

ALTANA New Technologies GmbH - Cubic Ink® materials for 3D printing

ALTANA New Technologies GmbH launched the first products for VAT-based additive manufacturing under the Cubic Ink® brand at Formnext 2022.

At Formnext 2023, the portfolio was once again presented in a broader and more defined form.

The products cover different areas of application in both resin printing and material jetting.

The basic Cubic Ink® products already have a fairly broad range of mechanical, thermo-mechanical and chemical properties to meet most everyday challenges for printing projects.

However, Cubic Ink®'s claim goes beyond a standard portfolio, as project and application-specific properties often come into play in practice that cannot be fully mapped with standard products.

Prototyping, functional prototyping

The requirements in this area are often transparency, easy post-processing in the form of washability with e.g. water and with inexpensive post-processing equipment. Good coatability of the printed object is also not a disadvantage.

In this category, Cubic Ink® offers Rigid 300 VP, Tough 1400 VP and Rigid 404 VP-Clear products that fulfil these requirements. The surface quality is subsequently very good, and the excellent transparency of Rigid 404 VP-Clear should be emphasized, which produces very attractive translucent objects when colored.

As specialties in the field of prototyping, Cubic Ink® offers the Dental 500 VP products for the production of detailed impression models for dental technicians and the Mold product range for the production of casting molds, e.g. for one-shot molds in injection molding. After a short soaking time in a water bath, these molds allow the material to be easily peeled off the cast object and the surface of the objects to be protected. A mold produced using resin printing offers time and cost advantages compared to a conventionally produced injection mold for a small number of parts.

The material Cubic Ink® Flexible 1400 VP stands out due to its particular elasticity, whereby the hardness of the material can be adjusted to customer requirements.

Industrial applications

In this category, the demands on the printed object are much higher compared to the area of prototyping.

It must also be mentioned here that post-processing plays a much greater role for these applications, and in some cases even a decisive role compared to prototyping. The simple post-exposure of the objects is not sufficient to achieve the required object properties, but should be supplemented by a thermal curing process.

As objects are produced here that are used as production aids, spare parts or final components for further use together with other components, there are high demands on the mechanical, thermo-mechanical and chemical properties.

The influence of heat or even warmth, chemicals, impacts, shocks, tensile and bending stresses require special material properties.

The Cubic Ink® High Performance range offers appropriate resins in this area, which can be used to print objects that can withstand these influences.

Attention was also paid to good material handling and fast production times. Thanks to their low viscosity, these resins fulfil requirements for good printability, good cleaning of the printer when changing materials and fast printing.

Cubic Ink® High Performance 1-202 VP, for example, stands out with a good HDT B value of 195°C and flame retardancy class HB. This makes it possible to produce objects that are exposed to high thermal loads and still need to retain their shape.

When it comes to objects that need to withstand aggressive chemicals, Cubic Ink® High Performance 2-900 VP is a good choice.

The products High Performance 4-300 VP, 4-2100 VP and 4-3800 VP can be categorized as industrial all-round materials that offer balanced material properties and are therefore suitable for a wide range of applications. The difference here lies in the different elongation at break, impact strength and heat resistance, so that the right material can be selected depending on the intended use. Special variants of this family have recently also passed the Cytotoxicity test.

However, special functions are often required for industrial applications, such as antistatic properties.

With Cubic Ink® High Performance 4-2800 VP-ESD, ALTANA offers a material for the manufacture of objects that prevents static charging in the production environment, which is very important in the manufacture of electronic components, for example.

For a while, the topic of flame-retardant materials was intensively discussed. Things have quietened down somewhat since it emerged that these materials produce brittle objects, which is due to the chemistry involved. As the 1:1 comparison is still usually made with injection molding materials, which have better mechanical properties, users have become somewhat more cautious here. Once it is better understood that standards developed for one class of material cannot simply be transferred to a new class of material, interest in these resins will certainly return and consideration will be given to what new guidelines should look like. For these applications, Cubic Ink® offers High Performance 4-1000 VP-V0, which is UL certified and classified.

Material jetting

We are coming to a small area of application in additive manufacturing, which is certainly due to the more complex technology of inkjet.

Over the past eight years, ALTANA has been intensively involved in the development of materials that can be used in UV inkjet for the production of three-dimensional objects.

The attributes for these materials are above all reliability in the jetting process and viscosity stability over a long period of time, as these resins generally remain in the ink supply system of the machine and thus the ink circulation for a long time. The durability of the inkjet print heads must be guaranteed as well as the compatibility of the different inks with each other.

This is a major advantage of material jetting: instead of just one material as in VAT technologies, different materials can be processed at the same time, either to produce colored objects or objects with specific properties, e.g. from hard to soft. Material jetting always requires a support material, which must also be matched to the system in terms of its compatibility with the object inks in order to ensure both good surface quality and problem-free dissolution of the support in water.

With Cubic Ink® Rigid 700, Flexible 1201, Clear 502, High Performance 2-301, High Performance 4-1203 and the corresponding support material, ALTANA shows that the defined application areas of prototyping and industrial can also be served in material jetting.

However, if it turns out that this wide range of Cubic Ink® materials cannot serve certain applications satisfactorily, please contact us so that we can work out a solution with you.

[Cubic Ink - ALTANA AG](#)

We give shape to ideas

ALTANA Cubic Ink® High Performance Materials
suitable for DLP, LCD, SLA and Material Jetting

