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To: Distribution

From: Applications Engineering

Re: M & Y Data for Distribution-SI Units Edition **REVISED**

Date: February 27, 2008

Attached is the current M and Y data we have available on selected gasket products. The data is presented in English and International System (metric) units. All standard results were obtained using ASTM F586 as a guide with a leak rate of .005 cc/minute for the "Y" values, a leak rate of .5 cc/minute for the "M" values, Nitrogen gas as the media, and a standard 4" ring gasket. Compared to the M and Y values for liquid service, these values are higher and, therefore, more conservative.

Liquid values were added in 2002. These tests were conducted with water with an additive that glows under black light. Gaskets were considered sealed if no leakage was visible.

M and Y data is to be used for flange design only as specified in the ASME Boiler and Pressure Vessel Code Division 1, Section VIII, Appendix 2. It is not meant to be used as a gasket seating stress value in actual service. Our bolt torque tables give that information and should be used as such.

If there are any questions please contact Applications Engineering.

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Applications Engineer

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Applications Engineer

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"M & Y" Factors

	Thickness		"m"	"y"		
	inches	mm	(no units)	psi	N/mm^2	kgf/mm^2
COMPRESSED NON-ASBESTOS						
700	1/16	1.6	4.0[6]	2500[6]	17.2	1.76
	1/8	3.2	4.0[7]	2500[7]	17.2	1.76
2550	1/16	1.6	4.0	1800	12.4	1.27
	1/8	3.2	7.0	3500	24.1	2.5
2900	1/16	1.6	10[1]	5000	34.5	3.52
	1/8	3.2	24[1]	7000	48.3	4.92
2930	1/16	1.6	6.0	4500	31.0	3.16
2950	1/16	1.6	4.5	3000	20.7	2.11
	1/8	3.2	7.0	4000	27.6	2.81
3000	1/16	1.6	4.2	3050	21.0	2.14
	1/8	3.2	5.2	4400	30.3	3.09
3200/3400	1/16	1.6	3.5	2100	14.5	1.48
	1/8	3.2	6.6	3000	20.7	2.11
3300	1/16	1.6	2.1	3050	21.0	2.14
	1/8	3.2	4.0	3500	24.1	2.46
3700	1/16	1.6	3.5	2800	19.3	1.97
	1/8	3.2	6.7	4200	29.0	2.95
3750	1/16	1.6	8.0[5]	2500	18.6	1.90
	1/8	3.2	7.5[5]	2300	13.8	1.41
3760	1/16	1.6	8.1[8]	2500	17.2	1.75
	1/8	3.2	7.4[8]	2300	15.8	1.62
3800	1/16	1.6	2.0	2000	13.8	1.41
CP-3900	1/16	1.6	1.5	1800	12.4	1.27
	1/8	3.2	1.5	3600	24.8	2.53
IFG-5500	1/16	1.6	6.6	2600	17.9	1.83
	1/8	3.2	6.6	3300	22.8	2.32
IFG-5507	1/16	1.6	3.5	2400	16.5	1.69
	1/8	3.2	5.5	3900	26.9	2.74
HTC-9800	1/16	1.6	3.5	2350	16.2	1.65
	1/8	3.2	8.0	3200	22.1	2.25

	Thickness		"m"	"y"		
	inches	mm	(no units)	psi	N/mm^2	kgf/mm^2
HTC-9850	1/16	1.6	6.5	2550	17.6	1.79
	1/8	3.2	8.0	2800	19.3	1.97
G-9900	1/16	1.6	4.5	4100	28.3	2.88
	1/8	3.2	6.0	4100	28.3	2.88
ST-706	1/16	1.6	11.4[(1)]	4800	33.1	3.37
	1/8	3.2	22.0[(1)]	6500	44.8	4.57
GYLON®						
3500 Fawn	1/16	1.6	5.0	2750	19.0	1.93
	1/8	3.2	5.0	3500	24.1	2.46
3504 Blue	1/16	1.6	3.0	1650	11.4	1.16
	1/8	3.2	2.5	3000	20.7	2.11
	3/16	4.8	2.5	3000	20.7	2.11
	1/4	6.4	2.5	3000	20.7	2.11
3510 Off-White	1/16	1.6	2.0	2350	16.2	1.65
	1/8	3.2	2.0	2500	17.2	1.76
3530 Black	1/16	1.6	2.8	1650	11.4	1.16
	1/8	3.2	2.0	1650	11.4	1.16
3540	1/16	1.6	3.0	1700	11.7	1.20
	1/8	3.2	3.0	2200	15.2	1.55
	3/16	4.8	2.0	2200	15.2	1.55
	1/4	6.4	2.0	2500	17.2	1.76
3545	1/16	1.6	2.6	1500	10.3	1.05
	1/8	3.2	2.0	2200	15.2	1.55
	3/16	4.8	2.0	2200	15.2	1.55
	1/4	6.4	7.0	3700	25.5	2.60
3545 (in envelope)	1/8	3.2	2.0	800	5.5	0.56
3565 ENVELON®	1/16	1.6	2.8	1400	9.7	0.98
	1/8	3.2	3.7	2300	15.9	1.62
	3/16	4.8	5.5	2800	19.3	1.97
	1/4	6.4	6.0	2800	19.3	1.97
HP 3560	1/16	1.6	5.0	3500	24.1	2.46
	1/8	3.2	5.0	4000	27.6	2.81
HP 3561	1/16	1.6	5.0	3500	24.1	2.46
	1/8	3.2	5.0	4000	27.6	2.81
3575 SAGE	1/16	1.6	2.1	2000[(9)]	13.8	1.40
	1/8	3.2	2.1	2500[(10)]	17.2	1.76
GYLONGen2™ 3591	1/16	1.6	4.3	1650	11.4	1.16
	1/8	3.2	2.0	1650	11.4	1.16

	Thickness		"m"	"y"		
	inches	mm	(no units)	psi	N/mm^2	kgf/mm^2
GYLONGen2™ 3594	1/16	1.6	3.0	1650	11.4	1.16
	1/8	3.2	3.0	2500	17.2	1.76
PTFE						
8764	1/16	1.6	3.0	1500	10.3	1.05
	1/8	3.2	3.0	1700	11.7	1.20
9405	1/16	1.6	2.6	1550	10.7	1.09
	1/8	3.2	3.0	1800	12.4	1.27
500FG[4]	1/16	1.6	2.6	1550	10.7	1.09
	1/8	3.2	3.0	1800	12.4	1.27
3535 Joint Sealant	1/4	6.4	2.0	3000	20.7	2.11
Composite Gaskets						
STRESS SAVER® 370	1/8	3.2	2.0	400	2.8	0.28
GRAPH-LOCK®						
3123 (Homogeneous)	1/16	1.6	2.0	2500	17.2	1.76
3124 (Wire-Inserted)	1/16	1.6	2.0	2500	17.2	1.76
	1/8	3.2	2.0	2500	17.2	1.76
3125 (Laminated)	1/8	3.2	2.0	2500	17.2	1.76
3125SS	1/16	1.6	6.5	3300	22.8	2.32
	1/8	3.2	11.8[1]	5900	40.7	4.15
3125 TC	1/16	1.6	2.6	2500	17.2	1.76
	1/8	3.2	6.0	3000	20.7	2.11
3128	1/16	1.6	3.0	2000	13.8	1.41
	1/8	3.2	3.6	3000	20.7	2.11
Vegetable Fiber						
660	1/16	1.6	2.2	1000	6.9	0.70
	1/8	3.2	2.2	2000	13.8	1.41
681	1/16	1.6	9.2	2700	18.6	1.90
	1/8	3.2	5.5	2400	16.5	1.69
Elastomers without fabric (Per ASME Boiler & Pressure Vessel Code Div. 1, Sect. VIII, App. 2)[2]						
Below 75 Shore A	All		0.50	0[3]	0[3]	0[3]
75 Shore A or higher	All		1.00	200	1.4	0.14

	Thickness		"m"	"y"		
	inches	mm	(no units)	psi	N/mm^2	kgf/mm^2
Metallic Gaskets						
GRAPHONIC® (Gas)	1/16	1.6	2.0	2000	13.8	1.41
	1/8	3.2	9.0	3000	20.7	2.11
GRAPHONIC® (Liquid)	1/16	1.6	2.0	900	6.2	0.63
	1/8	3.2	2.0	900	6.2	0.63
TEPHONIC® (Gas)	1/8	1.6	2.0	2500	17.2	1.76
GET (Gas)	1/8	3.2	2.0	1600	11	1.10
EDGE® (RW 304/FG)	1/8	3.2	2.0	5000	34.5	3.52
CD® (RW 304/FG)	1/8	3.2	3.0	7500	51.7	5.27
FLEXSEAL® (RW 304/FG)	1/8	3.2	3.0	10000	70.0	7.03
Kammprofile (graphite facing)	1/8		4.0	1000	7.0	0.70
LIQUID "m" & "y" Values Using Water Media (Note: These values are very low and are listed for information only. Nitrogen values should be used for flange design.)						
2400	1/16	1.6	2.5	700	4.8	0.48
	1/8	3.2	4.0	1200	8.3	0.83
3300 (CNA)	1/8	3.2	5.0	910	6.3	0.63
3400 (CNA)	1/16	1.6	2.0	927	6.4	0.65
3570 (PTFE)	1/16	1.6	2.0	1000	6.9	0.70
3760 (CNA)	1/16	1.6	2.0	300	2.0	0.21
	1/8	3.2	2.0	300	2.0	0.21
9800 (CNA)	1/16	1.6	2.0	464	3.2	0.33
9850 (CNA)	1/16	1.6	2.0	464	1.6	0.16
3500 (GYLON)	1/16	1.6	2.1	927	6.4	0.65
3504 (GYLON)	1/16	1.6	2.1	232	1.6	0.16

3510 (GYLON)	1/16	1.6	2.1	927	6.4	0.65

	Thickness		**"m"**	**"y"**		
	inches	mm	(no units)	psi	N/mm^2	kgf/mm^2
3540 (GYLON)	1/16	1.6	3.3	250	1.7	0.18
	1/8	3.2	3.3	700	4.8	0.49
3545 (GYLON)	1/16	1.6	1.5	450	3.1	0.31
	1/8	3.2	2.0	450	3.1	0.31
3565 (GYLON)	1/16	1.6	1.4	232	1.6	0.16
706 (CNA)	1/8	3.2	2.0	700	4.8	0.49

NOTES:

NOTE [(1)]: These "M" values, based on ambient temperature leakage with nitrogen, are high. Field experience has shown that lower values would be workable in elevated temperatures. Consult Applications Engineering.

NOTE [(2)]: ASTM F-586 test method is not valid for elastomeric gaskets. These values are from ASME Boiler & Pressure Vessel Code Division 1, Section VIII, Appendix 2.

NOTE [(3)]: Garlock Applications Engineering has historically recommended a suggested "Y" value of 100 psi (0.7 N/mm^2) (.07 kgf/mm^2) for these elastomers.

NOTE [(4)]: M & Y values for 500FG material are based on Style 9405 test results.

NOTE [(5)]: The LEAK-GARD® Style 3750 gasketing material is designed to affect a tighter seal by swelling when contacted by oil. Since the ASTM F-586 method does not incorporate oil in the test procedure, the values given are not a true measurement of how the gasket will perform in aliphatic hydrocarbon service. The test values are considerably higher than actual required compressive loads.

NOTE [(6)]: Actual tests showed 3.7 and 1200 psi. These are considered too low for effective flange design.

NOTE [(7)]: Actual tests showed 3.6 and 1150 psi. These are considered too low for effective flange design.

NOTE [(8)]: Since the primary intended service for this style would be oil and water, liquid M&Y values are more appropriate.

NOTE [(9)]: Actual tests showed 673 psi. These are considered too low for effective flange design.

NOTE [(10)]: Actual tests showed 785 psi. These are considered too low for effective flange design.