



FORZA
Automotive Stainless Steel Tubing

SS
Series
400

STAINLESS STEEL (GRADE 400 SERIES)

IIL FORZA is a (SS Grade 409) premium stainless steel tube that is manufactured for use in automotive exhausts, trims & frames, mufflers and home geysers.

IIL Forza (SS Grade 409) is manufactured in accordance to ASTM A240 & A554.

IIL Forza (SS Grade 409) are available in diameter range from 12.0mm to 63.50mm with wall thickness range from 0.8mm to 1.5mm.

Applications:

- Automotive exhausts
- Automotive trims and frames
- Burner/emission control components
- Catalytic converter shells
- Home gysers
- Muffler components

Salient Features:

- Non-magnetic
- Excellent aesthetic appeal with high-end value for money
- Excellent formability, bendability and weldability
- Packaging: All tubes available in 6.1m (20ft) and are packed as per international standards

Standards

- ASTM A240
- ASTM A554



**INTERNATIONAL
INDUSTRIES LTD.**

Promising Reliability, For Now and Tomorrow

Mechanical Properties:

Grade	Tensile Strength ksi. (Mpa)	Yield Strength ksi. (Mpa)	Elongation (%)	Hardness (HRB)
409	55 (379) min	25 (170) min	20 min	90 max
436	60 (414) min	35 (240) min	20 min	90 max
439	60 (414) min	30 (105) min	18 min	90 max

Product Range:

Size (mm)	Thickness (mm) & *Kg/m			
	0.8	1.0	1.2	1.5
12	0.217	0.266	0.314	0.381
12.7	0.230	0.283	0.334	0.407
15.9	0.292	0.361	0.427	0.523
19.05	0.353	0.437	0.518	0.637
25.4	0.476	0.590	0.703	0.868
28.6	0.538	0.668	0.796	0.984
31.8	0.600	0.745	0.889	1.100
35	0.662	0.823	0.982	1.216
38.1	0.722	0.898	1.072	1.329
41.3	0.784	0.975	1.165	1.445
42.7	0.811	1.009	1.205	1.496
45	0.856	1.065	1.272	1.579
48.6	0.925	1.152	1.376	1.710
50.8	0.968	1.205	1.440	1.790
54	1.030	1.283	1.533	1.906
60.5	1.156	1.440	1.722	2.142
63.5	1.214	1.513	1.809	2.251

*Theoretical tube weight at a density of 7700 kg/m³

** Tubes in other sizes ranging from 9.5mm to 25.4mm with thickness of 0.7mm to 2.0mm and sizes above 25.4mm to 63.5mm with wall thickness of 0.7mm to 3.0mm can be produced on request

Note: All tubes are available in 6.1m (20ft) length and are packed as per international standards

Chemical Composition:

Element	409 (WT%)	436 (WT%)	439 (WT%)
Carbon	0.03 max	0.12 max	0.03 max
Maganese	1.00 max	1.0 max	1.0 max
Phosphorus	0.040 max	0.04 max	0.04 max
Sulfur	0.02 max	0.03 max	0.03 max
Silicon	1.0 max	1.0 max	1.0 max
Chromium	10.5-11.7	16-18.0	17.0-19.0
Nickel	0.5 max	-	0-0.50
Molybdenum	-	0.75-1.25	-
Nitrogen	0.03 max	-	0-0.030 max
Copper	-	-	-
Other Element(s)	Ti, Cb	Cb	Ti, Cb, Al
Iron	Balance	Balance	Balance

Other 400 series can also be manufactured as per requirement.
(Standards ASTM A240 & A554, JIS G-4305)



ISO 9001, ISO 14001, ISO 45001, API 5L, PSQCA, UL & CE Mark Certified Company