



## CONFIRMATION OF NON-TOXICITY PREMOKING HEATSET INKS

PremoKing web offset heatset proces inks are produced from carefully selected raw materials. Products based on toxic substances such as PCB (poly chlorinated biphenyls) and toxic heavy metals like lead, mercury, cadmium and hexavalet chromium are not part of the formulation of above mentioned inks.

According to our recent knowledge, the above mentioned printing inks are not classified as and do not contain chemicals classified as hazardous and dangerous substances and materials listed in the EEC Directory 67/548/EEC.

Material Safety Data Sheets of our product are available .

### Declaration

Flint Group Europe can confirm that PremoKing heatset inks do not have influence on the compliance with the European directive for toy regulations EN71-3:1994 of printed matter, printed with the ink, with regard to the content and migration of heavy metals and other toxic elements.

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### 1 Composition PREMOTERM Heatset inks:

pigments and extenders (water insoluble)	10-35%
synthetic hard resins	25-35%
alkyd resins/vegetable oils	5-18%
mineral oils distillates	35-45%
additives	±7%

Typical ink oil contents in Flint-Schmidt heatset ink series:

Premoterm 2000	37% (average of 4 colours)
Premoterm 4000	35% (average of 4 colours)
Premoterm 6000	33% (average of 4 colours)
Premoterm 3000	33% (average of 4 colours)

### 2 Legislative background

According to the European Communities Council Directive 1999/13/EC the definition for VOC is: "VOC shall mean any organic compound having at 293.15 K a vapour pressure of 0.01 kPa or more or having a corresponding volatility under the particular conditions of use".

The conditions of use of the heatset inks (read the temperature in the hot air dryer) vary quite much, but will be between about 160°C and 270°C. At these temperatures we consider the ink oils and solvents with boiling range up to 310°C used in the Premoterm ink series to comply to the definition of VOC.

The main part of heatset ink oils are mineral oils (aliphatic cyclo parafinic hydrocarbons) with narrow boiling ranges, lying between 240°C and 290°C. Some inks contain a small percentage of oil with boiling range up to 340°C. These oils are typically very low on aromatic contents and possess a comparatively low volatility and are not subject to the ordinance on hazardous substances (EC-directive 67/548/EEC).

The vapour pressure of these organic solvents at a temperature of 293.15 K (20°C) is below 0.01 kPa and is not officially mentioned as VOC.

### 3 Emission

Regarding emissions, the evaporable components with boiling range up to 310°C need to be considered. They represent 30 - 40% of the total ink mass. Some part of the oils ( 5 - 15% estimated) is absorbed by the paper and/or remains in the dried up ink film. The rest of the mineral oil is evaporated in the hot-air dryer, so about 25% of the ink weight.

The polluted waste gas from the dryer is to be cleaned, using a oxidising combustion process. The thermal and catalytic combustion processes have become the most common way of waste gas cleaning for web offset printing.

The hydrocarbons contained in the solvent vapour carried by the waste gas are burned to produce mainly carbondioxide and water. The mass concentration of organic material will be less then 10 mg/m<sup>3</sup> of total carbon ( without CO and CO<sub>2</sub>), provided that mechanical malfunctions are avoided.

### **Theme: VOC in Heatset printing ink**

#### **Legislative background**

According to the European Communities Council Directive 1999/13/EC the definition for VOC:

*“VOC shall mean any organic compound having at 293.15 K a vapour pressure of 0.01 kPa or more or having a corresponding volatility under the particular conditions of use”.*

#### **Statement**

At room temperature heatset inks have a vapour pressure that is less than 0.01 kPa, the VOC content is considered negligible.

The “conditions of use” in the hot air dryer commonly are at temperatures of 160 - 270°C. At these temperatures the special solvents and the mineral oil distillates in the Premoterm heatset inks, having a boiling range up to 310°C, are supposed to evaporate and will meet the definition of VOC.

The main part of mineral oil distillates in heatset inks has a boiling range of 240 up to 290°C. A small part of distillates has a boiling range up to 340°C

The percentage of oils and solvents in the Premoterm ink series that are evaporable in the hot air drier, averaged for four colours per series, is as follows:

Premoterm 2000/2200	39%
Premoterm 3000	39%
Premoterm 4000/4200	38%
Premoterm 6000	36%

#### **The final emission**

In the heatset printing process a part of the oils is absorbed by the paper, estimated at 10% and is not considered VOC. The main part of solvent, about 28% based on the ink weight, evaporates and is removed with the exhaust gas to be treated in an afterburner installation.

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The main part of mineral oil distillates in heatset inks has a boiling range of 240 up to 290°C. A small part of distillates has a boiling range up to 340°C

The percentage of oils and solvents in the PremoKing ink series that are evaporable in the hot air drier, averaged for four colours per series, is as follows:

PremoKing 1000	39%
PremoKing 2000/2200	39%
PremoKing 4000/4200	38%
PremoKing 6000	36%

#### **The final emission**

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