

RAYCAST® INNOVATIVE HIGH PRECISION SYSTEM – The Basics

Orfit Industries makes and designs patient fixation systems for radiation oncology since more than 15 years.

It all started with the production of low melting temperature thermoplastic materials with specific properties for patient fixation in radiation oncology. Efficast® thermoplastic material is engineered for precision. It differs in many features from first generation materials that were originally designed for splint making applications. Efficast® is formulated for radiation oncology applications and it has controlled performance characteristics. It is easy to mould and use and it can be shaped very closely to the patient's anatomy, providing excellent reproducibility and patient comfort. This results in a high precision, easy to mould and comfortable patient immobilization mask.

EFFICAST® THERMOPLASTIC MATERIAL

- Low working temperature of 65°C/149°F. The activation temperature of Efficast® is 5 to 15°C (41 to 59°F) lower than that of first-generation materials. The benefits are clear. The patient does not feel hot material on the skin and the person who makes the mask does not have the risk of burning the fingers when handling the material.

- Controlled stretch
The molecular structure of Efficast® is designed as such that the material will not overstretch when being moulded. This results in an even and stable thickness of the mask over its whole surface, which increases its rigidity.
- Low shrinkage
Efficast® has a special formulation that eliminates the problems of shrinkage that are common with first generation materials. The retraction of a thermoplastic material when cooling is a natural physical effect and it plays an important role in the immobilization effect of the mask. Efficast® has a molecular configuration that limits the natural retraction and that results in a comfortable snug fit of the mask, also the day after the mask is made.
- Non-stick coating
A surface coating prevents the material from sticking to the patient's hair and skin and to hardware.

- 100% memory
When reheated, Efficast® goes back to its original shape. This allows to make a mask a second time when the form is not correct, or to adapt the shape in the course of treatment.
- Activation and setting time
Efficast® shows its best properties only when it is heated at 65°C/149°F during minimum 3 minutes and when it is left to set on the patient during minimum 5 minutes.
- Environmental effects
All thermoplastic materials from Orfit Industries are safe to persons and environment. There is no release of toxic fumes during activation, the thermoplastic materials are tested on skin biocompatibility and they can be disposed of with normal hospital waste.

Efficast® is offered in a wide selection of 3-, 4- and 5-point pre-cut masks. Efficast® pre-cuts for head, neck and shoulders are attached to a base plate by means of multi-

point fixations. This allows a mask to form closely around the patient's anatomy. The bony prominences of the cranium, the nose bridge, the chin and the ear canals are used as reference points for the mask. This results in a patient-unique reproduction of the anatomy that assures a perfect fit of the mask throughout the entire course of treatment.

HIGH PRECISION HARDWARE

Raycast® High Precision Hardware is designed to set new standards in precision, durability and lightness in density and weight. Orfit Industries has a knowledge in material science that is transferred to its products to result in high precision machined hardware for exact reproducibility and that has a high mechanical stiffness and the lowest density in the industry.

Our low density hardware is made for use on treatment machines. The carbon fibre sandwich construction base plates have an attenuation factor that is non-significant in dose calculation (*see page 47 for dosimetric properties*).

Our high density hardware is designed for use on simulators and diagnostic imaging machines. It has exactly the same design as our low density hardware, assuring perfect patient positioning reproducibility from one machine to another.

