

Selecting the ideal thermoplastic material can be as confusing and at times overwhelming due to the wide array of options available. Firstly, educating yourself on the selections is paramount in order to make an informed choice. Understanding the handling characteristics and physical features of various materials will allow you to choose the optimal material for that particular orthotic application. The key handling characteristics include *resistance to stretch* and *memory*. The important physical qualities consist of *bondability*, *thickness*, *perforations*, and *colors/printing*. With this knowledge and some hands-on practice with our Manosplint® thermoplastic materials, you will equip yourself with the information and skills necessary to provide your patients with the optimal orthosis.

**Resistance to Stretch:**

Manosplint® thermoplastics can be organized by their resistance to stretch or the degree of conformability - ranging from minimum to maximum. To demonstrate this property, thoroughly heat a small piece of material in water and attempt to pull it apart. The more resistance, the less conformable the material will be when molded to a body part. Less resistance to stretch results in more conformability during application.

Materials with **minimum resistance** to stretch are also known as “plastic” in nature. They are highly conformable once fully heated, so they contour closely to the body part. This type requires a gravity-assisted position and light handling during the molding process; this material is ideal for designs requiring an intimate fit. **Manosplint® Arizona**



On the opposite end of the continuum, materials with **maximum resistance** to stretch are also referred to as “rubber-like.” This category offers minimal conformability and results in excellent control. Firm handling is required to achieve a conformed fit, making this material ideal for larger orthoses or extremely rigid designs required for the elbow or neurological patients. **Manosplint® Carolina**



Perhaps the most versatile thermoplastics are those in the middle of the continuum with **moderate resistance** to stretch. These “blended” materials provide the best of both worlds in terms of conformability and control. They can be used for virtually all types of orthoses and are an excellent choice for a multi-use material in the clinic. **Manosplint® Wisconsin**

**Memory:**

A final category includes thermoplastics with some degree of memory; this grouping offers various materials with minimum to maximum resistance to stretch. Thermoplastics with memory generally turn clear or opaque when fully heated and may be easily reheated/remolded because they shrink back to their original shape.

**Manosplint® Ohio and Ohio S**



**Bondability:**

Bondability refers to the presence of coating, which acts as a barrier to prevent unwanted adherence. Coated thermoplastic does not bond to itself unless overheated, overstretched, scratched or treated with solvent. In general, these are easier to clean, less likely to adhere to skin, hair or dressings, and have the ability to form a temporary bond with a light pinch. Uncoated material bonds to itself when both areas are heated. To prevent unwanted adherence, use a wet paper towel or hand lotion between the surfaces.

**Manosplint® Thermoplastics with coating: Arizona, Wisconsin, Ohio; Manosplint® Thermoplastics without coating: Carolina, Ohio S**

**Thickness:**

A range of thickness is offered with Manosplint® thermoplastics. Make your selection based on the desired orthotic function, using the thinnest material possible that will provide the necessary rigidity. In general, 1/8" is suitable for arm, forearm, elbow and wrist orthoses; 3/32", 1/12" and 1/16" are appropriate for hand-based and pediatric designs.

**Perforations:**

Manosplint® Thermoplastics are available in various perforation patterns ranging from 1% to 42%. More perforations result in better air exchange, making the orthosis less likely to cause maceration issues. And those that are highly perforated may be more flexible and easier to don/doff.

PERFORATION PATTERNS



**Color/Printing:**

Manosplint® Thermoplastics are offered in an assortment of colors. In addition, Kinetec has the ability to print directly onto the thermoplastic material, allowing therapists the capability to custom design their clinic's thermoplastic selection. Patients love taking part in this creative process!

