The Sixth Green and Sustainable Chemistry Award

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Development of the environmentally friendly CTP waterless plate and printing system

While arguing internationally about the environmental problem of earth levels, such as global warming, the offset printing industry is also forced to respond to environmental problems, such as VOC (volatile organic compound) reduction and cut-off of developing solution waste, as urgent issues. Moreover, in the printing industry, the CTP (Computer To Plate) system, writing the digitized data on a computer in the offset plate directly by laser, is replacing quickly the conventional exposure system, using silver halide film and UV light, with the background of digital technology progress.

Toray Industries has developed the printing plates since 1974, using polymer and photochemistry science as core technologies, and has especially established the steadfast status in the market as a pioneer of the environmentally friendly "Waterless offset plate". Recently, in response to such trend as digital technology progress, Toray has also developed "CTP Waterless plate". As a result, Toray has succeeded in commercializing world's first "CTP Waterless plate" in April, 2000, by the invention of the new image forming mechanism called "Photo (thermal) exfoliation mechanism" and silicone rubber material, which enables using thermal laser light for picture writing and is suitable for any printing application widely, such as general commercial printing and newspaper printing. The printing system with CTP waterless plate can eliminate the dampening water, which is inevitable with the conventional offset printing. The dampening water contains IPA (Isopropyl alcohol) which is becoming a subject to regulations and, with CTP waterless printing system, no less than 80% of VOC mainly from the dampening water can be eliminated. Moreover, CTP waterless plate systems use water developing method, and the waste of strong alkaline developing solution can be significantly reduced. As can be seen, CTP waterless printing system is environmentally friendly, contributes to improvement and stability of printing quality, and could reduce printing cost.

After the recent rise of the environmental consciousness, public organizations and companies eager for environmental conservations call for waterless printing, following green purchase standards, and the attachment of the Butterfly Logo, the symbol of waterless printing, to printed materials is also increasing, which leads to waterless printing as a big trend. The adoption of waterless printing is expanding year by year, in the field from general commercial printing, such as public relations magazines by public organizations, catalogs and advertising materials by companies, to publication printing, such as books and magazines. Recently, especially in Europe of an environmental advanced area, waterless printing is highly estimated as environmentally friendly technology from Japan, and the expanding to the newspaper printing field, which was believed difficult to enter, is also progressing. Furthermore, the spread of waterless printings is accelerating worldwide in package printing and CD/DVD printing field, in which waterless printing has great advantages against the conventional printing.

This technology offers lower environmental loads, such as reductions of VOC, solution waste, and paper waste, together with improvement and stability of printing quality, economical efficiency such as and cost reduction. From that point of view, waterless printing exactly embodies the green sustainable chemistry, contributing to realization of the society which can sustainable through the innovation of chemistry technology.