



PRODUCT DATA

KRYSTALFLEX PE 399

Thermoplastic Polyurethane Film

INTRODUCTION

KRYSTALFLEX PE399 is a high performance aliphatic polyether film intended for processing by lamination into range of glass / polycarbonate / acrylic components.

KRYSTALFLEX PE399 is part of the HUNTSMAN optical aliphatic film range for glass, polycarbonate, acrylic, CAB lamination applications and can be used in aerospace, transportation, security and architectural applications.

PERFORMANCE FEATURES

- Excellent laminated transparency
- Excellent hydrolysis & microbial resistance
- Good low temperature flexibility
- Enhanced UV stability
- Medium durometer
- Contains adhesion promoter
- Medium modulus
- Excellent cold impact

APPLICATIONS

- Prison containment glazing
- Ballistic / Blast / Intrusion
- Vehicle armoring
- Retail kiosks
- Hurricane / Vandal glazing
- Liquid crystal laminates
- Computer screens

Table 1: Typical Physical Properties

Property	Key	DIN	Unit	Value	ASTM	Unit	Value
Hardness	M	53505	Shore A	80	D-2240	Shore A	80
Tensile Strength	E	53504	MPa	45	D-412	psi	6500
Elongation @ break	E	53504	%	500	D-412	%	500
100% Modulus	E	53504	MPa	2	D-412	psi	300
300% Modulus	E	53504	MPa	7	D-412	psi	1000
Tear Resistance	E	53515	N/mm	37	D-624	pli	210
Specific Gravity	E	53478		1.07	D-792		1.07
Softening Range Low	E	Huntsman TMA	°C	80	Huntsman TMA	°F	175
Softening Range High	E	Huntsman TMA	°C	140	Huntsman TMA	°F	285
Peak Temperature	E	Huntsman TMA	°C	119	Huntsman TMA	°F	246
Tg (mid point)	E	Huntsman TMA	°C	-36	D-3418	°F	-33

E= 0.050" extruded film cut to ASTM requirements
M = Injection moulded parts to meet DIN & ASTM requirements.
ASTM measurements were made at 20 in/min
DIN measurements were made at 500 mm/min





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POLYMER SELECTION

Before selecting this product it is necessary that the user ensures the product performance will meet all operational and end use requirements. Having satisfied these requirements, should changes be contemplated in method of application, materials, service conditions or any other change that could affect the ultimate performance of the end product, then further tests and trials should be carried out. For assistance with particular problems and applications, please contact the HUNTSMAN TPU Technical Service Department listed below.

HEALTH & SAFETY ADVICE

Before undertaking any trials with this product it is essential that all personnel are aware of the necessary precautions that must be taken. These are detailed in the relevant Material Safety Data Sheet, which will be provided by HUNTSMAN.

SUPPLY & STORAGE

KRYSTALFLEX PE399 is supplied in the form of film with interlayer in cardboard boxes.

KRYSTALFLEX PE399 may be stored for 24 months from the date of manufacture, sealed in the manufacturer's original packaging.

PHYSICAL FORM

Type: Film

MATERIAL PREPARATION

To ensure trouble free processing, it is necessary to keep KRYSTALFLEX film free of dust or contamination.

For further advice on the use of KRYSTALFLEX film, please contact the HUNTSMAN TPU Technical Service Department at any of the addresses listed below.

PROCESSING PARAMETERS

Table 2: Typical Laminating Parameters

Ultimate Temperature:	110°C – 130°C 230°F – 266°F
Ultimate Pressure:	8 bar – 12 bar 116 psi – 174 psi
Soaking Time:	30 min. per 6 mm 30 min. per 0.25 inch

The address of your nearest technical centre is:

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