

Comparison Between Polypropylene (PP) and Polyester (PET)

PET Benefits	Explanation	Conclusion
Better resistance to UV aging	PET's chemical formula has an aromatic ring making it highly resistant to UV. In contrast, PP needs treatment to resist UV light. This treatment, when applied, is not 100% effective.	PP "suffers" from the weather and becomes increasingly fragile with UV exposure and temperature changes. On the other hand, PET gets very little damaged in comparison. Therefore, a PP product will already be highly damaged after one season, while PET will remain virtually intact
Better resistance to thermal aging	PP has a phase change temperature (glass transition) of -10°C . Each time temperature changes from below -10°C to over -10°C , PP deteriorates. As for PET, the lowest phase change temperature is 70°C . Therefore, PET does not go through a phase change under common temperatures and is thus not subjected to thermal aging.	
Better strength under cold conditions	The aforementioned glass transition is a physical process. When finding itself below its glass transition temperature, the material is more like glass than rubber. It is therefore stronger when pulling on it, but more sensitive to impact and distortion. Note that PET is already below its glass transition temperature at room temperature, but it is flexible because of the aromatic ring in its chemical formula.	When temperature drops below -10°C , PP becomes brittle, whereas PET remains flexible. Therefore, if we need to move the product at that temperature or in the presence of hail, if it is made of PP, the fibres will break and the product will get damaged.
PET fibres are bulkier than PP fibres	This is explained by the very little electrical activity due to the chemical nature of polymers (Van der Waals attraction) which are much more significant for PET than PP. Therefore, PET fibres naturally tend to "crimp" as opposed to PP fibres.	PET fibres being bulkier, a product made from PET fibres will contain more air than a product made from PP fibres. That said, air is one of the best thermal insulators, and more air means better thermal resistance. This way, products made from PET fibres are better thermal insulators than those made from PP.

Products made from PET fibres are therefore more resistant, long lasting, and provide better insulation than PP products

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