

VOC-FREE INK TREND EMERGES IN THE GLOBAL CARD INDUSTRY

Manufacturers, designers and banks are trying to reduce the use of volatile organic compounds (VOCs) in the global plastic card industry.

Certain regions of the world already provide a strict legacy environment when it comes to the use of chemical products and VOCs. Industries in the United States and the European Union can prevent the use of VOCs by creating legal frameworks. By working on Directive 1999/13/EC on the limitation of emissions of VOCs due to the use of organic solvents in certain activities and installations, the European Union fosters the eviction of VOCs. There is currently a gap between different parts of the world in terms of using solvent products or not, with or without VOCs. As a result

of new laws and taxes in some parts of the world, as well as new health, social and environmental ambitions, industries using inks with VOCs will have to modify their processes in the next few years.

Problems with VOCs

Short-term exposure to high levels of some VOCs can cause headaches, dizziness, lightheadedness, drowsiness, nausea and eye and respiratory irritation. These effects usually go away when the exposure stops. Long-term exposure to high levels of some VOCs in laboratory animals has caused cancer and affected the liver, kidney and nervous system. [1]



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VOCs have also been determined to be a major factor contributing to the formation of ground-level ozone, which has been shown to be a public health concern. [2]

China's Move Toward VOC-Free Industries

In China, VOC control policies are in progress. Paints with high levels of VOCs have an additional 4 percent consumption tax whether they are manufactured or imported, according to a joint notice issued by the Ministry of Finance and the State Administration of Taxation of China. [3]

Provinces in China are adopting laws and taxes against VOCs. These policies mainly affect the operations of companies in the chemical, packaging, printing and coatings industries. These VOC control policies are pushing companies to adopt and industrialize new technologies, including high-solid, solvent-less and waterborne technologies at an unprecedented speed. [4]

In June 2015, the National Development Reform Commission, Ministry of Finance of the People's Republic of China and Ministry of Environmental Protection enacted "Pilots for VOC Discharge Fees." These required the petrochemical, packaging and printing industries to complete pilot projects for VOC emissions fees by Oct. 1, 2015. In July 2015, Guangzhou took the lead in levying the VOC emission fees. By the end

of 2015, the city had collected a total of 1,128,900 Renminbi from 669 enterprises emitting benzene, methylbenzene and dimethylbenzene. Afterward, Beijing, Shanghai, Jiangsu, Anhui, Hunan, Sichuan, Tianjin, Liaoning, Zhejiang, Hebei, Shandong, Shanxi, Hainan, Hubei, Fujian and Jiangxi issued their local regulations on VOC emissions fees. Yunnan province is China's 17th provincial level region to impose fees on the disposal of VOC pollutants. [5]

The "Made in China 2025" and Air Pollution Prevention Action Plan put forward by the Chinese government aim to reduce VOC emissions by key industries and improve air quality in China. The government plans on cutting industries' VOC emissions by one-third by the end of 2018. [6]

In the United States, California has banned the use of solvent products. More company marketing and communications departments are highlighting their "green approach" to business to customers and environmental and social concerns are commonly used to promote brands and avoid bad buzz.

VOC-Free Inks in the Card Industry

More than 10 years ago, key accounts in the global card industry started looking into VOC-free products, including VOC-free inks. Research and development efforts led to

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the first orders of VOC-free ultraviolet (UV) inks in 2009. The first UV-curable inks were specially dedicated for bank cards, gift cards and loyalty cards and accept overprinting, lamination process (peel test ISO 10373) and embossing operation. They are usable on all types of PVC, available in numerous colors and adhere well to plastic media.

Pearl and metallic colors came next. Then, researchers developed an advanced hybrid curing screen ink for plastic card printing. This water-based and UV curing ink for printing on PVC accepts overprinting of offset inks, lamination and embossing. It produces a thin ink deposit, very good ink stability in the screen and has a finish closer to solvent-based inks.

What to Expect in the Future

With the various new laws and regulations across borders and the general raising of awareness of environmental matters, companies in different industries, including printing, will invest more funds into the development of eco-friendly products. In the plastic card industry, this will apply across the board, from the pigment suppliers to personalizers of the cards. VOC-free UV-curable inks are widely used in North America and their use will continue to grow in other parts of the world while researchers also develop new technologies, such as LED-curing, to keep on reducing side effects on the environment and workers. These breakthroughs will help raise consciousness, and a common understanding may lead to a full VOC-free industry within a few years. 

SOURCES

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About the Author: Christian De Rueda joined VFP Ink Technologies as a technical applications manager. His main role is to help customers across the world using VFP products meet specific technical requirements with various equipment and processes. Before beginning his career in screen printing, he was a graphic designer. Working in screen printing for 38 years, he has held various positions including operator, supervisor, production manager, business owner and trainer. A leading player in the European market with a worldwide distribution, VFP Ink Technologies covers an extensive range of applications and materials for printed labels, laminated PVC cards, printed electronics and packaging.