

HIGH PRESSURE FLUID CONVEYANCE

Product Guide

BACKFILL / GROUTING / SLURRY /
HYDROPOWER & WATER / CEMENTATION



SUMMARY

DARIER ALLOY TECH supplies a comprehensive range of products and solutions for high pressure pumping applications in mining and construction environments. The include the following applications.



We can supply products and systems in both steel and plastic materials to satisfy operational and design constraints. Our product manufacturing, materials sourcing, logistics and quality control measures ensure we deliver high quality products at competitive pricing.

The following literature provided serves as a general product guide but is not limited to the scope of products described herein. Customers are encouraged to speak with our sales representatives to discuss their requirements in greater detail. We build systems to suit your needs.



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TUBE MATERIALS

STEEL

SEAMLESS TUBE

ASTM A106 GR. B X42,X52,X60

(Or to suit requirement)

WELDED TUBE API 5L B/ SANS 719/ ASTM A53 GR.B **HDPE**

HDPE to SANS 4427/ISO 4427

(Or to suit requirement)

COMPOSITE PIPE

Steel outer pipe and HDPE internal lining

DAT offers unique piping and conveyance solutions to customers and can manufacture and fabricate piping systems in accordance with customer requirements

* NOTE: We offer PVC-M (polyvinylchloride) plastic pipes but these are not typically used for high pressure slurry and cement lines

TUBE SIZE RANGE

STEEL

STUB ENDED DESIGN 50 NB (1") -250 (10 ") NB

STEEL TUBE RANGE 15 NB- 1200 NB

THREADED SEAMLESS
TUBE
25NB- 150NB

HDPE

16 NB - 630 NB

SDR available:

SDR 7,4 - SDR 41

COMPOSITE PIPE

150NB -1200 NB STEEL TUBE RANGE

HDPE lining to any diameter and wall thickness

*note: any size range of tube can be supplied to meet requirements





TUBE WALL THICKNESS RANGE

The wall thickness of tubes is typically dependant on the design pressures and operating conditions. DAT has capacity to offer the full range of pipe wall thicknesses and diameters in respective standards. The wall thickness ranges shown below are specific to the cementitious and slurry pumping products and piping systems.

The full schedules of tube dimensions is provided in other sections in this document.

STEEL

SEAMLESS TUBE

25-40NB: SCH10-SCHXXS

50NB- 250NB: SCH40- SCH XXS

WELDED TUBE 4.5 mm - 12mm **HDPE**

All available wall thickness schedules in standard ISO 4427

> PE 63 PE 80 PE 100

SDR 7,4- SDR41

COMPOSITE PIPE

ERW STEEL TUBE/ SEAMLESS TUBE wall thickness range equivalent

any thickness HPDE internal available

(To suit requirement)





PIPING SYSTEMS

DAT manufactures and fabricates a range of different piping systems with various connection methods . The systems are designed to facilitate easy and rapid installation as well as operate in limited spatial environments. We can design, build and deliver any piping system to meet the customers demands as well as develop new fittings and systems to suit customer's operational conditions and environment. A summary of the various types of systems and applications is provided below.



STUB-ENDED STEEL PIPES -D.A.T. BETA SYSTEM

The stub ended piping system makes use of our BETA backfill and hydropower system. As the name suggests, the seamless steel tubes have stubs welded onto the ends of the tube. The system makes use of a stub and coupling (clamp) type jointing design. These piping systems are designed for high pressure applications in deep level mining.

SYSTEM DETAILS

Materials: Tube ASTM A106 B/ API 5L B,X42,X52,X60

Stub material: ST52

Joint type-stub end

Welding process: Friction welding

Includes stub end manufactured fittings

Includes BETA range of couplings

Working pressures: up to 40MPa (400 Bar

Lengths: any length required up to 12m, standard lengths: 1,5m,3m,4.5m,6m,9m

external coatings: Plain uncoated, bitumen, galvanised, epoxy

includes full range of accessories: valves, control hardware, expansion joints

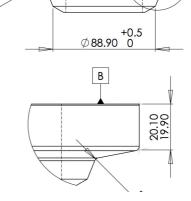
Pipes are delivered wrapped and strapped with plastic end caps

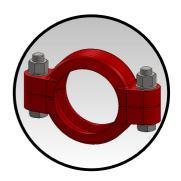














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PIPING SYSTEMS



THREADED END STEEL TUBES AND FITTINGS

DAT supplies threaded end seamless tube systems primarily for high pressure grouting and cementation applications, however, these tubes are not limited to these applications and can be utilised in various high pressure processes. Tubes can be supplied in schedules (wall thickness) to suit operating pressures. The system includes offering of associated high pressure forged, threaded fittings and coupling components (high pressure couplings, unions, fittings, valves, control hardware- ie. ANSI B16.11

SYSTEM DETAILS

Materials: Tube ASTM A106 B/ API 5L B,X42,X52,X60 Forged fittings: ASTM A105N

Joint type-THREADED thread specification: BSPT(ISO 7-1)/BS21

size range: up to 150NB

Includes ANSI B16.11 threaded fittings, DAT cementation unions, high pressure couplings, associated valves and hardware

Working pressures: up to 40MPa (400 Bar)

Lengths: any length required up to 12m, standard lengths: 1,5m,3m,4.5m,6m,9m

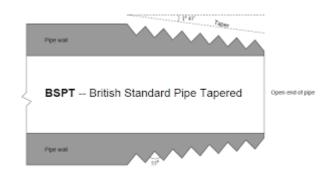
external coatings: Plain uncoated, bitumen, galvanised, epoxy

includes full range of accessories: valves, control hardware, expansion joints

Pipes are delivered wrapped and strapped with plastic end thread protectors













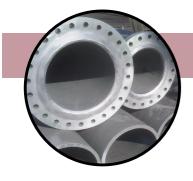




**Note: NPT threaded systems available on request



PIPING SYSTEMS



FLANGED STEEL TUBES AND FITTINGS

DAT manufactures and supplies conventional flanged piping systems for mining and various other applications. These systems are typically not favoured for backfill, grouting and cementation applications due to spatial considerations and restrictions underground or mining areas but DAT has capacity to supply and flange pipe systems to suit customer requirement should they so wish. Flanged pipe systems are suitable for slurry conveyance applications and high pressure water conveyance such as hydropower. We also offer a range of compact flanges to utilise in areas with spatial restrictions

SYSTEM DETAILS

Materials: Tube ASTM A106 B/ API 5L B,X42,X52,X60 Forged fittings: ASTM A105N

Joint type-Flanged Flange types: BS4504/ANSI B16.5/SANS 1123/Compact flange/ weldnecks, slip on, socket weld

Includes flanged seamless fittings to ANSI B16.5 Fittings to ASTM A234 WPB or customer requirement

Working pressures: TO REQUIREMENT

Lengths: any length required up to 12m, standard lengths: 1,5m,3m,4.5m,6m,9m

external coatings: Plain uncoated, bitumen, galvanised, epoxy

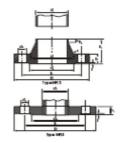
includes full range of accessories: valves, control hardware, expansion joints

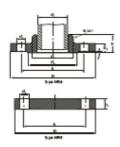
Pipes are delivered wrapped and strapped



















PIPING SYSTEMS



WEAR RESISTANT-LINED PIPE SYSTEM

DAT supplies wear resistant lined (internal bore lining) steel pipe systems for slurry and cement products pumping and conveyance. These pipe systems are offered with connection types to suit any of the previously mentioned methods or to suit customer requirement. These pipe systems can be supplied with linings as per details stipulated below.

SYSTEM DETAILS

Materials: Tube ASTM A106 B/API 5L B.X42.X52.X60

internal linings available: HDPE/RUBBER/CERAMIC

Joint type-stub-end/flanged/threaded/outer-bolt type couplings/Socket welding sleeve

Fittings to ASTM A234 WPB or customer requirement

Working pressures: TO REQUIREMENT

Lengths: any length required up to 12m, standard lengths: 1,5m,3m,4.5m,6m,9m,9,144m

external coatings: Plain uncoated, bitumen, galvanised, epoxy

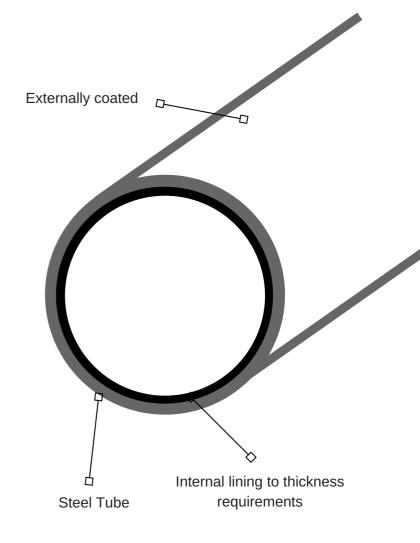
includes full range of accessories: valves, control hardware, expansion joints

Pipes are delivered wrapped and strapped





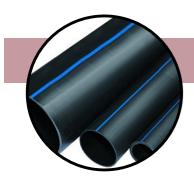








PIPING SYSTEMS



HDPE PIPING SYSTEM

DAT supplies HDPE piping systems including all associated fittings ,couplings and accessories. HDPE systems are provided to suit operational requirements and can be designed and manufactured to suit. DAT offers the full dimensional range of tubes and fittings in accordance with ISO 4427 (SANS 4427). Systems can be designed to use various coupling methods.

SYSTEM DETAILS

Materials: HDPE to SANS 4427 (ISO 4427)

Joint type:TAK-STUB ends/ Grooved to SANS 815-1(VICTAULIC STYLE)/ STUB END WITH STEEL BACKING FLANGE to suit flange tables

Working pressures: TO REQUIREMENT

Lengths: any length required up to 12m, standard lengths: 1,5m,3m,4.5m,6m,9m,

includes full range of accessories: fittings, valves, control hardware, expansion joints

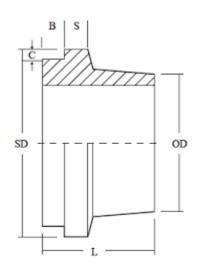
Pipes are delivered bundled and strapped

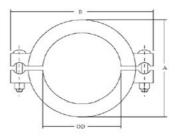


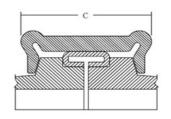








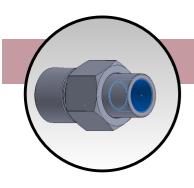








PIPING SYSTEMS



SYSTEM DESIGN & CUSTOM FITTINGS

DAT undertakes in-house design and contracts services of dedicated engineering design contractors to produce custom designed parts/fittings and pressure systems to meet customers pumping and fluid conveyance requirements. If you require design and implementation of systems to meet your operation we can offer you a solution.

There are numerous operational restrictions and problems which may arise in customer's operations which could necessitate the need for customisation. These may include spatial constraints, medium to pumped, operational life extensions, cost reductions and general problem resolutions.

DETAILS

DESIGN SCOPE OF WORK

Custom fittings

(eg. compact flanges, unions, custom bends and elbows, high-pressure expansion joints, diffusers, valves and flow control devices, extended reducers, etc)

Full piping and pumping system design

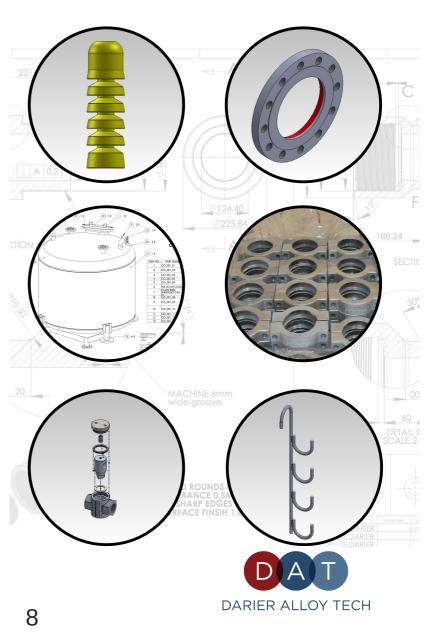
Tank/storage design, fabrications and supply

Piping fixing/hanging/support hardware design and supply

Specialised borehole hanging fittings and system design

Design and manufacture of polymer flushing pigs and flushing equipment







TUBE DIMENSIONS AND SIZE RANGE

SEAMLESS CARBON STEEL TUBES

NOMINAL SIZE		OUTSIDE DIAMETER MM	20	30	STD	40	60	XS	80	100	120	140	160	xxs
in	mm													
1/2	15	21.3			2.77 1.27	2.77 1.27		3.73 1.62	3.73 1.62				4.78 1.95	7.47 2.55
3/4	20	26.7			2.87 1.69	2.87 1.69		3.91 2.20	3.91 2.20				5.56 2.90	7.82 3.64
1	25	33.4			3.38 2.50	3.38 2.50		4.55 3.24	4.55 3.24				6.35 4.24	9.09 5.45
1 1/4	32	42.2			3.56 3.39	3.56 3.39		4.85 4.47	4.85 4.47				6.35 5.61	9.70 7.77
1 1/2	40	48.3			3.68 4.05	3.68 4.05		5.08 5.41	5.08 5.41				7.14 7.25	10.15 9.56
2	50	60.3			3.91 5.44	3.91 5.44		5.54 7.48	5.54 7.48				8.74 11.11	11.07 13.44
2 1/2	65	73.0			5.16 8.63	5.16 8.63		7.01 11.41	7.01 11.41				9.53 14.92	14.02 20.39
3	80	88.9			5.49 11.29	5.49 11.29		7.62 15.27	7.62 15.27				11.13 21.35	15.24 27.68
3 1/2	90	101.6			5.74 13.57	5.74 13.57		8.08 18.63	8.08 18.63				-	-
4	100	114.3			6.02 16.07	6.02 16.07		8.56 22.32	8.56 22.32		11.13 28.32		13.49 33.54	17.12 41.03
5	125	141.3			6.55 21.77	6.55 21.77		9.53 30.97	9.53 30.97		12.70 40.28		15.88 49.11	19.05 57.43
6	150	168.3			7.11 28.26	7.11 28.26		10.97 42.56	10.97 42.56		14.27 54.20		18.26 67.56	21.95 79.22
8	200	219.1	6.35 33.31	7.04 36.81	8.18 42.55	8.18 42.55	10.31 53.08	12.70 64.64	12.70 64.64	15.09 75.92	18.26 90.44	20.62 100.92	23.01 111.27	22.23 107.92
10	250	273.1	6.35 41.77	7.80 51.03	9.27 60.31	9.27 60.31	12.70 81.55	12.70 81.55	15.09 96.01	18.26 114.75	21.44 133.06	25.40 155.15	28.58 172.33	25.40 155.15
12	300	323.9	6.35 49.73	8.38 65.20	9.53 73.88	10.31 79.73	14.27 108.96	12.70 97.46	17.48 132.08	21.44 159.91	25.40 186.97	28.58 208.14	33.32 238.76	25.40 186.97

SI Metric units

Upper value= Wall thickness mm Lower value= mass kg/m plain ended tube

A.S.A tube schedules According to ANSI B36.10





TUBE DIMENSIONS AND SIZE RANGE

SEAMLESS CARBON STEEL TUBES

NOMINAL SIZE		OUTSIDE DIAMETER mm	20	30	STD	40	60	xs	80	100	120	140	160	xxs
n	mm													
14	350	355.6	7.92 67.90	9.53 81.33	9.53 81.33	11.13 94.55	15.09 126.71	12.70 107.39	19.05 158.10	23.83 194.96	27.79 224.65	31.75 253.56	35.712 81.70	
16	400	406.4	7.92 77.83	9.53 93.27	9.53 93.27	12.70 123.30	16.66 160.12	12.70 123.30	21.44 203.53	26.19 245.56	30.96 286.64	36.53 333.19	40.49 365.35	
18	450	457.2	7.92 87.71	11.13 122.38	9.53 105.16	14.27 155.80	19.05 205.74	12.70 139.15	23.88 254.55	29.36 309.62	34.93 363.56	39.67 408.26	45.24 459.37	
20	500	508.0	9.53 117.15	12.70 155.12	9.53 117.15	15.09 183.42	20.62 247.83	12.70 155.12	26.19 311.17	32.54 381.53	38.10 441.49	44.45 508.11	50.01 564.81	
22	550	558.8	9.53 129.13	12.70 171.09	9.53 129.13	-	22.23 294.25	12.70 171.09	28.58 373.83	34.93 451.42	41.28 527.02	47.63 600.63	53.98 672.26	
24	600	609.6	9.53 141.12	14.27 209.64	9.53 141.12	17.48 255.41	24.61 355.26	12.70 187.06	30.96 442.08	38.89 547.71	46.02 640.03	52.37 720.15	59.54 808.22	
26	650	660.4	12.70 202.72	-	9.53 152.87	-		12.70 202.72						
28	700	711.2	12.70 218.69	15.88 271.21	9.53 164.85	• · ·		12.70 218.69						
30	750	762.0	12.70 234.67	15.88 292.18	9.53 176.84	-		12.70 234.67						
32	800	812.8	12.70 250.64	15.88 312.15	9.53 188.82	17.48 342.91		12.70 250.64						
34	850	863.6	12.70 266.61	15.88 332.12	9.53 200.31	17.48 364.90		12.70 266.61						
36	900	914.4	12.70 282.27	15.88 351.70	9.53 212.56	19.05 420.42		12.70 282.27						
38	950	965.2			9.53 224.54			12.70 298.24						
40	1000	1016.0			9.53 236.53			12.70 314.22						
42	1050	1066.8			9.53 248.52			12.70 330.19						
44	1100	1117.8			9.53 260.50			12.70 346.16						
46	1150	1168.4			9.53 272.25			12.70 351.82						
48	1200	1219.2			9.53 284.24			12.70 377.79						

SI Metric units

Upper value= Wall thickness mm Lower value= mass kg/m plain ended tube

A.S.A tube schedules According to ANSI B36.10





TUBE DIMENSIONS AND SIZE RANGE

HDPE TUBES- ISO/SANS 4427

Wo	rking Pre	essure P	E 63		PN	2.5			PN	3.2			PI	N 4		PN 5							
Wo	rking Pre	essure P	E 80		PN	3.2			PI	N 4			PI	N 5		PN 6							
Working Pressure PE 100 Standard Diameter Ratio (SDR)					PI	N 4			PI	N 5			PI	N 6		PN8 SDR 21							
					SD	R 41			SDI	R 33			SDI	R 26									
Nom Size mm	Mean Outside Diameter		Ovality	Ovality	Ovality	Ovality	Ovality		all ness-t	Pipe ID & Weight		Wall thickness-t		Pipe ID & Weight		Wall thickness-t		Pipe ID & Weight		Wall thickness-t			e ID & eight
	Min	Max	Max	Min	Max	ID	Kg/m	Min	Max	ID	Kg/m	Min	Max	ID	Kg/m	Min	Max	ID	Kg/m				
16	16	16.3	1.2																				
20	20	20.3	1.2																				
25	25	25.3	1.2																				
32	32	32.3	1.3																				
40	40	40.4	1.4													2	2.3	36	0.24				
50	50	50.4	1.4									2	2.3	46	0.31	2.4	2.8	45	0.37				
63	63	63.4	1.5									2.5	2.9	58	0.49	3.0	3.4	57	0.57				
75	75	75.5	1.6									2.9	3.3	69	0.67	3.8	4.1	67	0.84				
90	90	90.6	1.8									3.5	4.0	83	0.97	4.3	4.9	81	1.17				
110	110	110.7	2.2									4.2	4.8	101	1.42	5.3	6.0	99	1.76				
125	125	125.8	2.5									4.8	5.4	115	1.83	6.0	6.7	112	2.25				
140	140	140.9	2.8									5.4	6.1	128	2.3	6.7	7.5	126	2.82				
160	160	161	3.2									6.2	7	147	3.02	7.7	8.6	144	3.69				
180	180	181.1	3.6									6.9	7.7	165	3.76	8.6	9.6	162	4.64				
200	200	201.2	4									7.7	8.6	184	4.67	9.6	10.7	180	5.75				
225	225	226.4	4.5									8.6	9.6	207	5.86	10.8	12	202	7.27				
250	250	251.5	5									9.6	10.7	230	7.27	11.9	13.2	225	8.89				
280	280	281.7	9.8									10.7	11.9	257	9.06	13.4	14.9	252	11.23				
315	315	316.9	11.1	7.7	8.6	299	7.46	9.7	10.8	295	9.32	12.1	13.5	289	11.54	15.0	16.6	283	14.11				
355	355	357.2	12.5	8.7	9.7	337	9.49	10.9	12.1	332	11.79	13.6	15.1	326	14.59	16.9	18.7	319	17.91				
400	400	402.4	14	9.8	10.9	379	12.04	12.3	13.7	374	15.02	15.3	17	368	18.5	19.1	21.2	360	22.84				
450	450	452.7	15.6	11.0	12.2	427	15.18	13.8	15.3	421	18.91	17.2	19.1	414	23.39	21.5	23.8	405	28.89				
500	500	503	17.5	12.3	13.7	474	18.9	15.3	17	468	23.32	19.1	21.2	460	28.72	23.9	26.4	450	35.64				
560	560	563.4	19.6	13.7	15.2	531	23.53	17.2	19.1	524	29.35	21.4	23.7	515	36.17	26.7	29.5	504	44.61				
630	630	633.8	22.1	15.4	17.1	598	29.77	19.3	21.4	589	37.03	24.1	26.7	579	45.83	30.0	33.1	567	56.35				

Working Pressure PE 63					NA PN 8								PN	10			N	IA		NA				
Wor	king Pre	ssure P	E 80	PN 8 PN 10								PN 12.5					PN	16		PN20				
Work	ing Pres	sure Pl	E 100		PN		PN 12.5				PN 16				PN20				PN25					
Standard Diameter Ratio (SDR)				SDR 17				SDR 13.6				SDR 11				SDR 9				SDR 7.4				
Nom Size	Mean (Outside neter	Ovality	Ovality	thick	all ness-t		ID &		all ness-t		ID & ight		all ness-t		ID & ight		all ness-t		ID &		all ness-t		e ID & eight
mm	Min	Max	Max	Min	Max	ID	Kg/m	Min	Max	ID	Kg/m	Min	Max	ID	Kg/m	Min	Max	ID	Kg/m	Min	Max	ID	Kg/m	
16	16	16.3	1.2													2	2.3	12	0.09	2.3	2.7	11	0.10	
20	20	20.3	1.2									2	2.3	16	0.11	2.3	2.7	15	0.13	3	3.4	14	0.15	
25	25	25.3	1.2					2	2.3	21	0.17	2.3	2.7	20	0.17	3	3.4	19	0.20	3.5	4.0	18	0.24	
32	32	32.3	1.3	2	2.3	28	0.19	2.4	2.8	27	0.23	3	3.4	26	0.27	3.6	4.1	24	0.32	4.4	5	23	0.38	
40	40	40.4	1.4	2.4	2.8	35	0.29	3	3.5	34	0.36	3.7	4.2	32	0.43	4.5	5.1	30	0.5	5.5	6.2	28	0.60	
50	50	50.4	1.4	3	3.4	44	0.45	3.7	4.2	42	0.54	4.6	5.2	40	0.66	5.6	6.3	38	0.78	6.9	7.7	35	0.93	
63	63	63.4	1.5	3.8	4.3	55	0.71	4.7	5.3	53	0.87	5.8	6.5	51	1.04	7.1	8	48	1.25	8.6	9.6	45	1.46	
75	75	75.5	1.6	4.5	5.1	65	1.01	5.6	6.3	63	1.23	6.8	7.6	61	1.46	8.4	9.4	57	1.76	10.3	11.5	53	2.09	
90	90	90.6	1.8	5.4	6.1	79	1.45	6.7	7.5	76	1.76	8.2	9.2	73	2.11	10.1	11.3	69	2.53	12.3	13.7	64	2.99	
110	110	110.7	2.2	6.6	7.4	96	2.15	8.1	9.1	93	2.6	10.0	11.1	89	3.13	12.3	13.7	84	3.76	15.1	16.8	78	4.48	
125	125	125.8	2.5	7.4	8.3	109	2.74	9.2	10.3	106	3.35	11.4	12.7	101	4.06	14	15.6	95	4.87	17.1	19	89	5.76	
140	140	140.9	2.8	8.3	9.3	122	3.45	10.3	11.5	118	4.2	12.7	14.1	113	5.06	15.7	17.9	106	6.18	19.2	21.3	100	7.24	
160	160	161	3.2	9.5	10.6	140	4.5	11.8	13.1	135	5.48	14.6	16.2	129	6.65	17.9	19.8	122	7.94	21.9	24.2	114	9.42	
180	180	181.1	3.6	10.7	11.9	157	5.69	13.3	14.8	152	6.96	16.4	18.2	145	8.4	20.1	22.3	138	10.05	24.6	27.2	128	11.91	
200	200	201.2	4	11.9	13.2	175	7.02	14.7	16.3	169	8.54	18.2	20.2	162	10.36	22.4	24.8	153	12.42	27.4	30.3	142	14.74	
225	225	226.4	4.5	13.4	14.9	197	8.90	16.6	18.4	190	10.84	20.5	22.7	182	13.11	25.2	27.9	172	15.72	30.8	34	160	18.62	
250	250	251.5	5	14.8	16.4	219	10.91	18.4	20.4	211	13.35	22.7	25.1	202	16.13	27.9	30.8	191	20.15	34.2	37.8	178	23.05	
280	280	281.7	9.8	16.6	18.4	245	13.71	20.6	22.8	237	16.73	25.4	28.1	227	20.22	31.3	34.6	214	24.29	38.3	42.3	199	28.83	
315	315	316.9	11.1	18.7	20.7	276	17.36	23.2	25.7	266	21.2	28.6	31.6	255	25.59	35.2	38.9	241	30.73	43.1	47.6	224	36.5	
355	355	357.2	12.5	21.1	23.4	311	22.1	26.1	28.9	300	26.88	32.2	35.6	287	32.49	39.7	43.8	271	39.03	48.5	53.5	253	46.27	
400	400	402.4	14	23.7	26.2	350	27.93	29.4	32.5	338	33.18	36.3	40.1	324	41.25	44.7	49.3	306	49.52	54.7	60.3	285	58.78	
450	450	452.7	15.6	26.7	29.5	394	35.38	33.1	36.6	380	43.18	40.9	45.1	364	52.23	50.3	55.5	344	62.69	61.5	67.8	321	74.35	
500	500	503	17.5	29.7	32.8	438	43.72	36.8	40.6	423	53.28	45.4	50.1	405	64.45	55.8	61.5	383	77.25					
560	560	563.4	19.6	33.2	36.7	490	54.77	41.2	45.5	473	66.84	50.8	56	453	80.74	62.5	68.9	429	96.92					
630	630	633.8	22.1	37.4	41.3	551	69.37	46.3	51.1	533	84.49	57.2	63.1	510	102.3	70.3	77.5	482	122.65					

SALES AND COMPANY DETAILS



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