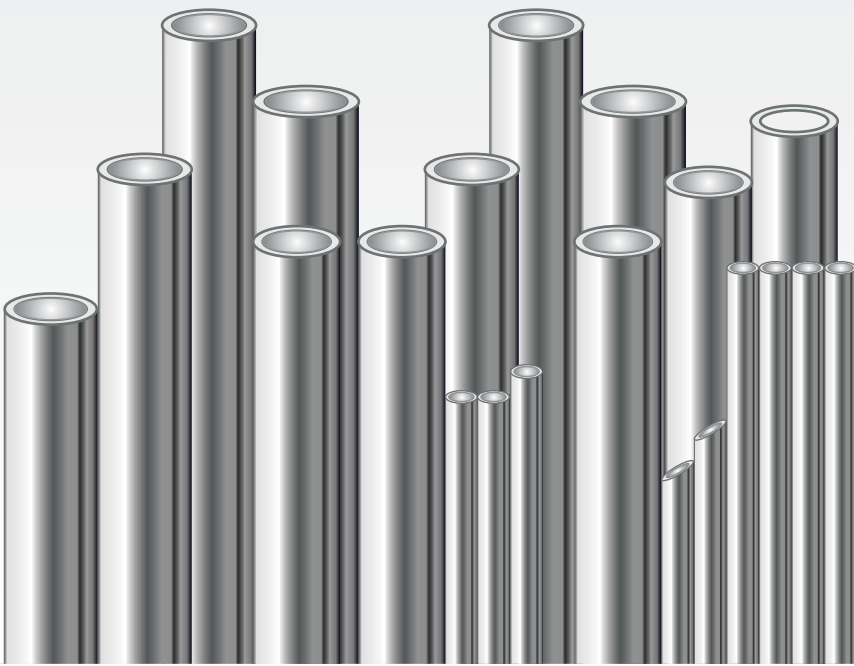


ACTION

METAL & TUBES LLP.

AN ISO 9001, 14001, 45001 CERTIFIED COMPANY





Company Profile

ACTION METAL & TUBES LLP is fundamentally group of capital Engineering Machinery manufacturers who designed and developed various hydraulic machines for various application and now introducing SEAMLESS TUBES.

ACTION METAL & TUBES LLP is fully managed by skilled and experienced workforce in full strength to achieve the production target and fulfill forthcoming and challengeable requirement from the market.

To be the most sought after, efficient, profitable, and respected producer globally of precision seamless tubes.

To provide the best value proposition in terms of cost and quality of product/service to our customers in the industry.

To do so with a wholehearted commitment to the Quality, Environment, Health & Safety Management Systems.

To create a working environment that encourages creativity, empowers individuals, creates accountability and rewards performance.

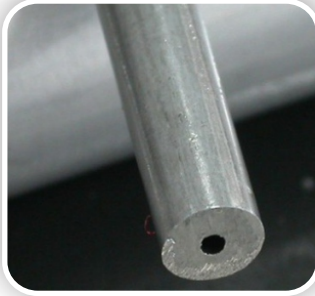
To create a self-learning organization that gathers knowledge and reacts quickly to changes in customer expectations and the environment.



ACTION

METAL & TUBES LLP.

Cold Drawn Seamless Steel Tubes for Heat Exchangers as per ASTM SA-179



Cold Drawn Seamless Steel Tubes for Hydraulics as per **DIN 2391 / EN 10305** Specification



Precision Cold Drawn Seamless Steel Tubes

Are produced by cold drawing precision seamless tubes over a plug through a reducing die to achieve reduction in outside diameter and wall thickness. The tubes are bright annealed under closely controlled reducing atmosphere in a highly sophisticated Electric heated roller hearth furnace so as to ensure bright, scale free and clean tubes, completely free from oxidation, thus meeting critical requirements of end users.

The tubes are cold straightened, followed by finishing operations, inspection, packing and dispatch. Cold drawn seamless tubes have close dimensional tolerances, better surface finish, refined micro structure etc. These tubes have wide applications in hydraulics, high pressure fuel injection, General Engineering industries and process industries.

Size Range :-

Outside Diameter : 6 mm to 50.80 mm

Wall Thickness : 1 mm to 5 mm

Length of Tubes : Up to 25 Meters

Market Segment

Automobile Manufacturers

- Fuel Lines
- Brake Lines
- Oil Lines

Hydraulic System Manufacturers
Heat Exchanger Manufacturers
Boiler Manufacturers
Oil Refineries
Petrochemicals

Fertilizers
Chemicals
Pressure Vessels Manufacturers
Sugar Industry
Engineering
Ship Builders
Defense



STANDARDS

DIN	DIN 17175 ST35.8	DIN 17175 ST45.8	DIN 17175 15Mo3	DIN 17175 13CrMo44	DIN 17175 10CrMo910
	DIN2397 ST35	DIN2391 ST45	DIN2391 ST52	DIN 2391.C.ST37.4	DIN 2391.C.ST52.3
	DIN2391.C.37.0				
EN	10305-1&10204	EN 10216-2	EN10297-1		
IS	IS 3074 CDS1	IS 3074 CDS3	IS 1239		
ASTM	A 179	A 192	A 210 GR.A1	A 201 GR.C	A 333 GR.1
	A 333 GR.6	A 334 GR.1	A 334 GR.6	A 335 T5	A 335 T11
	A 335 T12	A 335 T22	A 106 GR.B	A 213 P5	A 213 P11
	A213 P12	A 213 P22	A 209 GR.T1	A 209 GR.T1A	A 199 T5
	A556 GR.C				
BS	BS 3059.I.320	BS 3059.II.360	BS 3059.II.440	BS 3059.II.620	BS 3059.II.622
JIS(G3445)	STMK 11A	STMK 12A,B	STMK 13A,B		





Infrastructure



The plant of **ACTION METAL & TUBES LLP** is located in RAJKOT, GUJARAT, INDIA and is spread across vast area of 1,41,570 Sq ft. It is located strategically at 22 Kms from the City of Rajkot.

The location helps in easy access to the Port and the Airport for convenient management of the transportation.

Our Plant is equipped with the latest equipments and machineries to achieve the stringent quality parameters and optimum production efficiency, towards satisfying the customers exceeding expectations from **ACTION METAL & TUBES LLP** for their requirement of Precision Cold Drawn Seamless Tubes, Heat Exchanger Tubes and Mechanical Tubes, etc.

The production facility includes the production lines such as Draw Benches, Controlled Atmosphere Heat Treatment Furnaces, Finishing Machines like Straightening Machines and End Preparation Machine to Value Addition, Process Machines like U Bending Machine. The detailed list of infrastructure and Machinery can be provided on request.

The plant has various Approvals and Certifications like **ISO 9001:2015, ISO 14001:2015, ISO 45001:2018.**

The plant has an installed capacity to manufacture 400 Metric Tons per month of Bright Annealed Cold Drawn Precision Seamless Tubes.



Quality And Inspection

Chemical Test:To test the Chemical constituents of tubes.

Eddy Current Test:To detect surface & subsurface inhomogeneities of tubes.

Hydro Test:Hydrostatic test is carried by precision machine on 100% tubes to detect leakage.

Ultra Sonic Test:For detection of subsurface flaw & imperfections.

Surface Check:To ensure that finished tubes are free from scale, pit, marks, rupture, scores, roll marks, dent, OD & ID etc.

Hardness Test:To check the hardness of tubes (HRB/BHN)

Tensile Test:To measure the strength of the tubes and its elongation

Flaring Test:To test the ductility of material, End of tubes should be flared successfully without developing cracks.

Surface Roughness:To check surface roughness in I.D.

Flattening / Flange Test:The tests are conducted to check the strength to extreme compression stress.

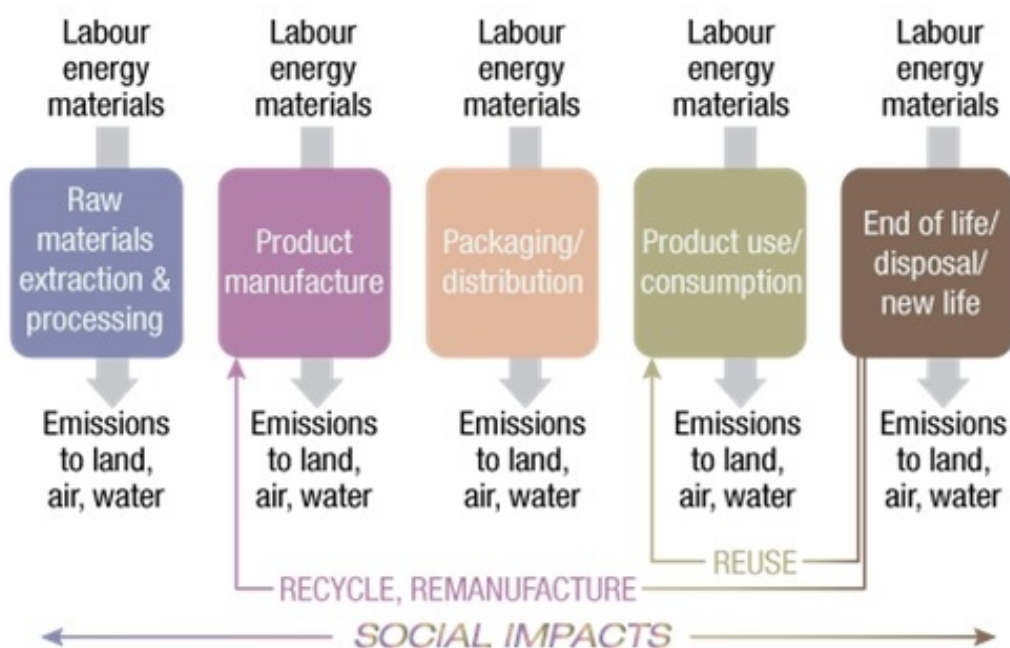
Micro Structural Test:Tubes are under microscope at 500x magnification to check the grain structure.

Bend Test:During the test, tubes are bent as per specification without developing cracks.

Dimensional Check:To ensure dimensional accuracy of OD, ID, Thickness, Length Ovality, Straightness etc.

Advantages Of Bright Annealed Cold Drawn Seamless Steel Tubes

Precision dimensional control tubes are free of oxides, dirt, etc. Hence simple operations like flushing with oil or compressed air will clean the remaining soot and dust particles in the tubes which will extend the life of the critical components like nozzle. pumps, control valves, etc.





Quality, Environment, Health and Safety Policy

Action Metal & Tubes LLP is committed to

- Prevent the injury and ill health of workers and
- Protect the environment including prevention of pollution concerning our activities, products and services.
- Satisfy applicable requirements of customer and other interested parties.

Action Metal & Tubes LLP is committed to

- Provide safe and healthy working conditions for the prevention of work-related injury and ill health of workers
- Eliminate hazards and reduce OH&S risks
- Engage workers through consultation and participation
- Reduce waste and minimize the consumption of resources
- Comply with applicable QEHS legal requirements
- Continual improvement of QEHS performance
- Promoting QEHS culture to involve external providers and the interested parties to enhance the QEHS performance.

Action Metal & Tubes LLP is committed to

- Provide training to employees to carry out task in a responsible manner that promotes QEHS outcome.

This policy will be strictly adhere by all team members and will be made available to the interested parties.

QEHS Objectives

Action Metal & Tubes LLP has established QEHS objectives at relevant functions and levels, considering the organizations significant QEHS aspects and associated compliance obligations, and considering its risks and opportunities.

The QEHS objectives considered are:

- a) Consistent with the QEHS policy
- b) Measurable
- c) Monitored
- d) Communicated
- e) Updated as appropriate

The organization has maintained documented information of the QEHS objectives.



Chemical Composition & Mechanical Properties

Specification	Type	Grade	Chemical Composition (%)														Mechanical Properties					Hydrostatic Test Pressure	Impact						
			C		Mn		P	S		Si		Cr		Mo		Cu		Ni		V				Yield Strength		Tensile Strength		% Elongation (G.L. 50 mm WT 8 mm) e (min.)	
			Min	Max	Min	Max	Max	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min			Max	Min	Max	Min	Max	Long.
DIN 2391	Seamless	St-30 SL	-	0.10	-	0.55	0.025	0.025	-	0.30	-	-	-	-	-	-	-	-	-	-	-	NBK : 215 GBK : -	NBK:290 GBK:280	NBK:480 -	NBK : 30 GBK : 30		Not Specified		
		St-30 AL	-	0.10	-	0.55	0.025	0.025	-	0.05	-	-	-	-	-	-	-	-	-	-	-	NBK : 215 GBK : -	NBK:290 GBK:280	NBK:420 -	NBK : 30 GBK : 30				
		St-35	-	0.17	0.40	-	0.025	0.025	-	0.35	-	-	-	-	-	-	-	-	-	-	-	NBK : 215 GBK : -	NBK:340 GBK:315	NBK:470 -	NBK : 25 GBK : 25				
		St-45	-	0.21	0.40	-	0.025	0.025	-	0.35	-	-	-	-	-	-	-	-	-	-	-	NBK : 255 GBK : -	NBK:440 GBK:390	NBK:570 -	NBK : 21 GBK : 21				
		St-52	-	0.22	-	1.60	0.025	0.025	-	0.55	-	-	-	-	-	-	-	-	-	-	-	NBK : 355 GBK : -	NBK:490 GBK:490	NBK:630 -	NBK : 22 GBK : 22				
DIN 1629	Seamless	St-37.0	-	0.17	-	-	0.040	0.040	-	-	-	-	-	-	-	-	-	-	-	-	235 for WT upto 16mm 225 for WT 16-40mm	350	-	25	23	50 Bar	-		
		St-34.0	-	0.21	-	-	0.040	0.040	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21	19				
		St-52.0	-	0.22	-	-	0.040	0.035	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21	19				
DIN 1630	Seamless	St-37.4	-	0.174	0.35	-	0.040	0.040	-	-	-	-	-	-	-	-	-	-	-	-	235 for WT upto 16mm 225 for WT 16-40mm	-	-	25	23	80 Bar	Longitudinal:43 Joules Transverse:27 Joules		
		St-34.4	-	0.20	0.40	-	0.040	0.040	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21	19				
		St-52.4	-	0.22	-	1.60	0.040	0.035	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21	19				
DIN 17175	Seamless	St-35.8	-	0.17	0.40	0.80	0.040	0.040	0.10	0.35	-	-	-	-	-	-	-	-	-	-	235 for WT ≤16mm 225 for WT > 16 to 40mm	360	480	25	23	80 Bar	Transverse:34 Joules		
		St-45.8	-	0.21	0.40	1.20	0.040	0.040	0.10	0.35	-	-	-	-	-	-	-	-	-	-	-	255 for WT ≤16mm 245 for WT > 16 to 40mm	410	530	21	19		Transverse:27 Joules	

- BK** - Cold finished as drawn - No heat treatment after last cold drawn process.
- NBK** - Normalized - Tubes are normalized above the upper transformation point in controlled atmosphere.
- GBK** - Annealed

Standard Sizes of Heat exchanges Tubes as per ASTM SA-179

Tube OD inch/mm	Wall thickness
3/4" = 19.05 mm	14 BWG-2.11 mm
1" = 25.4 mm	16 BWG-1.65 mm
1" = 25.4 mm	14 BWG-2.11 mm
	13 BWG-2.41 mm
	12 BWG-2.77 mm
	11 BWG-3.05 mm
	10 BWG-3.40 mm
1 1/4" = 31.75 mm	12 BWG-2.77 mm
	10 BWG-3.40 mm
1 1/2" = 38.1 mm	12 BWG-2.77 mm
38.0 mm	2.0 mm



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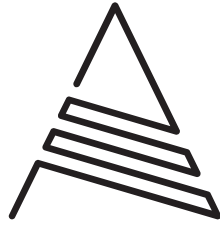
METAL & TUBES LLP.

General Recommendations On Seamless Tubes For Hydraulics

Tolerances according to DIN 2391. part 1.

Tube OD (mm)	Tolerance	wall thickness (mm)	Tube ID (mm)	Design pressure bar		Burst Pressure bar	Weight kg. / m
				DIN 241v3 CASE-I	CASE-II		
4	-	0.5	3	313	274	1160	0.047
4	±0.08	0.75	2.5	409	393	1820	0.067
4		1	2	522	502	2950	0.075
5	±0.08	1	3	432	416	2120	0.099
6		0.75	4.5	333	289	1230	0.103
6		1	4	389	414	1680	0.123
6	±0.08	1.5	3	549	528	3050	0.166
6		2	2	692	665		0.197
6		2.25	1.5	757	728		0.208
8		1	6	333	289	1190	0.170
8	±0.08	1.5	5	431	414	1860	0.240
8		2	4	549	528	3020	0.296
8		2.5	3	658	632		0.339
10		1	8	282	249	870	0.222
10	±0.08	1.5	7	373	358	1380	0.314
10		2	6	478	460	2100	0.395
10		2.5	5	576	553	3180	0.462
10		3	4	666	641		0.518
12		1	10	235	210	760	0.271
12		1.5	9	353	305	1150	0.388
12	±0.08	2	8	409	393	1580	0.493
12		2.5	7	495	476	2600	0.586
12		3	6	576	553	3200	0.666
12		3.5	5	651	627		0.734
14	-	1	12	201	182	620	0.321
14		1.5	11	302	265	940	0.452
14	±0.08	2	10	403	343	1340	0.592
14		2.5	9	434	417	1760	0.709
14		3	8	507	487	2400	0.814
14		3.5	7	576	553	3220	0.906
14		4	6	641	616		0.986
15		1	13	188	171	590	0.345
15		1.5	12	282	249	980	0.499
15	±0.08	2	11	376	323	1250	0.641
15		2.5	10	409	393	1690	0.771
15		3	9	478	460	2120	0.888
16		1	14	176	160	540	0.370
16		1.5	13	264	234	820	0.536
16	±0.08	2	12	353	305	1170	0.691
16		2.5	11	386	372	1470	0.832
16		3	10	452	435	1920	0.962

Tube OD (mm)	Tolerance	wall thickness (mm)	Tube ID (mm)	Design pressure bar		Burst Pressure bar	Weight kg. / m
				DIN 241v3 CASE-I	CASE-II		
18		1	16	157	143	510	0.419
18		1.5	15	235	210	780	0.610
18	±0.08	2	14	313	274	1040	0.789
18		2.5	13	392	335	1320	0.956
18		3	12	409	393	1830	1.110
20	-	1.5	17	212	191	570	0.684
20		2	16	282	249	920	0.888
20	±0.08	2.5	15	353	305	1220	1.079
20		3	14	373	358	1450	1.258
20		3.5	13	426	410	1720	1.424
20		4	12	478	460	2080	1.578
22		1	20	128	117	370	0.518
22	±0.08	1.5	19	192	174	590	0.758
22		2	18	256	228	850	0.986
22		2.5	17	320	280	1040	1.202
22		3	16	385	329		1.406
25		2	21	226	202	670	1.134
25	±0.08	2.5	20	282	249	920	1.387
25		3	19	338	294	1050	1.628
25		3.5	18	394	379	1520	1.860
25		4	17	437	420	1780	2.070
28		1.5	25	151	139	450	0.980
28	±0.08	2	24	201	182	620	1.282
28		2.5	23	252	224	770	1.572
28		3	22	302	265	920	1.850
28		4	20	403	343		2.368
28		5	18	434	417		2.836
30		2	26	188	171	620	1.381
30	±0.08	2.5	25	235	210	770	1.695
30		3	24	282	249	920	1.998
30		4	22	376	323	1250	2.565
30		5	20	409	393	1580	3.083
35		2	31	161	147	470	1.628
35		2.5	30	201	182	620	2.004
35	±0.15	3	29	242	216	720	2.367
35		4	27	322	281	960	3.058
35		5	25	403	343	-	3.699
35		6	23	419	403	-	4.291
38		2.5	33	186	168	550	2.189
38	±0.15	3	32	223	200	660	2.589
38		4	30	297	261	970	3.354
38		5	28	371	319	1350	4.069
38		6	26	390	375	-	4.735
38		7	24	446	429	-	5.352
42		2	38	134	124	390	1.973
42	±0.2	3	36	201	182	580	2.885
42		4	34	269	238	850	3.749
50	±0.2	5	40	-	-	-	-



ACTION

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Website:www.amtindia.com

Company Location:

Nearest Airport

: **Domestic -**

Factory to Rajkot Airport 29 km.

International-

Factory to Ahmedabad airport 245 km by road.

Rajkot to Mumbai airport 1 hour by air.

Rajkot to Mumbai 760 km. by road.

Nearest Shipment Ports : Mundra 280 km.

Kandla 310 km.

Mumbai 760 km.



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