Permissible variations on dimensions

	ASTM A 53	
ermissible Variations of Dimension over 60,3 mm (including)	± 1 %	
Permissible Variations of Wall thickness	- 1:	2.5 %
Permissible Variations of Weight	Weight in the dimensional standard ASME	B36.10M can not differ by more than ±10 %
	ASTM A 106	
	Permissible Variation	ns of Outside diameter
Outside diameter (mm)	upper	lower
	mm	mm
from 48,3 to 114,3 (including)	+ 0.8	- 0.8
from 114,3 to	+ 1.6	- 0.8
219,1 (including)	+ 2.4	- 0.8
from 219,1 to 457 (including)		- 0.8
Permissible Variations of Wall thickness	– 12.5 %	
Permissible Variations of Weight	+ 10 % / – 3.5 %	
	ASTM A 450	
Outside diameter (mm)		ns of Outside diameter
	over	under
	seamless hot rolled tubes	
up to 101,6 (including) from 101,6 to	+ 0.4	- 0.8
190,5 (including)	+ 0.4	- 1.2
from 190,5 to 228,6 (including)	+ 0.4	- 1.6
	Permissible Variations of Wall thickness	
	Wall thickness %	
Outside diameter (mm)	over 4,6	
	seamless hot rolled tubes	
up to 101,6 (including)	+ 28	8 / - 0
over 101,6	+ 28	8 / - 0
Production	Permissible Variations of Weight per feet, %	
riodecion	over	under
seamless hot rolled tubes	+ 16	- 0
	ASTM A 530	
	Permissible Variation	ns of Outside diameter
Outside diameter (mm)	upper	lower
	mm	mm
from 48.3 to 114.3 (including)	+ 0.8	- 0.8
from 114.3 to	+ 1.6	- 0.8
219.1 (including) from 219.1 to 457 (including)	+ 2.4	- 0.8
Permissible Variation		- 12.5 %
	Permissible Variations of Weight	12.0 %
up to ø 323.8 mm (including)	+ 10 % / - 3.5 %	
over ø 323.8 mm		6 / - 5 %
	DIN 1629, 1630	
	Permissible Variations of Outside diameter	
Outside diameter (mm)	Permissible Variations	Tube end
≤ 100	± 1 % D (but	± 0.4 mm
	± 0.5 mm is allowed)	
	± 1 % D	± 0.5 % D
100 < D ≤ 200		± 0.6 % D
> 200	± 1 % D	ļ
	Permissible Variations of Wall thickness	
		+ 15 % / – 10 % + 12.5 % / – 10 %

	t ≤ 0.05 D	+ 17.5 % /
	0.05 D < t ≤	- 12.5 %
130 < D ≤ 320	0.11 D	± 12.5 %
mm 320 < D ≤ 660	t > 0.11 D	± 10 %
mm	t ≤ 0.05 D 0.05 D < t ≤	+ 20 % / – 15 %
	0.05 D < t ≤ 0.09 D	+ 15 % / – 12.5 %
	t > 0.09 D	+ 12.5 % / – 10 %
	$^{\star}t_{n}$ – basic wall thickness according to DIN 2448	
	Permissible Variations of Weight	
for individual tubes		+ 12 % / - 8 %
for delivery of at least 10 tons		+ 10 % / – 5 %
	DIN 17 121	± 1 % (but
Permissible Variation	s of Outside diameter	± 0.5 mm is allowed)
Permissible Variations of Wall thickness		the same as according to DIN 1629
	Permissible Variations of Weight	
	dual tubes	+ 12 % / - 8 %
for delivery of a	at least 10 tons	+ 10 % / - 5 %
	DIN 17 172	
Outside diameter (mm)		tions of Outside diameter
	Tube	Tube end ± 1 % D
< 200	± 1 % D (max. ± 0.5 mm)	(max. ± 0.5 mm) possible to agree ± 0.5 % D (max. ± 0.4 mm)
200 ≤ D < 500 500 ≤ D < 1200	± (0.4%D+1mm) ± 0.5 % D (max. ± 5 mm)	± 0.7 % D ± 1.6 mm
	Permissible Variations of Wall thickness	
for D \leq	130 mm	± 10 %
for D >	130 mm	± 12.5 %
On various parts wall thickness can fall unde	r by about 0,5 %, but only in lenghts shorter than twice	the outside diameter of the tube (max. 300 mm).
		(, , , , , , , , , , , , , , , , , , ,
	Permissible Variations of Weight	
	dual tubes	+ 10 % / - 8.5 %
	Jual tubes y of at least 10 tons	+ 10 % / - 8.5 % ± 7.5 %
	dual tubes y of at least 10 tons DIN 17 173	± 7.5 %
	dual tubes y of at least 10 tons DIN 17 173 Permissible Varia	± 7.5 % tions of Outside diameter
for waggon deliver	dual tubes y of at least 10 tons DIN 17 173	± 7.5 % tions of Outside diameter Tube end
for waggon deliver Outside diameter (mm) < 100	dual tubes y of at least 10 tons DIN 17 173 Permissible Varia Tube ± 1 % D (max. ± 0.5 mm)	± 7.5 % tions of Outside diameter Tube end max. ± 0.4 mm
for waggon delivery Outside diameter (mm) < 100 100 ≤ D < 200	dual tubes y of at least 10 tons DIN 17 173 Permissible Varia Tube ± 1 % D (max. ± 0.5 mm) ± 1 % D	± 7.5 % tions of Outside diameter Tube end max. ± 0.4 mm ± 0.5 % D
for waggon deliver Outside diameter (mm) < 100	Jual tubes y of at least 10 tons DIN 17 173 Permissible Varia Tube ± 1 % D ± 1 % D ± 1 % D ± 1 % D ± 1 % D	± 7.5 % tions of Outside diameter Tube end max. ± 0.4 mm
for waggon delivery Outside diameter (mm) < 100 100 ≤ D < 200	Jual tubes y of at least 10 tons DIN 17 173 Permissible Varia Tube ± 1 % D (max. ± 0.5 mm) ± 1 % D ± 1 % D ± 1 % D Permissible Variations of Wall thickness	± 7.5 % tions of Outside diameter Tube end max. ± 0.4 mm ± 0.5 % D ± 0.6 % D
for waggon delivery Outside diameter (mm) < 100 100 ≤ D < 200 D > 200	dual tubes y of at least 10 tons DIN 17 173 Permissible Varia Tube $\pm 1 \% D$ $(max. \pm 0.5 mm)$ $\pm 1 \% D$ $\pm 1 \% D$ Permissible Variations of Wall thickness $t \le 2 * t_n$	± 7.5 % tions of Outside diameter Tube end max. ± 0.4 mm ± 0.5 % D ± 0.6 % D + 15 % / - 10 %
for waggon delivery Outside diameter (mm) < 100 100 ≤ D < 200	Jual tubes y of at least 10 tons DIN 17 173 Permissible Varia Tube $\pm 1 \% D$ $\pm 1 \% D$ Dermissible Variations of Wall thickness $t \le 2 * t_n$ $2 * tn < t \le 4 * t_n$	± 7.5 % tions of Outside diameter Tube end max. ± 0.4 mm ± 0.5 % D ± 0.6 % D + 15 % / - 10 % + 12.5 % / - 10 %
for waggon delivery Outside diameter (mm) < 100 100 ≤ D < 200 D > 200 D ≤ 130 mm	dual tubes y of at least 10 tons DIN 17 173 Permissible Varia Tube $\pm 1 \% D$ $(max. \pm 0.5 mm)$ $\pm 1 \% D$ $\pm 1 \% D$ Permissible Variations of Wall thickness $t \le 2 * t_n$	± 7.5 % tions of Outside diameter Tube end max. ± 0.4 mm ± 0.5 % D ± 0.6 % D + 15 % / - 10 % + 12.5 % / - 10 % ± 9 %
for waggon delivery Outside diameter (mm) < 100 100 ≤ D < 200 D > 200	Jual tubes y of at least 10 tons DIN 17 173 Permissible Varia Tube $\pm 1 \% D$ $\pm 1 \% D$ Dermissible Variations of Wall thickness $t \le 2 * t_n$ $2 * tn < t \le 4 * t_n$	± 7.5 % tions of Outside diameter Tube end max. ± 0.4 mm ± 0.5 % D ± 0.6 % D + 15 % / - 10 % + 12.5 % / - 10 %
for waggon delivery Outside diameter (mm) < 100 100 ≤ D < 200 D > 200 D ≤ 130 mm 130 < D ≤ 320	dual tubesy of at least 10 tonsDIN 17 173Permissible VariaTube $\pm 1 \% D$ (max. $\pm 0.5 \text{ mm}$) $\pm 1 \% D$ Permissible Variations of Wall thickness $t \le 2 * \text{ th}$ $2 * \text{tn} < t \le 4 * \text{ th}$ $t \le 0.05 D$ $0.05 D < t \le$	± 7.5 % tions of Outside diameter Tube end max. ± 0.4 mm ± 0.5 % D ± 0.6 % D + 15 % / - 10 % + 12.5 % / - 10 % ± 9 % + 17.5 % / - 12.5 %
for waggon delivery Outside diameter (mm) < 100 100 ≤ D < 200 D > 200 D ≤ 130 mm	dual tubes y of at least 10 tons DIN 17 173 Permissible Varia Tube $\pm 1 \% D$ $(max. \pm 0.5 mm)$ $\pm 1 \% D$ Permissible Variations of Wall thickness $t \le 2 * tn$ $2 * tn < t \le 4 * tn$ $t \le 0.05 D$ $0.05 D < t \le$ 0.11 D	$ \begin{array}{c c} \pm 7.5 \% \\ \hline tions of Outside diameter \\ \hline Tube end \\ \hline max. \pm 0.4 mm \\ \pm 0.5 \% D \\ \hline \pm 0.6 \% D \\ \hline \pm 0.6 \% D \\ \hline \pm 15 \% / - 10 \% \\ \hline \pm 9 \% \\ \hline \pm 17.5 \% / - \\ \hline 12.5 \% \\ \hline \pm 12.5 \% \\ \hline \pm 12.5 \% \\ \hline \end{array} $
for waggon delivery Outside diameter (mm) < 100 $100 \le D < 200$ D > 200 $D \le 130$ mm $130 < D \le 320$ mm	dual tubesy of at least 10 tonsDIN 17 173Permissible VariaTube $\pm 1 \% D$ (max. $\pm 0.5 \text{ mm}$) $\pm 1 \% D$ Permissible Variations of Wall thickness $t \le 2 * \text{ th}$ $2 * \text{tn} < t \le 4 * \text{ th}$ $t \le 0.05 D$ $0.05 D < t \le$	$ \begin{array}{c c} \pm 7.5 \% \\ \hline tions of Outside diameter \\ \hline Tube end \\ \hline max. \pm 0.4 mm \\ \pm 0.5 \% D \\ \hline \pm 0.6 \% D \\ \hline + 15 \% / - 10 \% \\ \hline + 12.5 \% / - 10 \% \\ \hline \pm 9 \% \\ \hline + 17.5 \% / - \\ \hline 12.5 \% \\ \hline \pm 12.5 \% \\ \hline \pm 10 \% \\ \hline \end{array} $
for waggon delivery Outside diameter (mm) < 100 100 ≤ D < 200 D > 200 D ≤ 130 mm 130 < D ≤ 320	dual tubes y of at least 10 tons DIN 17 173 Permissible Varia Tube $\pm 1 \% D$ $(max. \pm 0.5 mm)$ $\pm 1 \% D$ Permissible Variations of Wall thickness $t \le 2 * tn$ $2 * tn < t \le 4 * tn$ $t \le 0.05 D$ $0.05 D < t \le$ 0.11 D	$ \begin{array}{c c} \pm 7.5 \% \\ \hline tions of Outside diameter \\ \hline Tube end \\ max. \pm 0.4 mm \\ \hline \pm 0.5 \% D \\ \pm 0.6 \% D \\ \hline + 15 \% / - 10 \% \\ \hline + 12.5 \% / - 10 \% \\ \hline + 17.5 \% / - \\ \hline 12.5 \% \\ \hline \pm 12.5 \% \\ \hline \pm 10 \% \\ \hline + 22.5 \% / \\ \hline \end{array} $
for waggon delivery Outside diameter (mm) < 100 $100 \le D < 200$ D > 200 $D \le 130$ mm $130 < D \le 320$ mm	Jual tubesDIN 17 173Permissible VariaTube $\pm 1 \% D$ $(max. \pm 0.5 mm)$ $\pm 1 \% D$ Permissible Variations of Wall thickness $t \le 2 * tn$ $2 * tn < t \le 4 * tn$ $t \ge 0.05 D$ $0.05 D < t \le$ $0.11 D$ $t \le 0.05 D$	tions of Outside diameter Tube end $1 \pm 0.5 \% D$ $1 \pm 0.5 \% D$ $1 \pm 0.6 \% D$ $1 \pm 0.5 \% / -10 \%$ $1 \pm 9 \%$ $1 \pm 12.5 \% / -10 \%$ $1 \pm 12.5 \%$ $1 \pm 12.5 \%$ $1 \pm 10 \%$ $1 \pm 22.5 \% / -12.5 \%$
for waggon delivery Outside diameter (mm) < 100 $100 \le D < 200$ D > 200 $D \le 130$ mm $130 < D \le 320$ mm	Jual tubes DIN 17 173 Permissible Varia Tube $\pm 1 \% D$ $(max. \pm 0.5 mm)$ $\pm 1 \% D$ $\pm 1 \% D$ Permissible Variations of Wall thickness $t \le 2 * tn$ $2 * tn < t \le 4 * tn$ $t \ge 2 * tn$ $2 * tn < t \le 4 * tn$ $t \ge 0.05 D$ $0.05 D < t \le$ $0.05 D < t \le$ $0.05 D < t \le$	tions of Outside diameter Tube end $1 mtext{max. \pm 0.4 mm}$ $1 mtext{t0.5 \% D}$ $1 mtext{t0.6 \% D}$ $1 mtext{t0.6 \% D}$ $1 mtext{t12.5 \% /- 10 \%}$ $1 mtext{t12.5 \% /- 10 \%}$ $1 mtext{t12.5 \% /- 10 \%}$ $1 mtext{t12.5 \%}$ $1 mtext{t15 \% /}$
for waggon deliver, Outside diameter (mm) < 100	Jual tubes y of at least 10 tons DIN 17 173 Permissible Varia Tube $\pm 1 \% D$ $\pm 1 \% D$ $\pm 1 \% D$ $\pm 1 \% D$ Permissible Variations of Wall thickness $t \le 2 * t_n$ $2 * tn < t \le 4 * t_n$ $t > 4 * t_n$ $t \le 0.05 D$ $0.05 D < t \le$ $0.11 D$ $t \le 0.05 D$ $0.05 D < t \le$ $0.05 D < t \le$ $0.005 D < t \le$ $0.005 D < t \le$ $0.005 D < t \le$ $0.009 D$	$ \begin{array}{c c} \pm 7.5 \% \\ \hline tions of Outside diameter \\ \hline Tube end \\ \hline max. \pm 0.4 mm \\ \hline \pm 0.5 \% D \\ \hline \pm 0.6 \% D \\ \hline \pm 15 \% / - 10 \% \\ \hline \pm 12.5 \% / - 10 \% \\ \hline \pm 9 \% \\ \hline \pm 17.5 \% / - \\ \hline 12.5 \% \\ \hline \pm 10 \% \\ \hline \pm 10 \% \\ \hline \pm 12.5 \% / \\ \hline \pm 10 \% \\ \hline \pm 12.5 \% \\ \hline \pm 10 \% \\ \hline \pm 12.5 \% \\ \hline \pm 10 \% / \\ \hline - 12.5 \% \\ \hline \pm 12.5 \% \\ \hline \pm 15 \% / \\ \hline \pm 12.5 \% \\ \hline \pm 10 \% \\ \hline $
for waggon deliver, Outside diameter (mm) < 100	Jual tubesDIN 17 173Permissible VariaTube $\pm 1 \% D$ $(max. \pm 0.5 mm)$ $\pm 1 \% D$ $\pm 1 \% D$ Permissible Variations of Wall thickness $t \le 2 * tn$ $2 * tn < t \le 4 * tn$ $t \ge 0.05 D$ $0.05 D < t \le$ $0.11 D$ $t \le 0.05 D$ $0.05 D < t \le$ $0.05 D < t \le$ $0.09 D$ $t > 0.09 D$	tions of Outside diameter Tube end $1 mtext{max. \pm 0.4 mm}$ $1 mtext{t0.5 \% D}$ $1 mtext{t0.6 \% D}$ $1 mtext{t0.6 \% D}$ $1 mtext{t12.5 \% /-10 \%}$ $1 mtext{t12.5 \% /-10 \%}$ $1 mtext{t12.5 \%}$ $1 mtext{t10 \%}$ $1 mtext{t12.5 \%}$ $1 mtext{t10 \%}$ $1 mtext{t15 \% /}$
for waggon deliver, Outside diameter (mm) < 100	Jual tubes y of at least 10 tons DIN 17 173 Permissible Varia Tube $\pm 1 \% D$ $\pm 1 \% D$ $\pm 1 \% D$ $\pm 1 \% D$ Permissible Variations of Wall thickness $t \le 2 * t_n$ $2 * tn < t \le 4 * t_n$ $t > 4 * t_n$ $t \le 0.05 D$ $0.05 D < t \le$ $0.11 D$ $t \le 0.05 D$ $0.05 D < t \le$ $0.05 D < t \le$ $0.005 D < t \le$ $0.005 D < t \le$ $0.005 D < t \le$ $0.009 D$	$ \begin{array}{c c} & \pm 7.5 \% \\ \hline & \\ & \\ & \\ & \\ & \\ & \\ & \\ $
for waggon delivery Outside diameter (mm) < 100 $100 \le D < 200$ D > 200 $D \le 130$ mm $130 < D \le 320$ mm $320 < D \le 660$ mm	Jual tubes y of at least 10 tons DIN 17 173 Permissible Varia Tube $\pm 1 \% D$ $\pm 1 \% D$ $\pm 1 \% D$ Permissible Variations of Wall thickness $t \le 2 * t_n$ $2 * tn < t \le 4 * t_n$ $t \ge 2 * t_n$ $2 * tn < t \le 4 * t_n$ $t \le 0.05 D$ $0.05 D < t \le$ $0.11 D$ $t \le 0.05 D$ $0.05 D < t \le$ $0.09 D$ $t > 0.09 D$ $t > 0.09 D$ $t - basic wall thickness according to DIN 2448 $	$ \begin{array}{c c} \pm 7.5 \% \\ \hline tions of Outside diameter \\ \hline Tube end \\ \hline max. \pm 0.4 mm \\ \hline \pm 0.5 \% D \\ \hline \pm 0.6 \% D \\ \hline \pm 0.6 \% D \\ \hline \pm 15 \% / - 10 \% \\ \hline \pm 12.5 \% / - 10 \% \\ \hline \pm 19 \% \\ \hline \pm 17.5 \% / - \\ \hline 12.5 \% \\ \hline \pm 10 \% \\ \hline \pm 10 \% \\ \hline \pm 12.5 \% / \\ \hline - 12.5 \% \\ \hline \pm 15 \% / \\ \hline - 12.5 \% \\ \hline \pm 15 \% / \\ \hline - 12.5 \% \\ \hline \pm 15 \% / \\ \hline - 12.5 \% \\ \hline \pm 10 \% / \\ \hline - 12.5 \% \\ \hline \pm 10.5 \% / \\ \hline - 12.5 \% \\ \hline \pm 10.5 \% / \\ \hline - 12.5 \% \\ \hline \pm 12.5 \% / \\ \hline - 12.5 \% \\ \hline \pm 12.5 \% / \\ \hline \pm 10.5 \% / \\ $

	DIN 17 175		
Outside diameter	Permissi	ible Variations	
D ≤ 100 mm	± 0.75 % (but	at least ± 0.5 mm)	
100 < D ≤ 320 mm	±	: 0.9 %	
D > 320 mm		± 1 %	
	Permissible Variations of Wall thickness		
	t ≤ 2 * tn	+ 15 % / – 10 %	
D ≤ 130 mm	2 * t₀ < t ≤ 4 * tn	+ 12.5 % / – 10 %	
	t ≥ 4 * t _n	±9%	
	t ≤ 0.05 D	+ 17.5 % /	
130 < D ≤ 320	0.05 D < t ≤	– 12.5 %	
mm	0.11 D	± 12.5 %	
	t > 0.11 D	± 10 %	
	t ≤ 0.05 D	+ 22.5 % / - 12.5 %	
320 < D ≤ 660	0.05 D < t ≤	+ 15 % / - 12.5 %	
mm	0.09 D		
	t > 0.09 D	+ 12.5 % / – 10 %	
	tn – basic wall thickness according to DIN 2448		
	Permissible Variations of Weight		
for individu		+ 10 % / - 8 %	
for waggon delivery		± 7.5 %	
	DIN 17 176		
Permissible Variations		according to DIN 17 175	
Permissible Variation		according to DIN 1629	
	DIN 17 204	±1%	
Permissible Variations of Outside diameter		mm is allowed)	
Permissible Variations of Wall thickness		12.5 %	
	Permissible Variations of Weight	ed permissible variation of weight)	
for individ		+ 12 % / - 8 %	
for waggon delivery		+ 10 % / - 5 %	
	EN 10 208-2		
	Permissible Variati	ions of Outside diameter	
Outside diameter (mm)	Tube	Tube end	
D≤ 60	± 0.5 mm or	± 0.5 mm or	
60 < D ≤ 610	± 0.75 %	\pm 0.5 D (higher value is always valid) not more than \pm 1.6 m	
Wall thickness	(higher value is always valid) Permissible Varia		
t ≤ 4	Permissible Variations of Wall thickness + 0.6 mm / – 0.5 mm		
4 < t < 25			
t≥25	+ 15 % / −12.5 % + 3.75 mm / − 3.0 mm or ± 10 % (higher value is always valid)		
- 20	Permissible Variations of Weight		
for individ	Ŭ	+ 10 % / – 3.5 %	
	EN 10 210-2		
Permissible Variations of Outside diameter		±1%	
	min. ± 0.5 mm. max. ± 10 mm – 10 %.		
Permissible Variations of Wall thickness		+ it is limited by weight tolerance	
It is	possible max. tolerance –12. 5 % for 25 % of the diam	eter.	
Permissible Variations of Weight		±6%	
for individual tube	(it is possible n EN 10 216-1 and 4	nax. tolerance + 8 %	
	Liv 10 210-1 and 4	Permissible Variations of Wall thickness according	
		ratio t/D	
	Permissible Variations of Outside diameter	t/D ≤ 0.025 0.02	
Outside dia- meter (mm)			
Outside dia- meter (mm)		$t/D \le 0.05$ $0.05 < t/D \le 0$	
Outside dia- meter (mm)		t/D ≤ 0.05 0.05 < t/D ≤ 0.05 < t/D ≤ 0.05 < t/D ≤ 0.05 < t/D ≤ 0.1	

D > 219.1	± 1 % or ± 0.5 mm (higher value is always valid)	± 20 % ± 15 % ± 12.5 % ± 10 %*	
* For D ≥ 3	355.6 mm it is possible to increase the local tolerance by	about 5 %	
	EN 10 216-2 and 3		
Outside dia- meter (mm)	Permissible Variations of Outside diameter	Permissible Variations of Wall thickness according to ratio t/D	
		$ t/D \le 0.025 \qquad 0.025 < \\ t/D \le 0.05 \qquad 0.05 < t/D \le 0.1 \\ t/D > 0.1 $	
D ≤ 219.1		\pm 12.5 % or \pm 0.4 mm (higher value is always valid)	
D > 219.1	\pm 1 % or \pm 0.5 mm (higher value is always valid)	± 20 % ± 15 % ± 12.5 % ± 10 %*	
There are also tolerances for combination of tolerances for	inner diameter and wall thickness, outside diameter and thickness.	minimum wall thickness, inner diameter and minimum wall	
	EN 10297-1		
Outside dia- meter (mm)	Permissible Variations of Outside diameter	Permissible Variations of Wall thickness according to ratio t/D	
		t/D ≤ 0.025 0.025 <t d≤0.05<br="">t/D>0.05</t>	
D ≤ 219.1	±1% or	± 12.5 % or ± 0.4 mm (higher value is always valid)	
D >	± 0.5 mm (higher value is always valid)	± 20 % ± 15%	
2,191		± 12.5 %	
Wall thickness (mm)	Permissible Variations of Wall thickness		
	with higher accuracy	with common accuracy	
up to 15	± 12.5 %	+ 12.5 % /	
including		– 15.0 %	
from 15	+ 10.0 % /	± 12.5 %	
to 30	– 12.5 %		
over 30	± 10.0 %	+ 10.0 % / - 12.5 %	
up to 15	+ 12.5 % /		
including	– 15.0 %		
from 15 to 30	± 12.5 %		
over 30	+ 10.0 % / - 12.5 %		
Legend: D = outside diameter, t = wall thickness			