

# CHIRON

## Microplastics

Microplastics are tiny plastic particles, which can be unintentionally formed as a result of the breakdown of larger plastics.<sup>1</sup> Some plastics are deliberately designed to be small. They are known as microbeads and are used in many health and beauty products, such as exfoliating beads in facial or body scrubs.

Once in the environment, microplastics do not biodegrade. Instead, they accumulate in animals, and aquatic life, and are consequently consumed as food by humans.<sup>2</sup> As an emerging environmental pollutant, little is known about the impact of microplastics and whether they are harmful to human or animal health.<sup>1</sup>

Microplastics are officially defined as plastics less than five millimetres (0.2 inches) in diameter.<sup>1</sup> An even smaller group of plastics known as nanoplastics, which measure at just 100 nanometres or less, are also contaminating our environment.<sup>3</sup> A third group of larger plastics pollutants, called macroplastics, are typically categorised as anything greater than 5 millimeters.



# What are the concerns?

Plastic pollution is globally recognised as a planetary boundary threat to humans and our environment.

Our beaches and marine sediments are contaminated, organisms have plastic particles in their stomachs, and microplastics are found in our drinking water and food. Plastic pollution is a widespread issue; microplastics have been found as far away as Antarctica, and as closely as in our own blood.

Microplastic and nanoplastic accumulation poses a great risk to the environment. Because of their small size, their bioavailability increases, meaning they can potentially impact many more species than larger objects, like macroplastics.<sup>4</sup>

There is concern surrounding the toxicity of plastic ingestion, and the potential risks microplastics pose to organisms in aquatic habitats, threatening biodiversity and potentially human health.<sup>5</sup>

## The PRefs® Project

PRefs®, established in partnership with Innovation Norway and Chiron, is an evolving portfolio of plastic reference materials consisting of the six most environmentally prevalent plastics: PE, PET, PS, PP, PVC and PC, with particle size distribution ranging from 50-300 micron.



PRefs® will produce plastic reference materials to support researchers in establishing polymer types, particle size, quantity of particles present and mass of polymers present.

The three sub-brands, MacroPRefs®, MicroPRefs® and NanoPRefs®, will each specialise in microplastics of different sizes and provide its own respective reference materials.

The logo for MacroPRefs. It features the word "Macro" in a bold, red, sans-serif font, with a light red circle behind the letter "M". Below "Macro" is the word "PRefs" in a bold, blue, sans-serif font.

**Macro**  
**PRefs**

The logo for MicroPRefs. It features the word "Micro" in a bold, green, sans-serif font, with several small green dots above the letters "i", "c", and "o". Below "Micro" is the word "PRefs" in a bold, blue, sans-serif font.

**Micro**  
**PRefs**

The logo for NanoPRefs. It features the word "Nano" in a bold, dark blue, sans-serif font, with several small dark blue dots above the letters "n", "o", and "o". Below "Nano" is the word "PRefs" in a bold, blue, sans-serif font.

**Nano**  
**PRefs**

# How are they monitored and regulated?

**Several countries, including Australia, Canada, Italy, Korea, New Zealand, Sweden, the UK and the US have approved or proposed national bans on the intentional use of microplastics in consumer products. The bans mainly prohibit the use of microbeads in cosmetics, where microplastics are used as abrasive and polishing agents.<sup>2</sup>**

The Netherlands were the first country to introduce a ban on microbeads in cosmetic products in 2014.<sup>6</sup> Products containing deliberately designed microplastics, or microbeads, were banned from being manufactured in the UK from January 2018, and banned from sale in June 2018.<sup>7</sup>

In 2016, the European Food Safety Authority (EFSA) identified the need to gather more data on the occurrence levels of microplastics in food and their potential effects on human health. The EFSA held a scientific colloquium in 2021 to discuss the current state of play and ongoing research in the field.

The concluding remarks of a session on microplastic analytical challenges, acknowledged that standards and reference materials were critical for method development, quality control and laboratory development.<sup>8</sup>

In January 2019, ECHA proposed a wide-ranging restriction on microplastic intentionally placed in products in the EU/EEA market. The proposal is expected to prevent the release of 500,000 tonnes of microplastic over 20 years.<sup>2</sup>

Discussions between the REACH Committee and EU Member States prompted a vote in favour of the European Commission's proposal in April 2023. Before the restriction can be enacted, it must still under-go a 3-month scrutiny by the European Parliament and the Council before it can be adopted by the Commission. As of July 2024, regulation decisions are yet to be confirmed.<sup>2</sup>



# What does Chiron offer?

## Neat

Chiron No.	Name	Synonym	CAS
15246.X	MicroPrefs® Polyethylene (50-300 µm)	MicroPrefs® PE (50-300 µm)	9002-88-4
15247.X	MicroPrefs® Polyethylene terephthalate (50-300 µm)	MicroPrefs® PET (50-300 µm)	25038-59-9
15248.X	MicroPrefs® Polystyrene (50-300 µm)	MicroPrefs® PS (50-300 µm)	9003-53-6
15249.X	MicroPrefs® Polypropylene (50-300 µm)	MicroPrefs® PP (50-300 µm)	9003-07-0
15250.X	MicroPrefs® Polyvinylchloride (50-300 µm)	MicroPrefs® PVC (50-300 µm)	9002-86-2
15251.X	MicroPrefs® Polycarbonate (50-300 µm)	MicroPrefs® PC (50-300 µm)	25037-45-0
15558.6-KIT	MicroPrefs® KIT containing PE, PET, PS, PP, PVC, PC (50-300 µm)	KIT MicroPrefs® (50-300 µm)	n/a

## Tablets, single polymer

15459.X-TAB	MicroPrefs® Blank tablet	Blank tablet for microplastic singles and mixes	n/a
15247.X-50/300-TAB	MicroPrefs® Polyethylene terephthalate tablet (50-300 µm)	MicroPrefs® PET tablet (50-300 µm)	25038-59-9
15249.X-50/300-TAB	MicroPrefs® Polypropylene tablet (50-300 µm)	MicroPrefs® PP tablet (50-300 µm)	9003-07-0

## Tablets, mixed polymers

S-5401-50/300-TAB	MicroPrefs® Tablet: Mix of PE, PET, PS (50-300 µm)	PE, PET, PS (50-300 µm)	n/a
S-5402-50/300-TAB	MicroPrefs® Tablet: Mix of PP, PVC, PC (50-300 µm)	PP, PVC, PC (50-300 µm)	n/a

For a quotation, please contact us today at [sales@chiron.no](mailto:sales@chiron.no)

## References

1. Microplastics - National Geographic | <https://education.nationalgeographic.org/resource/microplastics/> | Accessed 2023
2. Microplastics - ECHA | <https://echa.europa.eu/hot-topics-microplastics> | Accessed 2023
3. What is a nanoplastic? - National Library of Medicine | <https://pubmed.ncbi.nlm.nih.gov/29370948/#:~:text=We%20define%20nanoplastics%20as%20particles,-from%201%20to%201000%20nm> | 2019
4. What are microplastics? - The Ocean Cleanup | <https://theoceancleanup.com/faq/what-are-microplastics-and-macroplastics-and-why-may-they-be-harmful/> | Accessed 2023
5. Microplastics as contaminants in freshwater environments - Science Direct | <https://www.sciencedirect.com/science/article/pii/S1642359320300367> | 2020
6. Microbeads in cosmetics - OECD | <https://www.oecd.org/stories/ocean/microbeads-in-cosmetics-609ea0bf/> | 2020
7. World leading microbeads ban comes into force - GOV.UK | <https://www.gov.uk/government/news/world-leading-microbeads-ban-comes-into-force> | 2018
8. Definition of micro and nanoplastics & analytical challenges - European Commission | <https://www.efsa.europa.eu/sites/default/files/2021-05/4.definition-micro-nanoplastics-gilliland.pdf> | Accessed 2023

**CHIRON**

Chiron AS | Arkitekt Ebbells veg 22 | Bygg D | 7041 Trondheim | Norway

☎ +47 73 87 44 90 ✉ [sales@chiron.no](mailto:sales@chiron.no) 🌐 [www.chiron.no](http://www.chiron.no)