Lux23 srl
Via Pitagora, 25 - 35030 Rubano (PD)
P.IVA: 05513310283 C.F.: 05513310283
website: www.lux23.it
Telephone: +39 389 1967616

Data: 28/08/2023 Doc_Rev1_23En

REVO-01, polyurethane material for Led lenses, description

For us at Lux23 srl every particular customer need turns into an ambitious challenge that leads us towards continuous innovation and to devise unique solutions to equally unique requests.

Precisely from this natural propensity of ours the creation of the REVO-01 project was born, created in collaboration with the best partner on the market: Mitsui & CO, LTD - producer of monomers and polymers.

REVO-01 is a polyurethane material normally used in the ophthalmic sector, but we at Lux23 srl have modified its chemical composition to make it suitable for the production of lenses for lighting systems.

Optical polyurethane is known for its high refractive index, together with a high Abe value, which allows you to effectively control the direction and intensity of the light passing through it. This property makes it an ideal material for LED lenses, as it helps focus and direct the light emitted by the LEDs.

In fact, this particular use of polyurethane in this field makes it possible to create lenses which not only boast advanced optical properties, but which are also ultra-light and have excellent mechanical characteristics and which are therefore well suited to lighting engineering designs.

The optical properties of REVO-01 depend on its unique composition which makes the polymer almost transparent to UVA and especially UVB radiation, preventing the yellowing experienced by alternative materials for the realization of transparent optical articles.

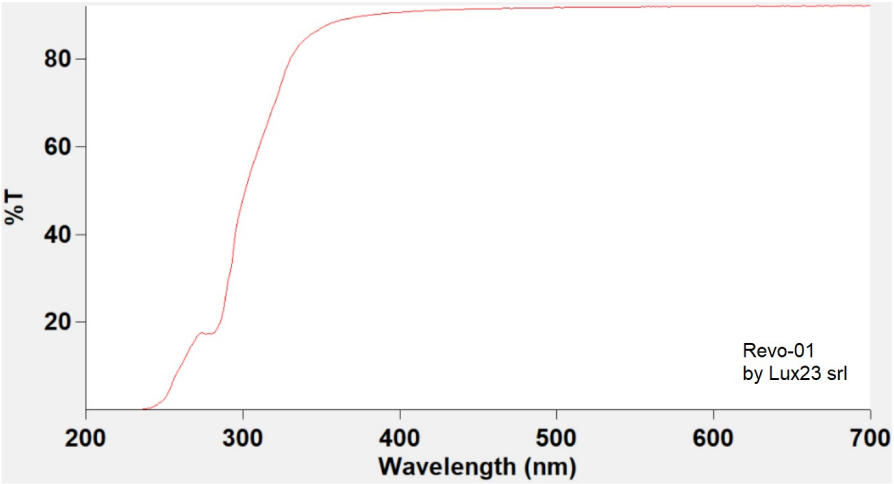
Lux23 srl
Via Pitagora, 25 - 35030 Rubano (PD)
P.IVA: 05513310283 C.F.: 05513310283
website: www.lux23.it
Telephone: +39 389 1967616

REVO-01 datasheet

	REVO-01	Method
Optical Properties		
Refractive Index	1,507	ASTM D 542
Abbe Nr.	54	ASTM D 542
Yellowness Index	0,5	ASTM D 1925
Light Trasmission, %	93	ASTM D 1003
Haze, %	0,1	ASTM D 1003
Chemical properties		
Heavy metals content	None	Internal
Ethanol (Alcol)	No defects	Internal
H2SO4 (sulfuric acid)	No defects	Internal
10%NaOH (Sodium hydroxide)	No defects	Internal
Acetone	No defects	Internal
Temperature working range		
From -40°c to +110°c	No defects	Internal
From -40°F to 230°F	No defects	Internal
Physical Properties		
Specific gravity, 20°c.	1,116	ASTM D 792
Hardness, Rockwell M	102	ASTM D 785
Izod Impact Strength (unnotch), KJ/m2	150	ASTM D 256
Head Distortion Temperature, °c	120	ASTM D 648
Abrasion resistance, Haaze %	14	Steel wool
Polymerisation Shrinkage, %	4,5	Formula
Tensile strenght, Kgf/mm	33	Internal
Tinting	Excellent	Internal
Surfacing & edging	Excellent	Internal
Drilling	Excellent	Internal

Lux23 srl
Via Pitagora, 25 - 35030 Rubano (PD)
P.IVA: 05513310283 C.F.: 05513310283
website: www.lux23.it
Telephone: +39 389 1967616

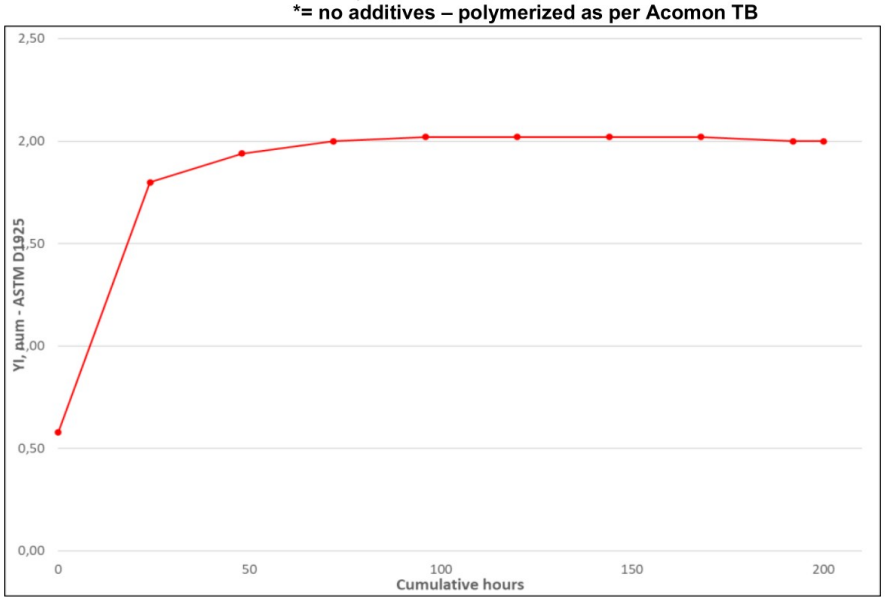
Spectrum test, conducted using a 3 mm thick flat plate. No additives have been added (UV cutter).



Revo-01 shows a transmittance cut at about 240nm (T%<1.0), while at 315nm where the UV-A radiation band begins, whose total transmittance is well above 60%.

a) Q-UV test[1]. 3mm flat sheet*

***= no additives – polymerized as per Acomon TB**



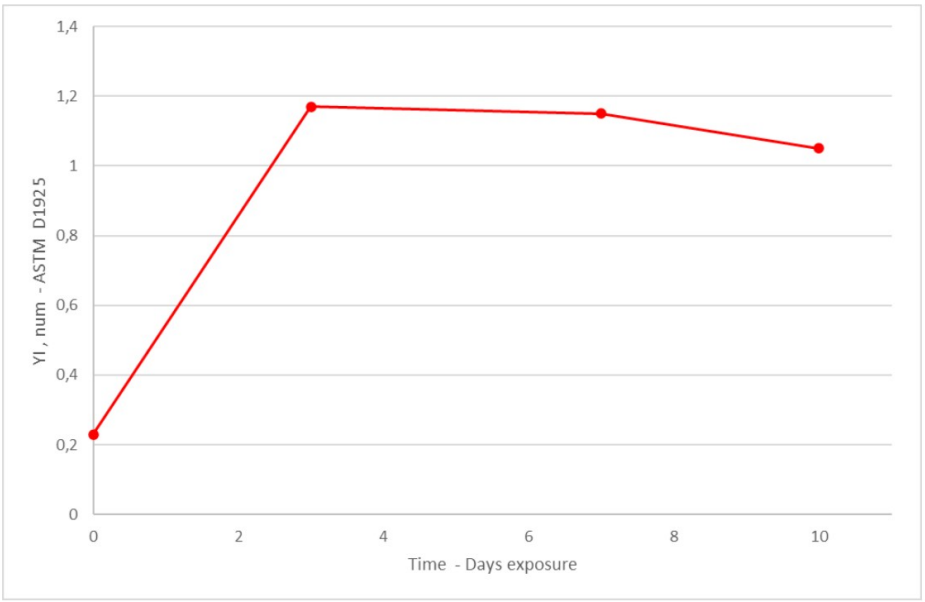
1= QUV tester model QUV/se with Solar Eye Irradiance Control – 0.5 W @ 50 °C for 200 hs

After an initial “intrinsic yellowing” which is typically exhibited by transparent materials exposed to UV radiation, REVO-01 remains stable without further yellowing.

Lux23 srl
Via Pitagora, 25 - 35030 Rubano (PD)
P.IVA: 05513310283 C.F.: 05513310283
website: www.lux23.it
Telephone: +39 389 1967616

A similar trend is also observed in the accelerated aging test by irradiation with a Xenon lamp, the source that most closely resembles the visible light spectrum; In this case, the material shows a high stability and over time, only after thousands of cycles is the tendency to turn yellow noticeable.

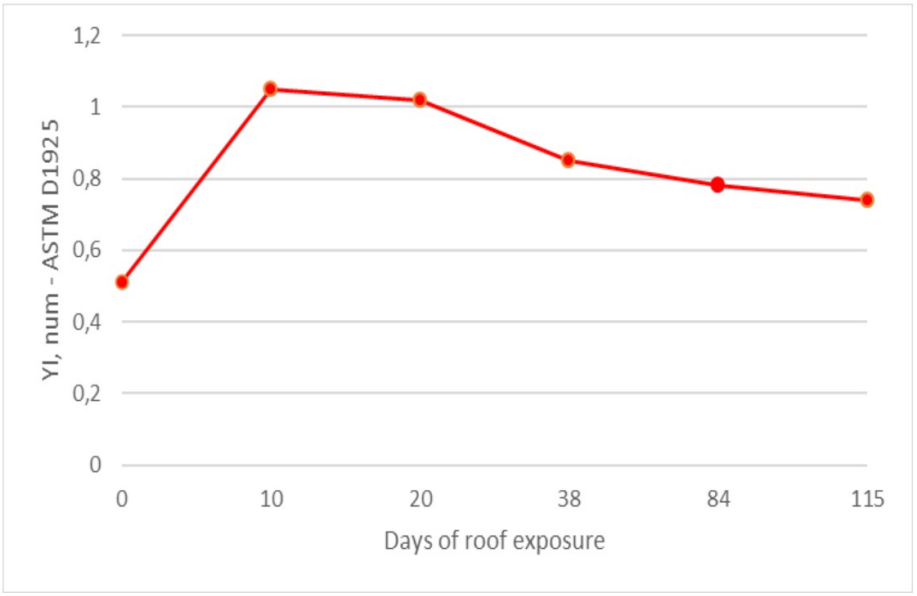
c) Weatherometer test[2]. 3mm flat sheet*
***= no additives – polymerized as per Acomon TB**



2= Xenon-meter model Q-SUN XE-1-B – 60W/m2 @ 50°C for 240 hs

The results of the xenon accelerated weathering test were confirmed by a test of continuous and prolonged exposure to true natural light by performing a standard "roof of building test".

Building roof test[3]. 3mm flat sheet*
***= no additives – polymerized as per Acomon TB**



3= non- stop exposure under daily light on the building roof – duration= 4 months

REVO-01 has exceptional stability to exposure to natural light which makes it the ideal material for the preparation of special optical products and for "outdoor" applications