Celion®

Technical Data Sheet

Celion® is the world's first high quality and high purity cellulose acetate recovered from cigarette filters.The mechanical-chemical technology developed by IMEKO allows for the complete and purified recovery of the cellulose acetate present in cigarette butts, which is then used in the Celion® formulation.

Celion® pellets are formulated with 100% recovered cellulose acetate, resulting in a bioacetate that is completely free of phthalates and plasticized exclusively with biodegradable, plant-based additives.

In terms of processing and appearance, Celion® offers excellent versatility in colors and visual finishes with a strong level of transparency (featuring a subtle yellow tone and the potential presence of minor natural processing impurities). It is fully compatible with standard industrial processing techniques—including injection molding, extrusion, and compression—and offers a customizable formulation suited for high-end applications such as eyewear frames, jewelry, tools, and consumer goods. At the end of its life cycle, Celion® can be completely recycled by IMEKO.

PHYSICAL AND MECHANICAL PROPERTIES OF CELION®

Below is a summary of the physical and mechanical properties obtained according to ASTM standards:

Property	Value	Unit	Method
Density	1.27 ± 0.0	g/cm^3	ASTM D792
Flow index	2.19 ± 0.04	g/10min; @190 °C 2.16 kg	ASTM D 1238
Young's modulus or elasticity	1,920 ± 227	MPa	ASTM D 790
Maximum effort	39.2 ± 0.4 9	MPa	ASTM D 638
Elongation at break	9 ± 1	%	ASTM D 638

Data extracted from the technical report prepared by GT-ATP for IMEKO in 2026.

PROCESSING PARAMETERS AND CONDITIONS

Typical values for processing by molding and injection:

Parameters and conditions	Typical value
Injection temperature	185 °C
Injection pressure	140 bar
Injection Flow	140 cm^3/s
Tangential velocity	140 m/min
Cooling time	140 s
Pre-drying requirement (*)	4-6 hours 70-90°C

* The material should be dried in a dehumidifier.

Processing parameters vary depending on the method and conditions employed.

THERMAL CHARACTERIZATION AND TOXICOLOGICAL ANALYSIS

Compositional Thermal Characterization

Results from Thermogravimetric Analysis (TGA) and Differential Scanning Calorimetry (DSC) demonstrate the purity of the recovered cellulose acetate and its agreement with standard thermal profiles.

Toxicological Analysis

Chemical analyses rule out the harmful presence of heavy metals and organic compounds (PAHs), guaranteeing the chemical safety of Celion®.

Note: For further technical details or specific application guidance, please contact the manufacturer.

By IMEKO

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