INOX VISION

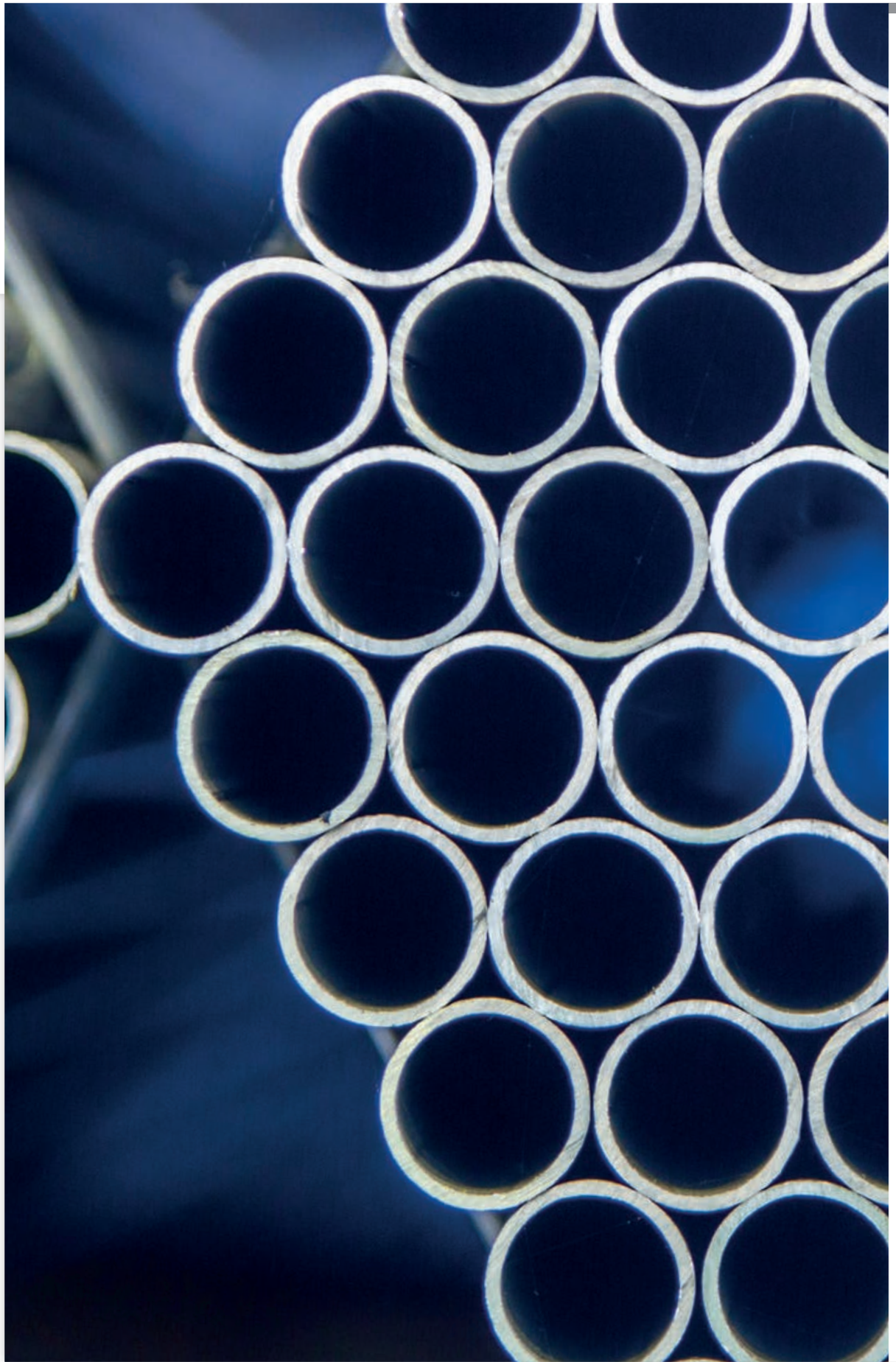
Electro-welded
Stainless steel tubes

ACCIAI SPECIALI TERNI

TUBI TERNI

DRIVEN BY INNOVATION, CHALLENGING THE FUTURE

We are an integral part of a pioneering multinational company manufacturing electro-welded stainless steel tubes.
We develop and encourage innovation and work with the awareness of being a world leader in this market segment.
Our market leadership has been achieved through our steadily increasing customer-oriented service, the passion of our salesforce and technical assistance that daily follows and monitors our worldwide customers needs.
Our global vision, customer focus, and innovative manufacturing cycle have taken us far in becoming one of the world's leading tube manufactures.



THE STRENGTH OF A GLOBAL VISION

We are a pioneering company with an integrated manufacturing cycle.

Tubes production is one of the excellences of Acciai Speciali Terni, a company that is a world leader in the production of stainless steel flat products and electro-welded stainless steel tubes within a single integrated manufacturing plant.
The tube manufacturing facility extends for over 45,000 square meters (of which 26,000 square meters are roofed), encompassing the excellence of a company that invests in research, technological and manufacturing innovations along with state of the art equipment, exporting Italian know-how throughout the world.
Our competitive advantage is to concentrate our production in one single manufacturing site – located in the center of Italy. The service network and sales force provides market closeness to its primary customers throughout Europe.
Acciai Speciali Terni is an integral part of thyssenkrupp, a highly diversified industrial group with traditional strengths in materials and a growing share of capital goods and business services.

800,000,000 meters of tubes manufactured in 20 years, over twenty complete laps around the world

OUR PRODUCT PORTFOLIO

A complete product range offered to key sectors of our economy.

Manufacturing and process innovation, combined with a wide product range, are the two levers that have positioned our company to be a market reference point in a multitude of industry sectors and in particular for the automotive industry.
The always ongoing cooperation with Centro Sviluppo Materiali, allows us to maintain our highest quality standards consistent and in harmony with the most stringent market and regulatory standards.
The tubes are welded longitudinally by an electric arc without adding any weld material (TIG. GTAW) or by high-frequency induction welding (HF) or by laser welding.
The external and internal weld bead is then removed.
Our production lines can indifferently weld stainless steels of the 300 and 400 series, with a wide variety of thicknesses and diameters for any lengths that may be required by our customers and always respecting our standards of excellence in quality and services.
Our superior craftsmanship has in few years positioned our company as a market leader in the exhaust system industry.

AUTOMOTIVE, CONSTRUCTION AND INDUSTRIAL APPLICATIONS ARE THE FIELDS THAT SHARE OUR COMMON VIEW TOWARDS THE FUTURE.

STAINLESS STEEL GRADES FOR TUBES MANUFACTURING

Quality is the constant and main value in all of our manufacturing cycle and includes research and implementation of the best austenitic and ferritic stainless steels for the most important and widespread market applications.

		FERRITIC						AUSTENITIC						
		FERRO CHROME	FERRO CHROME STABILIZED			FERRO CHROME STABILIZED SUPER FERRITIC	FERRO CHROME MOLYBDENUM	FERRO CHROME NICKEL			FERRO CHROME NICKEL MOLYBDENUM			HEAT RESISTANT
ACCIAI SPECIALI TERNI		STR 12	409 LI	439 M	441 LI	470 LI	4513	304	304 DL	321	316	316 L	316 Ti	4828
EN 10088-2		1.4003	1.4512	1.4510	1.4509	1.4613	1.4513	1.4301	1.4307	1.4541	1.4401	1.4404	1.4571	1.4828
TYPICAL COMPOSITION	C	0.02	0.01	0.02	0.02	0.01	0.02	0.04	0.025	0.05	0.06	0.03	0.05	0.05
	Cr	11.3	11.5	17.7	18.2	24.0	16.3	18.2	18.2	17.3	16.7	16.7	16.7	19.3
	Ni	0.5	-	-	-	-	-	8.1	8.1	9.1	10.6	10.3	10.6	11.1
	Mo	-	-	-	-	-	1,2	-	-	-	2,1	2,1	2,1	-
	Others	-	Ti	Ti, Nb	Ti, Nb	Ti, Nb	Ti	-	-	Ti	-	-	Ti	Si
MECHANICAL PROPERTIES AT 20 °C - TYPICAL VALUES	0.2% Yield Strength Mpa	320	250	280	300	330	300	270	250	250	300	270	270	290
	Rm tensile Strength MPa	500	420	450	470	490	470	650	630	590	610	580	580	640
	Elongation A% A_{80} (thickness <3mm) A_5 (thickness ≥3mm)	23	32	28	30	30	28	54	54	57	50	52	55	55
CORROSION RESISTANCE	General	◦	◦	+	+	+++	++	++	++	+++	+++	+++	+++	+++
	Pitting	◦	+	+	++	+++	++	++	++	+++	+++	+++	+++	++
	SCC	+	+	++	++	+++	++	◦	◦	◦	◦	◦	◦	◦
	Heat resistence	◦	++	++	+++	+++	+	++	++	+++	++	++	++	+++
COLD FORMABILITY		+	++	++	++	++	++	++	++	+++	++	+++	+++	+
WELDABILITY		++	+++	+++	+++	+++	+++	+++	++++	+++	+++	++++	++++	+++

The above table reports the main stainless steels produced and traded by Acciai Speciali Terni for tubes production

The above mentioned figures, which refer to 1 mm CR, 2B finish, are approximate; they can vary according to thickness and finishing

◦ Not applicable/not required
\+ Acceptable
++ Good
+++ Excellent
++++ Superior performance

EXHAUST SYSTEMS TUBES

The most important European automotive brands have chosen our stainless steel tubes for high quality, performance and wide product range available along with tailor-made solutions.

Product Range of Round Tubes

AUSTENITIC GRADES

DIAMETER FROM 8 TO 34 mm	THICKNESS (mm)										
	0.5	0.6	0.7	0.8	1.0	1.2	1.5	1.6	1.7	1.8	2.0
	THEORETICAL WEIGHTS kg/m										
8	0.094	0.111	0.128	0.144	0.175	0.204	0.244				
10	0.119	0.141	0.163	0.184	0.225	0.264	0.319				
12	0.144	0.171	0.198	0.224	0.275	0.324	0.394				
13	0.156	0.186	0.216	0.244	0.300	0.355	0.432				
14	0.169	0.201	0.233	0.264	0.326	0.385	0.469	0.497	0.524		
15	0.182	0.216	0.251	0.284	0.351	0.415	0.507	0.537	0.566		
15.88	0.193	0.230	0.266	0.302	0.373	0.441	0.540	0.572	0.604		
16	0.194	0.231	0.268	0.304	0.376	0.445	0.545	0.577	0.609		
17.4	0.212	0.252	0.293	0.333	0.411	0.487	0.597	0.633	0.668		
18	0.219	0.261	0.303	0.345	0.426	0.505	0.620	0.657	0.694		
19	0.232	0.276	0.321	0.365	0.451	0.535	0.657	0.697	0.736	0.775	0.851
19.05	0.232	0.277	0.322	0.366	0.452	0.536	0.659	0.699	0.739	0.777	0.854
20	0.244	0.291	0.338	0.385	0.476	0.565	0.695	0.737	0.779	0.820	0.901
21.3	0.260	0.311	0.361	0.411	0.508	0.604	0.744	0.789	0.834	0.879	0.966
21.8	0.267	0.318	0.370	0.421	0.521	0.619	0.762	0.809	0.856	0.901	0.992
22	0.269	0.321	0.373	0.425	0.526	0.625	0.770	0.817	0.864	0.910	1.002
22.22	0.272	0.325	0.377	0.429	0.531	0.632	0.778	0.826	0.873	0.920	1.013
23	0.282	0.337	0.391	0.445	0.551	0.655	0.807	0.857	0.907	0.955	1.052
24	0.294	0.352	0.408	0.465	0.576	0.685	0.845	0.897	0.949	1.001	1.102
25	0.307	0.367	0.426	0.485	0.601	0.715	0.883	0.937	0.992	1.046	1.152
25.4	0.312	0.373	0.433	0.493	0.611	0.727	0.898	0.953	1.009	1.064	1.172
26.9	0.331	0.395	0.459	0.523	0.648	0.772	0.954	1.014	1.073	1.131	1.247
27	0.332	0.397	0.461	0.525	0.651	0.775	0.958	1.018	1.077	1.136	1.252
28	0.344	0.412	0.478	0.545	0.676	0.805	0.995	1.058	1.119	1.181	1.302
28.7	0.353	0.422	0.491	0.559	0.694	0.826	1.022	1.086	1.149	1.212	1.337
29	0.357	0.427	0.496	0.565	0.701	0.835	1.033	1.098	1.162	1.226	1.352
30	0.369	0.442	0.514	0.585	0.726	0.865	1.070	1.138	1.205	1.271	1.402
31.75	0.391	0.468	0.544	0.620	0.770	0.918	1.136	1.208	1.279	1.350	1.490
32	0.394	0.472	0.549	0.625	0.776	0.925	1.146	1.218	1.290	1.361	1.502
33	0.407	0.487	0.566	0.645	0.801	0.955	1.183	1.258	1.332	1.406	1.552
34	0.419	0.502	0.584	0.665	0.826	0.986	1.221	1.298	1.375	1.451	1.602

DIAMETER FROM 35 TO 127 mm	THICKNESS (mm)										
	0.5	0.6	0.7	0.8	1.0	1.2	1.5	1.6	1.7	1.8	2.0
	THEORETICAL WEIGHTS kg/m										
35	0.432	0.517	0.601	0.685	0.851	1.016	1.258	1.338	1.417	1.496	1.653
38	0.469	0.562	0.654	0.745	0.926	1.106	1.371	1.458	1.545	1.632	1.803
38.1	0.471	0.563	0.656	0.747	0.929	1.109	1.375	1.462	1.549	1.636	1.808
39	0.482	0.577	0.671	0.765	0.951	1.136	1.408	1.498	1.588	1.677	1.853
40	0.495	0.592	0.689	0.785	0.977	1.166	1.446	1.538	1.630	1.722	1.903
42.4	0.525	0.628	0.731	0.833	1.037	1.238	1.536	1.635	1.732	1.830	2.023
43	0.532	0.637	0.741	0.845	1.052	1.256	1.559	1.659	1.758	1.857	2.053
44.4	0.550	0.658	0.766	0.873	1.087	1.298	1.611	1.715	1.818	1.920	2.123
44.45	0.550	0.659	0.767	0.874	1.088	1.300	1.613	1.717	1.820	1.922	2.126
45	0.557	0.667	0.776	0.885	1.102	1.316	1.634	1.739	1.843	1.947	2.153
48.3	0.598	0.717	0.834	0.951	1.184	1.415	1.758	1.871	1.984	2.096	2.319
50	0.620	0.742	0.864	0.986	1.227	1.466	1.822	1.939	2.056	2.172	2.404
50.8	0.630	0.754	0.878	1.002	1.247	1.490	1.852	1.971	2.090	2.208	2.444
51				1.006	1.252	1.496	1.859	1.979	2.098	2.217	2.454
52				1.026	1.277	1.526	1.897	2.019	2.141	2.262	2.504
53				1.046	1.302	1.556	1.934	2.059	2.184	2.308	2.554
54				1.066	1.327	1.586	1.972	2.099	2.226	2.353	2.604
55				1.086	1.352	1.616	2.009	2.139	2.269	2.398	2.654
60				1.186	1.477	1.767	2.197	2.340	2.482	2.623	2.904
60.3					1.485	1.776	2.208	2.352	2.494	2.637	2.919
63.5					1.565	1.872	2.329	2.480	2.631	2.781	3.080
65				1.286	1.602	1.917	2.385	2.540	2.694	2.848	3.155
70				1.386	1.728	2.067	2.573	2.740	2.907	3.074	3.405
75					1.853	2.217	2.761	2.941	3.120	3.299	3.656
76.1					1.880	2.250	2.802	2.985	3.167	3.349	3.711
80				1.586	1.978	2.368	2.948	3.141	3.333	3.524	3.906
88.9					2.201	2.635	3.283	3.497	3.712	3.926	4.352
101.6					2.519	3.017	3.760	4.006	4.252	4.498	4.988
114.3					2.837	3.398	4.237	4.515	4.793	5.070	5.624
120					2.980	3.569	4.451	4.743	5.036	5.327	5.909
127					3.155	3.780	4.714	5.024	5.333	5.643	6.260

Thickness of 2.5 mm are also available upon request

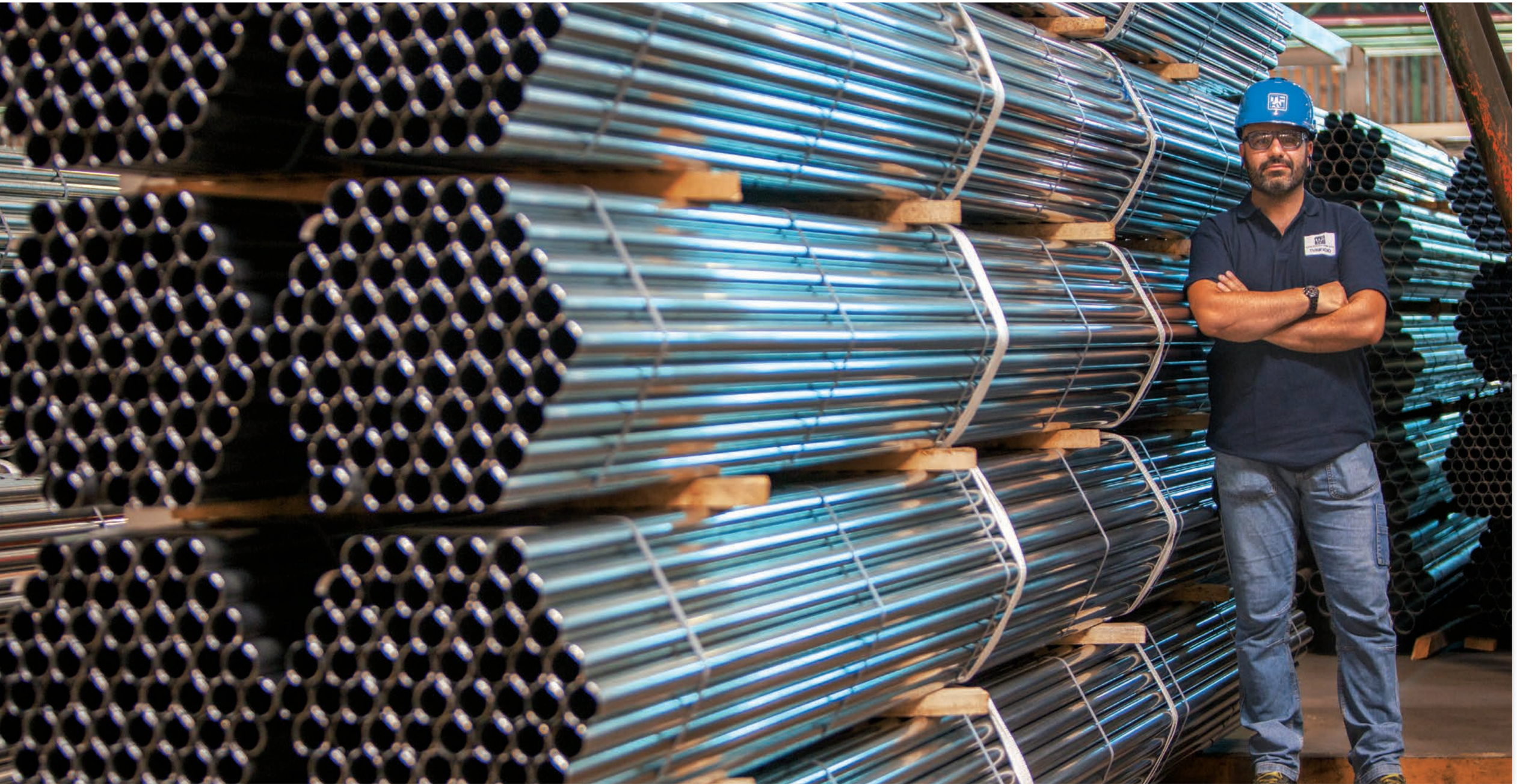
SURFACE FINISH: mill finish

Product Range of Round Tubes

FERRITIC GRADES

DIAMETER	THICKNESS (mm)							
	0.8	1.0	1.2	1.5	1.8	2.0	2.5	3.0
	THEORETICAL WEIGHTS kg/m							
25		0.595	0.708	0.874	1.036	1.141		
25.4		0.605	0.720	0.889	1.054	1.161		
26.9		0.642	0.765	0.945	1.121	1.235		
27		0.645	0.768	0.949	1.125	1.240		
32	0.619	0.769	0.917	1.135	1.348	1.488		
33	0.639	0.794	0.946	1.172	1.393	1.538		
34	0.659	0.818	0.976	1.209	1.438	1.587		
35	0.679	0.843	1.006	1.246	1.482	1.637		
38	0.738	0.918	1.095	1.358	1.616	1.786		
38.1	0.740	0.920	1.098	1.362	1.621	1.791		
39	0.758	0.943	1.125	1.395	1.661	1.835		
40	0.778	0.967	1.155	1.432	1.705	1.885		
42.4	0.825	1.027	1.226	1.522	1.813	2.004	2.474	
43	0.837	1.042	1.244	1.544	1.839	2.034	2.511	
44.45	0.866	1.078	1.287	1.598	1.904	2.106	2.601	
45	0.877	1.091	1.304	1.618	1.929	2.133	2.635	
48.3	0.943	1.173	1.402	1.741	2.076	2.297	2.840	
50	0.976	1.215	1.452	1.804	2.152	2.381	2.945	
50.8	0.992	1.235	1.476	1.834	2.188	2.421	2.995	
51	0.996	1.240	1.482	1.842	2.197	2.431	3.007	
52	1.016	1.265	1.512	1.879	2.241	2.480	3.069	
53	1.036	1.290	1.542	1.916	2.286	2.530	3.131	
54	1.056	1.315	1.572	1.953	2.330	2.580	3.193	
55	1.075	1.339	1.601	1.990	2.375	2.629	3.255	
60	1.175	1.463	1.750	2.176	2.598	2.877	3.565	
60.3		1.471	1.759	2.188	2.612	2.892	3.584	
63		1.538	1.839	2.288	2.732	3.026	3.751	
63.5		1.550	1.854	2.307	2.755	3.051	3.782	
65		1.587	1.899	2.362	2.822	3.125	3.875	
70		1.711	2.048	2.549	3.045	3.373	4.185	
75		1.835	2.197	2.735	3.268	3.621	4.496	
76.2		1.865	2.232	2.779	3.322	3.681	4.570	
80			2.345	2.921	3.491	3.869	4.806	
88.9			2.610	3.252		4.311	5.357	6.392
101.6			2.988	3.724		4.941	6.145	7.337
114.3			3.366	4.197		5.571	6.932	8.282
120			3.536	4.409		5.853	7.286	8.706
127			3.744	4.669		6.201	7.720	9.227

SURFACE FINISH: mill finish



ORNAMENTAL AND DECORATIVE TUBES

RECTANGULAR TUBES

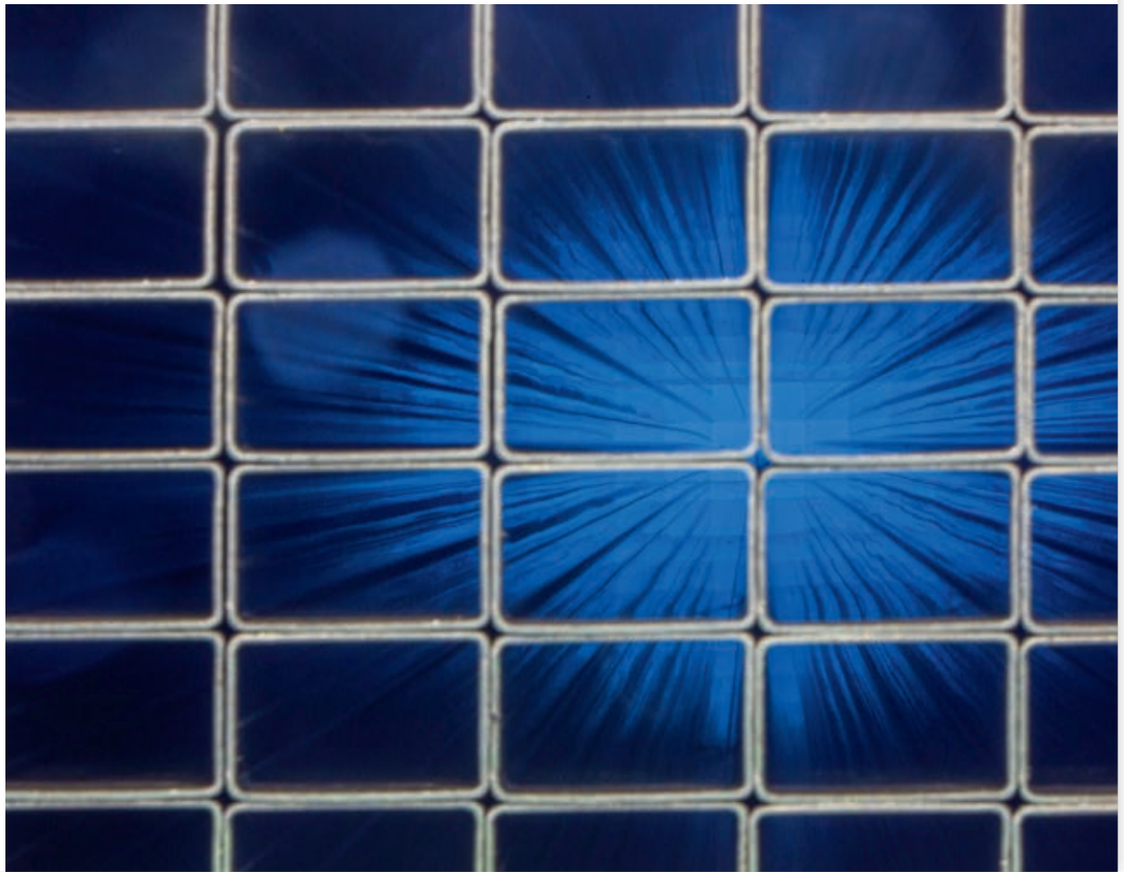
SECTION (mm)	THICKNESS (mm)						
	1.0	1.2	1.5	2.0	2.5	3.0	4.0
	THEORETICAL WEIGHTS kg/m						
30x20	0.772	0.921	1.140	1.495			
40x20	0.932	1.112	1.379	1.813			
40x30	1.091	1.303	1.618	2.132			
50x25	1.171	1.399	1.737	2.292			
50x30			1.857	2.451			
50x40			2.096	2.770			
60x30			2.096	2.770		4.080	
60x40			2.335	3.089		4.558	
60x50				3.408	4.229	5.038	
80x30				3.408	4.229	5.038	
80x40			2.813	3.726		5.515	
80x60			3.291	4.364		6.471	
100x40			3.291	4.364		6.471	
100x50			3.531	4.683		6.949	
100x60			3.770	5.001		7.427	
120x40			3.770	5.001	6.223	7.427	
120x60			4.248	5.639		8.384	
120x80				6.277		9.340	12.354
140x80				6.914		10.247	13.629
150x50				6.277		9.340	12.354
150x100				7.871		11.731	15.542
160x80				7.552		11.253	14.905

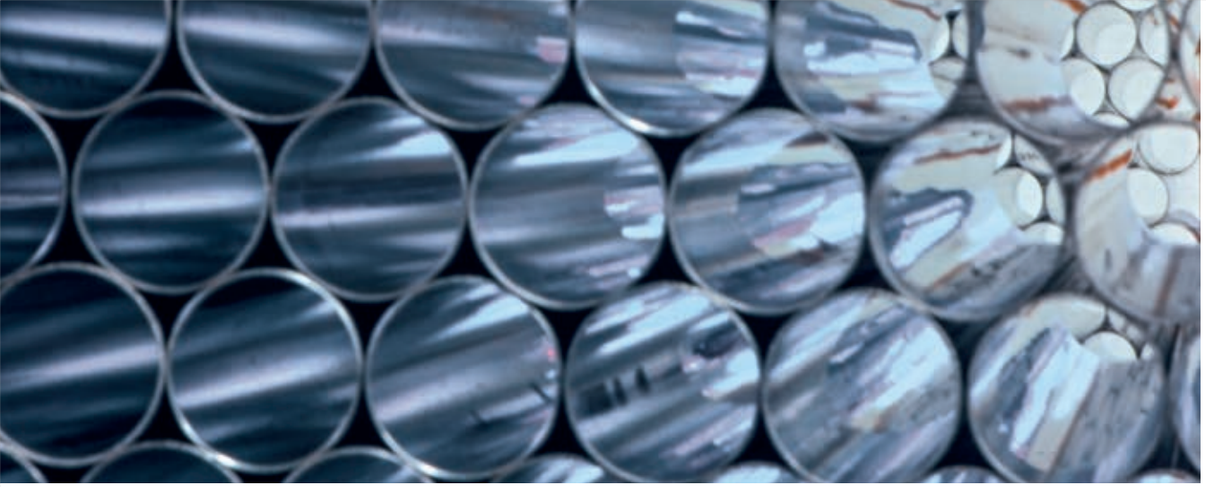
Thickness of 2.5 mm are also available upon request

SURFACE FINISHES: brushed, polished and mirror polished

SQUARE TUBES

SECTION (mm)	THICKNESS (mm)						
	1.0	1.2	1.5	2.0	2.5	3.0	4.0
	THEORETICAL WEIGHTS kg/m						
20x20	0.613	0.729	0.900	1.176			
25x25	0.772	0.921	1.140	1.495			
30x30	0.932	0.112	1.379	1.813		2.645	
35x35	1.091	1.303	1.618	2.132		3.124	
40x40	1.250	1.494	1.857	2.451		3.602	
50x50			2.335	3.089		4.558	
60x60				3.726		5.515	
80x80				5.001		7.427	
100x100						9.340	12.354
120x120						11.253	14.905





ROUND TUBES*

DIAMETER FROM 8 TO 34 mm	THICKNESS (mm)										
	0.5	0.6	0.7	0.8	1.0	1.2	1.5	1.6	1.7	1.8	2.0
	THEORETICAL WEIGHTS kg/m										
8	0.094	0.111	0.128	0.144	0.175	0.204	0.244				
10	0.119	0.141	0.163	0.184	0.225	0.264	0.319				
12	0.144	0.171	0.198	0.224	0.275	0.324	0.394				
13	0.156	0.186	0.216	0.244	0.300	0.355	0.432				
14	0.169	0.201	0.233	0.264	0.326	0.385	0.469	0.497	0.524		
15	0.182	0.216	0.251	0.284	0.351	0.415	0.507	0.537	0.566		
15.88	0.193	0.230	0.266	0.302	0.373	0.441	0.540	0.572	0.604		
16	0.194	0.231	0.268	0.304	0.376	0.445	0.545	0.577	0.609		
17.4	0.212	0.252	0.293	0.333	0.411	0.487	0.597	0.633	0.668		
18	0.219	0.261	0.303	0.345	0.426	0.505	0.620	0.657	0.694		
19	0.232	0.276	0.321	0.365	0.451	0.535	0.657	0.697	0.736	0.775	0.851
19.05	0.232	0.277	0.322	0.366	0.452	0.536	0.659	0.699	0.739	0.777	0.854
20	0.244	0.291	0.338	0.385	0.476	0.565	0.695	0.737	0.779	0.820	0.901
21.3	0.260	0.311	0.361	0.411	0.508	0.604	0.744	0.789	0.834	0.879	0.966
21.8	0.267	0.318	0.370	0.421	0.521	0.619	0.762	0.809	0.856	0.901	0.992
22	0.269	0.321	0.373	0.425	0.526	0.625	0.770	0.817	0.864	0.910	1.002
22.22	0.272	0.325	0.377	0.429	0.531	0.632	0.778	0.826	0.873	0.920	1.013
23	0.282	0.337	0.391	0.445	0.551	0.655	0.807	0.857	0.907	0.955	1.052
24	0.294	0.352	0.408	0.465	0.576	0.685	0.845	0.897	0.949	1.001	1.102
25	0.307	0.367	0.426	0.485	0.601	0.715	0.883	0.937	0.992	1.046	1.152
25.4	0.312	0.373	0.433	0.493	0.611	0.727	0.898	0.953	1.009	1.064	1.172
26.9	0.331	0.395	0.459	0.523	0.648	0.772	0.954	1.014	1.073	1.131	1.247
27	0.332	0.397	0.461	0.525	0.651	0.775	0.958	1.018	1.077	1.136	1.252
28	0.344	0.412	0.478	0.545	0.676	0.805	0.995	1.058	1.119	1.181	1.302
28.7	0.353	0.422	0.491	0.559	0.694	0.826	1.022	1.086	1.149	1.212	1.337
29	0.357	0.427	0.496	0.565	0.701	0.835	1.033	1.098	1.162	1.226	1.352
30	0.369	0.442	0.514	0.585	0.726	0.865	1.070	1.138	1.205	1.271	1.402
31.75	0.391	0.468	0.544	0.620	0.770	0.918	1.136	1.208	1.279	1.350	1.490
32	0.394	0.472	0.549	0.625	0.776	0.925	1.146	1.218	1.290	1.361	1.502
33	0.407	0.487	0.566	0.645	0.801	0.955	1.183	1.258	1.332	1.406	1.552
34	0.419	0.502	0.584	0.665	0.826	0.986	1.221	1.298	1.375	1.451	1.602

DIAMETER FROM 35 TO 127 mm	THICKNESS (mm)										
	0.5	0.6	0.7	0.8	1.0	1.2	1.5	1.6	1.7	1.8	2.0
	THEORETICAL WEIGHTS kg/m										
35	0.432	0.517	0.601	0.685	0.851	1.016	1.258	1.338	1.417	1.496	1.653
38	0.469	0.562	0.654	0.745	0.926	1.106	1.371	1.458	1.545	1.632	1.803
38.1	0.471	0.563	0.656	0.747	0.929	1.109	1.375	1.462	1.549	1.636	1.808
39	0.482	0.577	0.671	0.765	0.951	1.136	1.408	1.498	1.588	1.677	1.853
40	0.495	0.592	0.689	0.785	0.977	1.166	1.446	1.538	1.630	1.722	1.903
42.4	0.525	0.628	0.731	0.833	1.037	1.238	1.536	1.635	1.732	1.830	2.023
43	0.532	0.637	0.741	0.845	1.052	1.256	1.559	1.659	1.758	1.857	2.053
44.4	0.550	0.658	0.766	0.873	1.087	1.298	1.611	1.715	1.818	1.920	2.123
44.45	0.550	0.659	0.767	0.874	1.088	1.300	1.613	1.717	1.820	1.922	2.126
45	0.557	0.667	0.776	0.885	1.102	1.316	1.634	1.739	1.843	1.947	2.153
48.3	0.598	0.717	0.834	0.951	1.184	1.415	1.758	1.871	1.984	2.096	2.319
50	0.620	0.742	0.864	0.986	1.227	1.466	1.822	1.939	2.056	2.172	2.404
50.8	0.630	0.754	0.878	1.002	1.247	1.490	1.852	1.971	2.090	2.208	2.444
51				1.006	1.252	1.496	1.859	1.979	2.098	2.217	2.454
52				1.026	1.277	1.526	1.897	2.019	2.141	2.262	2.504
53				1.046	1.302	1.556	1.934	2.059	2.184	2.308	2.554
54				1.066	1.327	1.586	1.972	2.099	2.226	2.353	2.604
55				1.086	1.352	1.616	2.009	2.139	2.269	2.398	2.654
60				1.186	1.477	1.767	2.197	2.340	2.482	2.623	2.904
60.3					1.485	1.776	2.208	2.352	2.494	2.637	2.919
63.5					1.565	1.872	2.329	2.480	2.631	2.781	3.080
65				1.286	1.602	1.917	2.385	2.540	2.694	2.848	3.155
70				1.386	1.728	2.067	2.573	2.740	2.907	3.074	3.405
75					1.853	2.217	2.761	2.941	3.120	3.299	3.656
76.1					1.880	2.250	2.802	2.985	3.167	3.349	3.711
80				1.586	1.978	2.368	2.948	3.141	3.333	3.524	3.906
88.9					2.201	2.635	3.283	3.497	3.712	3.926	4.352
101.6					2.519	3.017	3.760	4.006	4.252	4.498	4.988
114.3					2.837	3.398	4.237	4.515	4.793	5.070	5.624
120					2.980	3.569	4.451	4.743	5.036	5.327	5.909
127					3.155	3.780	4.714	5.024	5.333	5.643	6.260

Thickness of 2.5 mm are also available upon request

* Austenitic grades

SURFACE FINISHES: brushed, polished and mirror polished

STRUCTURAL TUBES (STR 12 – EN 1.4003)

RECTANGULAR TUBES

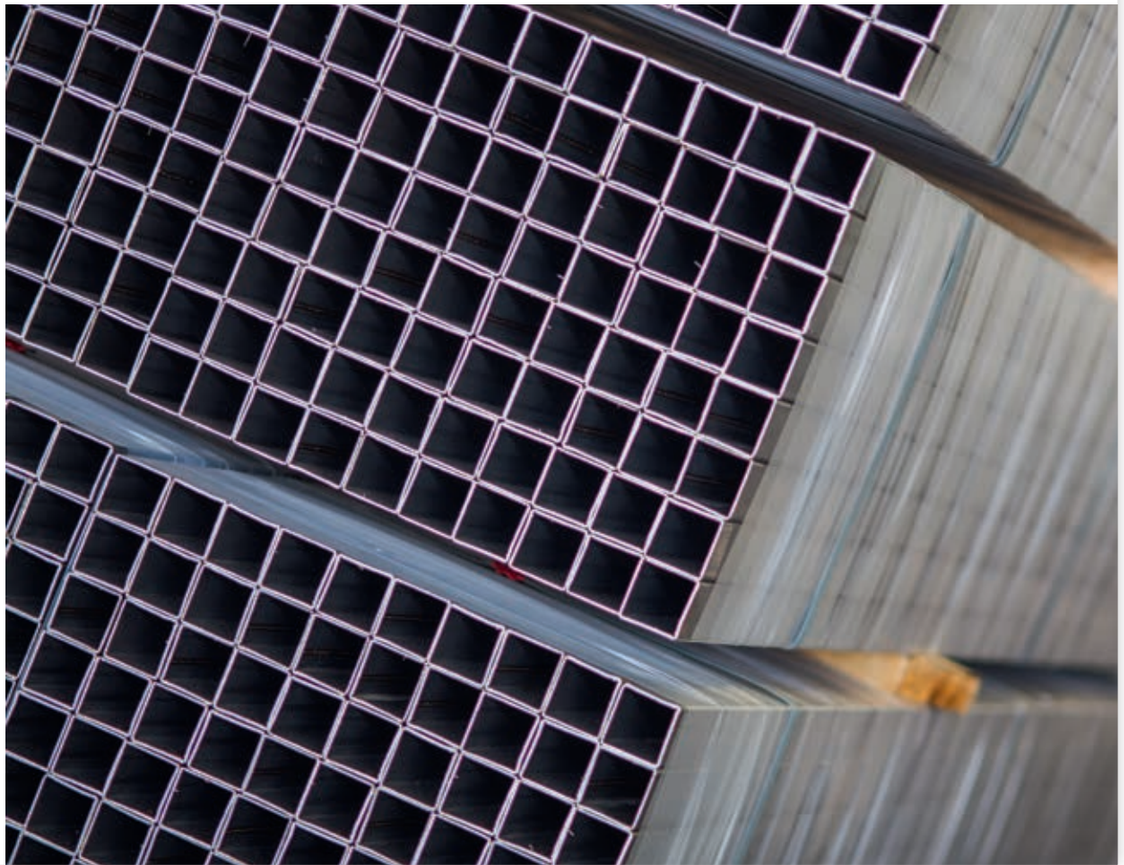
SECTION (mm)	1,00	1,20	1,50	2,00	2,50	3,00
	THEORETICAL WEIGHTS kg/m					
30x20	0,749	0,893	1,105	1,450		
40x20	0,904	1,079	1,337	1,759		
40x30	1,058	1,264	1,569	2,068		
50x25	1,136	1,357	1,685	2,223		
50x30			1,802	2,378		
50x40			2,034	2,687		
60x30			2,034	2,687		
60x40			2,266	2,996	3,715	4,422
60x50				3,306	4,102	4,886
80x30				3,306	4,102	4,886
80x40			3,615	4,489		5,350
80x60			3,194	4,234		6,278
100x40			3,194	4,234		6,278
100x50			3,426	4,543		6,742
100x60			3,658	4,853		7,206
120x40			3,658	4,853	6,035	7,206
120x60			4,122	5,471		8,134
120x80				6,090		9,062
140x80				6,709		9,990
150x50				6,090		9,062
150x100				7,637		11,382
160x80				7,327		10,918

Thickness of 2.5 mm are also available upon request

SURFACE FINISH: mill finish

SQUARE TUBES

SECTION	1,00	1,20	1,50	2,00	2,50	3,00
	THEORETICAL WEIGHTS KG/M					
20x20	0,594	0,707	0,873	1,140		
25x25	0,749	0,893	1,105	1,45		
30x30	0,904	1,079	1,337	1,759		2,566
35x35	1,058	1,264	1,569	2,068		3,03
40x40	1,213	1,45	1,802	2,378	2,942	3,494
50x50			2,266	2,996		4,422
60x60				3,615		5,35
80x80				4,853		7,206
100x100						9,062
120x120						10,918



INDUSTRIAL TUBES

ROUND TUBES *

DIAMETER FROM 8 TO 34 mm	THICKNESS (mm)							
	0.5	0.6	0.7	0.8	1.0	1.2	1.5	2.0
	THEORETICAL WEIGHTS kg/m							
8	0.094	0.111	0.128	0.144	0.175	0.204	0.244	
10	0.119	0.141	0.163	0.184	0.225	0.264	0.319	
12	0.144	0.171	0.198	0.224	0.275	0.324	0.394	
13	0.156	0.186	0.216	0.244	0.300	0.355	0.432	
14	0.169	0.201	0.233	0.264	0.326	0.385	0.469	
15	0.182	0.216	0.251	0.284	0.351	0.415	0.507	
15.88	0.193	0.230	0.266	0.302	0.373	0.441	0.540	
16	0.194	0.231	0.268	0.304	0.376	0.445	0.545	
17.4	0.212	0.252	0.293	0.333	0.411	0.487	0.597	
18	0.219	0.261	0.303	0.345	0.426	0.505	0.620	
19	0.232	0.276	0.321	0.365	0.451	0.535	0.657	0.851
19.05	0.232	0.277	0.322	0.366	0.452	0.536	0.659	0.854
20	0.244	0.291	0.338	0.385	0.476	0.565	0.695	0.901
21.3	0.260	0.311	0.361	0.411	0.508	0.604	0.744	0.966
21.8	0.267	0.318	0.370	0.421	0.521	0.619	0.762	0.992
22	0.269	0.321	0.373	0.425	0.526	0.625	0.770	1.002
22.22	0.272	0.325	0.377	0.429	0.531	0.632	0.778	1.013
23	0.282	0.337	0.391	0.445	0.551	0.655	0.807	1.052
24	0.294	0.352	0.408	0.465	0.576	0.685	0.845	1.102
25	0.307	0.367	0.426	0.485	0.601	0.715	0.883	1.152
25.4	0.312	0.373	0.433	0.493	0.611	0.727	0.898	1.172
26.9	0.331	0.395	0.459	0.523	0.648	0.772	0.954	1.247
27	0.332	0.397	0.461	0.525	0.651	0.775	0.958	1.252
28	0.344	0.412	0.478	0.545	0.676	0.805	0.995	1.302
28.7	0.353	0.422	0.491	0.559	0.694	0.826	1.022	1.337
29	0.357	0.427	0.496	0.565	0.701	0.835	1.033	1.352
30	0.369	0.442	0.514	0.585	0.726	0.865	1.070	1.402
31.75	0.391	0.468	0.544	0.620	0.770	0.918	1.136	1.490
32	0.394	0.472	0.549	0.625	0.776	0.925	1.146	1.502
33	0.407	0.487	0.566	0.645	0.801	0.955	1.183	1.552
34	0.419	0.502	0.584	0.665	0.826	0.986	1.221	1.602

DIAMETER FROM 35 TO 127 mm	THICKNESS (mm)							
	0.5	0.6	0.7	0.8	1.0	1.2	1.5	2.0
	THEORETICAL WEIGHTS kg/m							
35	0.432	0.517	0.601	0.685	0.851	1.016	1.258	1.653
38	0.469	0.562	0.654	0.745	0.926	1.106	1.371	1.803
38.1	0.471	0.563	0.656	0.747	0.929	1.109	1.375	1.808
39	0.482	0.577	0.671	0.765	0.951	1.136	1.408	1.853
40	0.495	0.592	0.689	0.785	0.977	1.166	1.446	1.903
42.4	0.525	0.628	0.731	0.833	1.037	1.238	1.536	2.023
43	0.532	0.637	0.741	0.845	1.052	1.256	1.559	2.053
44.4	0.550	0.658	0.766	0.873	1.087	1.298	1.611	2.123
44.45	0.550	0.659	0.767	0.874	1.088	1.300	1.613	2.126
45	0.557	0.667	0.776	0.885	1.102	1.316	1.634	2.153
48.3	0.598	0.717	0.834	0.951	1.184	1.415	1.758	2.319
50	0.620	0.742	0.864	0.986	1.227	1.466	1.822	2.404
50.8	0.630	0.754	0.878	1.002	1.247	1.490	1.852	2.444
51				1.006	1.252	1.496	1.859	2.454
52				1.026	1.277	1.526	1.897	2.504
53				1.046	1.302	1.556	1.934	2.554
54				1.066	1.327	1.586	1.972	2.604
55				1.086	1.352	1.616	2.009	2.654
60				1.186	1.477	1.767	2.197	2.904
60.3					1.485	1.776	2.208	2.919
63.5					1.565	1.872	2.329	3.080
65					1.602	1.917	2.385	3.155
70					1.728	2.067	2.573	3.405
75					1.853	2.217	2.761	3.656
76.1					1.880	2.250	2.802	3.711
80						2.368	2.948	3.906
88.9						2.635	3.283	4.352
101.6						3.017	3.760	4.988
114.3						3.398	4.237	5.624
120						3.569	4.451	5.909
127						3.780	4.714	6.260

Thickness of 2.5 mm are also available upon request

* Austenitic grades

SURFACE FINISH: mill finish

GENERAL TOLERANCES

DIMENSIONAL TOLERANCES FOR ROUND COMMERCIAL-LENGTH TUBES			
	GUARANTEED VALUES	TYPICAL VALUES	NOTES
Thickness	+/- 10% with min ± 0,2	+1 / - 7%	
Diameter	+/- 0,75% with ± 0,3	+ 0,10 / - 0,20 mm	
Length	- 0 / + 50 mm	- 0 / + 50 mm	
Internal bead	- 0 / +10% max 0,20 mm	max 0,10 mm	
Linearity	2,0 mm/m	1,0 mm/m	

DIMENSIONAL TOLERANCES FOR FIX-LENGTH TUBES			
	GUARANTEED VALUES	TYPICAL VALUES	NOTES
Length	- 0 / + 1 mm	0,50 mm	upon request +/- 0,5 mm
Ovality on the cut	0,60 mm	0,30 - 0,40 mm	D_{max} - D_{min} (*) at 1 D from cut end

DIMENSIONAL TOLERANCES ORNAMENTAL TUBES	
Thickness	± 10%
Dimensions base and height	± 0,50 %
Length	- 0 + 50 mm
Thickness of the weld bead	- 0 / +10% of the thickness; max 0,20 mm
Linearity	≤ 2,0 mm per meter
Torsion	≤ 2,0 mm for the first meter then 0,5 mm for the following
Radius of the corners	1,2 x T +/- 20% (thickness ≤ 2,0 mm) 2,0 x T +/- 20% (thickness > 2,0 mm)
Burr	max 1,0 mm per thickness ≥ 2,5 mm max 0,2 mm per thickness < 2,5 mm

T = Thickness

PERFORMANCES

Ferritic grades

MECHANICAL PROPERTIES OF THE TUBES				
		REFERENCE NORMS	GUARANTEED	TYPICAL
AISI 409 LI W 1.4512	Rp02 (MPa)	> 210	> 205	330
	Rm (MPa)	> 380	400÷500	420
	A5 (%)	> 25	> 30	36÷38
AISI 441 W 1.4509 AISI 439 W 1.4510 etal.	Rp02 (MPa)	> 230	> 300	380
	Rm (MPa)	> 420	> 450	490
	A5 (%)	> 20	> 28	32÷34
W 1.4003	Rp02 (MPa)	> 280	> 300	350
	Rm (MPa)	> 450	> 450	480
	A5 (%)	> 20	> 20	22

TECHNOLOGICAL TEST ON THE EXHAUST SYSTEM TUBE AISI 409 LI / W 1.4512			
	REFERENCE NORMS	GUARANTEED	TYPICAL
Flattening test	2xT + 16 mm	2xT + 16 mm	2xT
Cone expansion	30%	30%	30%
Radial expansion	-	20%	30%

T = Thickness

Austenitic grades

MECHANICAL PROPERTIES OF THE ROUND TUBES			
	REFERENCE NORMS	GUARANTEED	TYPICAL
Rp02 (MPa)	> 200	> 300	400
Rm (MPa)	> 500	> 550	600
A5 (%)	> 40	> 40	50÷55
Hv 5	< 220	< 220	< 220

TECHNOLOGICAL TEST ON THE TUBES			
	REFERENCE NORMS	GUARANTEED	TYPICAL
Flattening test	2xT + 16 mm	2xT	2xT
Cone expansion	40%	40%	50%
Radial expansion	-	30%	33 - 35%

T = Thickness

TECHNICAL FEATURES

TECHNICAL REFERENCES STANDARDS

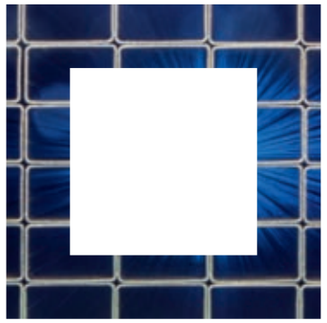
ISO 9001: Quality System Standards
ISO 14001 Environmental System Standards
OH SAS 18001 Safety system standards
IATF 16949: SQ automotive sector standards
EN 10204: Test certificates for stainless steel products
EN 10088: Chemical composition standards for stainless steel
EN 10028-7: Flat products made of steel for pressure purpose, stainless Steels
EN 10095: Chemical composition and Mechanical properties standards for stainless steel EN ISO 1127: Dimensional standards and tolerances

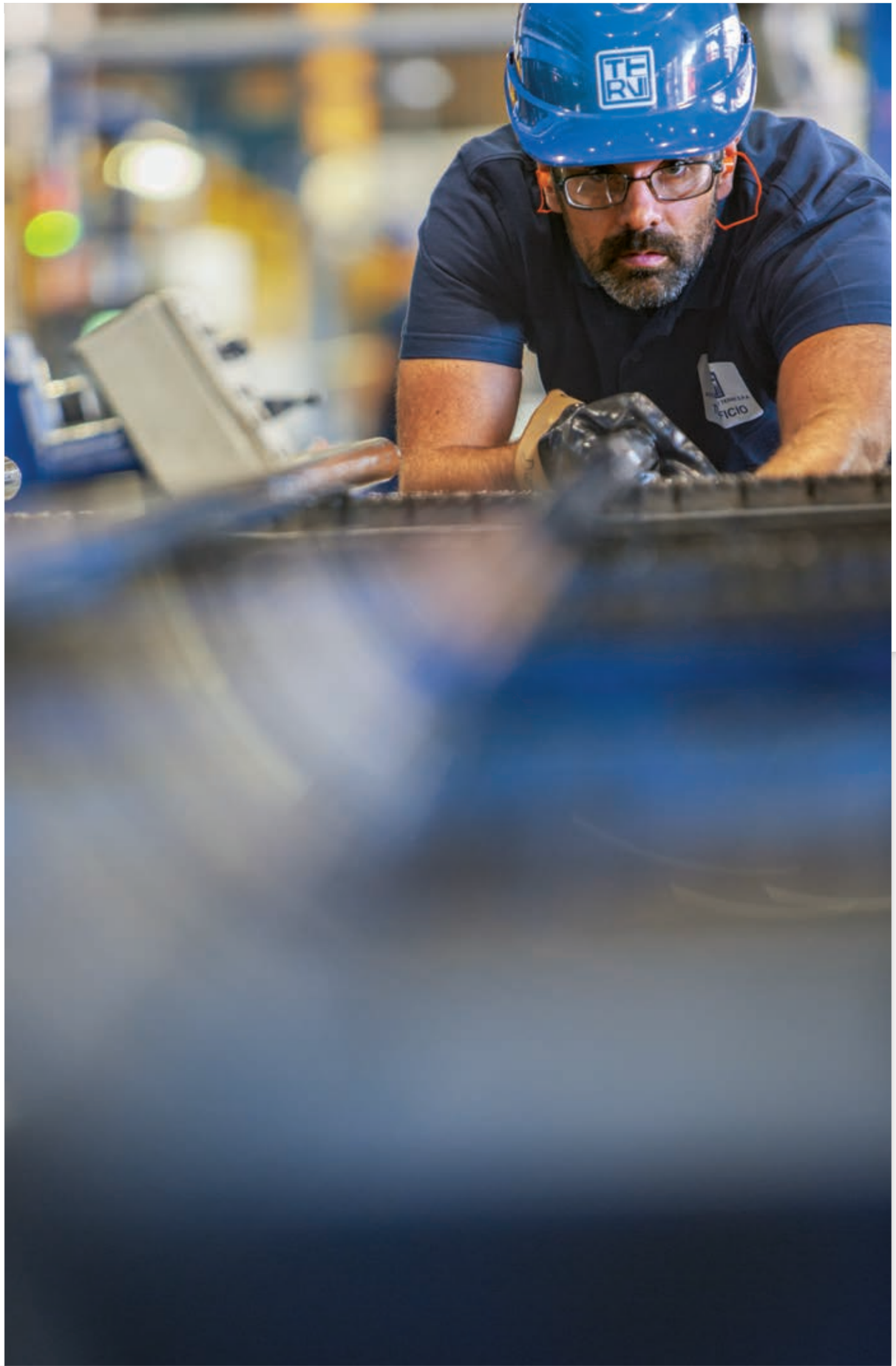
MANUFACTURING STANDARDS

EN 10296-2
EN 10217-7
AD 2000 - Merkblatt W0
ASTM: A554, A791, A450
NFA: 49647
EN 10217-7

QUALITY CONTROL STANDARDS

EN 10002, 10246
ASTM A426
EN ISO 6892-1, 8492, 8493, 10893





45,000 SQUARE METERS AND THE PASSION OF A LABOUR FORCE MADE OF ABOUT 160 PEOPLE.

OUR SERVICES

On time quality services are core values always at work.

Product innovation is functional to customer needs and works in parallel with quality and punctuality.
These values are the building blocks of our philosophy applied to our entire manufacturing cycle.
The final product, shipped directly or delivered to a warehouse close to our end customer, is promptly made available at any particular request.
This customer support, helps us to reach our eight times per day just-in-time client delivery and consignment goal.
This flexibility helps our customers shorten their supply chains and inventory requirements, thus achieving a reduction in costs and improved efficiency.
Each customer can follow and personally feel our manufacturing workflow by connecting to our highly advanced IT system panel and visually monitor step by step all our manufacturing phases from their office: from placing the order to the manufacturing of the goods and ending with the packaging and delivery of the finished material to their final destination.

Over 40 warehouses and depots located throughout Europe

Thanks to a password everything is under control

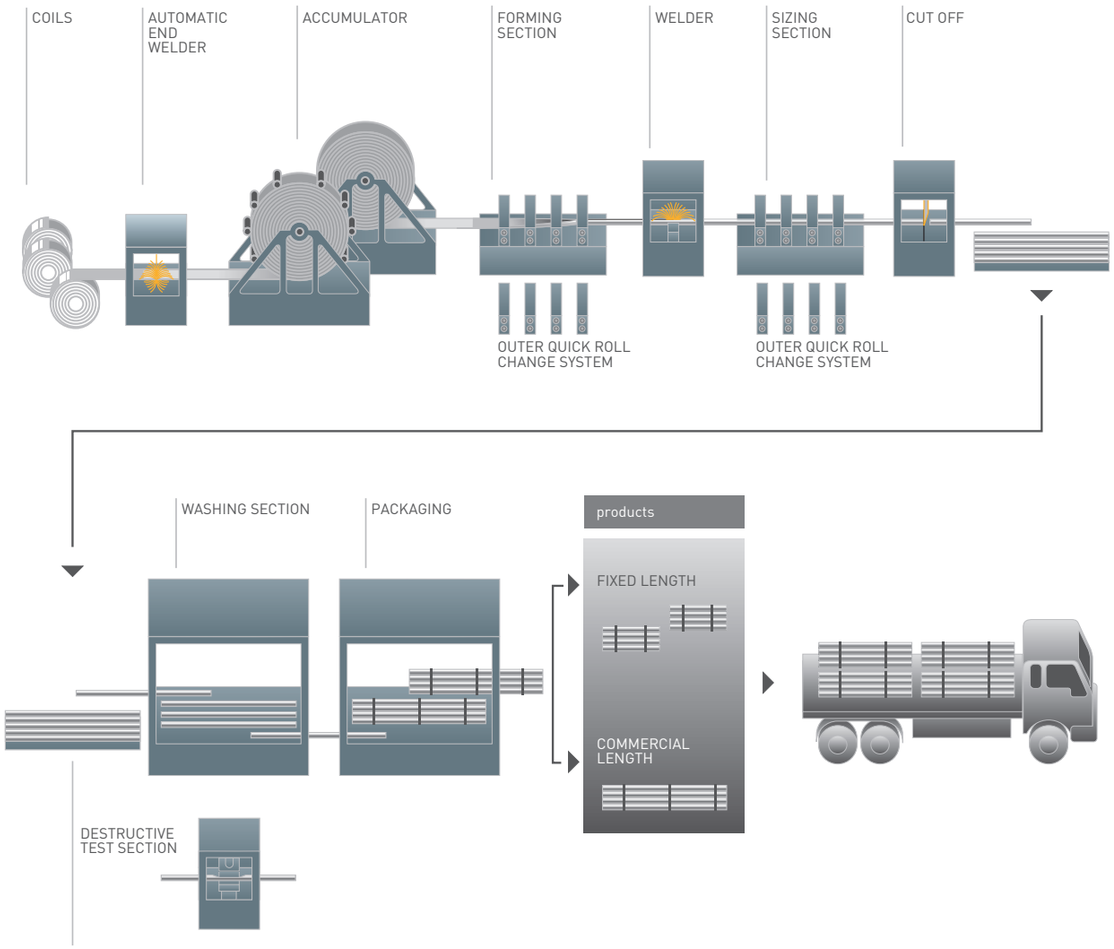
OUR SAFETY, ENVIRONMENTAL AND QUALITY MANAGEMENT SYSTEM

Tubes production follows an organized workflow under Quality Management Systems certified by third-party entities such as Det Norske Veritas for ISO 9001 since 1995, subsequently in accordance with QS 9000 and ISO TS 16949. Additionally the QMS was certified for Safety and Environmental Systems as for OH SAS 18001 and ISO 14001. Currently, electro-welded tubes production has a certified quality system according to ISO 9001
(CERT - 00358-95 - AQROM - SINCERT) and IATF 16949
(CERT - 06420-2004 - AQ - HOU- IATF).
These certifications cover the workflow organization for the production of tubes for both ornamental use and the automotive industry.
For specific applications, tubes production has obtained TÜV certification according to AD 2000 Merkblatt W0 and in compliance to PED 97/23 / EC.
Pursuing continuous improvements in the manufacturing process and of the product, tubes production is oriented to a six sigma approach extensively aligned and embedded in the more complex structure of the six sigma of the group.

OUR MANUFACTURING CYCLE

The manufacturing cycle of electro-welded stainless steel tubes is fully integrated with stainless steel flat products within the Acciai Speciali Terni industrial plant.
The smooth, flexible and integrated organization, always at the forefront and oriented towards constant innovation, provides our customers and market needs with timely responses wherever they may be found and located.

ORDER TRACKING SYSTEM: OUR CUSTOMERS WILL ALWAYS HAVE CONTROL OVER ORDER FLOW AND DELIVERY OVERVIEW.



ELECTRO-WELDED
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