

# Homopolymer polypropylene

North Sea Plastics Ltd Premium Grade homopolymer polypropylene is made to a specification set by NSP that takes into consideration not only the challenging nature of manufacturing in the prosthetics and orthotics profession, but also the mechanical properties of the material.

Shrinkage? Not a problem when using our Premium Grade homopolymer polypropylene; an independent study measured the shrinkage by volume of our copolymer polypropylene at less than 1%, a standard that is hard to match.

Homopolymer polypropylene can be used in orthotics to make AFO's (Ankle Foot Orthosis), KAFO's (Knee Ankle Foot Orthosis) and DAFO's (Dynamic Ankle-Foot Orthosis); and in prosthetics to make definitive AK sockets, and definitive AK frame sockets.

Whilst more rigid than copolymer polypropylene, homopolymer polypropylene does not exhibit the same resistance to fatigue. At low temperatures (less than 5°C) homopolymer polypropylene experiences a marked reduction in impact strength and flexural strength. Catastrophic failure is a risk particularly if the material has been mishandled during the moulding process.

Homopolymer polypropylene suffers more than most when it comes to excess stress. The more stress, the more brittle the material becomes. We only supply stress relieved homopolymer polypropylene, to provide a better starting point for the manufacture of orthotic and prosthetic devices.



## Homopolymer polypropylene

### Material Characteristics

Lightweight

More rigid than copolymer polypropylene

Brittle

NSP only supplies stress relieved sheet. Non-stress relieved sheet is more brittle than stress relieved

Notch sensitive (if any stress is applied to any cuts or "nicks" at the edge of the material it will crack or split)

Reasonable impact strength

Impact markedly reduced at temperatures below 5°C/41°F

Shrinkage of less than 1%\*

\* Shrinkage by volume as measured in a study conducted by NCTEPO at the University of Strathclyde.

### Applications

Ankle Foot Orthosis - AFOs

Dynamic Ankle-Foot Orthosis - DAFOs

Definitive Prosthetic Sockets

Frame Sockets

Knee Ankle Foot Orthosis - KAFOs

### Sheet size for orthotics:

2440 x 1220mm

### Square size for prosthetics

500 x 500mm, 460 x 420mm, 406 x 406mm, 343 x 343mm, 305 x 305mm.

### Available in the following thickness:

2mm, 3mm, 4mm, 5mm, 6mm, 10mm, 12mm, 15mm.

Tolerance on thickness: ±5%

### Available in the following colours:

Natural

### Moulding temperature:

Orthotics 180° - 200°C / 356° - 392°F

Prosthetics 200°C - 220°C / 392° - 428°F

### Cooking time:

3 minutes per mm thickness.

N.B. As all ovens have slightly different heating characteristics please use our recommended timings as a guide only.

