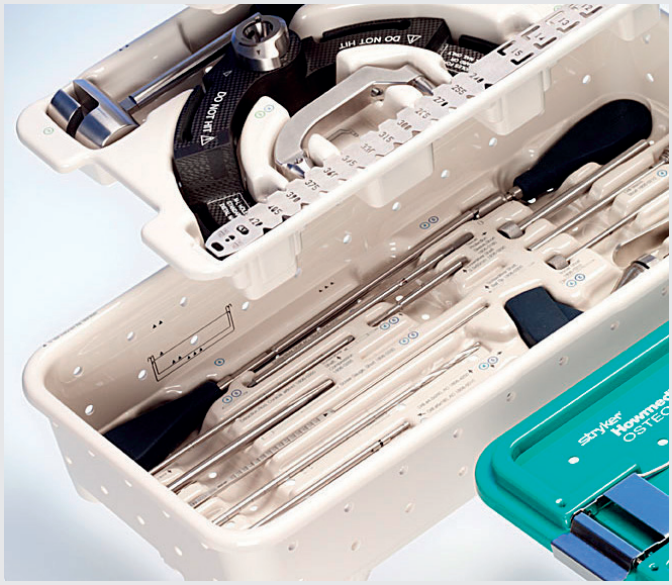
EUROPLEX®
PPSU

An outstanding material for medical technology – virtually indestructible

A sheet material distinguished by its special combination of properties:

- High heat distortion temperature up to 190 °C in permanent service.
- EUROPLEX® PPSU shows excellent mechanical properties over a wide temperature range – also at low temperatures.
- EUROPLEX® PPSU shows extraordinary chemical resistance for an amorphous material.
- Parts made from EUROPLEX® PPSU can be sterilized by all conventional methods, particularly by superheated steam at 1000 cycles and more, also in combination with morpholine. EUROPLEX® PPSU therefore shows particularly good resistance to hydrolysis.
- EUROPLEX® PPSU is inherently flame-retarded (self-extinguishing without flame retardant). Its rating of UL94:V0 at 0.8 mm thickness stands for very good fire behaviour.
- EUROPLEX® PPSU is physiologically inoffensive, and easily meets FDA and ISO 10993 requirements for food contact and medical applications.



Sterile medical instruments stored clearly and safely!

Engineering plastic sheets are the better alternative for manufacturing sterilizable trays and containers.

EUROPLEX® sheets based on the engineering polymer polyphenyl sulphone (PPSU) are employed more and more frequently to manufacture trays or containers for medical instruments or implants. Sheet material as a basis for such containers offers more rapid and flexible design and manufacturing options than injection moulding. Because of the relatively low costs for forming equipment, the use of sheet material is a very economical solution, particu-lary for smaller series.

The EUROPLEX® PPSU sheets used for items such as boxes and trays for surgical instruments, implants and endoscopes as well as disinfenction baths and steriliz-able equipment guards have withstood the tough conditions of everyday use in hospitals with excellent results. Their low weight, functional design and the ability to recognize the contents through transparent lids are major advantages over conventional metal containers.

Components fabricated from EUROPLEX® PPSU show high impact strength and are therefore practically unbreakable. The excellent resistance to hydrolysis and chemicals permits frequent contact with aggressive disinfectants and repeated sterilization by means of superheated steam or other methods. Röhm, the plastics specialist and manufacturer of EUROPLEX® PPSU sheets, will be glad to advise you. Together with the manufactur-ers of sterilizable containers, we can support you from product design through the selection

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Product Properties	EUROPLEX® PPSU	Unit	Standard
Density	1,29	g/cm³	ISO 1183
Vicat softening temperature	222	°C	ISO 306/B50
Max. permanent service temperature	190	°C	
Modulus of elasticity	2.350	MPa	ISO 527
Tensile strength	70–80	MPa	ISO 527
Izod notched impact strength (3.0 mm)	50–60	kJ/m²	ISO 180/1A

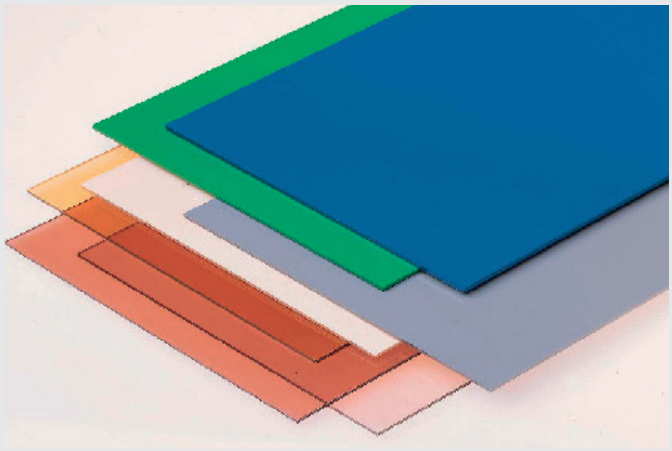
Processing instructions for thermoforming:

Before thermoforming, EUROPLEX® PPSU sheets must be dried in an air-circulation oven. The sheets are to be positioned in such a way that the air can circulate freely between and around them. They should not, therefore, be stacked, so as not to prolong drying unnecessarily. The temperature of the oven must be controlled. Following drying time and temperature is recommended: five hours per 1 mm sheet thickness at 175 °C (+/- 5 °C). This recommendation was established after storage under normal conditions (23 °C, 50 % rel. humidity). If the sheets are stored in particularly damp rooms, the drying periods may have to be extended by up to 50 %.

To permit problem-free thermoforming, the machines must be equipped as follows: Heating from above and below; the output of the individual upper radiators should be adjustable. It should be possible to support the heated sheets automatically by means of air. Area output approx. 43 – 54 kW/m² (heating potential for sheets up to approx. 300 °C). Minimum 22 kW/m². If necessary, facility for mould heating. The forming temperature range of EUROPLEX® PPSU sheets lies between 270 and 285 °C, the optimum forming temperature being approx. 275 °C.

This provides good mould reproduction, preservation of the surface texture and minimal sagging. Due to the narrow range of the forming temperature, it must be possible to control the sheet temperature throughout the heating phase. Suitable for this are radiation pyrometers, which in some thermoforming machines are firmly installed in the centre of the upper heaters. In general, the edges of the sheets should be heated to a higher temperature than the central areas, especially if these are flat. The thermoformed parts shrink upon cooling down to room temperature. The shrinkage of EUROPLEX® PPSU is uniform and predictable and must be taken into account when designing the moulds so that the finished part is of the required dimensions.

Since the various mould materials have different coefficients of linear thermal expansion, the shrinkage values of EUROPLEX® PPSU were determined as the difference between the dimensions of the mould at operating temperature and those of the part after cooling for at least 24 hours and conditioning under standard conditions. The shrinkage of EUROPLEX® PPSU mouldings, measured according to this method, is about 0.8 – 1 %. Additional processing instructions on request.



EUROPLEX® PPSU sheets are available in transparent and opaquely colors and thicknesses of 0.5 to 6.0 mm.

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