



Netherlands Institute
for Sustainable Packaging

FACT SHEET

Microplastics in packaging



PART OF THE DOSSIER ON FOOD SAFETY

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Although microplastics are not directly related to food safety, they are not entirely unrelated to it either: they can occur in packaging and end up in food or end up in the environment when plastic packaging ends up in nature and breaks down into small particles. In this fact sheet, the KIDV provides information on the origin of microplastics and the latest situation regarding their use in packaging.

What are microplastics?

Microplastics are, like nano plastics, small particles of plastic. The difference between micro- and nano plastics lies in their size:

- Microplastics are microscopic: 0.1 - 5,000 micrometres (or 5 millimetres) (1).
- Nano plastics are much smaller still, between 1 and 100 nanometres (or 0.0001 millimetres) (2).

Sources of microplastics include plastic materials (such as packaging, bottles and bags), car tyres (wear and tear) and synthetic clothing (the particles of which become detached when worn or washed). In the environment, this plastic disintegrates into ever smaller particles. But microplastics are also found in food products, such as beer, honey, sugar and table salt (3).

Two types of microplastics can be distinguished: primary and secondary microplastics (4).

- Primary microplastics are manufactured in industry for specific purposes, such as the *scrubbing* effect of cosmetics on hair, teeth or skin, due to the application of so-called *microbeads* (granules).
- Secondary microplastics are the result of the ageing and degradation processes of larger plastic parts, such as bottles, bags and packaging. Secondary microplastics in particular end up in the environment (4).

Application in packaging and materials

Microplastics have no specific application in food packaging. Whether or not food packaging leads to the formation of microplastics - for example during use and storage, - has only been investigated

to a limited extent. In recent years, news items have appeared with some regularity about the presence of microplastics in, for example, plastic bottles for [mineral water](#) and [baby food](#) or in [tea-bags](#).

Plastic, glass and drinking cartons and their influence on the amount of microplastics in water were studied. A German study into different packaging materials did not establish a sufficient link between the type of material and the levels of microplastics found. Further research is needed to demonstrate the link between microplastics from packaging materials in food. (5).

Possible health risks

Microplastics can be absorbed by the human body, but what this does to our health is still difficult to determine. An accumulation of microplastics in the body can lead to physical complaints, such as inflammatory reactions, which are a risk factor for cardiovascular diseases. In addition, plastics can be contaminated with 'non-intentionally added substances' (NIAS). (6). Examples of NIAS are mineral oils and heavy metals. These substances can be absorbed into the body and be harmful in their own way.

There is still too little known to properly compare the health risks identified in studies with reality. In March 2021, Wageningen University & Research published a new calculation method that will make it possible to better predict the health risks of microplastics. (6).

The amount of microplastics (and indirectly the amount of NIAS) that a person ingests depends on their eating habits and on the concentrations of microplastics in food products. Research has shown that people consume an average of 0.0041 mg of microplastics per week. This is less than one grain of salt (6), but is that a lot or not? And what are the short- and long-term effects? A lot of research is still needed to answer this question, which means that a standard for microplastics in food, water and possibly from packaging will only be set in due course. Science also pleads for more research. In a number of studies, the polymer industry and the medical world are working together to find solutions to this global problem (7) (8).

Legislation

When a packaging material comes into contact with a food product, certain substances can migrate from the packaging into the food product. In European legislation (See the [regulation on plastic materials](#)) the migration limit for all substances together is 60 mg per kg of food. There is no legal limit for the amount of microplastics that may end up in food products from packaging.

It is insufficiently known how harmful microplastics in food are and on what scale this comes from packaging. This requires more research. Which measurements can be determined to prevent a negative impact on health can be based on more research results (10).

Conclusion

Not enough is known about the harmfulness of microplastics and on what scale this is caused by packaging materials. However, there are concerns about the long-term health risks of harmful substances from microplastics. Research does not unequivocally show the extent to which microplastics from packaging end up in food products. Migration is possible and depends on the material, treatment of the packaging and opening method.

Finally

The KIDV has drawn up this fact sheet in collaboration with Riskplaza. Riskplaza is a database with information on the food safety of ingredients, as well as measures to control food safety hazards.

The greatest possible care has been taken in compiling the text; see also the appendix for the sources consulted. No rights can be derived from the texts.

If you still have questions after reading the fact sheet, please ask them in the [questionnaire](#) on the KIDV website.

Interesting links

- [Are microplastics in food and drink dangerous? \(DUTCH ONLY\) | Voedingscentrum](#)
- [Microplastics | RIVM](#)
- [Microplastics | Food packaging Forum](#)
- [Microplastics and nano plastics in food – an emerging issue | EFSA](#)
- [Microplastics | European chemicals agency \(ECHA\)](#)

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NOTE: Always consult consolidated legislation at <https://eur-lex.europa.eu/>.

KIDV fact sheets Food Safety

This fact sheet is part of a series of KIDV fact sheets on food safety. There are fact sheets on the following subjects:

- Mineral oils in packaging materials
- Bisphenol A in packaging materials
- Microplastics in packaging materials
- Heavy metals in packaging materials

- NIAS – Not-intentionally added substances
- Legislation on food contact materials

See also our [dossier page on Food Safety](#) on the KIDV website.