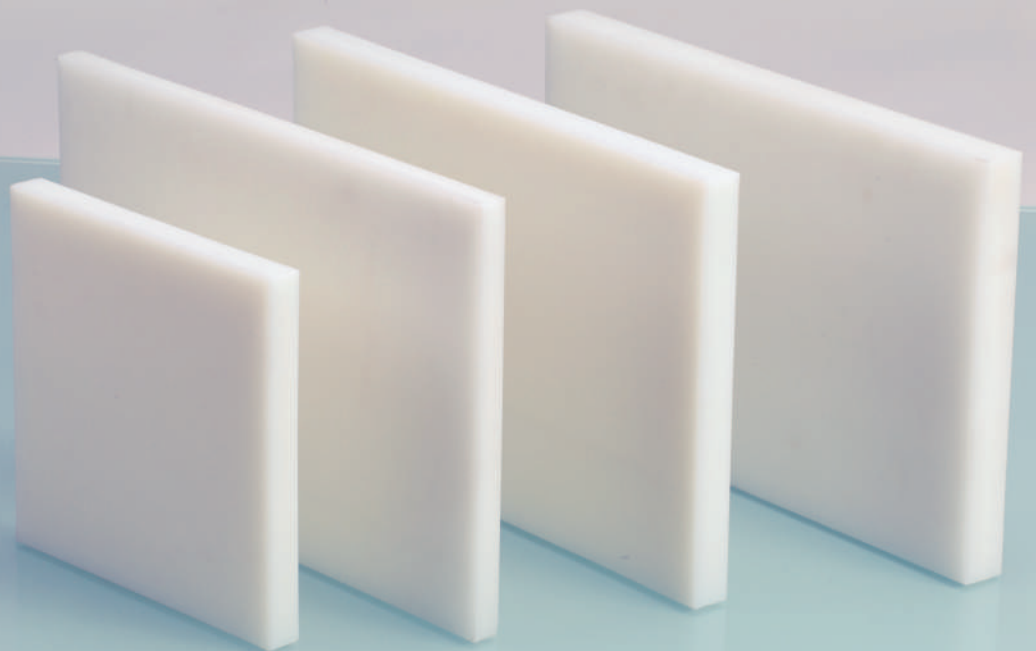


ANULON

OPG RANGE OF PRODUCTS





PLASTIC ABHIYANTA

Plastic Abhiyanta - a renowned house of Engineering Thermoplastics, was based on the solid track laid by late D. Maheshwari, five decades ago and strengthened by his son, late Ghanshyam Maheshwari, who was the leading lights in the Thermoplastic industry within and outside India. Today under the leadership of Mr. Raj Mohan Maheshwari the company has grown multiple folds in past decade and more.

Plastic technology is characterized by accelerating development of materials for specific applications. Selecting the correct material for an application is paramount. Consideration must be given to all aspects, viz. mechanical, thermal, chemical and electrical needs. In addition, environmental factors, such as, UV resistance, toxicity and water absorption are to be given due attention. Lastly, price limitation for the intended applications is an important factor.

With expertise gained through years of innovation, **Plastic Abhiyanta** develops technical plastics tailored to individual customer needs. These special products help our clients increase productivity and reduce costs. Plastic Abhiyanta is proud to have a performance graph continuously renewing and developing itself with the aim to maintain optimum quality. company offers highest quality products and services by making use of the latest production technologies available in the world.

Today, we have come a long way, catering to the ever growing needs of Machinable Engineering Plastics. The organisation has the largest market share not only in Eastern India but also across the country. With time the company has expanded its Channel Partners, Distributors globally. The company shall continue to render high quality products and services to its customers by making new additions to its product range.

Our Health care business involves manufacturing of Our OPG & OPG+ range, FLEX- and SUPER FLEX-O sheets in making appliances for orthosis and prosthesis application and Patrans used in hospitals and patient transfer application. Since **Plastic Abhiyanta** has been established with a state of the art plant we manufacture and supply these sheets to cater to the specific need of this sector with use of specified grade of raw materials and further compounded with special additive to enhance the strength and forming properties of the sheet and to deliver precisely world class end products. Looking forward to serve you soon.



ANULON 92 OPG



Our Premium Grade Polypropylene sheet is made to a specification set by international standards that takes into consideration the challenging nature of manufacturing in the prosthetics and orthotics profession. The material is designed to drape evenly avoiding excess thinning, which can lead to rejection of the formed device. Customers have a common question about PP sheets, that is shrinkage, with Anulon 92 OPG (P) it's not a problem. An independent study measured the shrinkage by volume of our Anulon 92 PG (P) is less than 1%, a standard that is hard to match.

Anulon 92 OPG (P) consists of mainly Polypropylene with small amounts of special additives to enhance the quality, it is this combination that imbues Copolymer Polypropylene with its unique ability to resist fatigue when flexing under load. In orthotics, this feature makes Copolymer Polypropylene particularly suitable for AFO's (Ankle Foot Orthosis), KAFO's (Knee Ankle Foot Orthosis) and DAFO's (Dynamic Ankle-Foot Orthosis). Copolymer Polypropylene is also used to make TLSO's (Thoraco Lumbar Sacral Orthosis - Thoracolumbarsacral orthosis), where a balance of flexibility and rigidity has to be achieved.

In prosthetics, Copolymer Polypropylene has been widely used to make BK (Below Knee) and AK (Above Knee) sockets with great success. The ability to make a socket quickly and cleanly is appreciated, as is the fact that minor adjustments can be quickly and easily made, without risking the mechanical integrity of the socket.

Key Features:

- Light weight
- Versatile
- Rigid
- High impact strength
- Maintains impact strength down to -20°C / - 4°F
- Has the ability to constantly flex without fracturing
- Shrinkage of <1% (by volume)

Available in the following thickness:

2mm, 3mm, 4mm, 5mm, 6mm, 8mm, 10mm, 12mm & 15mm.

*Tolerance on thickness: +5%

Sizes available

1mtr x 2mtr ; 1.25mtr x 2mtr ; 1.5mtr x 2mtr ;
1.05mtr x 2.1mtr ; 1.25 x 2.1 in thickness 12 & 15
*Custom size against bulk order

Colour

Natural & Skin in ready stock, other colours on bulk order

Moulding temperature:

Orthotics 180° - 200°C / 356° - 392°F

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

Properties	
Forming Temperature	180-220°C/ 356°F -428°F
Heating time (preheated)	2-3mins/mm
Density	.92 g/cm3
Shrinkage	Approx. 1%

ANULON 92 OPG +

Made from 100% imported material, Anulon 92 OPG+ offers greater rigidity than conventional PP sheets. Anulon 92 OPG+ is a thermoplastic sheet material that uses copolymerisation to combine the good properties of polypropylene and the toughness of polyethylene.

The polypropylene used in Anulon OPG + obtained in this way shows considerably increased impact strength in comparison with a homopolymer polypropylene or conventionally used PP sheets, especially at low temperatures. The Anulon 92 OPG+ is easily thermoformed and heat-sealed and is ideal for placing around orthotic joints.

Potential areas of application include

- AFOs (Ankle-Foot Orthoses)
- KAFOs (Knee-Ankle-Foot Orthoses)
- FFOs (Functional Foot Orthoses)
- TLSOs (Thoracolumbosacral Orthoses)
- And others

Available in the Following thickness

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

*Tolerance on thickness: +5%

Sizes available

1mtr x 2mtr; 1.25mtr x 2mtr

*Custom size against bulk order

Colours Available

Natural & Black (Black in select few thickness)

*Other colours can be made against order

Moulding Temperature

Orthotics 180° - 200°C / 356° - 392°F

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

Properties	
Forming Temperature	180°C-220°C
Heating time (preheated)	2-3mins/mm
Density	.92 g/cm3
Shrinkage	Approx. 1%



ANULON FLEX-O

ANULON FLEX-O is a soft, flexible material used mainly in orthotic applications. The combination of flexibility and a degree of rigidity makes it a popular choice of material in the manufacture of TLSO braces. It can also be used to make wrist splints, neck braces & resting splints.

An issue to be noted with any Low Density Polyethylene (LDPE) is susceptibility to attack by human skin oil. This affects the material by attacking the surface and weakening the material. Where the material is under stress, small cracks, or crazing will appear and the material will eventually fail. The degree to which the material is exposed to human skin oil will obviously affect the outcome.

Anulon Flex-O is made using a specific polymer keeping in mind international standards, and extruded very carefully to minimise the level of shrinkage that affects the material. Team Plastic Abhiyanta guarantees that our Anulon Flex-O will shrink by no more than 6% (area) when heated at our recommended temperature. Other extruded LDPE sheet can shrink by up to 30% (area).

Key Features:

- Semi flexible
- Good impact strength
- Maximum shrinkage 6%, guaranteed when heated at the correct temperature
- Affected by skin oil exuded in sweat, can lead to stress cracking

Available in the following thickness

3mm, 4mm, 5mm, 6mm, 8mm, 10mm, 12mm

*Tolerance on thickness: +5%

Colours available

Natural

Sheet size

1.5mtr x 2mtr

1.05mtr x 2.1mtr ; 1.25 x 2.1 (6mm thickness only)

*Custom size against bulk order

Moulding temperature

Orthotics & Prosthetics 150°C / 302°F

Properties	
Forming Temperature	150°C/ 302°F
Heating time (preheated)	2-3mins/mm
Density	.94 g/cm ³
Shrinkage	Approx. 1%



ANULON SUPERFLEX

The good flexibility and transparency of Anulon SuperFlex sheet are especially useful for fabricating flexible inner prosthetic sockets. The natural-coloured (translucent) material is used mainly for inner lining. The material's benefits are high surface quality and wearer comfort. Anulon Super Flex sheet have proven to be excellent choices for highly flexible transfemoral soft-walled inner sockets. This material is a thermoplastic which exhibits a higher shrinkage if the cooling rate is too high.

Key Features:

- Highly Flexible
- Good Impact Strength
- Higher shrinkage due to its molecular structure
- Versatile usage

Available in the Following thickness

2mm, 3mm, 6mm, 8mm, 10mm

*Tolerance on thickness: +5%

Colour Available

Natural

Sheet Size

1.25mtr x 2mtr

*custom size against bulk order

Moulding Temperature

Orthotics & Prosthetics - 120° - 150°C / 248°F -302°F

Properties

Forming Temperature	120-150°C/ 248°F -302°F
Heating time (preheated)	2min/mm
Density	.94 g/cm3
Shrinkage	5-8%





ANULON 98 OPG(H)

ANULON 98 OPG(H) is our new range of High Density Polyethylene (HDPE) sheet for use in the manufacture of bespoke orthotic devices. Available in natural colour (ready stock), this new range of High Density Polyethylene exhibits much less shrinkage than the standard grade of HDPE. This makes it easier to mould orthotic devices, which make use of the high impact strength, flexible strength and rigidity that Anulon 98 OPG (H) exhibits.

Key Features:

- Rigid
- Good Impact Strength
- Good Flexural Strength

Available in the following thickness

1mm, 1.5mm, 2mm, 3mm, 4mm, 5mm, 6mm, 8mm, 10mm
12mm, 15mm, 20mm, 25mm

*Tolerance on thickness: +5%

Available in the following colour

Natural in ready stock,
*Other colours on bulk order

Properties	
Forming Temperature	180°C-200°C/ 356°F-392°F
Heating time (preheated)	2-3mins/mm
Density	.94 g/cm ³
Shrinkage	Approx. 1%

Sheet size

1mtr x 2mtr ; 1.22mtr x 2mtr ; 1.22mtr x 2.44mtr; 1.5mtr x 2mtr ; 1.5mtr x 3mtr

*Custom size against bulk order

Moulding temperature

Orthotics 180° / 356°F
Prosthetics 200°C / 392°F

OTHER PRODUCTS

1. **ANULON MALLET**

Anulon Mallets are hammer like tool which helps the practitioner to easily mend or shape the product without leaving marks on it in compare to conventional metal mallets. Easy to carry and use Anulon Mallets are every P & O's. choice.

Available in -

- Anulon 92 Mallet
 - Small
 - Large

- Anulon 118 Mallet
 - Small
 - Medium
 - Large



2. **ANULON 98 MANDREL**

Primarily used in orthotics or prosthetics for casting. The steady hold and voluminous material saves you on PoP and gives better handling. The product is easy to clean and can be used for numerous cycles. A must have in every centre.

Available in -

- Small
- Medium
- Large



3. **ANULON 220 OVENMAT**

Used in both Infrared and conventional ovens, this product helps in preventing the polymer to stick with the tray in which the sheets are placed.

Available in 1mtr x 1mtr size

4. **OTHER COMPONENTS LIKE**

'O' RING

'D' RING

FLEXURE JOINTS & DUMMIES

HEAVY DUTY NYLON OKLAHOMA ANKLE JOINTS

POLYPROPYLENE OKLAHOMA ANKLE JOINT

FLEXIBLE ANKLE JOINT

etc. can also be made against order or design

5. **ANULON 220 Patch**

The Most Effective Friction-Reducing Modality for the Foot The Anulon 220 Patch provides a simple solution to the common, yet serious problems of calluses, blisters and foot ulcers. These skin conditions are often addressed only through pressure reduction. However, friction is also a major factor causing skin failure. Anulon 220 Patches reduce friction, aid in prevention, and create a better healing environment for calluses, blisters, and foot ulcers.



How Does the PTFE Patch Work?

Anulon 220 Patches reduce the coefficient of friction dramatically to decrease skin trauma. Adding a Anulon 220 Patch reduces friction under the skin and can improve the effectiveness of other callus, ulcer, or blister preventions or treatments.

These self-adhesive patches are durable, flexible, and thin. Application does not affect fit or function of orthoses, shoes, or insoles.

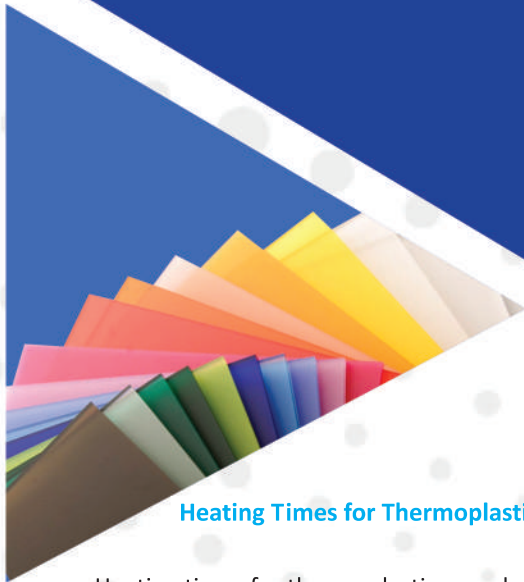
Application and Replacement

Orthotics or insoles should be worn for several days before Anulon 220 Patch application to ensure proper placement in the location of maximum irritation. Application is simple: remove the backing, apply the patch and press firmly around the edges. Anulon 220 Patches often last many months depending on activity, and should be removed and replaced if worn, torn, or loose. Use a heat gun to slightly warm the old patch and loosen the adhesive for easier removal. Do not apply to the skin or on vinyl surfaces.

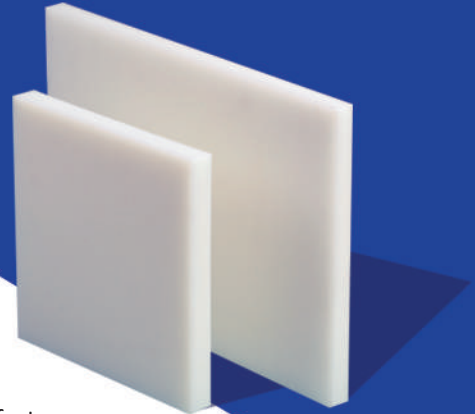
PTFE Patch Facts

- Anulon 220 Patches relieve friction and shear forces to support a better healing environment on the plantar foot.
 - Anulon 220 Patches are self-adhesive for easy application to any area of an orthotic, shoe or insole to reduce the chance of skin failure due to friction.
 - Anulon 220 Patches can be applied to diabetic shoe insoles in common areas of callus or ulcer formation.
 - Anulon 220 Patches are water and sweat resistant, giving them a very low coefficient of friction even when wet.
 - Anulon 220 Patches combined with an offloading orthotic can neutralize the primary causes of calluses and ulcers, namely horizontal (shear) and vertical (pressure) stresses.
 - Anulon 220 Patches are latex-free
- Anulon 220 Patches are precut and ready-to-use, can be easily trimmed for custom needs. They are available in sheet size of 200mm x 300mm





Heating Times for Thermoplastics



Heating times for thermoplastics are dependent upon the following factors:

- Material type
- Material thickness
- Material sheet size
- Initial temperature in the infrared or conventional oven (cold or preheated)

Make sure the thermoplastics are not heated in the infrared oven longer than necessary. Exceeding the heating time, even for only a short time, will overheat the plastic material. Overheating will make the plastic material too 'soft'. During further processing, the plastic material will begin to 'drop down from the model'. Unlike convection ovens, in which an object is heated by ambient heat in a closed compartment, infrared ovens generate infrared or thermal radiation in the form of electromagnetic waves. The material is heated by the absorption of this electromagnetic energy.

All materials are characterised by specific absorption curves that describe the relationship between wave length and absorption (degree of absorption).

For determination of the ideal infrared radiation for an infrared oven with respect to wave length and frequency, the absorption spectra of the materials to be heated must be known. In orthopaedic technology, plastic materials from the group of thermoplastic polyolefins such as PE or PP are mainly used. The absorption curves of these materials show that the ideal absorption of infrared radiation energy lies in the mid-infrared region of the spectrum at a wave length of approx. 3.5 μm .

As a rule of thumb, heating times for plastic materials can be calculated as follows: '1 minute of heating time per 1 mm of material thickness'. The actual heating time, however, depends on the factors mentioned above. New plastic materials must be tested using a material sample for ascertaining the heating time.

In order to ensure optimum material heating for subsequent processing, observe how the plastic material behaves in the oven.

Depending on the material type, changes in discolouration (e.g. transparency) should be even when plastic sheet materials are heated.

FEW OTHER FACTORS TO KEEP IN MIND

- Coloured plastic material must be heated approx. 30%–40% longer than clear or white material of the same thickness.
- When the plastic material is heated for vacuum forming the material should sag 10–12 cm. If the material sags more than this, it will overheat and flow from the model during vacuum forming or the wall of the inner socket will become uneven and have different thicknesses.
- During heating of Anulon Range of products both rigid or flexible, the infrared oven must be preheated to the specified temperature for the given material. Wait until the pre-selected temperature has been reached and then place the sheet into the infrared oven for heating. Be sure not to leave the door open too long when placing the sheet inside the oven as this may lead to a drop from desired temperature.

Standard material heating times and temperatures for ANULON 92 OPG & OPG+ sheet materials in Infrared Oven are as follows:

Thickness (mm)	Anulon 92 OPG or OPG +	Anulon Flex-O	Anulon Superflex	Anulon 98 (H)	Heating Time (mins)
2	180-220°C	-	120-150°C	180°C-200°C	2 – 3
3	180-220°C	150°C / 302°F	120-150°C	180°C-200°C	3 – 5
4	180-220°C	150°C / 302°F	-	180°C-200°C	4 – 6
5	180-220°C	150°C / 302°F	-	180°C-200°C	5 – 8
6	180-220°C	150°C / 302°F	120-150°C	180°C-200°C	6 – 9
8	180-220°C	150°C / 302°F	120-150°C	180°C-200°C	8 – 12
10	180-220°C	150°C / 302°F	120-150°C	180°C-200°C	10 – 15
12	180-220°C	150°C / 302°F	-	180°C-200°C	12 – 18
15	180-220°C	-	-	180°C-200°C	15 – 22

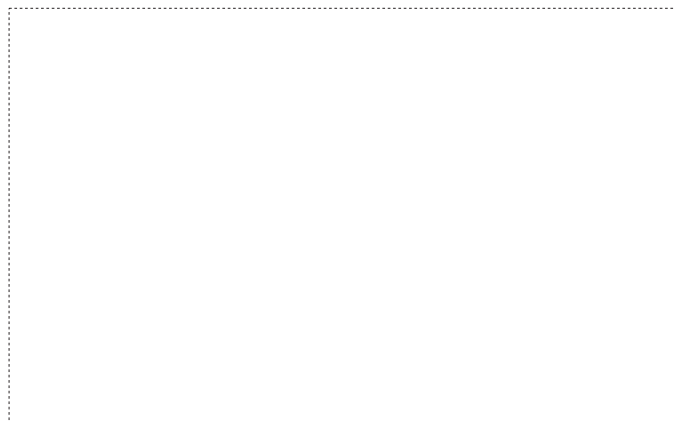
Practice recommendations for processing thermoplastics in prosthetics

- Set oven to recommended processing temperature for the thermoplastic sheet material.
- After approx. 1 hour (infrared oven) – 1½ hours (convection oven) place the thermoplastic sheet material in the oven.
- Allow the sheet to sag by at least 1/3 of the model.
- Take out the plaster model, immediately clamp it into the vacuum suction device and prepare it for vacuum forming.
- Vacuum-form the sheet as usual.
- Only turn off the vacuum after cooling to room temperature and then demould it.
- Do not use aids such as compressed air or water to accelerate the cooling process.
- If using hand draping method, after draping seal the ends with each other and then after draping on cast quickly remove the excess material with sharp knife or scissors in order to stop extra sagging due to material accumulation in one side.

Practice recommendations for processing thermoplastics in orthotics

- Slowly and evenly cool to room temperature while maintaining the vacuum in order to reduce shrinkage.

NOTES



PLASTIC ABHIYANTA

Anulon is a trademark of Plastic Abhiyanta
25A Chandini Chowk, Kolkata 700072, India
Contact- +91 33 22373893/ 22377297/ 22365371 | GSTIN:19AADFP9112B1ZI
Website- www.plasticabhiyanta.com | Mail : anulon@plasticabhiyanta.com