Topcoat E™
Hydrophobic Tablets

umicore

Umicore Thin Film Products

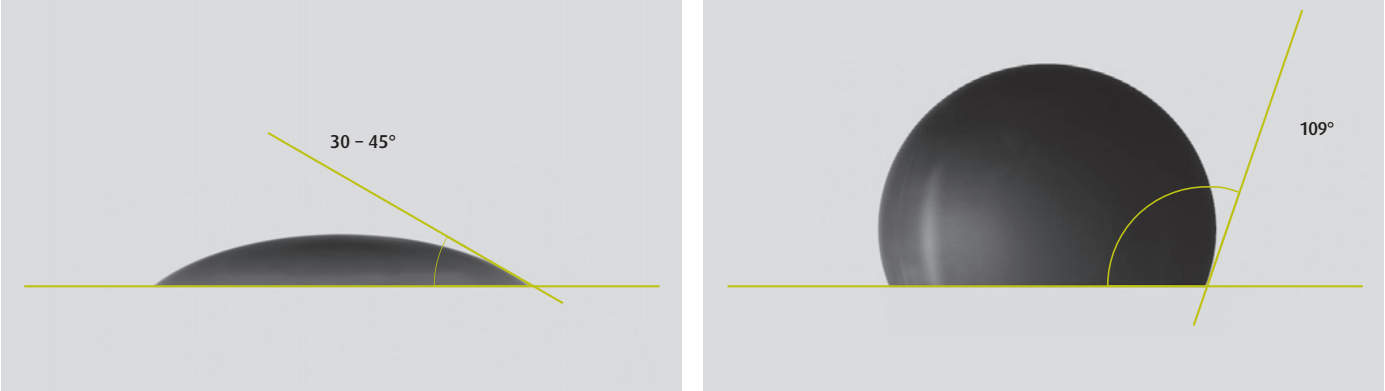
Umicore Thin Film Products, a globally active business unit within the Umicore Group, is one of the leading producers of coating materials for physical vapor deposition with more than 50 years experience in this field. Its Optics portfolio covers a wide range of highly effective evaporation materials and sputtering targets.

Next Generation Hydrophobic

Umicore's new hydrophobic materials of the "E"-line maintain the superior process and film properties known from Umicore Topcoat. This new product line thus expresses Umicore's concern about our environment and complies with the latest legislative requirements in the North American, European and Asian countries securing supply of cleancoat materials to the ophthalmics industry for the future. Topcoat E™ does not contain Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA) neither in the product nor in its entire production chain.

- Topcoat E™ materials combine high cleaning comfort and optimal vision for the spectacle wearer with an environmentally friendly chemical formulation in compliance with the latest legislative requirements*
- Topcoat E™ films show a very abrasion-resistant hydrophobic effect
- Topcoat E™ coated lenses can easily be processed after coating

* Perfluorooctanesulfonic acid (PFOS) was included in Annex B of the Stockholm Convention on persistent organic pollutants by the Fourth Conference of Parties In May 2009. Canada has a proposed ban on PFOS, only the second chemical proposed for a complete ban under the Canadian Environmental Protection Act. The use of PFOS is restricted in Europe and Perfluorooctanoic acid (PFOA) is currently monitored for its toxicity. DIRECTIVE 2006/122/ECOF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 12 December 2006.



Comparison of water wettability to an uncoated (left) and a Topcoat E™ coated (right) eyeglass surface.

Properties of Topcoat E™ films

Topcoat E™ films are water and grease repellent. Along with their excellent abrasion resistance this ensures an optimal cleaning comfort for the spectacle wearer.

The reduced slipperiness of Topcoat E films enables all post-deposition processing steps without additional adhesion layers or pads.

Topcoat E™ films are optically transparent and have an optical index close to that of SiO_2. Therefore, the change in the reflective color of an AR coating is small and it can easily be compensated for in the optical design by adjusting the last SiO_2 layer thickness. The cleaning comfort of Topcoat E™ films can further be enhanced by complementary antistatic layers.

Table 1: Cleaning properties

	as-deposited	after abrasion testing
Static water contact angle	≥ 100°	≥ 95°
	typically 102 – 107°	typically 100 – 105°

Table 2: Optical properties

Refractive index (550 nm)	1.36 – 1.46 dependent on deposition conditions and thickness
Range of transparency	Visible range

Technical data of starting material

Name	Topcoat E™
Density g/cm³	~ 1.0
Z-Ratio	1.00
Tooling	1.00 (or 100%)
Evaporation temperature °C	~ 300
Delivery form	Tablets

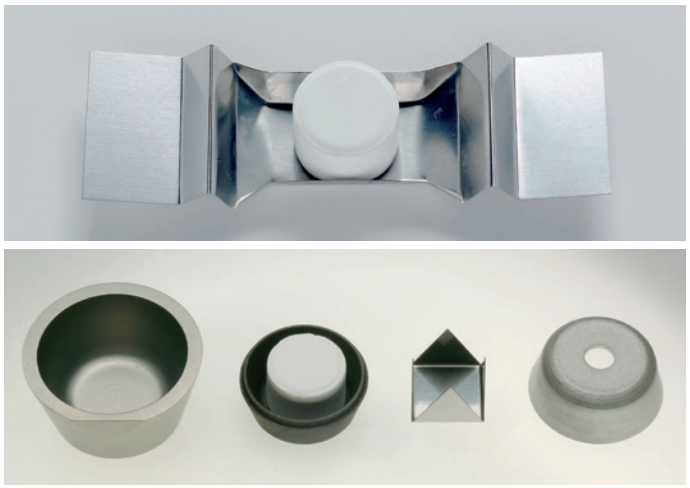
Evaporation Technique

Films from Topcoat E™ tablets are easy to deposit on coatings with SiO_2 or LIMA as the last layer.

Minimum film thicknesses for optimum hydrophobic function are ~ 25 nm. Deposition is possible from a resistively heated Mo-boat or a spiral heater as well as by electron beam using a topcoat liner, in table coaters and in a wide range of box coater types.

Alternatively, coating is done in constant power mode or by rate control. Special guidelines apply to each of the mentioned coater types and techniques. Only minimal process adjustment is necessary for substitution of any topcoat material by Topcoat E™.

Topcoat E™ tablets (large and small).



Topcoat E™ with typical accessory for boat evaporation (top) and e-beam evaporation (bottom).

Ordering Information

Material	Part no.	Delivery form	Quantity
Topcoat E™	0709341	Tablets Ø 8 x 4 mm	10
Topcoat E™	0709342	Tablets Ø 8 x 4 mm	100
Topcoat E™	0709334	Tablets Ø 13 x 10 mm	10
Topcoat E™	0709335	Tablets Ø 13 x 10 mm	100
Molybdenum boat	0702957	Typical boat, other geometries on request	1
Topcoat liner	0705743	Topcoat liner consisting of three parts	1

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Please find your local sales partner at:
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