MAPAL PLASTICS

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Comparison of Mechanical properties of MAPAL foam PP vs. foam PVC

MAPAL submitted samples to authorized laboratories for mechanical tests on foam PVC samples in thicknesses 2, 3 and 5 mm in comparison to MAPAL foam PP in thicknesses 1.8, 2.7 and 3.5 mm.
The results of the tests performed are presented here below.

	PP foam 1.8 mm		**PVC foam 2 mm**		**Conclusion (ref. weaker direction)**
Test	MD	TD	MD	TD	
Tensile Strength MPa	82	71	89	40	PP foam is 77% stronger
Max Strain %	103	79	39	19	PP foam has 315% more elasticity
Flexural Strength MPa	30	28	7.7	21	PP foam is 290% more flexible
Impact Charpy J/sqm	2.97		0.88		PP foam has 230% more hit resistance
Hardness	60		38		PP foam is 57% harder

	PP foam 2.7 mm		**PVC foam 3 mm**		**Conclusion (ref. weaker direction)**
Test	MD	TD	MD	TD	
Tensile Strength MPa	109	92	108	48	PP foam is 90% stronger
Max Strain %	92	62	33	23	PP foam has 170% more elasticity
Flexural Strength MPa	30	25	6.5	18	PP foam is 360% more flexible
Impact Charpy J/sqm	2.98		0.88		PP foam has 230% more hit resistance
Hardness	59		37		PP foam is 59% harder

	PP foam 3.5 mm		PVC foam 5 mm		Conclusion (ref. weaker direction)
Test	MD	TD	MD	TD	
Flexural Strength MPa	113	122	35	99	PP foam is 220% more flexible
Impact Charpy J/sqm	2.69		1.05		PP foam has 156% more hit resistance
Hardness	63		40		PP foam is 57% harder

After studying all these results we know that we can replace:

1. **PVC foam in 5 mm thick –with PP foam in 3.5 mm thick.**
2. **PVC foam in 3 mm thick – with PP foam in 2.5 mm thick.**
3. **PVC foam in 2 mm thick. – with PP foam in 1.6 mm thick.**

and still the PP foam sheets will have better results than PVC foam sheets.