maintains toughness at cryogenic temperatures down to -162°C, making it the optimal choice for valve flanges in LNG receiving terminals.

3.Chemical & Energy Heavy-Duty Equipment:

The Silicon content in the ASTM A694 F65 WN RF NACE MR0175, ASME B16.5 flange enables stability under high-temperature conditions. In power plant boiler systems and high-pressure steam line sealing applications, it supports long-term sealing integrity under thermal cycling stress.



ASTM A694 F65 Flanges Chemical Composition and Properties

Chemical Composition of ASTM A694 F65,Heat Analysis,%		
Carbon [C]	≤0.30	
Manganese [Mn]	≤1.60	
Phosphorus [P]	≤0.025	

Sulfur [S]	≤0.025	
Silicon [si]	0.15-0.35	

ASTM A694 F65 Flanges Mechanical and Physical Properties

The mechanical properties of grade A694 F65 Flange are displayed in the following table.

ASTM A694 Grade	Yield Strength min. Strength min.		Tensile		Elongation
	MPa	ksi	MPa	ksi	
A694F65 FLANGES	450	65	530	77	20

Density For ASME SA 694 F65 Forged Flanges

- 7.8 – 7.9 g/cm³

During manufacturing, vacuum degassing is employed to reduce inclusions, and a normalizing and tempering heat treatment process is used to refine the grain structure. These processes ensure the ASTM A694 F65 WN RF NACE MR0175, ASME B16.5 flange possesses resistance to Sulfide Stress Cracking (SSC) and Hydrogen Induced Cracking (HIC), guaranteeing safe service life in sour (acidic) media environments.

A694 F65 Allowable Stress		
100°F	200°F	300°F
24.0 ksi	21.9 ksi	21.3 ksi
400°F	500°F	600°F
20.6 ksi	19.5 ksi	17.7 ksi
650°F	700°F	
17.5 ksi	17.3 ksi	—
Refer Hardness of ASME SA 694 F65 Plate and Lap Joint Flange, Available in Class 150 To 2500 With Material Test Certificates		
Impact Test Of ASTM A694 F65 ASME B16.5		
°C (minimum)		F (minimum)
-29		-20

We are a professional manufacturer of A694 F65 Flange manufacturer in China ,ASTM A694 F65 Weld neck FLANGES,ASTM A694 F65 slip on FLANGES,ASTM-A694-F65 Blind Flanges with HIC Test,NACE MR0175

C&N provides high-quality flanges in various specifications. If you have requirements, please contact us.

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