

THE INNOVATIVE FUTURE TRENDS IN ECO -FRIENDLY GRAVURE INKS (A CASE STUDY OF “SAKATA INK INDUSTRY IN BHIWADI ALVER HARYANA)

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ABSTRACT: *This paper is attempt to the future of gravure ink. As we move towards a more eco-friendly environment, several changes and advancements are being made. One of those changes is the development of usage of eco-friendly inks. By switching to eco-friendly ink, we still get the high printing quality without the harmful additives found in traditional inks. By using traditional printing cleaners, inks and additives, we are contributing a constant population that is emitted from printing businesses. Not to mention many of these chemical and petroleum based solutions are harmful to the health of those using them. The gravure ink in solvent based ink as well as using will in future in free toluene and oil based ink by choosing more eco-friendly versions; it can not only save money but also protect themselves, their employees and environment. Many printers are switching to eco-friendly inks. This paper was research of main objective to the study of future gravure ink and analysis of the gravure ink mechanism. This paper research was ink manufacturing industry “Sakata ink Ltd”, during research training.*

Keyword: *Eco-friendly, ink, harmful, cleaners, chemical, printing and environment.*

I. INTRODUCTION:

Gravure inks: Description Intaglio printing process Gravure inks are fluid inks with a very low viscosity that allows them to be drawn into the engraved cells in the cylinder then transferred onto the substrate. Second Highest consumption after offset printing inks Almost 100% solvent based inks. Areas of Gravure printing Flexible Packaging Laminates Food packaging pouches wrapping paper Greeting cards Magazines Milk pouches Components of Gravure ink's formulations Resins: 10-30% Colorants (Dyes/Pigments) : 5-20% Diluents : 50-80% Additives : 0-5% Common Organic solvents used in gravure inks Toluene Methyl ethyl ketone (MEK) Methyl iso butyl ketone (MIBK) Ethyl Acetate N-Propyl Acetate Iso-Propyl Acetate Xylene Butyl Acetate Current chemistries in Gravure inks Solvent Based Inks:

- a) Vinyl Resin Based Inks
- b) PUR Based inks modified
- c) Acrylic Resin Modified based Inks
- d) NC Based modified inks
- e) Polyamide based modified inks and
- f) Meleic resin based modified inks

II. OBJECTIVE

This paper in which main aim to following;

- To evaluate latest using ink in gravure ink with environmental based and analysis.

- To evaluate and changing of gravure ink.
- To study of analysis the eco friendly gravure ink.

III. RESEARCH AND METHODOLOGY

The above work was carried out in the ink making kitchen chemist of “Sakata ink Ltd.” Bhiwadi, Alver, Haryana. The primary source of data has from to the gravure ink from making ink kitchen. Secondary source of data have include the information of gravure ink with books, internet, and handbook of print media. This above type's analysis and study of gravure ink.

IV. RESULT & DISCUSSION

The future of gravure ink is almost environmental based and using also in other process, Possible Green Chemistry/Solution for Gravure inks Eco-Friendly solvents usage in inks as well as printing process. Promotion of Water Based Inks Efficiency in printing Smart Design of Prints What can be done immediately Replacement of hazardous Solvents, colorants and Additives Promotion of Water based inks for most of absorbent substrate's printings Carbon Credit systems Smart design for printing place Smart design of packages Transparent, feasible, usable and required regulations. Barriers in Green Chemistry for Gravure Printing Cost of eco-friendly alternates Market competition for cheaper printing cost Lack of regulations and restrictions No awareness Poor Quality of substrate Non-smart printing process/Plant/inks/print design GEM is committed to reducing our impact on the planet while providing our customers with superior inks. We have developed a full line of Environmentally Friendly inks. Eco-friendly inks from GEM satisfy the following conditions and are considered “green” or environmentally friendly. The solvent based fluids contain less than 25% volatile organic compound (VOC's), less than 1 hazardous air pollutants (HAP's) and less than 0.1% carcinogens. GEM also offers a selection of water based fluids. Water based fluids contain at least 50% water, less than 50% alcohol, less than 1 hazardous air pollutants (HAP's) and less than 0.1% carcinogens. environment responsibility is the key factor of our sustainability and developing. The primary targets are developing new products of toluene-free inking system, water based printing ink on plastic substrates and vegetables-oil based Offset printing system.

There are environmental ink systems available:

- Toluene-free Gravure ink.
- MEK-free Gravure ink.
- Water based surface Gravure ink.

- Environmental friendly water based Flexo ink for paper soy based and UV Offset ink.

The printing industry is standing up and taking notice when it comes to printing with inks that are safe for our environment and safe for us all. While eco-friendly might slightly higher in some cases than traditional ink, companies save money in long run when it comes to cleanup and disposal costs. So eco-friendly should be taken into consideration when you want to provide quality and make a different to the world we live in. Environment responsibility is the key factor of our sustainability and developing. We believe on this mission applying to the entire operation which producing the true value inks for both: the application as well as environment. Printing inks, like all chemical compounds, must be properly managed to ensure protection of human health, property, and the environment. The storage, usage, and disposal of many of the chemical compounds used in printing inks are regulated through federal and state agencies as well as local authorities. Some printing inks are formulated with chemicals that pose a relatively low health, safety, and environmental risk in the manufacturing, laboratory, and pressroom environments, while others can be hazardous to both human health and the environment if not handled properly. The primary targets are developing new products of toluene-free inking system, water based printing ink on plastic substrates and vegetable-oil based Offset printing system. Those help to protect the environment and sustain this green earth. Gravure Inks are widely used in the flexible packaging industry, particularly for food products. We mainly supply gravure inks for Surface Printing and Reverse Printing. In the past two years, we also developed new inks to cater the brand owners who have awareness in environmental and food packaging safety concerns in their flexible packaging. Fine Max is one type of Non-Toluene OPP inks for application in extrusion PP lamination process. V in pet inks were developed for the labels market which switching from shrinkable PVC to shrinkable PET to reduce the adverse environmental impact in PVC usage. It is designed for food packaging, sanitary products, cigarette packaging in paper application. This ink is eco friendly which the organic solvents are mainly alcohol and ester based.

V. CONCLUSION

This paper is main point of result, the using of gravure inks with Toluene-free Gravure ink, MEK-free Gravure ink, Water based surface Gravure ink, Environmental friendly water based Flexo ink for paper soy based and UV Offset based using in future trends, it will be completely innovation in gravure ink and the gravure ink widely used in flexible packaging industry, so that the primary targets are developing new products of toluene-free inking system, water based printing ink on plastic substrates. The future of gravure ink is almost environmental based and using also in other process, Possible Green Chemistry/Solution for Gravure inks Eco-Friendly solvents usage in inks as well as printing process. It is designed for food packaging, sanitary products, cigarette packaging in paper application. This ink is eco friendly which the organic solvents are mainly alcohol and ester based. The printing industry is standing up and

taking notice when it comes to printing with inks that are safe for our environment and safe for us all.

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