ASTM A350/A350M

ASTM A350 LF2 low temperature carbon steel flanges

Carbon steel forgings that must pass a Charpy impact test at low temperature, for piping that has to stay tough in cold service. LF2 Class 1 is tested at minus 46 °C (minus 50 °F).

LF2 Class 1

Chemical composition, % by weight

Element	LF2 Class 1
C	0.30
Mn	0.60 to 1.35
P	0.035
S	0.040
Si	0.15 to 0.30
Ni	0.40
Cr	0.30
Mo	0.12
Cu	0.40
Nb	0.02
V	0.08

Heat analysis. A single value is a maximum. Cu + Ni + Cr + Mo + V together 1.00% max; Cr + Mo together 0.32% max.

Mechanical properties at room temperature

Property	LF2 Class 1
Tensile strength	485 to 655 MPa (70 to 95 ksi)
Yield strength, min	250 MPa (36 ksi)
Elongation, min (4D round)	22%
Reduction of area, min	30%
Hardness, max	197 HBW

Impact test

Charpy V-notch at −46 °C (−50 °F): 20 J (15 ft-lbf) minimum average of three specimens, 16 J (12 ft-lbf) minimum for any one.

Heat treatment

Normalized, normalized and tempered, or quenched and tempered, as ASTM A350 requires.

How to order

State the flange type, standard, size, class, facing, bore schedule, grade, certificate and quantity, and any extra tests or third-party inspection. The mill test certificate to EN 10204 3.1, or 3.2 with third-party inspection, gives the actual analysis and test results of the heat.

For example

> **Weld neck flange, ASME B16.5, NPS 8, Class 300, raised face, bore to Sch 40, ASTM A350 LF2 Class 1, EN 10204 3.1 certificate**

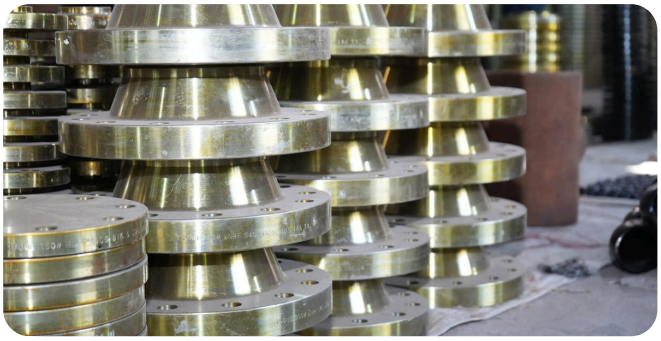
The limits are the requirements of ASTM A350/A350M; the standard governs. Edition 8 November 2026.

From the Umbergaon works, Gujarat, India

A350 LF2 flanges from RIC



Flange stock at the Umbergaon works



Carbon steel weld neck flanges in the stores

Flange types	Weld neck, slip-on, blind, lap joint, socket weld, threaded, ring type joint and long weld neck flanges; orifice flanges to ASME B16.36; spectacle blinds, spacers and blanks to ASME B16.48
Standards	ASME B16.5, NPS 1/2 to 24, Class 150 to 2500; ASME B16.47 Series A and B; EN 1092-1, PN 6 to 100
Facing	Raised face, flat face or ring type joint
Bore	To the pipe schedule, ASME B36.10M and B36.19M
Marking	Size, class, material and heat number, for traceability to the certificate

Where it is used

Low temperature and outdoor piping in cold climates, refrigeration and process plant, and oil and gas facilities.

Tested before dispatch

In house: tensile, hardness, PMI, dye penetrant and dimensional checks. At outside laboratories: chemical analysis, intergranular corrosion, impact, ultrasonic and magnetic particle tests. A 23-point final checklist before every dispatch.

Certificates and inspection

EN 10204 3.1, or 3.2 with TÜV, Bureau Veritas, IRClass, Gulf Lloyds or SGS. ISO 9001:2015 (TÜV NORD), ISO 45001 and ISO 29001; PED 2014/68/EU material manufacturer (TÜV Rheinland); NORSOK M-650 for duplex and super duplex.

Drawings and weights

A PDF and DXF drawing for every ASME B16.5 and EN 1092-1 size we list, with approximate weights in carbon and stainless steel, at rajendradatacenter.com/flanges/

Send your line list or drawing

Types, sizes, classes, grades and quantities, as a list or a drawing.

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