

# Case Study

## Tinuvin® 1600

Tinuvin® 1600 enables extended warranty of PC glazing for prolonged exposure to harsh climate conditions.

### The challenge

Polycarbonate is a versatile polymeric material which enables architects and builders to create structures with greater freedom of design, improved durability and insulation when compared to tempered glass.

Typical building and construction applications for polycarbonate are facade and skylight. They must resist tough climate conditions including prolonged exposure to UV light, low and elevated temperatures, rain, hail impact and storm.

When sunlight hits the polycarbonate sheet, the material absorbs the energy of certain wavelengths in the UV range namely UVb and UVa. Photooxidation occurs over time and makes the polycarbonate more fragile and susceptible to surface erosion.

An adequate UV absorber must be selected according to the end application, geographical location and desired warranty.

### The solution

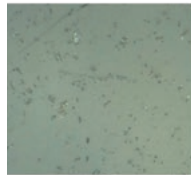
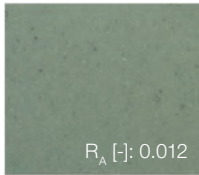

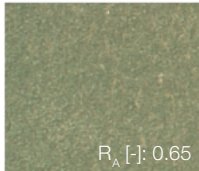
BASF's Tinuvin® 1600 is a high performance UV light absorber of the hydroxyphenyl triazine class exhibiting very low volatility and very high extinction coefficient.

Tinuvin® 1600 is the best in class solution for the most demanding polycarbonate thin-section applications in terms of exposure to UV light and heat providing extended lifetime and very low surface roughness after prolonged exposure to harsh climate conditions.

It enables reduced maintenance, enhances waste management and can replace traditional materials like tempered glass.

A four-year EMMAQUA outdoor ultra-accelerated weathering study was performed jointly with the company dott.gallina to evaluate the attributes of Tinuvin® 1600 against standard UV stabilization in dott.gallina's multiwall polycarbonate sheets.

### Microscopic view of surface roughness (Sample: Opal multiwall sheet)

	Weathering at point zero	48 months weathering
Tinuvin® 1600		 $R_A [-]: 0.012$
Market standard with BZT		 $R_A [-]: 0.65$

$R_A [-]$ : arithmetical mean deviation of roughness profile (ISO 4287:1996)



Tinuvin® 1600 shows outstanding performance in yellow index retention and lower surface roughness after 48 months of exposure in both crystal and opal multiwall sheets.

**Note**

48 months of EMMAQUA ultra-accelerated weathering exposure is supposed to be equivalent to 25 years natural ageing in Florida and 32 years natural ageing in Basel (Switzerland).



**Courtesy of Ceetrus Italy and Chapman Taylor's Milan studio**  
 The blue "Water Gallery" from "Porte Del Laghi" shopping mall in Rescaldina near Milan (Italy) built by Architech Valdo Canepa from Chapman Taylor's Milan studio who selected dott.gallina's arcoplus® comprising Tinuvin® 1600 triazine technology.

