

For spirit levels and measuring instruments

Measuring technology specialist Bürgermeister manufactures high-quality vials for the global market made from PLEXIGLAS® molding compounds

- **The long-established company has been using PLEXIGLAS® molding compounds as a proven material for its high-quality plastic vials for more than 60 years**
- **Excellent transparency, UV resistance, durability and good flow properties when used in injection molding processes**
- **Walter Bürgermeister GmbH uses the recyclability of Röhm's brand PMMA to create a sustainable production process**

The idea is as simple as it is clever: For centuries, spirit levels have been used to ensure components are lying flat. Even today, it is an essential tool for construction professionals and DIY fans alike. The measurement accuracy is dependent on the quality of the vial – a liquid-filled tube with an air bubble – which is the key component of every spirit level. One of the largest international manufacturers of vials – and the market leader for block vials in the premium segment – is Walter Bürgermeister GmbH, headquartered in Kirchberg-Thening, near Linz in Austria. The company has a portfolio of around 200 different models for spirit levels and other measuring instruments and produces around 80,000 vials every day, which are then exported around the world.

For more than 60 years, Bürgermeister vials have been made from PLEXIGLAS® molding compounds, the brand polymethyl methacrylate from Röhm GmbH. And because the company places great value on production processes that save resources, Bürgermeister also uses PLEXIGLAS® recycle. "Our material contributes to sustainable product design. Not only is it extraordinarily durable, but it is also completely recyclable – and the quality remains almost unchanged," says Heinz Schubkegel, Senior Business Manager in the Molding Compounds business unit at Röhm.

From glass to PLEXIGLAS®

Bürgermeister originally made glass vials. Upon founding the company in 1947, Walter Bürgermeister took inspiration from a family tradition of his wife, whose grandfather began producing glass measuring instruments back in 1898. However, with plastics becoming more widespread at the end of the 1950s, the next logical step was to manufacture spirit levels with unbreakable plastic vials.

The company founder decided to use the PMMA sold under the brand name PLEXIGLAS® from Röhm & Haas, a predecessor company to today's Röhm GmbH. In 1960, Bürgermeister acquired his first injection molding machine. However, he was initially limited to covering the glass vials in a layer made of PLEXIGLAS® molding compound, as sealing technology was not yet mature enough to make sealed plastic vials. This changed just a few years later with a modified recipe for the vial liquid and an innovative welding process. For a long time, Bürgermeister's reliable and tight vials made from PLEXIGLAS® molding compounds were unique in the market.

Many good reasons for the brand PMMA from Röhm

The small family-owned company has long evolved into a cutting-edge enterprise. Renowned around the globe, the vial manufacturer still relies on the brand PMMA from Röhm. "We can

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look back on a long and trusted partnership with Röhm. In addition to the high-quality raw materials, we place great value on European production standards and the short transport distances,” says Ronald Adlbrecht, CEO at Walter Bürgermeister GmbH. He lists the most important material properties to him: “PLEXIGLAS® is particularly well-suited for our vials as it is highly transparent and has excellent optical qualities, is UV-resistant and is easy to process in injection molding processes and subsequent processing steps.”

One of the vial manufacturer’s core competence is mold construction, enabling it to produce custom products for individual demands alongside the more standard block, tube and circular vials. The smallest vials are just three millimeters tall with a diameter of five millimeters, while the largest circular vials have a diameter of 100 millimeters and are used to align cranes, for example. Bürgermeister uses cold runner technology for limited-run series, and hot runner technology for its mass production. Following demolding, the components are processed further, with subsequent steps including the insertion of the marking rings, filling the vial with the measurement fluid and then closing the vial.

Resistant to UV radiation and chemicals

As the liquid in the spirit level is not water, but a special spirit with a dye and various additives, the vial must be resistant to chemicals. It must not develop stress cracks, as the liquid could leak and the tool would become useless. This would also be the case if the material yellowed or became brittle through weathering. UV rays could also alter the measuring liquid, which is why UV resistance is a sign of quality in vials. Components made from PLEXIGLAS® molding compounds are resistant to both UV rays and chemicals, ensuring they are permanently transparent – in this case, guaranteeing reliably precise measurement results.

PLEXIGLAS® is fully recyclable

Bürgermeister takes full advantage of the fact that the brand PMMA is easy to recycle, as the company places great emphasis on sustainability and conducts its business with saving resources and protecting the climate in mind. “We reuse material waste and leftover energy in the production process to the greatest possible extent,” emphasizes CEO Adlbrecht. Solar panels on the roof of the new plant – constructed in 2018 – create green energy, while waste heat is used for the heating system. By doing so, the company claims to have reduced the energy required for injection molding by 25 percent. Around 90 percent of production waste, such as sprues or vial caps that are no longer required, are melted down, ground to granules and reused.

“This process is only possible with top-quality raw materials. Because PLEXIGLAS® molding compounds from Röhm are characterized by their high optical purity, the regranulation process provides high-quality PMMA to produce new caps,” says Adlbrecht. Heinz Schubkegel says: “This is a model example of how PLEXIGLAS® molding compounds can contribute to a circular economy.”

[Pictures]



Bürgermeister vial made from PLEXIGLAS® molding compounds: Walter Bürgermeister GmbH, one of the world's largest manufacturers of vials for spirit levels and other measuring instruments, appreciates the brand PMMA from Röhm due to its extraordinary transparency and optical purity.

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Bürgermeister places great value on sustainable production and also uses recycled PLEXIGLAS® materials in the production of the vial caps. The brand PMMA from Röhm can be reused as part of a circular economy.

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For reliable measurements: Extreme precision is required during the injection molding of the vials in order to ensure the bubble stays centered when the tool is level. PLEXIGLAS® molding compounds guarantee this precision thanks to their good flow properties.

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About Röhm

With 3,500 employees and 15 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, Russia, and South Africa has more than 80 years of experience in methacrylate chemistry and a strong technology platform. Our best-known brands include PLEXIGLAS®, ACRYLITE®, MERACRYL™, DEGALAN®, DEGAROUTE® and CYROLITE®.

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