



RELIABLE PROTECTION

AGAINST **ELECTROSTATIC
DISCHARGES** FOR MULTI-
DIMENSIONAL SHAPES

A photograph showing several clear, thermoformed plastic parts, including a central multi-tiered cylindrical cap and other rectangular components, arranged on a reflective surface.

ESD PLASTIC SHEETS FOR THERMOFORMING

**PVC, PMMA (ACRYLIC) AND POLYCARBONATE
ANTISTATIC & TRANSPARENT**

www.eslon-dc.de/en

SEKISUI

SEKISUI Chemical GmbH | Roßstraße 92 | 40476 Düsseldorf | Germany
Phone +49 (0) 211 / 36 977 0 | eslon@sekisui.de

ESLON®-DC ESD THERMOFORM PLASTIC SHEETS

INTRODUCTION

Many producing industries require reliable protection against ESD (**e**lectro**s**tatic **d**ischarges) in their facilities. Especially in electronic manufacturing when producing microchips, circuit boards and sensors. But ESD protection is also needed in clean room technology, printing processes or food processing.

Even technical goods such as cameras or sensitive scanners require elements with ESD protection – as housings, covers, glazing or packaging.

ESLON®-DC ESD Thermoform plastic sheets and their conductive properties protect highly sensitive components from damages caused by electrostatic discharges. Through thermoforming, the sheets can be formed exactly into the shape which is needed. Every form made from ESLON®-DC ESD Thermoform plastic sheets remains transparent and antistatic after processing.

HIGH-QUALITY CONDUCTIVE COATING

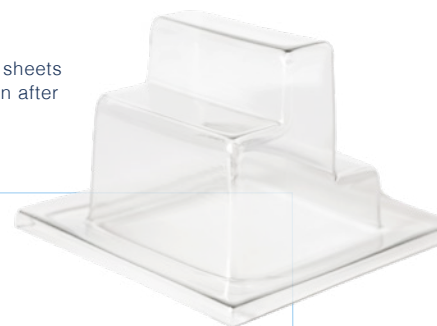
RELIABLE ESD PROTECTION

All ESLON®-DC ESD Thermoform plastic sheets have a double-sided conductive surface coating for reliable protection against electrostatic discharges.

Even when the sheet is thermoformed several times and molded into a new shape, the conductive particles of the coating keep their special structure and thus their high conductive capacity.

ESLON®-DC ESD Thermoform plastic sheets are available in different types and even in small quantities. Currently companies, mechanical engineers and product designers can choose between PMMA (Acrylic) and Polycarbonate as base materials in various sheet thicknesses and transparent colors.

ESLON®-DC ESD Thermoform plastic sheets remain transparent and antistatic even after multiple thermoforming processes.



ANTISTATIC. TRANSPARENT. ELECTROSTATIC DISCHARGING (ESD).

PVC
ESD Thermoform

PMMA/ACRYLIC
ESD Thermoform

POLYCARBONATE
ESD Thermoform



ESD Thermoform

Suitable for thermoforming and warm forming.



ESD Standard

Suitable for warm forming.



ESD Hard Coat

Not suitable for deforming.

THE UNIQUE ANTISTATIC COATING

ESD THERMOFORM



HIGH TRANSPARENCY

ESLON®-DC ESD Thermoform plastic sheets can be thermoformed exactly as needed to precisely fit the requirements and dimensions of the intended application. Even after three thermoforming processes, the new shape has a high translucency and an excellent transparency. This is important, for example if you build production machines and want to see components, texts or numbers clearly on the other side of the form.

CONSTANT SURFACE RESISTIVITY

Not only the great optical features remain after processing ESLON®-DC ESD Thermoform plastic sheets. So does also the reliable protection against electrostatic discharges. Experience has shown that the surface resistivity of all materials (ESLON®-DC Thermoform PVC, ESLON®-DC Thermoform PMMA and ESLON®-DC Thermoform Polycarbonate) changes only slightly after three thermoforming processes (from $10^6 \Omega$ to approx. $10^9 \Omega$).

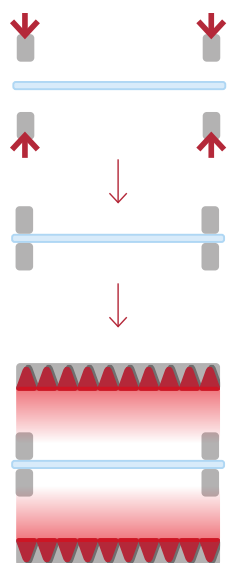
PROCESSING

PROCESS OVERVIEW

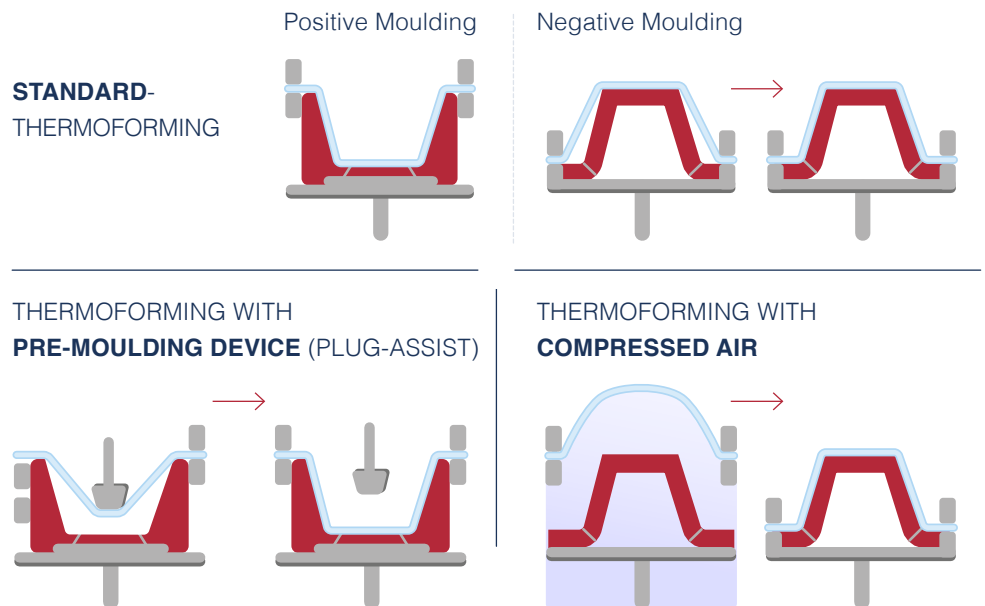
An ESLON®-DC ESD Thermoform plastic sheet can be formed into a new, multidimensional shape using all standard thermoforming processes. PVC can be thermoformed at 135-165 °C (3 mm) or at 145-170 °C (5 mm), PMMA (Acrylic) at 145-165 °C (3 mm) or at 165-185 °C (5 mm) and Polycarbonate can be thermoformed at temperatures of 165-175 °C (3 mm) or at 180-185 °C (5 mm). These numbers are for reference only; depending on your press/machine and the desired result, the temperatures may vary.

NOTE: The protective foil of the plastic sheet should only be removed immediately before usage (i.e. after processing and transportation).

CLAMP AND PREHEAT



THERMOFORMING



PVC | ESD THERMOFORM

PVC (polyvinyl chloride) is classified as an amorphous thermoplastic and is highly resistant to most acids, alcohol, petrol, lubricants and greases. All sheet types have the international fire protection classification UL 94 V-0. ESLON®-DC ESD Thermoform plastic sheets out of PVC are available in the transparent versions “clear“, “yellow“, “orange“ and “smoked-brown“.

PRODUCT LINE-UP

Code	Colour	Standard Sizes (mm)	Sheet Thickness (mm)											
			1	2	3	4	5	6	8	10	12	15		
CT401AS	clear transparent	1000 x 2000			●	●	●	●						
		1212 x 2424			●	●	●	●						
CT421AS	smoked-brown	1000 x 2000			●	●	●	●						
		1212 x 2424			●	●	●	●						
CT411AS	orange	1000 x 2000			●	●	●	●						
		1212 x 2424			●	●	●	●						
CT441AS	yellow	1000 x 2000			●	●	●	●						
		1212 x 2424			●	●	●	●						

Other colors and/or formats on request.

● Standard production ● Only as special production with minimum order quantity ● Production is stopped

TECHNICAL CHARACTERISTICS

	Method			Unit	CT401AS	CT421AS	CT411AS	CT441AS
					clear transparent	smoked-brown	orange	yellow
ELECTRICAL								
Surface resistivity	ASTM D-257	IEC 60093		Ω/\square	$10^6 \sim 10^7$	$10^6 \sim 10^7$	$10^6 \sim 10^7$	$10^6 \sim 10^7$
Electrostatic discharge	MIL B-81705B			s	< 0.1	< 0.1	< 0.1	< 0.1
Dielectric constant	ASTM D-150	IEC 60250			3	3	3	3
PHYSICAL								
Density	ASTM D-792	ISO 1183		g/cm ³	1.40	1.40	1.40	1.40
Water absorption	ASTM D-270	ISO 62A		%	0.03	0.03	0.03	0.03
Pencil hardness	JIS K5400	ISO 15184		Scale	2H	2H	2H	2H
OPTICAL								
Light transmittance	ASTM D-1003			%	80	41	26	70
Haze	ASTM D-1003	ISO 14782		%	5	5	5	5
MECHANICAL								
Tensile strength	ASTM D-638	ISO 527		N/mm ²	64	70	64	70
Flexural strength	ASTM D-790	ISO 178		N/mm ²	98	90	98	90
Flexural modulus	ASTM D-790			N/mm ²	3400	3400	3400	3400
Charpy impact strength (23°C)	JIS K7110			kJ/m ²	2.5	2.5	2.5	2.5
Notched impact strength (23°C)	ASTM D-256			J/m	29.5	32	29.5	32
THERMAL								
Heat deflection temperature	ASTM D-648			°C	60 ~ 65	60 ~ 65	60 ~ 65	60 ~ 65
Flammability	UL 94							

Other colors and/or formats on request.

Click here to download
the total product line-up:



DOWNLOAD

PMMA (ACRYLIC) I ESD THERMOFORM

PMMA (Polymethylmethacrylate = acrylic glass) has a high transparency, a high durability, an excellent weathering resistance and a large range of application options. ESLON®-DC ESD Thermoform plastic sheets out of PMMA are available in the transparent versions “clear”, “orange” and “smoked-brown”.

PRODUCT LINE-UP

Code	Colour	Standard Sizes (mm)	Sheet Thickness (mm)											
			2	3	4	5	6	8	10	12	15	20		
AT405AS	clear	1000 x 2000	●	●	●	●	●							
		1212 x 2424	●	●	●	●	●							
AT425AS	smoked-brown	1000 x 2000	●	●	●	●	●							
		1212 x 2424	●	●	●	●	●							
AT415AS	orange	1000 x 2000	●	●	●	●	●							
		1212 x 2424	●	●	●	●	●							

Other colors and/or formats on request.

● Standard production ● Only as special production with minimum order quantity ● Production is stopped

TECHNICAL CHARACTERISTICS

	Method	Unit	AT405AS clear transparent	AT425AS smoked- brown	AT415AS orange
ELECTRICAL					
Surface resistivity	ASTM D-257 IEC 60093	Ω/\square	$10^6 \sim 10^7$	$10^6 \sim 10^7$	$10^6 \sim 10^7$
Electrostatic discharge	MIL B-81705B	s	< 0.1	< 0.1	< 0.1
Dielectric constant	ASTM D-150 IEC 60250		3	3	3
PHYSICAL					
Density	ASTM D-792 ISO 1183	g/cm ³	1.19	1.19	1.19
Water absorption	ASTM D-270 ISO 62A	%	0.3	0.3	0.3
Pencil hardness	JIS K5400 ISO 15184	Scale	H	H	H
OPTICAL					
Light transmittance	ASTM D-1003	%	85	22	33
Haze	ASTM D-1003 ISO 14782	%	2	4	3
MECHANICAL					
Tensile strength	ASTM D-638 ISO 527	N/mm ²	74.5	74.5	74.4
Flexural strength	ASTM D-790 ISO 178	N/mm ²	117.7	117.7	117.7
Flexural modulus	ASTM D-790	N/mm ²	2900	2900	2900
Charpy impact strength (23°C)	JIS K7110	kJ/m ²	20.3	20.3	20.3
Notched impact strength (23°C)	ASTM D-256	J/m	2.0	2.0	2.0
THERMAL					
Heat deflection temperature	ASTM D-648	°C	90	90	90
Flammability	UL 94				

Other colors and/or formats on request.

Click here to download
the total product line-up:



POLYCARBONATE I ESD THERMOFORM

Polycarbonate is classified as a member of the polyester family. Polycarbonate possesses a great degree of impact strength, excellent transparency and very good dimensional stability. Polycarbonate is chemically resistant against weak acids, ethanol and oils. The material has little to no chemical resistance against bases, methanol, or aromatic hydrocarbon. ESLON®-DC ESD Thermoform plastic sheets out of Polycarbonate are available in the transparent versions “clear”, “orange” and “smoked-brown”.

PRODUCT LINE-UP

Code	Colour	Standard Sizes (mm)	Sheet Thickness (mm)											
			1	2	3	4	5	6	8	10	12	15		
PT407AS	clear	1000 x 2000	●	●	●	●	●							
		1212 x 2424	●	●	●	●	●							
PT427AS	smoked-brown	1000 x 2000	●	●	●	●	●							
		1212 x 2424	●	●	●	●	●							
PT417AS	orange	1000 x 2000	●	●	●	●	●							
		1212 x 2424	●	●	●	●	●							

Other colors and/or formats on request.

● Standard production ● Only as special production with minimum order quantity ● Production is stopped

TECHNICAL CHARACTERISTICS

	Method	Unit	PT407AS clear transparent	PT427AS smoked- brown	PT417AS orange	
ELECTRICAL						
Surface resistivity	ASTM D-257 IEC 60093	Ω/\square	$10^6 \sim 10^7$	$10^6 \sim 10^7$	$10^6 \sim 10^7$	
Electrostatic discharge	MIL B-81705B	s	< 0.1	< 0.1	< 0.1	
Dielectric constant	ASTM D-150 IEC 60250		3	3	3	
PHYSICAL						
Density	ASTM D-792 ISO 1183	g/cm ³	1.20	1.20	1.20	
Water absorption	ASTM D-270 ISO 62A	%	0.3	0.3	0.3	
Pencil hardness	JIS K5400 ISO 15184	Scale	2B	2B	2B	
OPTICAL						
Light transmittance	ASTM D-1003	%	80	51	30	
Haze	ASTM D-1003 ISO 14782	%	2	4	4	
MECHANICAL						
Tensile strength	ASTM D-638 ISO 527	N/mm ²	67	67	67	
Flexural strength	ASTM D-790 ISO 178	N/mm ²	90	90	90	
Flexural modulus	ASTM D-790	N/mm ²	2300	2300	2300	
Charpy impact strength (23°C)	JIS K7110	kJ/m ²	80	80	80	
Notched impact strength (23°C)	ASTM D-256	J/m	847	847	847	
THERMAL						
Heat deflection temperature	ASTM D-648	°C	135	135	135	
Flammability	UL 94					

Other colors and/or formats on request.

Click here to download
the total product line-up:

