

TECHNICAL REPORT

Good news to those in charge of development of automobile interiors where high quality is required !

Realization of High Quality/High Definition printing and high molding properties.

High Definition Ink System for Molding

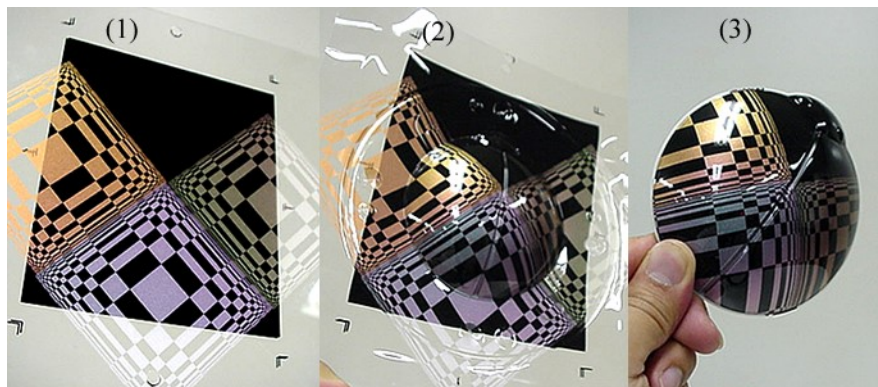
We will introduce the compatibility of solid printing with fine printing, beautiful gradation, and uniformity and excellent molding function realized by High Definition Ink System for molding.



1. Decoration method for molded component

Film Insert Molding (FIM/IMD) realize free design for three-dimensional object.

FIM/IMD decorates in three steps, (1) Printing process, (2) Forming process and (3) Injection process. Decoration by these three processes makes it possible to design with high degree of freedom unlike painting etc. due to decoration by printing.



(1) Screen Printing Process:

Decorative printing on thermoplastics resin film.

(2) Forming Process:

Heat and soften preliminarily extruded molding sheet, set to mold before cooling and solidification, trimmed (finishing) after forming to final shape with vacuum pressure or compressed air.

(3) Injection Process:

Insert it into a predetermined mold, heated, molten and fluidized molding resin material into a mold by applying pressure, and solidify by cooling to integrate the printing sheet and molding resin material.

In addition to FIM / IMD, there is a method without injection process but (1) printing and (2) forming process. Even in this case, decoration with high degree of freedom is possible due to decoration by printing.

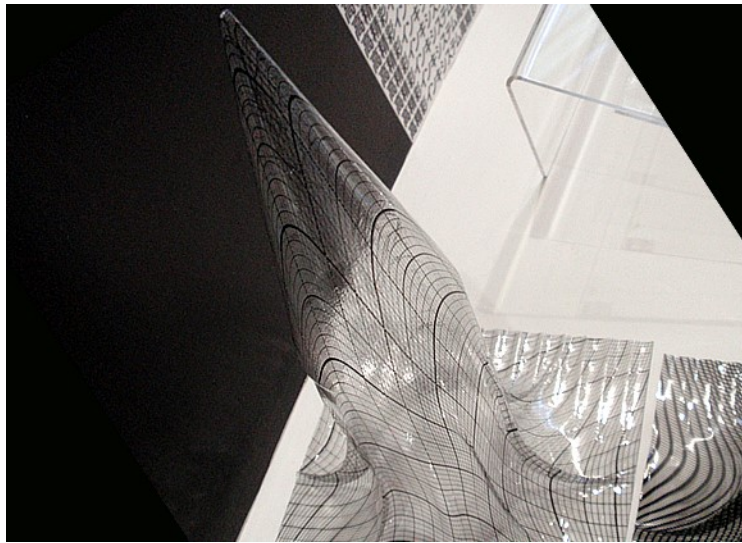
2. Realization of High Quality/High Definition decorations on molded articles by High Definition Ink System

Realize both High Quality/High Definition Printing and molding property.

Decorating method by printing and molding such as FIM / IMD has always been expected to realize the intended design with high precision because design freedom is very high.

To meet the requirement for such high precision, High-Definition Ink System for molding have responded by combining high-quality and high-definition printing with excellent molding functions. With the compatibility of these two functions, it became possible to realize high precision decorations on molded products such as gradation with dots of 100 μm level, fine lines with width of 100 μm level, beautiful solids without unevenness, etc.

Below is an example of forming a film printed with fine lines with different thicknesses of 100 μm level. No wire disconnection or the like is seen after molding, maintaining a beautiful lattice pattern while maintaining the initial thickness difference.



Characteristics of High Definition Ink Systems for molding.

The High Definition Ink System for molding, XFM (forming ink), XIP-HF (ink for FIM / IMD) has the following features.

Item	XFM	XIP-HF
Product Description	One pack type for forming High Definition Ink System	Two pack type for insert molding High Definition Ink System
Characteristics	Superior flexibility of printed ink layer during post process Superior resistance for vacuum forming Superior printing stability and high speed printing property	Superior heat resistance during post process Good adhesive property to treated PET, PC. Non-use of Halogen compound (Chlorine Cl, Bromine Br)
High Quality High Definition	Faithful reproduction of solid and fine patterns Printing fine lines of 100 μm with high accuracy (One side sagging width: 8 μm or less)	Faithful reproduction of solid and fine patterns Printing fine lines of 100 μm with high accuracy (One side sagging width: 8 μm or less)
Printing Substrate	PC, PMMA	Treated PET, PC
Application	Automobile nameplate	Automobile nameplate. Appliances

3. Example of superior molding property of High Definition Ink System

Realization of High Quality/High Definition gradation and molding

We maintain a texture that achieves a gradation with a dot diameter of 100 μm even after molding.



It is compatible with vivid, fine-grained gradation and molding. Extend the range of design further.



A case of a large molded product in which a solid and a gradation are printed in one stencil.

In the past, it was necessary to separate plates with solid and gradation, but High Definition Ink System can be printed in one stencil.

