Mineral Oils in Printing Inks

MOCRINIS Workshop
Bologna

Dr. Erich Frank
Flint Group Germany GmbH
for EuPIA
What is EuPIA?

- **European Printing Ink Association**
- Founded in 2003
- Operates under the umbrella of CEPE, the European Council of the Paint, Printing Ink and Artists’ Colours Industry
- Represents > 80 manufacturers of printing inks and varnishes in > 160 manufacturing sites
- Represents > 95% of ink sales in Europe
- Employs ~ 12,000 people
- Membership: Every member of a National Association representing the printing ink industry is automatically a member of EuPIA (dual membership principle)
Use and Demand

- Mineral Oils are typical raw materials for nearly all types of offset inks (solvent for resins used as binder)
- Mineral Oil consumption in printing inks (Europe 2012)*: 150 000 ton = 0,3 kg/capita, year
- Mineral Oil transfer from ink to recycled paper: 77 000 ton (theoretical value for 100 % paper recycling)
- For comparison: total crude oil consumption (Europe 2012)*: 720 000 000 ton = 1,4 ton/capita, year
- Mineral Oil consumption - Share for use in printing inks: 0,02 % = 200 ppm

*estimation on the base of statistics from EuPIA and IEA (International Energy Agency)
Selection Criteria for the Ink Industry

- Viscosity
- Boiling range
- Solvent power
- Colour
- Smell
- Costs
- Compliancy to EuPIA Exclusion list = not toxic, no cmr..

⇒ Physical performance and safe classification are more important than precise chemical composition
Evaluation and Classification

• According to chemical legislation (REACH/CLP). Content of polycyclic aromatic hydrocarbons is relevant (IP 346, DMSO-Extrakt, Grimmer method)
• Evaluation as mixture, UVCB: substance of Unknown or Variable Composition
• Intended use: coatings and inks
• Normal offset inks are not classified and safe for the intended use
• German BG ETEM: no indication for occupational diseases due to mineral oil in printing inks
Mineral Oil free Offset Inks

- Mineral oils free offset inks are feasible – print shops have to decide about the use.
- Need for technical adaptation and a cost increase has to be considered.
- Common replacements are vegetable oils and fatty acid alkyls esters.
- Ink formulas have to be adjusted.
- Mineral oil free sheetfed offset inks for food packaging (low migration) and other applications are state of the art (since years).
Needs of the Printing Ink Industry

- Request: mineral oil free inks
- Clear definitions for mineral oil/hydrocarbons
- Denomination of mineral oil classes of components: aliphatic, naphthenic, aromatic - MOSH, MOAH - PAH
- What about synthetic hydrocarbons (gas to liquid, biomass to liquid)? Are these to be regarded as mineral oils?

- Request: inks suitable for food packaging
- Clear classifications for mineral oil/hydrocarbons
- clear limits for transfer to food