

Statement

Microplastics Pollution and the Impact of Printing Inks

Microplastics means 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 . Polymers that occur in nature that have not been chemically modified (other than by hydrolysis) are excluded, as are polymers that are (bio)degradable¹. They are of general concern because they are polluting rivers and oceans. They are ubiquitous in the world oceans and can now also be detected in arctic ice and in the deep sea. Microplastics are able to enter the food chain and have a negative impact on many aquatic lifeforms. Furthermore, they have the potential to be transferred between trophic levels in the food chain and can ultimately have negative effects on human health when polluted aquatic lifeforms (e.g. fish, mussels) are eaten².

For a reduction of the pollution it is important to distinguish between the different sources of microplastics:

The main source of microplastics in the oceans (69-90%) are secondary microplastics from plastic waste which is released to rivers and oceans mostly in third world and newly industrialized countries³. Larger pieces of plastic debris break down to microscopic fragments through chemical and physical aging and decay processes in the ocean. The main prevention would therefore be improving garbage collection, recycling or incineration.

The remaining contamination of the world oceans originates from primary sources of microplastics (10-31%), which are entering via the sewage system or are washed out by rain after erosion. These are in particular synthetic textile fibers from washing machines (35%), tire degradation (28%), city dust (24%), road markings (7%) and marine coatings (3.7%). Only 2% of the primary microplastics originate from personal care products and 0.3% from accidental losses of intentionally manufactured "plastic pellets" during production, transport or storage in the plastics industry³.

Microplastics in Printing Inks

Very few raw materials used by the printing ink industry fall under the definition of microplastics. The vast majority of those are waxes, which are necessary additives for the improvement of the rub- and scratch resistance. They adjust the slip properties of an ink film and can be used as a matting agent. After drying or curing the wax particles are firmly bound in the matrix of the ink film and are not released under foreseeable conditions of use.

Due to the above stated reasons, **printing inks do not increase the environmental pollution by microplastics as long as they are correctly processed.**

The information in this document reflects Siegwirk's policy and commitments. This statement is valid without signature.

¹ Definition by ECHA (European Chemicals Agency, 08/2019)

² EFSA (European Food Safety Authority, 05/2016)

³ International Union for Conservation of Nature and Natural Resources: Primary Microplastics in the Oceans (2017)