Patent Protection for UVitro® Surface Treatment

UVitro® extends the range of applications for UV curable products

ELLWANGEN, Germany, 2 March 2006 – UVitro®, the surface treatment developed by ISIMAT, has been recognised as an innovation and granted patent protection (US 6,513,435 B5, EP 114 80 36); the innovation has created new opportunities for the use of UV curable products in industrial applications by ensuring lasting adhesion of these products to glass and ceramics.

UVitro modifies the surface of a solid first with an oxidising flame and then with a silicatising flame. This combined treatment of removing any coating, gel films, trapped moisture, and then depositing a silicon oxide layer, is controllable and repeatable; it gives the treated surface a sub-microscopic roughness with mechanical anchorpoints. These anchorpoints significantly improve the adhesion of UV inks, UV lacquers or UV curable adhesives.

ISIMAT's original objective for developing UVitro was to give glass decorators the option of changing from printing with ceramic enamels to printing with UV inks; this change would make it easier for glass decorators to comply with environmental legislation, substantially reduce production costs, and print images with all pantone colours and a smooth tonal graduation.

The UVitro process was proven when the patent applications were filed in 2001. Since then, the process has been enhanced to become a high-speed industrial production process. This enhancement required the development of reliable surface treatment units that could monitor their own

performance and signal alarms as soon as any process parameter, such as air pressure, gas pressure, air-gas-mix, flow of additives, was outside its set range.

The availability of a surface treatment that ensured lasting adhesion of UV inks to glass was an incentive for ink manufacturers to further improve their UV inks for direct screen printing onto glass. Today, an aftercuring of the UV inks at elevated temperatures is no longer required, the adhesion of images screen printed onto glass is no longer questioned, and the substantial cost savings achievable in production are well documented.

UV curing is a preferred drying technology based on an extremely low emission of volatile organic compounds (VOCs), a low energy consumption, and high quality finishes. As with many innovations, new applications emerged that were not thought of when the development of UVitro started; for example, UV lacquer spray coating of glass containers has simplified the spray coating process and significantly reduced production costs.