

### Polymer dispersions and microplastics

The EPDLA (European Polymer Dispersion and Latex Association, a Cefic Sector Group) is dedicated to promoting the safe manufacture, transportation, distribution, handling and use of waterborne polymer dispersions, in compliance with regulatory requirements and industry guidelines.

EPDLA members are committed to Responsible Care® principles and have implemented risk management according to the precautionary principles.

### Polymer dispersions

Polymer dispersions are used as raw materials (binders) in many waterborne applications, for example in adhesives, varnishes and coatings, printing inks, non-wovens, paper and paperboard and textile finishing agents. Polymer dispersion technology has been used safely and successfully for more than 50 years and has contributed significantly to a reduction in the release of organic solvents into the environment. The use of polymer dispersions has helped to reduce the use of organic solvents in workplaces leading to improved worker health and similarly has contributed to cleaner air in the home. Common to all dispersions and covered by this statement, is a film forming process during application.

Polymer dispersions are mixtures as defined under Article 3(2) of the REACH Regulation<sup>1</sup>, consisting mainly of water and high molecular weight polymer droplets. Based on polymer weight and chemical nature, the polymer droplets can be solid or highly viscous. The particle size of such polymer droplet can widely vary between ca. <100 nm (<0.1 µm) and 10,000 nm (10 µm)<sup>2</sup> in diameter. For more details on the status of polymer dispersions with respect to nanomaterials, please refer to the EPDLA position paper on nanomaterials<sup>3</sup>.

Within a dispersion, the polymer droplets are dispersed and stabilised in water and regarded as bound in the liquid matrix. They cannot be isolated as discrete droplets or particles by simple separation techniques and do not exist without their waterborne environment. Their fate is to form a film e.g. as an adhesive or paint.

As the water in the mixture evaporates, a separation between the aqueous and the polymeric phase begins and leads to the film formation via coalescence of the polymer droplets<sup>3</sup>.

Human or environmental exposure to individual polymer droplets or particles is thus highly unlikely under advised conditions of use.

<sup>1</sup> Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC.

<sup>2</sup> nm = nanometre / µm = micrometre.

<sup>3</sup> <https://specialty-chemicals.eu/epdla/> EPDLA position paper on polymer dispersions and nanotechnology (updated June 2018).



### Microplastics and Polymer Dispersions

In early 2019, ECHA published an ANNEX XV RESTRICTION REPORT concerning a PROPOSAL FOR A RESTRICTION of intentionally added microplastics<sup>4</sup>.

According to the proposal ECHA defined microplastics as:

- a. *a material consisting of solid polymer-containing particles, to which additives or other substances may have been added, and where  $\geq 1\%$  w/w of particles have (i) all dimensions  $1\text{nm} \leq x \leq 5\text{mm}$ , or (ii), for fibres, a length of  $3\text{nm} \leq x \leq 15\text{mm}$  and length to diameter ratio of  $>3$ .*
- b. *'particle' is a minute piece of matter with defined physical boundaries; a defined physical boundary is an interface.*
- c. *'polymer-containing particle' means either (i) a particle of any composition with a continuous polymer surface coating of any thickness or (ii) a particle of any composition with a polymer content of  $\geq 1\%$  w/w.*

Our understanding is that polymer dispersions containing solid particles would fall under the scope of the restriction. Determining the state of matter (liquid or solid) of the polymer droplets in polymer dispersions is not a trivial activity as the droplets cannot be individually isolated outside of the water matrix and currently available analysis techniques are not sufficiently advanced to do so within the water matrix. The EPDLA has advocated for the additional use of the Minimum Film Forming Temperature (MFFT)<sup>5</sup> as a measure of whether the polymer droplets should be considered liquid or solid, however this has not yet been accepted by ECHA.

The above three definitions from ECHA apply both to individual substances and mixtures where microplastics may be present at a concentration  $\geq 0.01\%$  w/w, such as, for example, in adhesives or paints.

The restriction document continues further and makes allowances for the placing on the market of microplastics (e.g. polymer dispersions) or mixtures containing microplastics if:

- a) They are used at industrial sites or
- b) *"Their physical properties are permanently modified when the substance or mixture is used such that the polymers no longer fulfil the meaning of a microplastic according to the definitions quoted above. "*

Since the intended use of the polymer dispersion is to form a film, the polymer particles are consumed during film formation and therefore no longer meet the definition of a microplastic. The microplastic droplets would be permanently incorporated into a solid matrix at the point of use.

<sup>4</sup> <https://echa.europa.eu/de/registry-of-restriction-intentions/-/dislist/details/0b0236e18244cd73>

<sup>5</sup> [https://specialty-chemicals.eu/wp-content/uploads/2020/06/EPDLA-Position-Determination-of-the-state-of-matter\\_Microplastics\\_RAC-53\\_MAY2020.pdf](https://specialty-chemicals.eu/wp-content/uploads/2020/06/EPDLA-Position-Determination-of-the-state-of-matter_Microplastics_RAC-53_MAY2020.pdf)



We therefore understand that the use of polymer dispersions for its entire myriad of applications will not be restricted under this proposal. However, ECHA foresees labelling and reporting requirements, *“as there could be some releases of ‘unconsumed’ microplastics under reasonably foreseeable conditions of use”*.

To minimize these releases industry will be required to communicate appropriate use instructions: ECHA’s proposal *“will require all downstream users placing on the market mixtures containing microplastics, where the use of the microplastic is derogated” ... “to report certain information to ECHA using a prescribed electronic format. This information can then be compiled and published annually. The information gathered will allow the tracking of the identity and quantities of the microplastics used and released to the environment in certain derogated uses and allow in the future for adaptations to the restriction to be made using this information, where these are considered necessary.”*

More details on the labelling and reporting requirements are to be published at a later stage.

The EPDLA started early to contribute to the discussion around the proposed restriction where appropriate and had provided significant input to the SEAC consultation<sup>6</sup> on the and on the topic of MFFT<sup>5</sup>. EPDLA chairman Martin Klatt also spoke at the 2020 and 2021 Fresenius conferences on microplastics<sup>7</sup>. EPDLA member companies believe polymer dispersions bring significant benefit to society and will continue to closely monitor any developments and actively advocate minimizing the burden of labelling and reporting for producers, sellers, and users of polymer dispersions and products containing them.

The EPDLA views advocacy on this topic as an important role and will also continue to raise the profile of this proposed restriction in its current form and the potential impacts to users in other suitable forums<sup>8</sup>.

### Conclusion

The EPDLA supports Cefic’s position on the publication of the REACH restriction proposal on microplastics: We call for a regulatory measure that is proportionate, scientifically sound and brings tangible benefit to the environment.

ECHA’s restriction proposal contains a definition of microplastics, which the EPDLA considers still too broad and leaving much room for interpretation, and which will make its implementation and enforcement challenging. We have therefore called for a clearer and enforceable definition of microplastics to be included in the final restriction proposal. We will continue to monitor progress on this topic and provide input to ECHA and updates as necessary.

<sup>6</sup> <https://echa.europa.eu/hot-topics/microplastics>

<sup>7</sup> <https://www.akademie-fresenius.com/events/detail/produkt/international-akademie-fresenius-conference-microplastics-online-conference-1/>



### Disclaimer

- The present position paper has been developed by EPDLA members in good faith, to the best of its knowledge and following the latest scientific evidence.
- The position paper is offered to all EPDLA members for further use. Each producer might add additional information in the communication towards customers, depending on the specific situation.
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**About EPDLA**

EPDLA (European Polymer Dispersion and Latex Association), a Cefic Sector Group founded in 1991, is dedicated to promote the safe manufacture, transportation, distribution, handling and use of waterborne polymer dispersions, in compliance with regulatory requirements and industry guidelines. EPDLA members are committed to Responsible Care® principles and have implemented risk management according to the precautionary principles.

