Information Note on French Order on Mineral Oils in Printing Inks

Legal background

Agec Law – Article 112[1]

The **French Circular Economy Law** from 2020 foresees in article 112that:

- from 1st **January 2022**, the use of mineral oils on **packaging** is prohibited.
- from 1st **January 2025** it is prohibited to use mineral oils in **prints for the general public**. For **unsolicited advertising leaflets and catalogues** with commercial purposes, this prohibition shall apply from 1 January 2023

Decree N°2020-1725[2]

A decree N° 2020-1725 of 29 December 2020 specified in Articles D. 543-45-1 and D. 543-213 of the Environmental Code that this ban applies to mineral oils containing substances that interfere with the recycling of packaging waste or limit the use of recycled materials due to the risks that these substances present for human health.

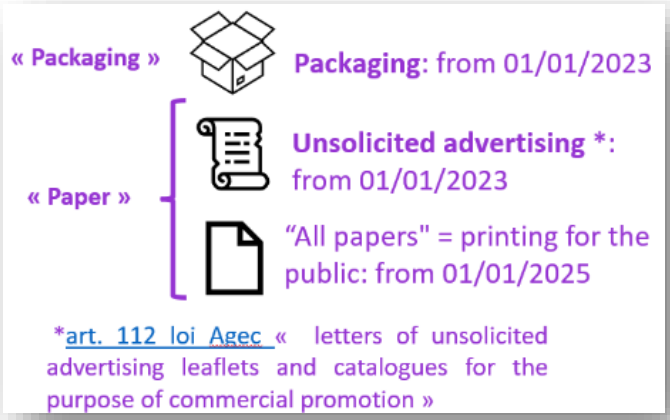
The article 112 of Circular Economy law and the decree does, however, not specify what is meant by mineral oil and which limit values apply. An order of the French Minister for the Environment specifies the substances concerned

French order of 13th April 2022[3]

The technical details are set out in a French order specifying the substances concerned by the ban on the use of mineral oils on packaging and printing intended for the public. This order was published in the French Official Journal on 3 May 2022 : « Arrêté du 13 avril 2022 précisant les substances contenues dans les huiles minérales dont l'utilisation est interdite sur les emballages et pour les impressions à destination du public »

The 3 texts imply that inks for packaging as well as inks for letters of unsolicited advertising leaflets and catalogues for commercial promotion need to be formulated in accordance with the mineral oil specifications of the French order starting from 1st January 2023. Inks for other printing for the public, such as newspapers, magazines, or books will be subjected to this regulation starting 1st January 2025.
The provisions are summarized and illustrated in the figure below:

[1] Loi n° 2020-105 du 10 février 2020 relative à la lutte contre le gaspillage et à l'économie circulaire
[2] Décret n° 2020-1725 (https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000042754025)
[3] Arrêté du 13 avril 2022 (https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000045733481)



Provisions for mineral oils in inks

Contrary to the scope of the Circular Economy Law, which covers mineral oils on printed products and packaging, the French order is only focussing on the mineral oil content of the used printing inks. It defines limit values (mass concentration in ink) of certain mineral oil constituents for the inks, which may be used for the printed products in scope.

The decree defines mineral oils as follows:
"mineral oils" means oils produced from feedstocks derived from petroleum hydrocarbons used in the manufacture of inks.

The substances affected by the ban on the use of mineral oils are

- Mineral oil aromatic hydrocarbons **(MOAH) comprising 1 to 7 aromatic rings**;
- Mineral oil saturated hydrocarbons **(MOSH) with 16 to 35 carbon atoms**.

Furthermore, the following limit values and timelines are defined:

- Until **31 December 2024**, the ban on the use of mineral oils applies when the concentration by mass in the ink of mineral oil aromatic hydrocarbons (MOAH) is greater than 1%.
- From **1 January 2025**, the ban on the use of mineral oils applies
    - for mineral oil aromatic hydrocarbons (MOAH), where the mass concentration in the ink of these substances is greater than 0.1% or the mass concentration in the ink of compounds with 3 to 7 ring aromatic is greater than one part per million (ppm);
    - for mineral oil saturated hydrocarbons (MOSH), where the mass concentration in the ink of these substances is greater than 0.1%.

Therefore, until end of 2024 only a limit value for MOAH applies, while from 2025 on limit values for MOSH and MOAH apply.

The previous regulatory reading can be summarized and illustrated in the figure below:

Mass concentration in ink	From 01/01/2023 to 31/12/2024	From 01/01/2025
$[MOAH_{1-7\ ring}]$	Allowed if $[MOAH_{1-7\ ring}]$ ≤ 1 %	Allowed if $[MOAH_{1-7\ ring}]$ ≤ 0.1 % **OR** Allowed if $[MOAH_{3-7\ ring}]$ ≤ 1 ppm
$[MOSH_{C16-C35}]$	No specific requirements for this order for this period	Allowed if $[MOSH_{C16-C35}]$ ≤ 0.1 %

What does this mean for the different print products?

For packaging and unsolicited advertising leaflets and catalogues for commercial promotion the following provisions apply:

- from **1. January 2023** MOAH may not be used in the inks in a concentration above 1%
- from **1. January 2025** MOSH may not be used in concentrations above 0.1 % and MOAH may not be used in the inks in concentrations above 0.1% and the content of 3 to 7 ring aromatics may not be above 1 ppm

For other printing for public, such as newspapers, magazines and books, the following applies:

- No specific provisions till **31. December 2024**
- From **1. January 2025** MOSH may not be used in concentrations above 0.1 % and MOAH may not be used in the inks in concentrations above 0.1% and the content of 3 to 7 ring aromatics may not be above 1 ppm

The previous regulatory reading can be summarized and illustrated in the figure below:

Deadline	**01/01/2023**	**01/01/2025**
Ban	**MOAH :** **Ban if** $[MOAH_{1-7\ ring}]$ **> 1 %**	**MOAH :** **Ban if** $[MOAH_{1-7\ ring}]$ **> 0.1 %** **OR** **Ban if** $[MOAH_{3-7\ ring}]$ **> 1 ppm** **AND** **MOSH :** **Ban if** $[MOSH_{C16-C35}]$ **> 0.1 %**
Packaging	**X**	**X**
Unsolicited advertising leaflets and catalogue for commercial promotion	**X**	**X**
All paper destinated to the public	**Not concerned**	**X**

Are compliant inks available on the market?

Concerning **packaging,** printing inks are available on the market that are formulated without mineral oils and especially for food packaging EuPIA and other associations of the packaging chain have recommended to use such inks for packaging since several years.[4]

Mineral oil-based inks are mainly used in offset inks in the **publication** sector.[5]

Unsolicited advertising leaflets and catalogues for commercial promotion are mainly printed with heatset and sheetfed. **Sheetfed** inks based on vegetable-based oils are available on the market. Concerning **heatset,** inks with a reduced content of aromatic hydrocarbons are available and hence it is technically possible to fulfil the provisions that apply until 31 December 2024. However, as the oils are evaporated during the drying process and used to fuel the dryers,

[4] Printing ink industry contribution to the paper, paper converting and food industry initiatives to reduce mineral oil in paper and board packaging, https://www.eupia.org/key-topics/food-contact-materials/recycled-materials

[5] EuPIA statement on the use of mineral oils in offset inks, https://www.eupia.org/key-topics/food-contact-materials/recycled-materials

vegetable-based oils or vegetable-based solvents are generally not suitable for heatset inks, as their high boiling point does not allow an efficient evaporation. Therefore, no broadly applicable mineral oil-free heatset ink is currently available on the market, which means that the provisions from 1. January 2025 cannot be met. It is important to stress that due to the evaporation of mineral oils only residues remain in the paper.

Newspapers are typically printed in the **coldset** process. Till December 2024 the current Coldset inks can continued to be used. However, from January 2025 Coldset inks formulated without mineral oils need to be used. Two publicly funded projects in Germany and France have been investigating the potential use of mineral oil-free coldset inks. EuPIA members have been heavily contributing to both projects. Within these projects it could be shown that mineral oil-free coldset inks are in principle possible. However, the transfer of the results of these pilot projects to the complete market, as well as the formulation of printing inks which run on all coldset printing machines without further changes and investments in the machinery, is a challenging task, as a lot of unforeseen technical difficulties may arise. Furthermore, some technical specifications deviate from the provisions of the research projects, even from the project driven by CITEO on behalf of the French government, which may necessitate further research.

High volume catalogues and magazines are often printed with **publication gravure**. These inks use toluene as single solvent. Whilst toluene is considered as a solvent and not a mineral oil, the decree does not provide a clear differentiation. Here a clarification from the French authorities is needed. Discussions between the French authorities and industry are ongoing and will hopefully result in a Q&A document, which will settle the remaining open questions.

The Technical Committee of AFEI, the French printing inks association, is currently preparing an up-to-date state of the art in order to feed this general overview. Apart from the pure technical aspects highlighted above it needs to be considered that it may be challenging for the printers to implement the provisions nationwide till the respective deadlines. Furthermore, as the threshold for 3 to 7 ring aromatics of 1 ppm is very low, it is possible that certain aromatic compound may be present as impurities of the raw materials even if the inks are formulated without mineral oils. Hence it remains to be seen how the French authorities will address this issue, this point is also still under discussion.

How will the provisions be enforced?

As the decree provides no analytical protocol it is currently unclear, how compliance with the limit values can be analytically demonstrated. In any case, the results will depend on the analytical method applied and hence a clear standard would need to be defined. Article 112 of the overarching Circular Economy law clearly covers mineral oils on packaging and printed matter. However, the French order only defines provisions for the inks and not the printed product. As the printed products are, however, in scope of the regulation, it is unclear how to demonstrate or control compliance. It needs to be demonstrated that a printed product has been printed with compliant inks. However, this cannot be verified on the final product: If mineral oils are found, it is hardly possible to distinguish, whether these originate from the ink or the paper or another component. The French authorities have indicated verbally that the enforcement will rely on documentation, but this still needs to be confirmed.

EuPIA Technical Committee, 2022-07-12