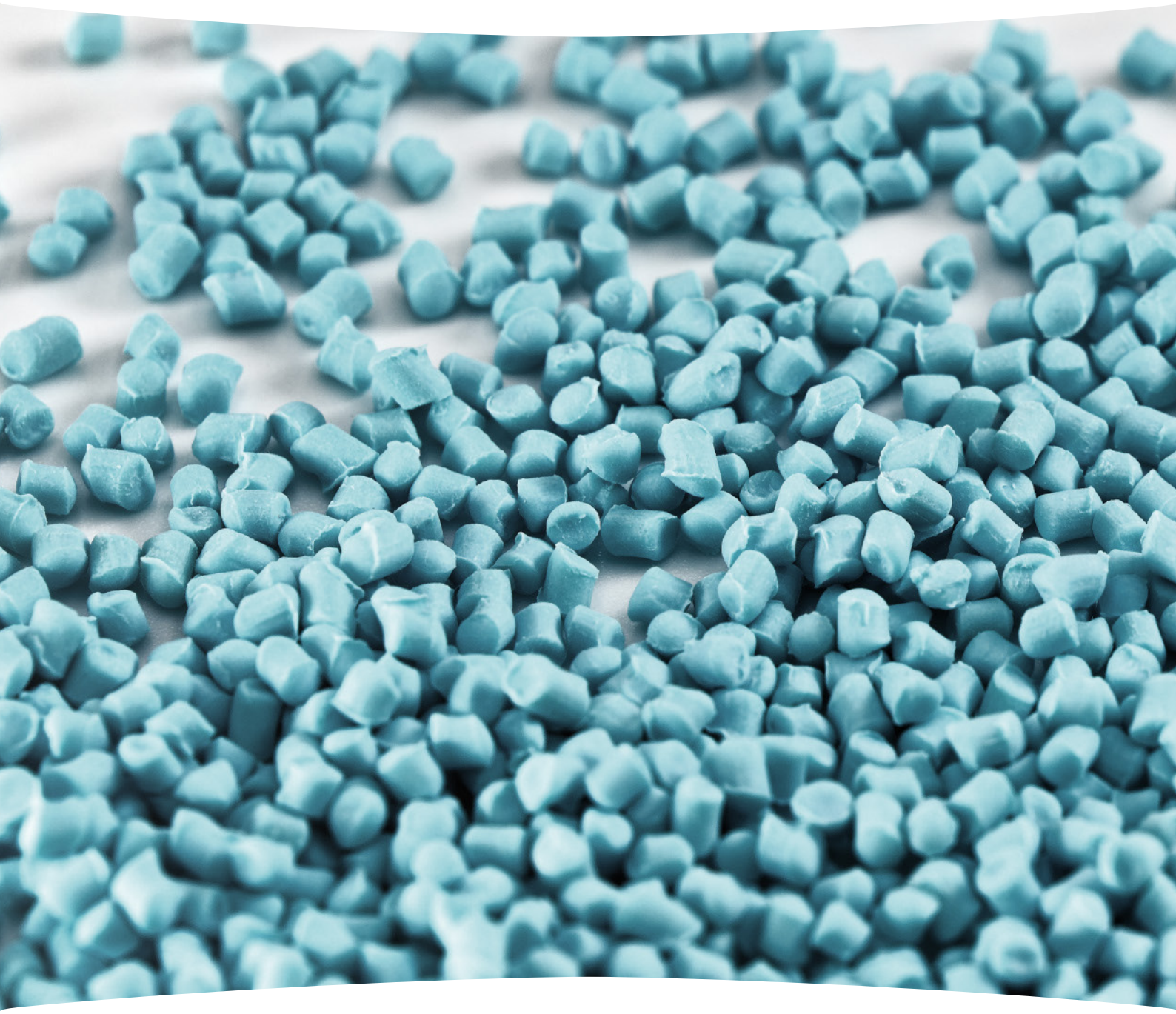


MARFRAN.CD

DISSIPATIVE TPE

ELECTROSTATIC DISSIPATIVE
TPE COMPOUND

MARFRAN

ELASTOMERS. WITH PASSION

MARFRAN® E CD
ELECTROSTATIC DISSIPATIVE TPE COMPOUND

Plastic materials are electrical insulators by their own nature. This feature is desired in most applications but it can generate problems when the final product undergoes rubbing stress.
In such conditions the material accumulates electrostatic charges which are responsible for the "shock" received when touching an electrified object.

Our TPE compounds based on styrene block copolymers are excellent insulators as well as all plastic materials, however it is possible to exhaust the build-up of electrostatic charge thanks to specific additives.

The problem of the accumulation of electrostatic charges has increasingly become an aspect of legislative relevance thus it is regulated by various sector directives, especially for Personal Protective Equipment for professional use (for example safety shoes).

CONDUCTION METHODS IN THERMOPLASTIC MEDIA

The conductive properties of compounds depend strongly on the fillers choice and how they are dispersed within the thermoplastic matrix. The main methods for modifying electrical conductivity in a thermoplastic elastomer can be achieved through the addition of three different types of fillers:

1.UNMIXABLE PARTICLES OF CONDUCTIVE MATERIALS

The electrical conductivity occurs thanks to the contact of conductive particles that create a network within the thermoplastic material. Some examples of such particles are: conductive carbon black, metal microfibres, carbon nanotubes, etc.

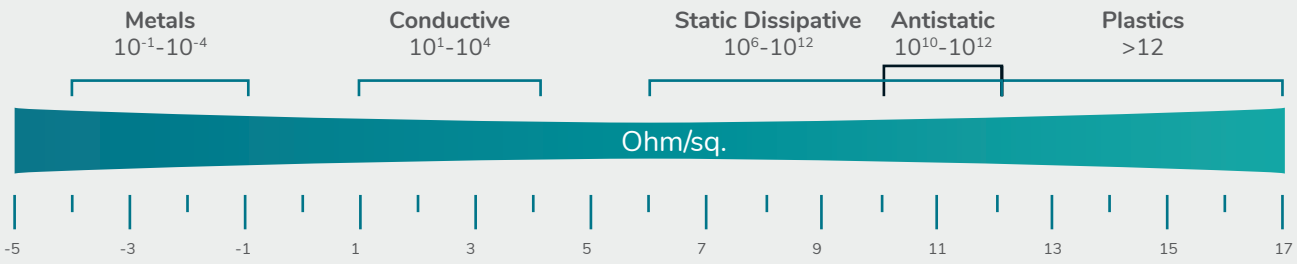
2.MIGRANT IONIC AND/OR HYDROPHILIC ADDITIVES

These additives migrate on the surface of the material, activating an electrical surface conductivity through time.
For this reason they are easily removable so the dissipative effect is destined to decrease over time. These additives are commonly referred to a "non-permanent antistatic additives".

3.INTRINSICALLY CONDUCTIVE POLYMERS (ICP)

The conduction mechanism is activated by a homogeneously dispersed polymer component in the thermoplastic matrix; this mechanism doesn't depend on mechanical and environmental stresses applied to the material and it guarantees a much more stable electrical conductivity over time (permanent).

RESISTIVITY RANGE OF DIFFERENT MATERIALS



MARFRAN® E CDP

PERMANENT ELETTRICALLY DISSIPATIVE TPE COMPOUND

MARFRAN® E CDP is a TPE-S compound based on SEBS modified with specific intrinsically conductive polymers in order to obtain a material with **high capability to discharge the electrostatic charges**. The electrical conduction mechanism based on Intrinsically Conductive Polymer ensures that this capability is **permanent**, regardless of the conditions of use of the product.
The MARFRAN® E CDP also guarantees a **good level of physical and mechanical characteristics**.

MARFRAN® E CDT1

ELETTRICALLY DISSIPATIVE TPE COMPOUND (NON PERMANENT)

MARFRAN® E CDT1 is a TPE-S compound based on SEBS with antistatic migrant additives in order to obtain a considerable **anti-static effect that decreases over time**.

MARFRAN® E CDT2

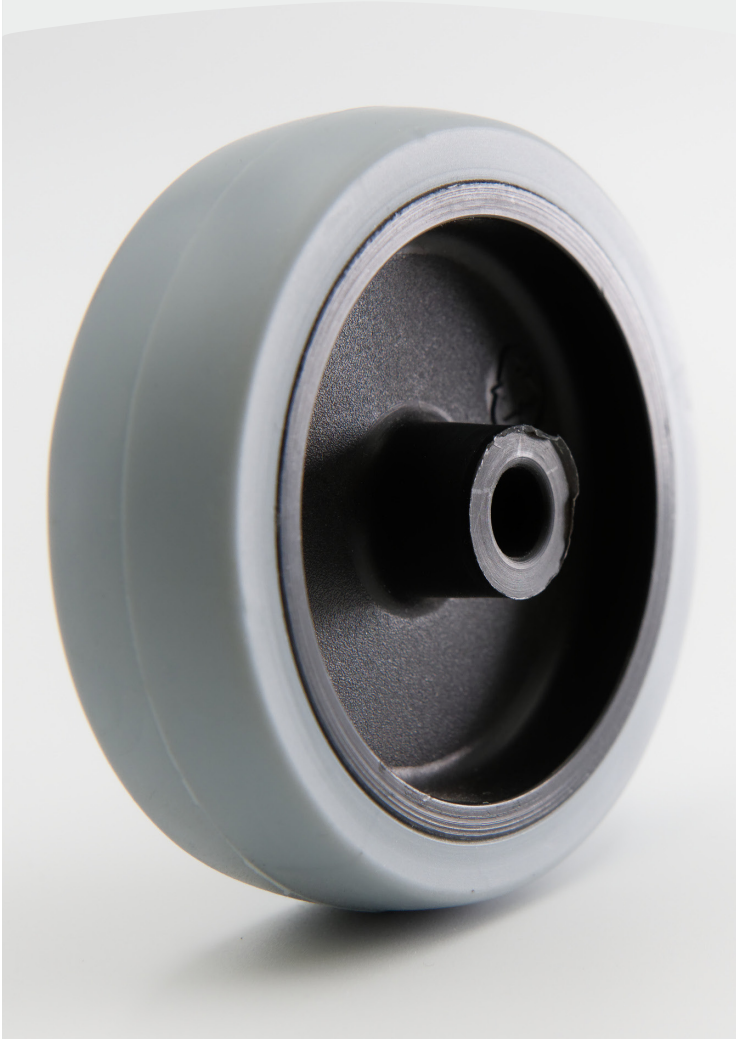
FILLED

ELETTRICALLY DISSIPATIVE TPE COMPOUND (NON PERMANENT)

MARFRAN® E CDT2 is a TPE-S compound based on SEBS with mineral filler and antistatic migrant additives in order to obtain an appreciable anti-static effect that decreases over time offering a **high performance/price ratio.**

Our **MARFRAN® E CD** combine easy processability, lightness and versatility of TPE compounds with the dissipation properties of electrical charges required by the market.

The new **MARFRAN® E CD** are born as products oriented to the production of work shoes such as hospital clogs, but they can also be used in other injection molding applications.



MARFRAN® E CD RANGE

GRADE	Hardness ShA	Food contact Grade	Density (g/cm³)	Tensile Strength (MPa)	Elongation at break (%)	Tear strenght (N/m)	Volume Resistivity (Ohm*cm)	Surface Resistivity (Ohm/sq)
MARFRAN® E CDP 50A	50	YES	0,940	2,8	530	23	≤1E9	≤1E9
MARFRAN® E CDP 55A	55	YES	0,940	3,1	520	25		
MARFRAN® E CDP 60A	60	YES	0,940	3,4	520	27		
MARFRAN® E CDP 65A	65	YES	0,940	3,7	500	29		
MARFRAN® E CDP 70A	70	YES	0,940	4,0	480	30		
MARFRAN® E CDT1 50A	50	NO	0,900	6,5	750	25	≤30E12	≤10E12
MARFRAN® E CDT1 55A	55	NO	0,900	7,0	750	26		
MARFRAN® E CDT1 60A	60	NO	0,900	7,5	750	27		
MARFRAN® E CDT1 65A	65	NO	0,900	8,0	750	28		
MARFRAN® E CDT1 70A	70	NO	0,900	8,5	720	29		
MARFRAN® E CDT2 50A	50	NO	1,000	n.a.	n.a.	n.a.	≤30E12	≤10E12
MARFRAN® E CDT2 55A	55	NO	1,000	n.a.	n.a.	n.a.		
MARFRAN® E CDT2 60A	60	NO	1,000	n.a.	n.a.	n.a.		
MARFRAN® E CDT2 65A	65	NO	1,000	n.a.	n.a.	n.a.		
MARFRAN® E CDT2 70A	70	NO	1,000	n.a.	n.a.	n.a.		

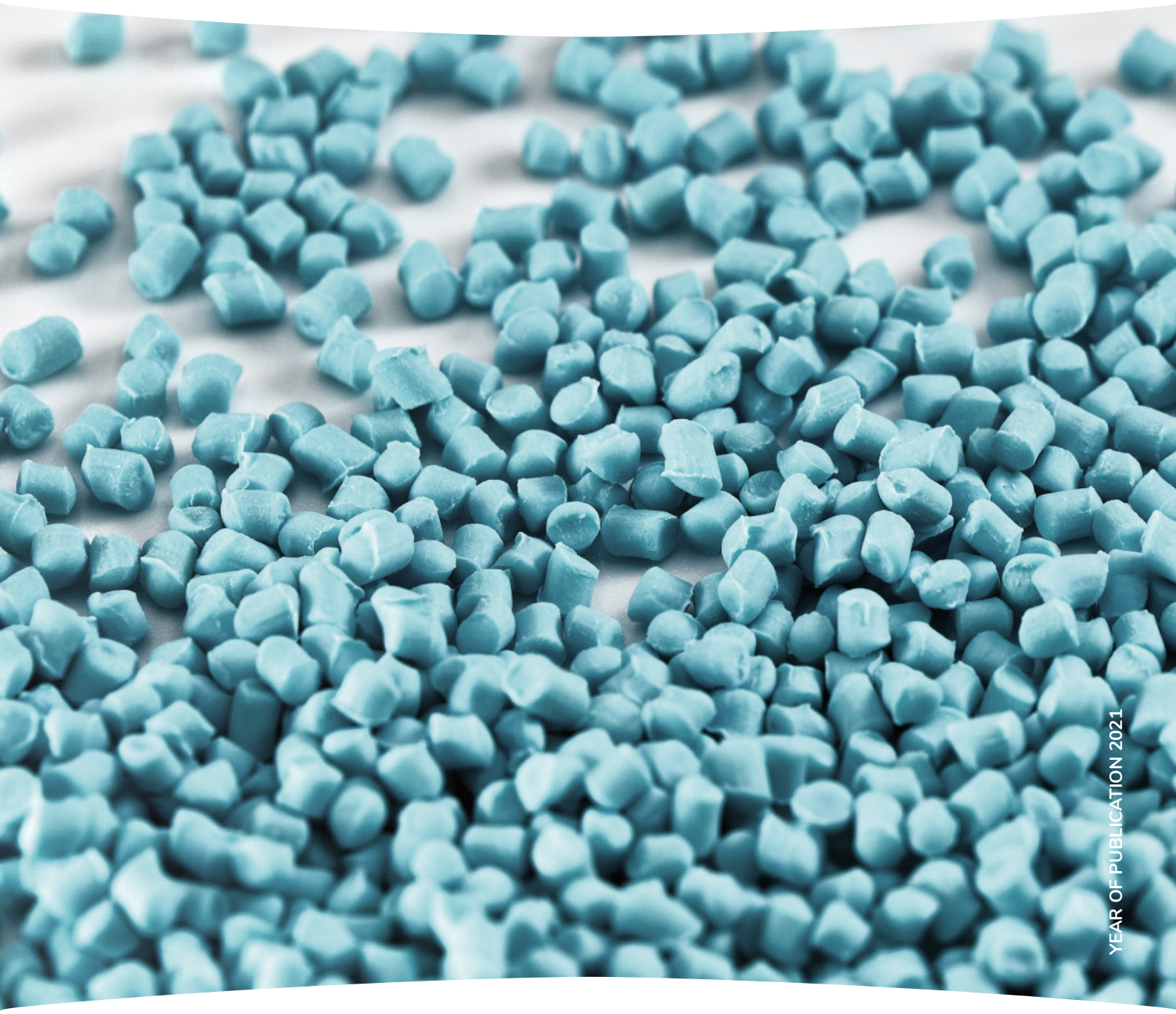
PROCESSING TIPS

FOR INJECTION MOLDING

MARFRAN® E CD can be easily processed by injection molding. The processing conditions of the TPE have a significant impact on the quality of the surface of the finished product. Beyond the following information, which can be considered as a guideline, it is always suggested to carry out various tests in order to identify the best conditions.

	MARFRAN® E CDP	MARFRAN® E CDT
Temperature profile of the cylinder (°C)	190 ÷ 220	170 ÷ 200
Maximum processing temperature (°C)	240	230
Mold temperature (°C)	20 ÷ 30	20 ÷ 30
Pre-drying	MANDATORY 80°C for 4 h	NOT NECESSARY

- Injection machine with standard three-zone screw for polyolefins.
- Injection pressure-speed: medium/high.
- Injection channels: with rounded and regular section; avoid sharp edges.



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