



NEMA Phenolic Sheet Thickness Tolerances

At least 90% of the area of the sheet shall be within the tolerances given and at no point shall the thickness vary from the nominal by a value greater than 125% of this specified tolerance. For nominal thickness' not listed, the tolerance shall be the same for the next greater thickness. For nominal thickness' greater than 2.0 inches, please contact the Customer Service Department.

Tolerances in Thickness, Inches							
Nominal Thickness	Paper Based Grades	Cotton Fabric Based Grades Norplex-Micarta Grades				Glass Based Grades	Aramid & Nylon Grades
		NP310	NP320	NP310E	NP320E		
	NP600 Series					NP500 Series	NP100 Series
(Inches)	(+ or -)	(+ or -)	(+ or -)	(+ or -)	(+ or -)	(+ or -)	(+ or -)
0.010	0.0002	-	0.003	-	-	0.002	0.003
0.015	0.0025	-	0.0035	-	0.0035	0.003	0.0035
0.020	0.003	-	0.004	-	0.004	0.004	0.004
0.025	0.0035	-	0.0045	0.005	0.0045	0.005	0.0045
0.031	0.0035	0.0065	0.005	0.0065	0.0055	0.0065	0.0065
0.047	0.0045	0.0075	0.0055	0.0075	0.0055	0.0075	0.0075
0.062	0.005	0.0075	0.006	0.0075	0.006	0.0075	0.0075
0.094	0.007	0.009	0.007	0.009	0.007	0.009	0.009
0.125	0.008	0.010	0.008	0.010	0.008	0.012	0.010
0.156	0.009	0.011	0.009	0.011	0.009	0.015	0.011
0.188	0.010	0.0125	0.010	0.0125	0.010	0.019	0.0125
0.219	0.011	0.014	0.011	0.014	0.011	0.021	0.014
		(+ only)	(+ only)				
0.250	0.012	0.030	0.024	0.015	0.012	0.022	0.015
0.312	0.014	0.035	0.029	0.017	0.0145	0.026	0.024
0.375	0.017	0.040	0.034	0.020	0.017	0.030	0.032

0.438	0.019	0.044	0.038	0.022	0.019	0.033	0.040
0.500	0.021	0.048	0.042	0.024	0.021	0.036	0.048
0.625	0.024	0.053	0.048	0.027	0.024	0.040	0.054
0.750	0.027	0.058	0.054	0.029	0.027	0.043	0.058
0.875	0.030	0.062	0.060	0.031	0.030	0.046	0.062
1.000	0.033	0.065	0.065	0.033	0.033	0.049	0.066
1.125	0.035	0.069	0.069	0.035	0.035	0.053	-
1.250	0.037	0.073	0.073	0.037	0.037	0.055	-
1.375	0.039	0.077	0.077	0.039	0.039	0.058	-
1.500	0.041	0.081	0.081	0.041	0.041	0.061	-
1.625	0.043	0.085	0.085	0.043	0.043	0.064	-
1.750	0.045	0.089	0.089	0.045	0.045	0.067	-
1.875	0.047	0.093	0.093	0.047	0.047	0.070	-
2.000	0.049	0.097	0.097	0.049	0.049	0.073	-

***Note:** For grades NP600, NP602 and NP605, use Glass Tolerances for thickness over 0.125".

Sheet Bow or Twist Tolerance

All Grades: Thickness, Inches	Max. Bow or Twist *Percent
0.031 - 0.061	5.00
0.062 - 0.124	2.50
0.125 - 0.249	1.00
0.250 - 0.750	0.50
0.751 and over	0.025

*Percentage of bow is stated in terms of the length or width dimensions; percentage of twist is stated in terms to the dimensions from one corner to the diagonally opposite corner.

Length and Width Tolerances

All sheet sizes: the tolerance in length and width shall be plus or minus 1.0 inch from the nominal trimmed dimensions. Panels or strips: the tolerance of cut pieces is entirely dependent upon the cutting equipment. Shearing, sawing, and rotary cutting operations achieve different tolerances. Therefore, the tolerances pertaining to an order will depend upon the cutting operation required. Close tolerances may be possible, but require special attention and equipment.

Cross Reference for Norplex Grades - NEMA Grades - Military Specifications

ANSI/ASTM NEMA LI-1-1998	Norplex Grade	Military MIL-I-24768/ – Type
X	NP610	/12 – PBM
XP	NP611, NP660, NP680	/19 – PBM-P
XPC	NP612, NP625, NP664	/20 – PBM-PC
XX	NP629	/11 – PBG
XXP	---	/21 – PBG-P
XXX	NP630	/10 PBE
XXXP	---	/22 – PBE-P
FR-1	NP691	/24 – PBM-PF
C	NP310	/16 – FBM
CE	NP310E	/14 – FBG
CF	NP318	---
L	NP320	/15 – FBI
LE	NP320E	/13 – FBE
G-3	NP504	/18 – GPG
G-5	NP509	/8 – GMG
G-9	NP509	/1 – GME
G-10	G10	/2 – GEE
FR-4	NP130, NP130HF, NP510A, NP510AT	/27 – GEE-F
G-11	NP511, MC511A,	/3 – GEB
CEM-1	NP424	/29 – CEM-1
N-1	NP101	/9 – NPG

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