

Sustainability Data Sheet:

Polypropylene (PP)



Introduction

Polypropylene (PP) is a low-density polymer widely used throughout the industry and especially in injection moulding. Having a very good strength to weight ratio means that costs and material usage can be kept to a minimum.

Typical properties

Density: 905 kg/m³

Melt index: 0.3 – 130 g/10min (@2.16kg, 230°C)

Melting point: 130 – 170°C

Notched Izod impact strength (rigid moulding / extrusion): 3 – 40+ kJ/m²

Flexural modulus (rigid moulding / extrusion): 850 – 2000 MPa

Carbon footprint data (NB: cradle-to-gate)



Material	kg CO ₂ equivalents (CO ₂ e) per kg of resin	Typical density (g/cm ³)	Ref
PP	1.95	0.905	2
rPP	0.90	0.905	3
HDPE	1.90	0.955	2
Paper	2.42	1.200	1
Glass	4.40	2.500	1



Recycling

Widely recycled including kerb side collection for rigid products.



Biodegradability & compostability

Polypropylene is neither biodegradable* nor compostable.



Bio-sourced

Polypropylene is manufactured from propylene which is mainly obtained from petroleum or natural gas and therefore not routinely bio-sourced**.



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for more information about sustainability data sheets



Material solutions for sustainability

Fillers can be used to reduce the amount of raw polymer being used and enhance mechanical properties. These can be minerals such as calcium carbonate, talc or natural fibres such as wood fibre. Mineral fillers can also reduce cycle times and lower processing energy requirements.

* For Items less than 1.2mm thick, a masterbatch can be added to make the material biodegradable without breaking down in to microplastics. This technology is separate from oxy-degradables.

Recycled grades are available. Limitations are typically colour and food approvals. The quality of recycled PP material is variable, so polymer modifiers can be used to improve their performance.

** Some suppliers are starting to offer polypropylene manufactured using wholly or partially bio-sourced propylene. A mass balance approach may be used whereby bio-sourced feedstock is allocated to polymer production.



Designing for sustainability

Make sure products are clearly marked as PP to aid recycling.

Reduce or ideally eliminate the use of colours, particularly carbon black, to improve recyclability.

Make the most of the material. High stiffness grades can allow thinner walls and high impact grades can help produce a longer lasting product.

In some applications a glass filled PP may be able to replace a glass filled PBT or Nylon. This can lead to a CO2 and weight saving.

Metallocene-catalysed PP allows for very high clarity grades to be produced. This can replace the use of GPPS in some thin wall applications allowing for a CO2 saving.

To view the full sustainability data sheet for polypropylene, scan the QR code to the right with your smartphone

Or visit: www.plb.ltd/sus-data-sheet/pp

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