

Convolute Rolled Tube Products – Phenolic Resins, Paper Substrates

Phenolic Resins – Paper Substrates							
Grade	RT610	RT628	RT628H	RT629	RT630	RT630H	RT630S
NEMA ¹	X	XX			XXX		
Color	NA			NA/BK			NA

Inside Diameter		Wall Thickness ^A		Outside Diameter	Maximum
Minimum	Maximum	Minimum	Maximum	Maximum	Length ^B
0.094	0.186	0.031	0.203	0.500	18
0.187	0.249	0.031	0.218	0.625	36
0.250	0.374	0.031	0.250	0.750	36
0.375	0.624	0.031	0.937	2.500	48
0.625	1.249	0.031	1.562	3.750	48
1.250	2.999	0.031	1.750	6.500	48
3.000	4.874	0.047	1.750	7.500	48
4.875	8.999	0.062	1.750	12.500	48
9.000	23.999	0.094	1.750	27.500	48
24.000	29.999	0.125	1.750	33.500	48
30.000	48.000	0.156	1.750	51.500	48

Convolute Rolled Tube Products – Phenolic Resins, Synthetic Substrates

Phenolic Resins – Synthetic Substrates	
Grade	RT193PM<
Substrate	Kevlar
NEMA	---
Color	BK

Inside Diameter		Wall Thickness ^A		Outside Diameter	Maximum
Minimum	Maximum	Minimum	Maximum	Maximum	Length ^B
2.000	2.999	0.125	1.500	7.500	48
3.000	4.874	0.125	2.250	7.500	48
4.875	8.999	0.125	3.000	20.000	48
9.000	23.999	0.156	3.000	30.000	48
24.000	29.999	0.187	3.000	41.500	48
30.000	48.000	0.250	3.000	54.000	48

Convolute Rolled Tube Products – All Resins, Cotton Fabric Substrates

Phenolic Resin - Fine Weave (linen) Cotton Fabric Substrate					
Grade	RTB320	RTB320H	RTB320S	RTB320X	RTB320Z
NEMA ²	LE				
Color	NA/BK		NA		

Fine Weave (linen) Cotton Fabric Substrate					
Grade	RTB324	RT325	RTB326	RTB326H	RTB329
Resin System	Phenolic – PTFE	Phenolic – Graphite	Epoxy		Melamine
NEMA	---	---	---	---	---
Color	NA	BK	NA		

Inside Diameter		Wall Thickness^A		Outside Diameter	Maximum
Minimum^C	Maximum	Minimum^C	Maximum	Maximum	Length^B
0.094	0.186	0.031	0.203	0.500	24
0.187	0.249	0.031	0.218	0.625	36
0.250	0.374	0.031	0.250	0.750	36
0.375	0.624	0.031	1.062	2.500	48
0.625	1.249	0.031	1.562	3.750	48
1.250	2.999	0.031	3.125	7.500	48
3.000	4.874	0.047	2.250	7.500	48
4.875	8.999	0.062	3.500	16.000	48
9.000	23.999	0.094	3.500	31.000	48
24.000	29.999	0.125	3.500	37.000	48
30.000	48.000	0.156	3.500	55.000	48

Medium/Heavy Weave (canvas) Cotton Fabric Substrate								
Grade	RT310	RT310H	RT310S	RT315	RT342	RT342H	RT360	RT370
Resin System	Phenolic			Phenolic – Graphite	Phenolic		Phenolic – MoS2	Alumina
NEMA ¹	C				C			
Color	NA			BK	NA		BK	RD

Inside Diameter		Wall Thickness ^A		Outside Diameter	Maximum Length ^B
Minimum	Maximum	Minimum	Maximum	Maximum	
0.500	0.624	0.047	1.000	2.500	48
0.625	1.249	0.047	1.562	3.750	48
1.250	2.999	0.047	3.125	7.500	48
3.000	4.874	0.062	2.250	7.500	48
4.875	8.999	0.062	5.750	20.000	48
9.000	23.999	0.094	5.750	30.000	48
24.000	29.999	0.125	5.750	41.500	48
30.000	48.000	0.156	5.750	58.000	48

Convolute Rolled Tube Products – All Resins, Glass Fabric Substrates

Epoxy Resins – Glass Fabric Substrates							
Grade	RT130	RT130M	RT130X	RT500	RT500F	RT500M	RT500X
NEMA ¹	FR-4			G-10			
Color	NA/BK ³	NA/BK/ WH	NA/BK	NA			

Epoxy Resins – Glass Fabric Substrates (continued)						
Grade	RT511	RT511F	RT511H	RT511M	RT521M	RT571
NEMA ¹	G-10 ⁴					G-10
Color	NA					

Phenolic, Melamine and Silicone Resins – Glass Fabric Substrates								
Grade	RT504	RT504F	RT505	RT505F	RT507	RT507F	RT509	RT509F
Resin System	Phenolic		Melamine		Silicone		Melamine	
NEMA ¹	G-3 ⁵		G-5		G-7		G-9	
Color	NA							

Inside Diameter		Wall Thickness ^A		Outside Diameter	Maximum
Minimum ^C	Minimum	Minimum ^C	Maximum	Maximum	Length ^B
0.094	0.186	0.031	0.203	0.500	18
0.187	0.249	0.031	0.218	0.625	36
0.250	0.374	0.031	0.250	0.750	36
0.375	0.624	0.031	1.062	2.500	48
0.625	1.249	0.031	1.562	3.750	48
1.250	2.999	0.031	2.000	7.000	48
3.000	4.874	0.047	2.000	7.500	48
4.875	8.999	0.062	2.000	13.000	48
9.000	23.999	0.094	2.000	28.000	48
24.000	29.999	0.125	2.000	34.000	48
30.000	48.000	0.156	2.000	52.000	48

I. Special Exceptions – (For tables above)
<p>A. Specifying Inside Diameter and Wall Thickness is not offered in any grade where the outside of the tube is unfinished or requires lathe turning.</p> <p>B. Supplied at: Random Length = No lengths less than 12" on a 18", 18" on a 24", 30" on a 36" or 42" on a 48" standard length. Non-Trimmed is considered a random length but not trimmed to allow for maximum customer yield. Minimum Length is considered the specified length with plus or minus 1.000" allowance Cut-To-Length is: (Tube must be a finished OD) 6" - 48" cut length with maximum Outside Diameter of 0.250" - 5.000"; Tolerance of ± 0.125" (May cut all – 0.250" or all + 0.250") 12" - 48" cut length with maximum Outside Diameter of 5.001" - 18.000"; Tolerance of ± 0.250" (May cut all – 0.500" or all + 0.500") 18" - 48" cut length with maximum Outside Diameter of 18.001" - 24.000"; Tolerance of ± 0.250" (May cut all – 0.500" or all + 0.500") All grades of micro ID tubing (less than 0.188" ID) are offered as random length only. Maximum Outside Diameter is 36.000" for trimmed length. Maximum Wall for any trimmed tube is 4.0"</p> <p>C. Additional Restrictions and Restricted Grades:</p> <p>LINEN TABLE IDs 2.000" to 3.000" with Wall Thicknesses less than 0.047" are only offered in RTB320 or RTB329, no minimum length.</p> <p>GLASS TABLE RT130M, RT500M, RT505, RT507, RT509, RT511M and RT521M (Minimum Wall Thickness of 0.094" for Inside Diameters Ranging from 0.312" – 0.749"), (Minimum Wall Thickness of 0.062" for Inside Diameters Ranging from 0.750" – 1.254"). IDs 2.000" to 3.000" with Wall Thicknesses less than 0.047" are only offered in RT500F, RT500X, RT511F no minimum length. Foil Lined Tubes are offered in RT500M or RT511M with a Minimum Wall of 0.125", Minimum ID of 4.000" and Finished Outside.</p>

II. Outside Diameter – Available Finishes		
Outside Diameter		
Minimum	Maximum	Finish
0.156	9.000	Centerless Ground (Standard), As Wound Available
4.875	9.000	Lathe Turned (Non-Standard), Contact Customer Service
9.001	24.000	Lathe Turned (Standard), As Wound Available
24.001	Maximum	As Wound (No Outside Finishing Available)

NOTE: Contact Customer Service for sizes and tolerances not listed. Micro ID Tubing (IDs less than 0.187") is offered in RTB320X, RTB320Z, RT130X, RT500X, RT628, RT629 and RT630. Industrial Standards related to tolerance, finish and workmanship is assumed, unless otherwise specified. Walls greater than 0.500" thick are subject to check marks and/or cracks in the wall.

¹ For information on Specifications and Standards, see "Tube – Specification Cross Reference".

² For information on Specifications and Standards, see "Tube – Specification Cross Reference".

³ RT130 black is subject to availability or minimum order quantity.

⁴ NEMA Standard LI-1 and MIL-I-24768 do not recognize a high temperature epoxy glass convolute rolled tube form, but, these materials are manufactured with a high temperature epoxy resin system, commonly used for NEMA G-11 and MIL-I-24768/27, type GEB sheet products, and do have improved thermal properties at elevated temperatures.

⁵ G-3 tube grades, although a recognized form NEMA, ASTM and MIL-I-24768 standards, has no criteria, and is only defined in IEC 61212-3-1; grade PF-GC-21.