

PET ESD SHEET TECHNICAL DATA SHEET

ANTISTATIC | CONDUCTIVE | STATIC DISSIPATIVE

ITEM	SPECIFICATION
Manufacturer	Shanghai Evergreen International Trading Co., Ltd Evergreen Industries Pte. Ltd
Product family	Thermoformable APET / PETG ESD sheet
Standard material configuration	100% virgin APET resin. PETG or recycled content is available only by written agreement.
Form and nominal gauge	Roll or sheet; 0.20-1.50 mm standard, up to 2.00 mm by agreement

1. Product classification and electrical performance

GRADE	CODE	TARGET SURFACE RESISTANCE R_s	CONSTRUCTION AND USE
Antistatic	EVG-PET-AS	1×10^9 to $< 1 \times 10^{11}$ ohm	Internal additive or durable coating; general electronics trays, lids and protective covers
Conductive	EVG-PET-C	1×10^3 to $< 1 \times 10^4$ ohm	Conductive polymer coating or carbon-filled matrix; grounded carriers and lead shunting
Static dissipative	EVG-PET-SD	1×10^6 to $< 1 \times 10^9$ ohm	Permanent IDP/ICP, coextruded layer or qualified durable coating; direct-contact ESD packaging

TEST ITEM	REQUIREMENT	INTERNATIONAL METHOD
Surface resistance - flat sheet	Both functional surfaces shall meet the ordered range. Report test voltage, electrode, conditioning, temperature and RH.	IEC 62631-3-2:2023 IEC 61340-2-3:2016 + COR1:2023 for 10^4 - 10^{12} ohm
Post-forming resistance	Test the highest-draw area and flange. Acceptance range and draw ratio shall be agreed before production.	IEC 62631-3-2:2023, applied to formed specimens
Humidity stability	No loss of the ordered ESD classification after the agreed conditioning cycle. Report actual values.	IEC 61340-2-3:2016 + COR1:2023; atmosphere per ISO 291:2008

Important: The ranges above are EVERGREEN proposed product targets, not universal IEC classification limits. Surface resistance (ohm) and surface resistivity (ohm/square) are not interchangeable.

2. Dimensional requirements

ITEM	NOMINAL RANGE	REQUIREMENT	INTERNATIONAL METHOD
Sheet or roll width	As ordered	Nominal width +/- 0.5 mm	ISO 4592:1992
Thickness	0.20-0.79 mm	+/- 0.01 mm	ISO 4593:1993
Thickness	0.80-1.50 mm	+/- 0.02 mm	ISO 4593:1993
Thickness	1.51-2.00 mm	By written agreement	ISO 4593:1993
Roll or sheet mass	As ordered	Nominal mass +/- 1%	Calibrated weighing system; report actual value

3. Appearance requirements

These requirements follow the supplied EGD-APET-TDS framework. Conductive carbon-black grades are exempt from clear optical requirements.

INSPECTION ITEM	ACCEPTANCE REQUIREMENT	INSPECTION BASIS
Overall character	Clear grades shall be colourless, transparent and uniform. Tinted or black grades shall match the approved master sample.	Visual inspection under controlled lighting
Crystal points	Any crystal point >2.0 mm: not allowed. Crystal points <=2.0 mm: limited quantity only, per approved boundary sample and agreed AQL.	300 mm x 300 mm inspection area; calibrated scale
Black or white impurities	No single impurity >2.0 mm within a 300 mm x 300 mm area.	Visual inspection and calibrated scale
Bubbles	No single bubble >2.0 mm within a 300 mm x 300 mm area.	Visual inspection and calibrated scale
Edges	Smooth, burr-free and neatly trimmed, with no edge waviness or missing edge.	Visual and tactile inspection
Watermarks or mist	Slight occurrence may be accepted only within the approved boundary sample and without functional impact.	Approved boundary sample
Winding and cutting	Roll shall be smooth, compact and neatly trimmed. Telescoping, loose winding and miscut are not allowed.	Visual inspection
Critical defects	Cracks, deep scratches, perforation, wrinkles, foreign matter, oil contamination and missing edge are not allowed.	Visual inspection

Sampling: Use ISO 2859-1:1999 for lot-by-lot inspection by attributes. Inspection level, AQL, defect classes and boundary samples shall be agreed in the purchase specification.

4. Physical and mechanical requirements

PROPERTY	REQUIREMENT	INTERNATIONAL METHOD	APPLICABILITY
Tensile strength - MD	>=60 MPa	ISO 527-3:2018 for t <1 mm; ISO 527-2:2012 for t >=1 mm	Report specimen type, speed and conditioning
Tensile strength - TD	>=50 MPa	ISO 527-3:2018 for t <1 mm; ISO 527-2:2012 for t >=1 mm	Report specimen type, speed and conditioning
Coefficient of kinetic friction	<=0.40	ISO 8295:1995	Film-to-film unless otherwise agreed
Total luminous transmittance	>=88%	ISO 13468-1:2019	Clear grades only; at agreed thickness
Haze	<=2%	ISO 14782:2021	Clear grades only; at agreed thickness
Impact resistance - falling mass	0.20 <= t <0.40 mm: >=800 g 0.40 <= t <0.80 mm: >=1200 g 0.80 <= t <1.00 mm: >=1500 g	ISO 7765-1:1988	Staircase method; report Method A or B
Puncture impact	For 1.00-2.00 mm, establish threshold failure energy during qualification. The original 1500 g benchmark requires correlation.	ISO 6603-1:2000	Report striker, support and energy
Density	1.35 g/cm ³ nominal	ISO 1183-1:2025, Method A	Report actual value
Intrinsic viscosity	0.69-0.74 dL/g	ISO 1628-5:1998	Use identical solvent, concentration and temperature
Thermoforming window	120-160 deg C typical	Process trial; not a release test	Confirm draw ratio, wall distribution and resistance retention

5. Compliance, documentation and release

CONTROL	MINIMUM SUPPLIER EVIDENCE	RELEASE REQUIREMENT
Chemical compliance	Current RoHS and REACH declarations; substance test reports when requested	Applicable only to the ordered grade and current formulation
Food contact - optional	Declaration of compliance and migration evidence to the specified market requirement	Not claimed unless explicitly ordered and documented
Lot documents	CoA with actual thickness, width, resistance and agreed critical properties; SDS and TDS	Lot number traceable to resin, coating/additive and production record
Change control	Advance written notice for resin source, ESD chemistry, coating, process or site change	Customer requalification where form, fit, function or compliance may change
Sample approval	First article / golden sample including flat and thermoformed resistance data	Written customer approval before mass production

Contract status: This document is a proposed commercial specification derived from the supplied APET TDS and international test methods. Final contractual limits require product trials, signed supplier TDS/CoA, agreed test conditions and customer approval.

6. International standards referenced

NO.	STANDARD
1	ISO 291:2008 - Standard atmospheres for conditioning and testing
2	ISO 4592:1992 and ISO 4593:1993 - Length, width and mechanical thickness
3	ISO 527-2:2012 and ISO 527-3:2018 - Tensile properties of plastics sheets and films
4	ISO 8295:1995 - Coefficients of friction of film and sheeting
5	ISO 13468-1:2019 and ISO 14782:2021 - Luminous transmittance and haze
6	ISO 7765-1:1988 and ISO 6603-1:2000 - Falling-dart and puncture impact
7	ISO 1183-1:2025 and ISO 1628-5:1998 - Density and intrinsic viscosity
8	IEC 62631-3-2:2023 and IEC 61340-2-3:2016 + COR1:2023 - Surface resistance
9	ISO 2859-1:1999 - Sampling inspection by attributes

PREPARED BY	REVIEWED BY	APPROVED BY
Name / Signature:	Name / Signature:	Name / Signature:
Date:	Date:	Date: