

Special molding compound for high long-term service temperatures
Lena Lighting uses high-performance optics made from
ACRYLITE® Optical HT in energy-efficient LED street lights

- Polish specialist for LED technology manufactures multi-lens arrays from Röhm's PMMA molding compound
- Special molding compound ACRYLITE® Optical HT offers excellent optical quality even at high continuous thermal loads
- Durable material helps give modern LED street lights a long lifespan and sustainable design

The electricity used for street lighting is one of the greatest cost factors for municipalities, often making up between 30 and 50 percent of their total electricity costs. As a result, many towns and cities have begun replacing outdated public lighting with efficient LED lights featuring smart light control. This modernization saves energy and therefore money, while also playing a key role in environmental and climate protection.

"LEDs are the simplest way to lower the electricity bill because they are highly energy-efficient. Compared to traditional illuminants in street lights, LED modules enable potential savings of 30 to 70 percent," the street lighting department at Lena Lighting points out. The Polish-based company specializes in LED lighting systems and develops street lights with high technological, design and sustainability standards. Lena Lighting also manufactures the lenses itself using an injection molding process.

ACRYLITE® Optical HT for high-performance lenses

Lena Lighting uses ACRYLITE® Optical HT from Röhm – a PMMA molding compound with an especially attractive property profile for the lighting industry – for the precision lenses of many models, including the Tiara LED Pro range for street and area lighting. In addition to the first-class optical quality typical of PMMA, the developers at Röhm have significantly improved the heat deflection temperature of this special molding compound. As a result, ACRYLITE® Optical HT can be used in applications that involve increased long-term service temperatures.

Rafał Czoków, Senior Business Manager at Röhm GmbH's Molding Compounds business unit, explains why this combination is so important for street lights such as the Tiara range: "Polymethyl methacrylate has outstanding optical properties. However, the high-performance lenses of an LED street light have to withstand very high temperatures, and standard PMMA is not always suitable. Our special molding compound ACRYLITE® Optical HT is the ideal material for this, offering the proven optical parameters and longevity of PMMA for applications in a higher temperature range, too."

Multi-lens arrays with maximum precision

With Tiara LED Pro, Lena Lighting has designed a street and area light that illuminates everything from highways and extensive industrial sites to urban streets, cycle paths and parks. The design of the lenses contributes to their efficiency. "We use directional multi-lens arrays made from ACRYLITE® Optical HT for the Tiara product family. Because every lens has the same optics, the light properties remain constant over time. High-quality components from renowned manufacturers and high-power LEDs contribute to the very high luminous

Darmstadt, February 20, 2024

Press contact:

Thomas Kern
Global Communications
Molding Compounds

Deutsche-Telekom-Allee 9
64295 Darmstadt
Germany
T +49 6151 863-7154
thomas.kern@roehm.com

Marc Tracey
Communications Lead, Americas

Roehm America LLC
8 Campus Drive
Suite 450
Parsippany, NJ 07054
USA
M +1 862 337 1270
marc.tracey@roehm.com

www.acrylite-polymers.com

Roehm America LLC
8 Campus Drive
Suite 450
Parsippany, NJ 07054
USA
www.roehm.com

efficacy achieved at the output of the luminaire, reaching 170 lm/W,” as Lena Lighting’s experts explain.

The high-performance LEDs and the flat and compact design of the luminaire head with a relatively small area for the multi-lens array mean that the material is subjected to a high thermal load. ACRYLITE® Optical HT withstands this load without compromising on optical qualities such as transparency, light transmittance, or UV and weather resistance. Rafał Czoków from Röhm elaborates: “With a certified UL RTI value of 105°C, the material is documented as being resistant to thermal aging. This means that its high luminous efficacy can be maintained constantly over a very long period of time.”

Long-lasting material for sustainable product design

Thanks to its combination of properties, ACRYLITE® Optical HT supports the sustainable design of street lights from Lena Lighting. PMMA and LEDs are generally a proven combination in the lighting industry, as the consistently high optical quality of ACRYLITE® lenses and the average of 100,000 operating hours offered by an LED in this application both contribute to a long lifespan and sustainable lights.

Moreover, the European Union’s Ecodesign Directive calls for low-maintenance and repairable products made from long-lasting and recyclable materials. Lena Lighting put this into action when designing the Tiara LED Pro: The two-chamber design separates the optical chamber with the waterproof multi-lens array from the electrical equipment chamber, which can be opened without tools. This makes it easier to maintain and replace components without damaging the sensitive lens. The components or materials can be removed individually and returned to the circular economy. As a result, the ACRYLITE® lens array can even be fully recycled to create new PMMA at the end of its service life.

[images]



© Lena Lighting S.A.

The Tiara LED Pro road luminaire by Lena Lighting with a multi-lens array made of ACRYLITE® Optical HT from Röhm. This transparent special molding compound stands out thanks to its excellent optical values and high heat deflection temperature at increased long-term service temperatures.

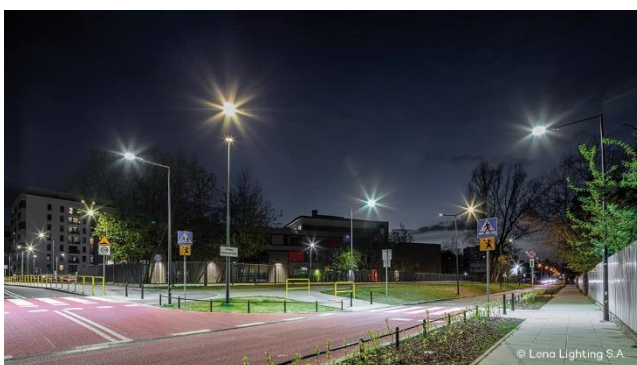
CASE STUDY



A detailed view of the Tiara LED Pro optics: The multi-lens matrix is made up of units consisting of four LEDs each under a cluster lens. ACRYLITE® Optical HT can be processed using standard tools for PMMA with only minor adjustments to the processing parameters. Thanks to the molding compound's precise mold surface reproduction, the desired light distribution characteristics are achieved constantly.



Eco-friendly design: The two-chamber design makes it easier to maintain and repair the road luminaires. The chamber containing the technical components can be opened without any tools, leaving the ACRYLITE® lens untouched. This prevents damage and the penetration of moisture.



Improved road safety for pedestrians, cyclists and motorists: This street in Warsaw's Żoliborz district features modernized lighting with 14 Tiara LED Pro units. They are brighter than the old luminaires and the ACRYLITE® Optical HT lenses permanently retain their high optical clarity. In turn, this lowers the risk of an accident occurring at the intersection.



The vehicle depot of Nahverkehr Schwerin GmbH in Germany has been given new exterior lighting with 48 Tiara LED Pro luminaires. The ACRYLITE® lenses are highly resistant to UV and weather influences.

...

About Röhm

With 3,500 employees and 13 production sites worldwide, Röhm is one of the leading manufacturers in the methacrylate business. The medium-sized company with branches in Germany, China, the USA, Mexico, and South Africa has 90 years of experience in methacrylate chemistry and a strong technology platform. Our best-known brands include PLEXIGLAS®, ACRYLITE®, MERACRYL®, DEGALAN®, DEGAROUTE® and CYROLITE®.

Polymethyl methacrylate (PMMA) products from Röhm are sold in the Americas under the registered trademarks ACRYLITE® and ACRYMID®, on the European, Asian, African and Australian continent under the registered trademarks PLEXIGLAS® and PLEXIMID®.

More information is available at www.roehm.com.