

Appearance/cookware

## New design freedom with Vectra® LCP



These Hot&Cool cups show the potential of Vectra® LCP for household articles

In their quest for the right material, designers and product developers are increasingly turning to engineering plastics. For cookware and household articles, these materials are already performing impressively, with advantages ranging from outstanding high- and low-temperature resistance to efficient production. The Hot&Cool cup is produced from Vectra® LCP polymer. This little mold is excellent for use in the catering sector or at home and is suitable for both the oven and microwave. It is also ideal for storing small snacks in the refrigerator or freezer. Finally, the Hot&Cool cup meets all esthetic requirements.

### Soufflé pan

- Pan for preparing dishes in the oven or microwave and for storing them in the refrigerator or freezer
- Can be used in commercial catering or home kitchens

### Advantages of Vectra® LCP

- Suitable for use in ovens, microwaves and freezers (shock cooling) at temperatures from  $-196\text{ }^{\circ}\text{C}$  to  $+280\text{ }^{\circ}\text{C}$
- Non-stick effect
- Dishwasher-safe
- EU and FDA food contact approvals
- Detergent-resistant

### Advantages over metal and ceramics

- 10 percent energy saving in terms of baking time and baking temperature
- Attractive appearance and pleasant to touch
- Design freedom and good colorability
- Cost-efficient production by injection molding, no coating or finishing necessary
- Fracture-proof



### Your contact

Mark Schouten  
Business Unit Consumer

mark.schouten@ticona.de  
Phone: +49 69 45009 1413  
Fax: +49 69 45009 51413

# Vectra® LCP E540i – more shapes, more efficiency

## Vectra® LCP E540i

### Constitution

The Vectra® grades are thermotropic, liquid crystalline polymers (LCP) with high resistance to temperature extremes. E540i is a 40 percent mineral-filled grade with very good flow properties.

### Properties of Vectra® LCP (grade-dependent)

- Continuous service temperature up to 280 °C, heat-resistant up to 340 °C
- Inherently flame-retardant
- Extremely good flow properties with minimal warpage
- Very good strength and toughness
- Excellent dimensional stability
- Very good resistance to organic solvents

### Applications for Vectra® LCP

- Electrical and electronic components: lamp holders and sockets, coil bobbins, switches, connectors, chip carriers, sensors
- Household sector: baking pans, cookware
- Medical applications: surgical instruments, dental tools, sterilizable dishes and equipment, drug-dispensing systems, diagnostic instruments

### Processing techniques

Injection molding, extrusion

Physical properties	Value	Test standard
Density	1740 kg/m <sup>3</sup>	ISO 1183
Molding shrinkage – longitudinal	0.0 %	ISO 294-4
Molding shrinkage – transverse	0.5 %	ISO 294-4

Mechanical properties	Value	Test standard
Tensile modulus (1 mm/min)	9800 MPa	ISO 527-2/1A
Tensile stress at break (5 mm/min)	105 MPa	ISO 527-2/1A
Elongation at break (5 mm/min)	3.2 %	ISO 527-2/1A
Flexural modulus (23 °C)	10000 MPa	ISO 178
Flexural strength (23 °C)	125 MPA	ISO 178
Izod impact strength (23 °C)	35 kJ/m <sup>2</sup>	ISO 180/1U
Izod notched impact strength (23 °C)	5.2 kJ/m <sup>2</sup>	ISO 180/1A

Thermal properties	Value	Test standard
Melting point (10 °C/min)	335 °C	ISO 11357-1,-2,-3
DTUL (1.8 MPa)	230 °C	ISO 75-1/-2
Vicat softening point	195 °C	ISO 306

### Advantage: Fast cycles

The fast cycles achieved with Vectra® LCP in injection molding increase cost efficiency. Besides their low viscosity, all grades have an extremely low heat of fusion (about 5 to 10% of the value for PET and PBT), i.e. very little heat needs to be removed through the mold walls. Demolding can be carried out at high temperatures, provided that the ejectors do

not press into the molding. The extremely low internal stress also makes it possible to operate the injection molds at relatively low temperatures. These properties permit exceptionally fast cycles. Changes in wall thickness alter the cycle times, approximately by the square of the wall thickness, which also has an effect on the overall cycle time.