

Comparison Matrix and Complementary Information for Plastics Used by LTP

	ABS	PS CHOC <i>(is no longer sourced in the standard range)</i>	PVC	PMMA (Plexiglass, Altu, Perspex)	PC [Lexan (MRSE), Makrolon, Impax]
Designation	ACRYLONITRILE BUTADIENE-STYRENE	POLYSTYRENE CHOC (non Crystall)	POLYVINYLE CHLORIDE	POLY METHYL METHA CRYLATE	POLYCARBONATE
Description	ABS, a thermoplastic especially used in the manufacture of enclosures, furniture, decoration, automobile.	The PS a thermoplastic especially used in the manufacture of housings, furnishing, decoration, automobile.	Rigid PVC is mainly used for the production of profiles and tubes by extrusion.	PMMA is appreciated for its very good transparency. It is mainly used for optics, automobile, carpentry and medical applications.	The PC is a thermoplastic especially used in the electromechanical, automobile, housings for electronics.
General use	Appliances, toys (LEGO), automobile, nautical etc.	Budget enclosures and decoration	Panels, signboard, display stands, window decorations etc.	Optics, Carpentry, Automotive, Medical	Appliances, Automotive, Electronics
Mechanical, technical and economic characteristics	Good resistance to scratching due to its grainy surface Beautiful satin aspect Good stiffness and impact resistance Easy marking Good temperature resistance Ecological because the left overs after milling are grounded and reused for future plastic panel production	Compared to ABS: Less scratch resistance Less beautiful satin appearance Less good rigidity and impact resistance Easy marking Less temperature resistance Ecological because the left overs after milling are grounded and reused for future plastic panel production	Weather proof and resistant to chemical and corrosive agents Hardly flammable Smooth appearance	Very good transparency Good UV resistance Brightness and remarkable hardness Exist in different types of surface finish (Anti-Reflection, Anti-Scratch) PMMA is more economical than the PC. There is the possibility of anti-abrasive surface treatment (only on 1 side).	Good impact resistance Good non-electrical conduct Good resistance towards high temperature Scratch-resistant but less resistant compared to PMMA. PC is less economical than PMMA. There is the possibility of anti-abrasive surface treatment (MRSE .
Fire resistance (UL94V0)	Yes - optional	Yes - optional	Yes - optional	No	Yes - optional
Impact resistance	Resistance ++	Resistance +	Resistance +	Resistance ++	Resistance +++
UV resistance	Resistance --- Yellowing: Acrylonitrile Butadiene Styrene is sensitive to UV rays due to double bonds of butadiene.	Resistance --- Following a direct exposure to natural UV, it can change colour after a few months	Resistance --- PVC weakens due to too long exposure to ultraviolet light	Resistance +++ Good resistance to ultraviolet rays	Resistance + Resistant to ultraviolet rays but risk a slight yellowing with time
Rigidity	Rigidity ++	Rigidity +	Rigidity +++	Rigidity +++	Rigidity +++
Gluing / Cold welding	Yes	Yes	Yes	Yes	Yes
Gluing / cold welding characteristic	ABS can be cold welded by different solvents.	PS can be cold welded by different solvents.	PVC can be glued with different industrial glues.	PMMA can be glued with different industrial glues.	PC can be glued with different industrial glues.
Can be glued / cold welded with:	ABS	PS CHOC	PS CHOC; ABS; PC; PMMA; PVC	PS CHOC; ABS; PMMA; PVC	PS CHOC; ABS; PC; PVC
Bending	Yes	Yes	depends on projects	depends on projects	depends on projects
Round bending / curving	Yes	Yes	Yes	No	depends on projects
Chemical resistance	Resistance ---	Resistance ---	Resistance +++	Information not available	information not available
Electrical Specifications	Non-conducting +++	Non-conducting +++	Non-conducting +++	Non-conducting +++	Non-conducting +++
Use at LTP	The standard material used at LTP for all product designs including UL.	Replaced by ABS material for almost all projects.	All LTP designs with Chemical Resistance requirements EXCEPT all food applications. There is a reference PVC dedicated to food "ON REQUEST". PVC can not be curved and bent.	All designs requiring visualization of a display via a transparent window.	All LTP designs with specific requirements in rigidity and that need to meet food standards.
Composition	A thermoplastic copolymer (styrenic polymers family)	An amorphous thermoplastic homopolymer	57% sea salt (NaCl) and 43% petrol	Thermoplastic of amoprope structure	Thermoplastic of amoprope structure
Density plastic	1.03 - 1.08g/cm3	1.04 g/cm3	1,43g/cm3	1.23 g/cm3	1,2g/cm3
Density Wood	0,82g/cm3	0,82g/cm3	0,82g/cm3	0,82g/cm3	0,82g/cm3
Density Carton	0,21g/cm3	0,21g/cm3	0,21g/cm3	0,21g/cm3	0,21g/cm3
Density Aluminium	2,7g/cm3	2,7g/cm3	2,7g/cm3	2,7g/cm3	2,7g/cm3
Density Steel	8,1g/cm3	8,1g/cm3	8,1g/cm3	8,1g/cm3	8,1g/cm3
Characteristic for food	The white color plastic can be used for the food industry.	The white color plastic can be used for the food industry.	Inutilisable dans le domaine alimentaire	Can be used to present a food showcase while remaining hygienic.	Not suitable for food applications
Finishing characteristics	ABS is suitable for all decoration techniques: painting, printing, metallization, shielding and electroplating.	PS is suitable for all decoration techniques: painting, printing, metallization, shielding and electroplating.	PVC is suitable for all decoration techniques: painting, printing, metallization, shielding and electroplating.	PMMA is suitable for all decoration techniques: painting, printing, metallization, shielding and electroplating.	PC is suitable for all decoration techniques: painting, printing, metallization, shielding and electroplating.
Thickness availability	2 - 3 - 4 - 5 - 6 - 8 - 10mm	2 - 3 - 4 - 6 mm	1 - 1,5 - 2 - 3 - 4 - 5 - 6 - 8 - 10 - 12 - 15 - 20 - 25mm	1,5 - 2 - 3 - 4 - 6mm	0,25 - 0,5 - 1 - 2 - 3 - 4 - 6mm
Color availability	BLACK / WHITE / GREY	BLACK / WHITE / GREY	BLACK / WHITE / GREY	TRANSPARENT / SMOKY / DIFFUSING	BLACK / TRANSPARENT
Minimum temperature	Temp. -30° C	Temp. -30°C	Temp. -30° C	Temp. -40° C	Temp. -40° C
Maxium temperature	Temp. + 80°C VICAT point = 102°C	Temp. + 70°C VICAT point = 87°C	Temp. + 60°C VICAT point = 75°C	Temp. + 80°C VICAT point = 145°C	Temp. + 110°C