

ASTM A350 LF2 Class 1 / Class 2 Forging Specification

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ASTM A350 Standard Introduction

ASTM A350 / ASME SA350 covers forged carbon and low-alloy steel flanges, forged fittings, valves, and parts intended primarily for low-temperature service requiring notch toughness.

ASTM A350 LF2 Material Description

ASTM A350 LF2 is a low-temperature carbon steel forging grade widely used for pressure-retaining components such as flanges and fittings. It provides reliable strength and impact toughness for sub-zero service.

LF2 Class 1 vs Class 2

LF2 Class 1 and Class 2 differ mainly in heat treatment and impact test requirements. Class 2 forgings are subject to stricter impact testing and additional heat treatment.

Category	Item	LF2 Class 1	LF2 Class 2
Chemical Composition (wt%)	Carbon, max	0.30	0.30
	Manganese	0.60 – 1.35	0.60 – 1.35
	Phosphorus, max	0.035	0.035
	Sulfur, max	0.040	0.040
	Silicon	0.15 – 0.30	0.15 – 0.30
	Nickel, max	0.40	0.40
	Chromium, max	0.30	0.30
	Molybdenum, max	0.12	0.12
	Copper, max	0.40	0.40
	Niobium, max	0.02	0.02
	Vanadium, max	0.08	0.08
Mechanical Properties	Tensile Strength (MPa)	485 – 655	485 – 655
	Yield Strength, min (MPa)	250	260
	Elongation (%)	22	22
	Reduction of Area (%)	30	35
Impact Test	Test Temperature (°C)	-46	-18
	Average Impact Energy (J)	20	27
	Minimum Single Specimen (J)	16	20
Carbon Equivalent	CE max (≤ 2 in)	0.47	0.47
	CE max (>2 in)	0.48	0.48

Heat Treatment

ASTM A350 LF2 Class 1 forgings are typically supplied in the normalized condition. LF2 Class 2 forgings are supplied in the normalized and tempered condition to achieve enhanced low-temperature toughness.

Low Temperature Impact Testing

Charpy V-Notch impact testing is mandatory for ASTM A350 LF2 forgings. Typical impact test temperature is -46°C (-50°F), unless otherwise specified.

Product Range

Weld Neck Flanges,
Slip On Flanges,
Blind Flanges,
Socket Weld Flanges,
Threaded Flanges,
Forged Fittings

Product Marking

Forgings are marked with ASTM A350 LF2 grade, class, size, pressure class, heat number, and manufacturer identification.

Typical Applications

Low-temperature piping systems, LNG and LPG facilities, oil and gas processing plants, cryogenic service, pressure vessels, and refinery piping.

Certification and Documentation

Each delivery is supplied with EN 10204 3.1 Mill Test Certificate. Third-party inspection and EN 10204 3.2 certification are available upon request.

