



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

www.eslon-dc.de/en



## 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.



### 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

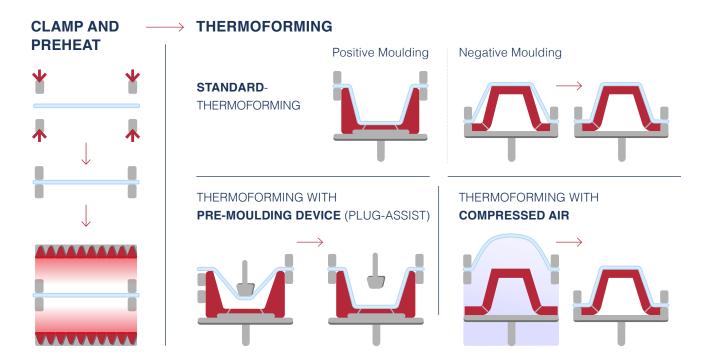
Not only the great optical features remain after processing ESLON®-DC ESD Thermoform plastic sheets. So does also the reliable protection against electrostatic discharges. Experience has shown that the surface resistivity of all materials (ESLON®-DC Thermoform PVC, ESLON®-DC Thermoform PMMA and ESLON®-DC 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).



# **PVC I 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				CT401AS clear	CT421AS smoked-	CT411AS	CT441AS	
	ELECTRICAL	Metho	od ———	Unit	transparent	brown	orange	yellow
	Surface resistivity	ASTM D-257	IEC 60093	$\Omega/\Box$	$10^6 \sim 10^7$	$10^6 \sim 10^7$	$10^6 \sim 10^7$	$10^6 \sim 10^7$
	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/cm³	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/mm²	64	70	64	70
	Flexural strength	ASTM D-790	ISO 178	N/mm <sup>2</sup>	98	90	98	90
	Flexural modulus	ASTM D-790		N/mm²	3400	3400	3400	3400
	Charpy impact strength (23°C)	JIS K7110		kJ/m²	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:



# 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					AT405AS	AT425AS	AT415AS
		Matha		11-9	clear	smoked-	
	ELECTRICAL	Metho	oa ——	Unit	transparent	brown	orange
	Surface resistivity	ASTM D-257	IEC 60093	Ω/□	$10^6 \sim 10^7$	10 <sup>6</sup> ~ 10 <sup>7</sup>	$10^6 \sim 10^7$
	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/cm³	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	Н	Н	Н
	OPTICAL						
		ACTM D 1000		0/	0.F	00	00
	Light transmittance	ASTM D-1003 ASTM D-1003	100 14700	%	85 2	22 4	33
	Haze	ASTIVI D-1003	ISO 14782	70	2	4	3
	MECHANICAL						
	Tensile strength	ASTM D-638	ISO 527	N/mm²	74.5	74.5	74.4
	Flexural strength	ASTM D-790	ISO 178	N/mm²	117.7	117.7	117.7
	Flexural modulus	ASTM D-790		N/mm²	2900	2900	2900
	Charpy impact strength (23°C)	JIS K7110		kJ/m²	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 CHADACTEDISTICS							
TECHNICAL CHARACTERISTICS					PT407AS clear	PT427AS smoked-	PT417AS
	ELECTRICAL	Metho	od ——	Unit	transparent	brown	orange
	Surface resistivity	ASTM D-257	IEC 60093	Ω/□	$10^6 \sim 10^7$	10 <sup>6</sup> ~ 10 <sup>7</sup>	$10^6 \sim 10^7$
	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/cm³	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/mm²	67	67	67
	Flexural strength	ASTM D-790	ISO 178	N/mm²	90	90	90
	Flexural modulus	ASTM D-790		N/mm²	2300	2300	2300
	Charpy impact strength (23°C)	JIS K7110		kJ/m²	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.



