

Average Chemical analysis

C%	Si%	Mn%	P%	S%	C.E%(*)
0.19	0.31	1.44	0.014	0.02	0.43

*CE=%C+%Mn/6+(%Cu+%Ni)/15+(%Cr+%Mo+%V)/5

Average seen on our received raw material certificates.

Mechanical Properties

Size	Yield Strength ReH N/mm ²	PSI	Tensile Strength Rm N/mm ²	Elong. A5%	KV
AllΦ	≥520	≥75000	≥620	15%min	27J at -20°C

Corresponding standards

ASO	EN	DIN	AFNOR	SAE/ASTM
A-TUBE TUCL 75	E355	St52-3	E36-4	1024

Tolerance range according to ISO 286-2 Table for ISO-f7 in μm

OD (mm)	upper	lower
>40-50	-25	-50
>50-80	-30	-60
>80-120	-36	-71
>120-180	-43	-83
>180-250	-50	-96

Tolerance range according to ISO 286-2 Table for ISO-H8 in μm

ID (mm)	upper	lower
30-50	+39	0
>50-80	+46	0
>80-120	+54	0
>120-180	+63	0

Chrome Layer:

For Diam >20 the chrome layer is 20my min.

Surface Roughness

The surface roughness (Ra) is always less then 0.20 my and normally in the average of 0.05-0.15my, the Rt is less then 2.0 my and with an average of 0.5-1.5my.

Inside Surface Roughness

The inside surface roughness (Ra) for skived and roller burnished tubes is always less then 0.25my. For the honned tubes the inside surface roughness is less tean 0.40my.

Surface Hardness

The Chrome Layer hardness is 900 HV 0.1 min

Straightness

For diam. ≥40mm the maximum deviation is less then 0.2/1000mm.

Roundness

The out of roundness is maximised at 50% of the diameter tolerance range.

Eccentricity

The eccentricity is max.3% of the WT according to the standard EN 10305-2.

Diameter tolerance

ISO-f7 is standard; Other tolerance can be supplied upon request.

Delivery Lengths

Production lengths are between 4500-8000mm

The 'unchromed length' of each bar, i.e. the distance at each end over which the Chrome-Layer properties and tolerance can not be guarantee, is at most 150mm per end, i.e 300 mm in total per bar for the material produced on the conventional horizontal bath. For material produced on continuous chroming line, we guarantee, full lenght.

Weldability & Machinability

A-TUBE 75 is based on a low carbon micoalloyed steel combining high strength with excelent machinability and weldability.

Marking

Each bar is marked outside over the plastic or cardboard tube with : manufacturing date,product name,diameter,tolerance range,standard corrosion,heat No. to facilitate full traceability.

Corrosion Resistance

The chromium layer generated in hard-chrome plating process contains micro-cracks, our A-CHROME products are made by a controlled distribution of cracks. Special pre-finishing surface and polishing after chroming ensure a very high corrosion resistance. The Corrosion resistance for hard chrome plated bars are based on a salt spray test following the ISO 9227 standard combined with the ISO 10289 for the evaluation of the rating.

ISO9227	ASTM	DIN50021	Salt Spray Test
NSS	B117	SS	Neutral Salt Spray
AASS	B287	ESS	Acetic Acid Salt Spray
CASS	B368	CASS	Copper-accelerated acetic acid salt spray

Salt spray tests we are capable to perform internally.

A-CHROME

Standard Corrosion resistance for $\Phi < 20$ R9/120h NSS; for $\Phi \geq 20$ R10/120h NSS and R9/200h NSS.

A-CHROME EXTRA

Standard Corrosion resistance $\Phi \geq 20$ -140 R10/120h NSS and $\Phi \geq 20$ -140 R9/500h NSS.

A-CHROME EXTRA PLUS

Standard Corrosion resistance for $\Phi \geq 20$ -140 R10/500h NSS.

**DOUBLE CHROME ON REQUEST*

Packaging

Tubes are packed in standard bundles oiled inside with end cups.

Other packaging options are available, like: wooden boxes, pallets for cut and machinedd parts, aluminium vacuum bags (for sea freight) and special protection oiling



Our products packaging is recyclable

Hardness Depth

$\Phi 1/4.0$ mm

Surface Hardness

38± 3HRC

Certifications

ISO 9001

ISO 14001

OHSAS 18001