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Imerys' by-products used to produce 100% recycled tiles thanks to a successful start-up partnership

- Start-up competition: a new way to collaborate and meet customer and market challenges
- The first edition of Imerys Performance Minerals' Start-Up Innovation Factory had sustainability and circularity at its heart

In September 2021, Imerys Performance Minerals kicked off a start-up competition named Start-Up Innovation Factory. The aim of this first edition was for the Group to research potential partners to collaborate on innovation to meet today's circular economy challenges on technical themes such as recovering and recycling construction material waste.

Achieving a circular economy model can be challenging for start-ups as it often requires large volumes of materials or high capital. These can be barriers of entry for early-stage companies where turnover is likely to be limited as well as financing. With the ability to scale up and distribute high volumes of product, Imerys has a lot to offer.

Alusid, is one of the winners from the 65 start-ups selected for the competition and has now progressed with Imerys on a project with both sustainability and circularity at its heart.

High-quality 100% recycled tiles from Imerys' by-products

UK-based Alusid transforms low-value industrial waste into desirable, premium-quality, high-value architectural tiles, which have the same performance as those made from non-recycled materials. The company has been trialing tile manufacture using Imerys' by-products over the past few months as a continuation of the Start-Up Innovation Factory competition.

Six by-products were ultimately selected for the trial by Alusid with the support of an Imerys team, led by Cédric Poilly, Customer Application Engineer for Ceramics EMEA. Alusid ran two parallel projects: one making floor tiles, and the other larger items such as coffee tables and worktops.

After further technical developments related to the use of the by-products, the larger items and 20x20 cm floor tiles were made successfully.

Made from 100% recycled waste, 90% of which comes from Imerys, the tiles use three by-products in the recipe, with scope to include additional materials directly produced by Imerys or from customers.

Sustainable benefits

Some of the benefits include the use and recycling of surplus raw materials and by-products that would normally go to waste. Alusid's processes consume less gas to manufacture than conventional tiles, with energy usage potentially cut by more than 35% because of the lower firing temperatures

needed and the use of dry powder granulation rather than spray drying. Water use is also reduced by up to 75%.

Alasdair Bremner, Alusid's CEO explains: *"Working with Imerys on this project has expanded our available sources of recycled material and allowed us to create a product missing from our range, a hard-wearing, high-quality floor tile. Imerys extensive knowledge and their scale means they have the capacity to help us precise our business model and ultimately reduce the environmental impact of tile production. In the initial pilot trial, we had to deal with some warping and adapting with firing these unconventional materials. However, the results are promising enough for us to envision industrial trials. Our aim is to achieve porcelain stoneware classification on water absorption and breaking strength, making our tiles as good as tiles made from non-recycled materials."*

After positive contacts with potential customers, including a leading retail brand, Imerys is keen to supply Alusid with its by-products to produce tiles made from recycled materials.

Frederic Jouffret, Vice-President, Performance Minerals Science & Technology, reflects: *"Working with start-ups through this challenge was very educational and promising for Imerys. The challenge itself has created a more structured approach for open innovation in the future."*

The world leader in mineral-based specialty solutions for industry, with €4.4 billion revenue and 16,300 employees in 2021, Imerys delivers high value-added, functional solutions to diversified set of industrial sectors, from processing industries to consumer goods. The Group draws on its knowledge of applications, technological expertise and its material science know-how to deliver solutions based on beneficiation of its mineral resources, synthetic minerals and formulations. These contribute essential properties to customers' products and performance, including refractoriness, hardness, conductivity, opacity, durability, purity, lightness, filtration, absorption and repellency. Imerys is determined to develop responsibly, in particular by fostering the emergence of environmentally-friendly products and processes.

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