

ELEVATE THE DESIGN OF ELECTRONIC DEVICES WITH SABIC'S ULTEM™ DT1820EV RESIN



SABIC's new high flow, high gloss ULTEM DT1820EV resin supports upgraded designs and beautiful aesthetics for electronic devices.

The material can be metallized and used for thin-wall designs making it well suited for parts such as cell phone frames, camera deco rings and smartwatch frames.

Consumer Electronics companies often use combinations of glass and metal in their flagship products to provide a high-end, differentiated design to the consumer. However, designing with metal can result in potentially high costs and long production cycles. ULTEM DT1820EV resin may provide an alternative to metal – a lower cost solution that offers comparable performance and similar appearance.

POTENTIAL ADVANTAGES OF ULTEM DT1820EV RESIN FOR PRODUCT DESIGN



High flowability for thin-wall design



Excellent colorful metallization using Physical Vapor Deposition (PVD)



High surface hardness with good anti-scratch performance



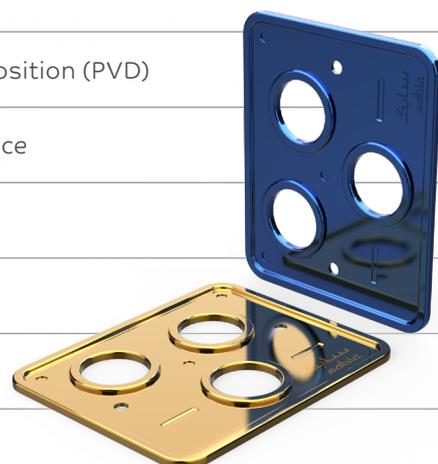
High gloss surface with high modulus



Inherent flame retardancy



Good UV and chemical resistance



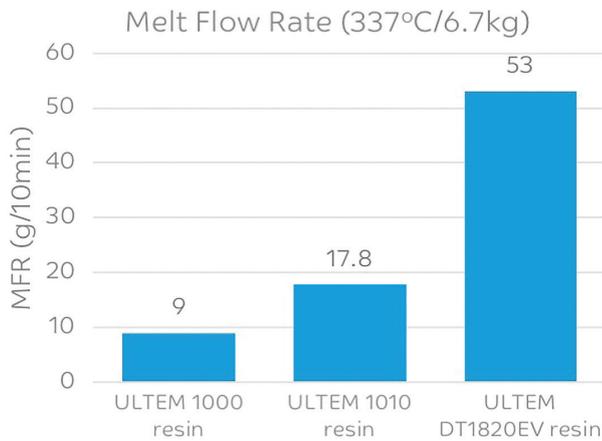
PERFORMANCE ADVANTAGES OF ULTEM™ DT1820EV RESIN

High performance ULTEM DT1820EV resin supports thin-wall, high gloss designs and is an excellent candidate for metal replacement thanks to its surface hardness, good mechanical performance and resistance to UV and chemicals.



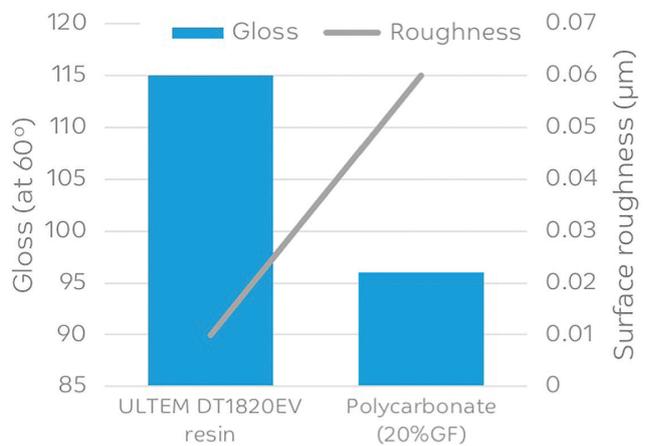
HIGH FLOWABILITY FOR THIN-WALL DESIGN

Well-suited for thin-wall and complex design with weld line elimination



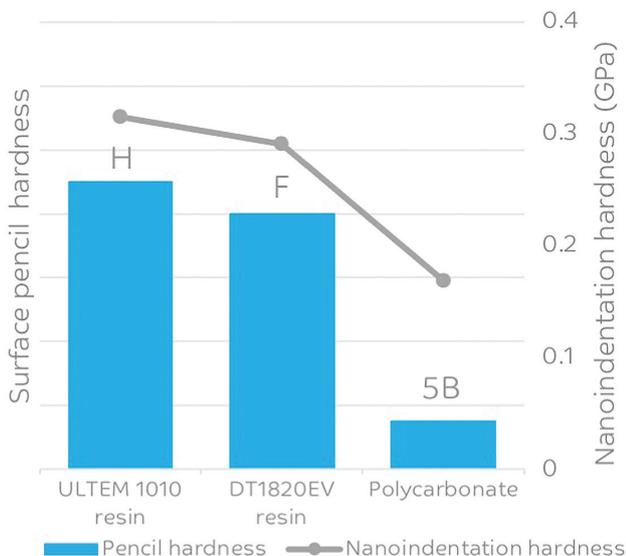
HIGH GLOSS SURFACE WITH HIGH MODULUS

ULTEM DT1820EV resin has high surface gloss with low surface roughness



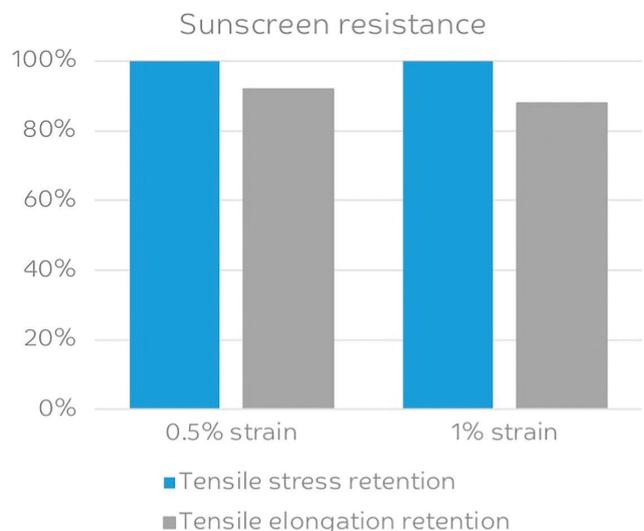
HIGH SURFACE HARDNESS

ULTEM DT1820EV resin shows good anti-scratch and high surface hardness



GOOD CHEMICAL RESISTANCE

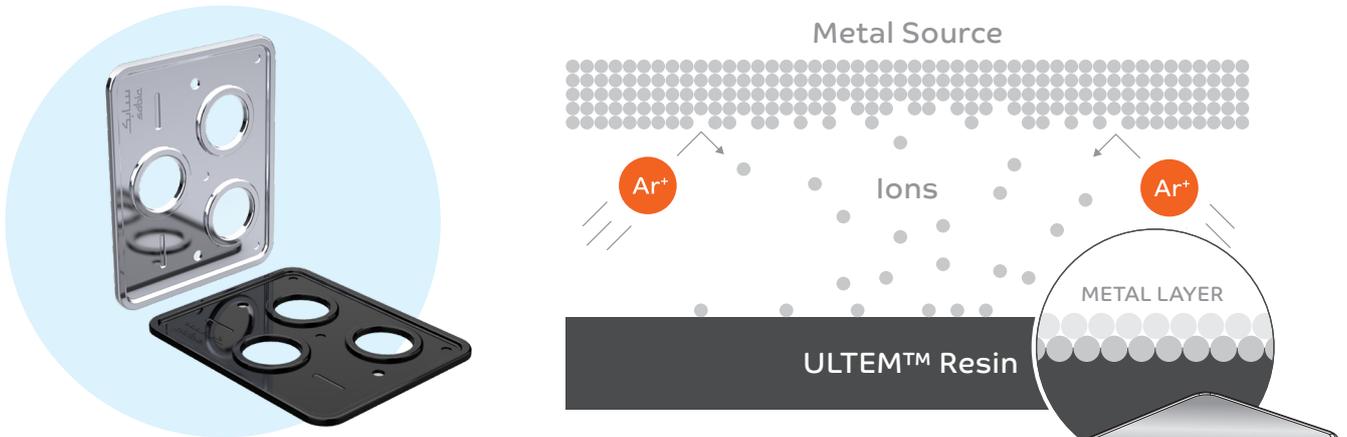
ULTEM DT1820EV resin passes the anodization process and has good resistance to sunscreen



COLORFUL METALLIZATION USING PHYSICAL VAPOR DEPOSITION (PVD)

Because of its high modulus and surface hardness, ULTEM™ DT1820EV resin is well-suited for metallization using sputtering PVD. The excellent appearance and good mechanical properties can help to replace metals and may reduce production costs.

ULTEM DT1820EV RESIN IS WELL SUITED FOR PVD SPUTTERING



PVD is a simpler process compared to Non-conductive Vacuum Metallization (NCVM) used with glass fiber filled polycarbonate (PC). PVD provides a better metallic appearance than NCVM and since color is determined by the PVD layer, this method can eliminate the 3 coating steps used in NCVM. In addition, ULTEM DT1820EV resin's high heat resistance enables the use of higher temperatures in the PVD process which can improve adhesion and cycle time.

SIMPLIFICATION OF THE METALLIZATION PROCESS



BENEFITS OF ULTEM DT1820EV RESIN IN COMBINATION WITH PVD METALLIZATION

High gloss surface with excellent metallic appearance	»»	Glass fiber filled polycarbonate can have a lower quality metallic appearance due to floating fibers
High modulus and hardness with excellent PVD process compatibility	»»	Polycarbonate is more easily scratched and the metal layer may crack due to substrate deformation
High heat resistance	»»	ULTEM resin supports high temperature PVD with better adhesion and shorter cycle time
Small difference in coefficient of thermal expansion (CTE) with PVD layer	»»	ULTEM resin gives excellent adhesion between PVD layer and the thermoplastic substrate

KEY MATERIAL PROPERTIES ULTEM™ DT1820EV RESIN

KEY MATERIAL PROPERTIES:	UNIT	STANDARD	ULTEM DT1820EV RESIN
Mechanical properties			
Flexural Modulus, 1.27mm/min	MPa	ASTM D790	3190
Flexural stress at break, 1.27mm/min	MPa		166
Tensile modulus, 50mm/min	MPa	ASTM D638	3150
Tensile stress at break, 50mm/min	MPa		80
Tensile strain at break, 50mm/min	%		25
Pencil hardness, 1kg	-	ASTM D 3363	F
Impact properties			
Notched impact, 23°C	J/m	ASTM D256	40
Un-notched impact, 23°C	J/m	ASTM D4812	2097
Instrumented Dart Impact Total Energy, 23°C	J	ASTM D3763	68
Thermal			
HDT, 0.45MPa, unannealed	°C	ASTM D648	182
Vicat soften temp, Rate B/50	°C	ASTM D1525	184
CTE, 23°C to 150°C, flow	1/°C	ASTM E831	55
CTE, 23°C to 150°C, xflow	1/°C	ASTM E831	58
Physical properties			
MFR, 337°C/6.7kg	g/10min	ASTM D1238	53
Specific gravity	-	ASTM D792	1.285

SABIC ISCC+ CERTIFIED RENEWABLE ULTEM RESIN SOLUTIONS

A new portfolio of bio-based ULTEM resins that delivers a lower carbon footprint while offering the same high performance and processability as incumbent ULTEM materials is now available.



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RESINS

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