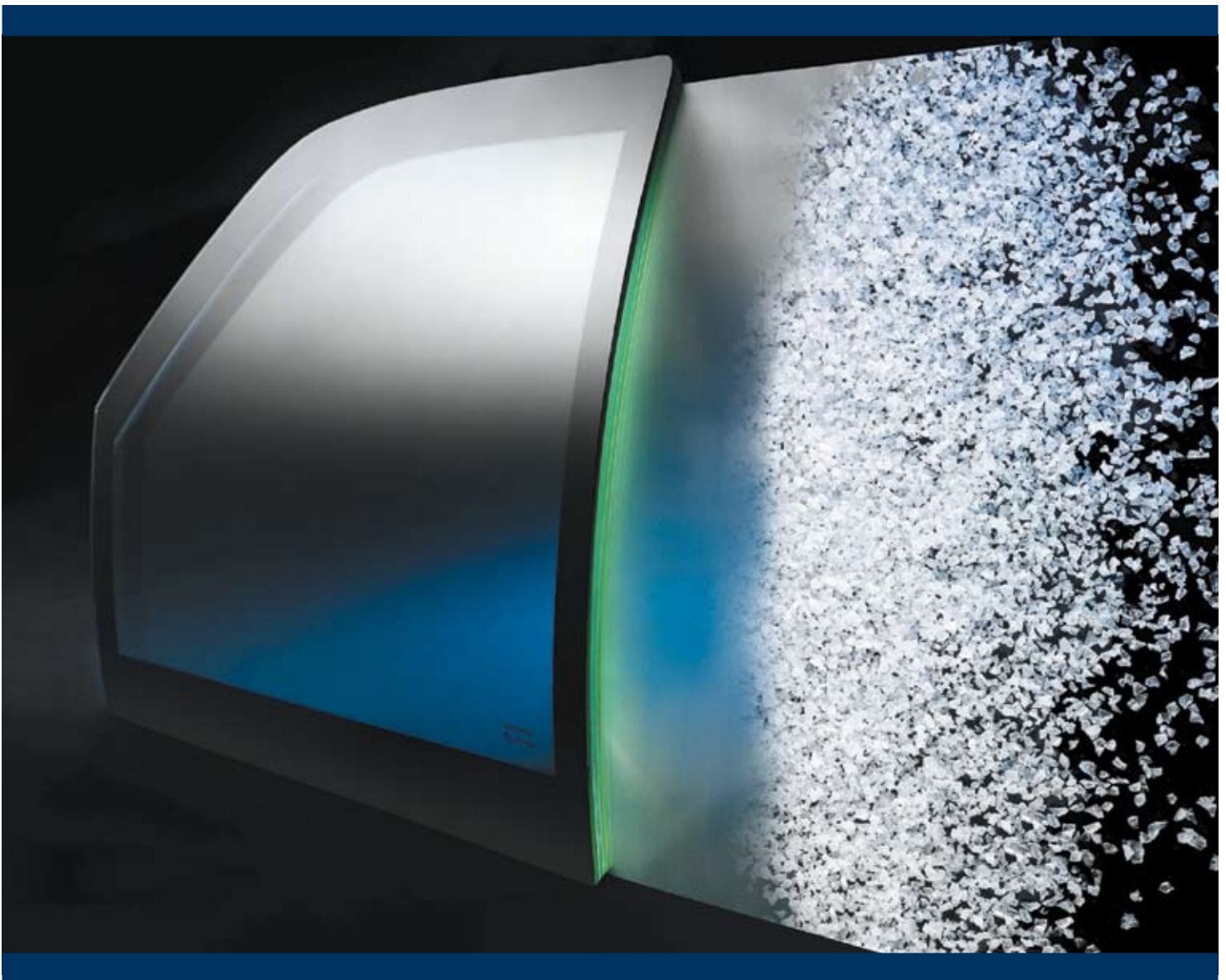




**ELASTOMERS**

Product Overview – Optical Aliphatic Films



Thermoplastic Polyurethanes



## TYPICAL PROPERTIES

### GENERAL

	Unit	Test Method	Krystalflex PE 192	Krystalflex PE 193	Krystalflex PE 399	Krystalflex PE 429
Hardness	Shore A	ASTM D-2240	76	74	80	70
	Shore A	DIN 53505	76	74	80	70
Specific Gravity		ASTM D-792	1,06	1,05	1,07	1,04
	g/cm <sup>3</sup>	DIN 53478	1,06	1,05	1,07	1,04

### MECHANICAL

Tensile Strength @ Break	psi	ASTM D-412	4000	3000	6500	4000
	MPa	DIN 53504	28	21	45	28
100% Tensile Modulus	psi	ASTM D-412	900	400	300	280
	MPa	DIN 53504	6	3	2	2
300% Tensile Modulus	psi	ASTM D-412	1800	800	1000	1200
	MPa	DIN 53504	12	6	7	8
Ultimate Elongation	%	ASTM D-412	550	600	500	440
	%	DIN 53504	550	600	500	440
Tear Strength	pli	ASTM D-624	450	370	210	165
	N/mm	DIN 53515	79	65	37	29

### PEEL RESISTANCE TO GLASS

laminated temperature: 185 °F	pli	ASTM D-3167	N/A	N/A	16	80
	N/mm		N/A	N/A	3	14
85 °C	pli	ASTM D-3167	N/A	N/A	67	138
	N/mm		N/A	N/A	19	24
195 °F	pli	ASTM D-3167	N/A	137 (*)	140+	138+
	N/mm		N/A	24 (*)	60+	24+
90,5 °C	pli	ASTM D-3167	N/A	150+ (*)	140+	N/A
	N/mm		N/A	26 (*)	60+	N/A
210 °F	pli	ASTM D-3167	121 (*)	N/A	140+	N/A
	N/mm		21 (*)	N/A	60+	N/A
99 °C	pli	ASTM D-3167	150+ (*)	160+ (*)	140+	N/A
	N/mm		26 + (*)	28+ (*)	60+	N/A
235 °F	pli	ASTM D-3167				
	N/mm					
113 °C	pli	ASTM D-3167				
	N/mm					
245 °F	pli	ASTM D-3167				
	N/mm					
118 °C	pli	ASTM D-3167				
	N/mm					
260 °F	pli	ASTM D-3167				
	N/mm					
127 °C	pli	ASTM D-3167				
	N/mm					

### THERMAL

TMA Melt Range Low	°F	Huntsman	185	185	175	150
	°C	Huntsman	85	85	80	65
TMA Melt Range High	°F	Huntsman	250	250	285	255
	°C	Huntsman	120	120	140	125

### GLASS TRANSITION

DSC Mid Point Tg	°F	Huntsman	-36	-47	-33	-65
	°C	Huntsman	-38	-44	-36	-54

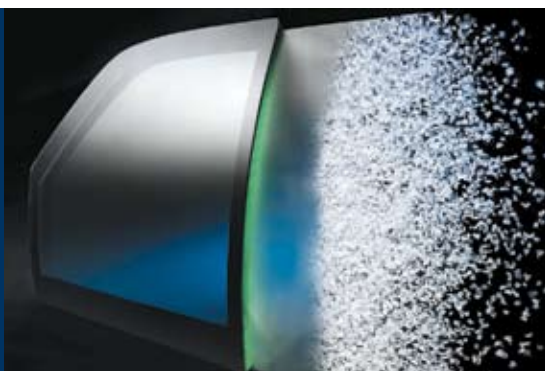
### BASE PRODUCTS

- Does not contain adhesion promoter
- (\*) : With Glass Primer



### KRYSTALFLEX® KEY PROPERTIES:

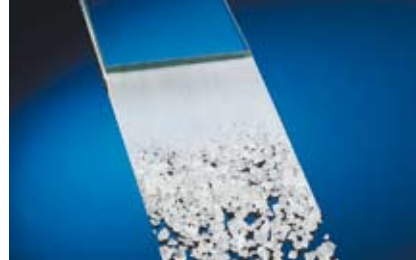
- Moisture Resistance
- Chemical Compatibility
- Cooler Processing





## PRODUCTS

Krystalflex <b>PE 499</b>	Krystalflex <b>PE 501</b> <sup>*3</sup>	Krystalflex <b>PE 505</b> <sup>*3</sup>	Krystalflex <b>PE 399</b> <sup>*2</sup> Coloured	Krystalflex <b>PE 900</b>	Unit	Test Method	
65	95	95	80	N/A	<b>Shore A</b>	ASTM D-2240	<b>GENERAL</b> Hardness
65	95	95	80	N/A	<b>Shore A</b>	DIN 53505	
1,07	1,07	1,06	1,07	N/A		ASTM D-792	Specific Gravity
1,07	1,07	1,06	1,07	N/A	<b>g/cm<sup>3</sup></b>	DIN 53478	
3500	6500	6800	4000 - 5600	5100	<b>psi</b>	ASTM D-412	<b>MECHANICAL</b> Tensile Strength @ Break
24	45	48	28 - 39	35	<b>MPa</b>	DIN 53504	
250	1800	1100	260 - 390	500	<b>psi</b>	ASTM D-412	100% Tensile Modulus
2	12	7	2 - 3	3	<b>MPa</b>	DIN 53504	
400	5000	3800	1700 - 2200	3100	<b>psi</b>	ASTM D-412	300% Tensile Modulus
3	35	24	12 - 15	21	<b>MPa</b>	DIN 53504	
850	350	370	380 - 400	760	<b>%</b>	ASTM D-412	Ultimate Elongation
850	350	370	380 - 400	760	<b>%</b>	DIN 53504	
225	580	430	240 - 280	290	<b>pli</b>	ASTM D-624	Tear Strength
39	102	82	42 - 49	51	<b>N/mm</b>	DIN 53515	
80	N/A	N/A	N/A	N/A	<b>pli</b>	ASTM D-3167	<b>PEEL RESISTANCE TO GLASS</b> laminated temperature: 185 °F
14	N/A	N/A	N/A	N/A	<b>N/mm</b>		85 °C
105	30	39	45 - 85	N/A	<b>pli</b>	ASTM D-3167	195 °F
18	5	7	8 - 15	N/A	<b>N/mm</b>		91 °C
135	112	110	112 - 123	N/A	<b>pli</b>	ASTM D-3167	210 °F
24	20	19	20 - 22	N/A	<b>N/mm</b>		99 °C
N/A	120	145	126 - 148	N/A	<b>pli</b>	ASTM D-3167	235 °F
N/A	21	25	22 - 26	N/A	<b>N/mm</b>		113 °C
N/A	146	155	136+ - 140+	N/A	<b>pli</b>	ASTM D-3167	245 °F
N/A	26	27	24+ - 25+	N/A	<b>N/mm</b>		118 °C
N/A	127	N/A	N/A	N/A	<b>pli</b>	ASTM D-3167	260 °F
N/A	22	N/A	N/A	N/A	<b>N/mm</b>		127 °C
140	195	200	169 - 172	194	<b>°F</b>	Huntsman	<b>THERMAL</b> TMA Melt Range Low
60	90	94	76 - 80	90	<b>°C</b>	Huntsman	
230	300	290	250 - 285	284	<b>°F</b>	Huntsman	TMA Melt Range High
110	150	144	121 - 140	140	<b>°C</b>	Huntsman	
-56	-24	-83	-33	N/A	<b>°F</b>	Huntsman	<b>GLASS TRANSITION</b> DSC Mid Point Tg
-49	-31	-64	-36	N/A	<b>°C</b>	Huntsman	



## TYPICAL PROPERTIES

### GENERAL

Hardness

Specific Gravity

### MECHANICAL

Tensile Strength @ Break

100% Tensile Modulus

300% Tensile Modulus

Ultimate Elongation

Tear Strength

### PEEL RESISTANCE TO GLASS

laminated temperature: 185 °F

85 °C

195 °F

91 °C

210 °F

99 °C

235 °F

113 °C

245 °F

118 °C

260 °F

127 °C

### THERMAL

TMA Melt Range Low

TMA Melt Range High

### GLASS TRANSITION

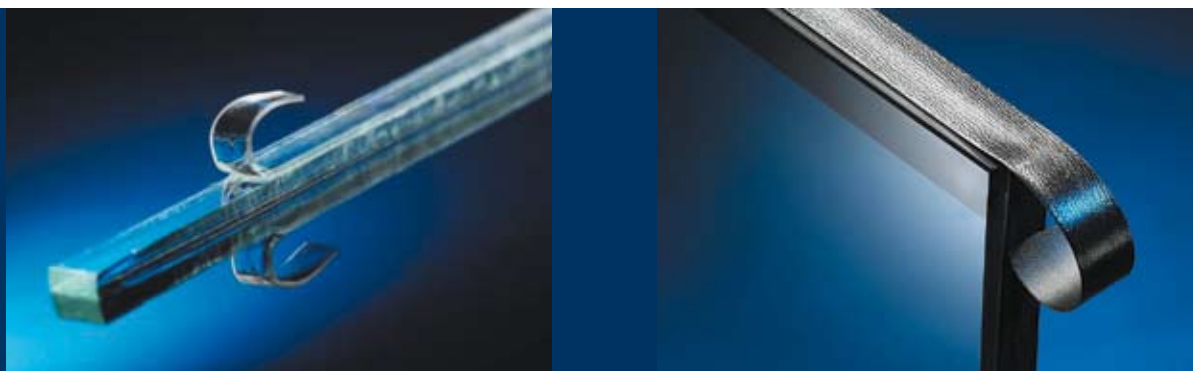
DSC Mid Point Tg

- Higher Adhesion
- Multiple Design Option
- No special storage required

\*2 in different colours available

\*3 development product

Further information on request.



Huntsman Polyurethanes is committed to your business and can offer fast and flexible response to your needs

Believing in confidential dialogue, we offer direct links into the laboratories with full technical backup. Commercial support and dedicated customer service is available throughout Europe, Asia and the US.



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