

APPENDIX 2: SUMMARY OF PUBLISHED DEFINITIONS OF MICROPLASTIC INGREDIENTS (MPIS)

Source	Context	Scope	Criteria																
			Composition	Physical state	Size	Solubility	Degradability												
Leslie (2014)¹	Marine litter science	It should be noted that many synthetic polymers in cosmetic formulations do not fulfil the criteria for microplastic (e.g. polymers that are liquids at normal environmental temperature ranges; water soluble polymeric substances) and that we limit the discussion here to the solid particles that would be considered to be marine litter if they were to reach the marine environment.	<ul style="list-style-type: none"> • Synthetic • Made from plastic 	Solid phase materials (i.e. solid particulates, not liquids)	Small size (up to 5 mm, although they can be even smaller than 1 µm, i.e. nano-sized)	Insoluble in water	Nondegradable (e.g. according to standardized tests)												
Leslie (2015)²	Marine litter science	Synthetic polymeric ingredients in PCCPs that can be regarded as a 'microplastic', as defined by the international marine litter scientific community ^{3,4}	Synthetic polymers and/or copolymers (plastics)	Solid phase materials (particulates, not liquids)	Small size (maximum 5 mm, no lower size limit is defined)	Insoluble in water	Nondegradable* *Nondegradable refers to the lack of ability of the material to decompose or mineralize at measurable rates. The consequence of being nondegradable is that the material is persistent. No material is expected to last indefinitely.												
Ooms et al. (2015)⁵	Business practice and policy	Included are:	Synthetic materials - conventional plastic materials (also biobased)	Solids and semi-solids: melting T > 20°C	< 5mm	Insoluble in water	Both non-biodegradable and biodegradable												
		Recommended for inclusion:	Expansion to elastomers and silicone rubbers	-	100 nm – 5mm	< 1 mg/L	-												
		Reservations for future considerations:	Expansion to other anorganic polymers	-	-	Research the 1 mg/L threshold	Development of criteria for biodegradability within representative conditions												
Verschoor et al. (2016)⁶	Regulation	A review of existing proposals and working definitions indicates that there are five major elements that should be specified in order to determine whether a compound is a microplastic:	Synthetic polymer-based materials	A substance that is not a liquid or a gas	< 5mm	<1 mg/L	<table border="1"> <thead> <tr> <th>Compartment</th> <th>Half-life</th> </tr> </thead> <tbody> <tr> <td>Marine water</td> <td>< 60 days</td> </tr> <tr> <td>Fresh or estuarine water</td> <td>< 40 days</td> </tr> <tr> <td>Marine sediment</td> <td>< 180 days</td> </tr> <tr> <td>Fresh or estuarine sediment</td> <td><120 days</td> </tr> <tr> <td>Soil</td> <td><120 days</td> </tr> </tbody> </table>	Compartment	Half-life	Marine water	< 60 days	Fresh or estuarine water	< 40 days	Marine sediment	< 180 days	Fresh or estuarine sediment	<120 days	Soil	<120 days
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Selected threshold values were adopted or derived from widely used and accepted legal frameworks:	ISO ⁷ , REACH ⁸	UN-GHS ⁹	MSFD ¹⁰	REACH ¹¹	REACH ¹²														

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- ⁶ Verschoor A, de Poorter L, R Dröge, Kuenen J Falcon E (2016). Emission of microplastics and potential mitigation measures - Abrasive cleaning agents, paints and tyre wear. RIVM Report 2016-0026. National Institute for Public Health and the Environment: Bilthoven, Netherlands.
- ⁷ International Organization for Standardization (2013). ISO 472:2013 Plastics – Vocabulary.
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- ⁹ UNECE (2013). Globally Harmonised System of Classification and Labelling of Chemicals. Fifth revised edition http://www.unece.org/trans/danger/publi/ghs/ghs_rev05/05files_e.html Retrieved 15/12/2016
- ¹⁰ European Commission (2008). Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive). Official Journal of the European Union, L164, 19-40.
- ¹¹ ECHA (2014). Guidance on Information Requirements and Chemical Safety Assessment. Chapter R.7a Endpoint specific guidance. Report no. ECHA-14-G-03-EN.
- ¹² European Commission (2007). REACH Annex XIII. Criteria for the identification of persistent, bioaccumulative and toxic substances, and very persistent and very bioaccumulative substances.