For our Environment

Umwelt Bundesamt

DRAFT of the 4th Amendment of xx.xx.2025

BASIS FOR ASSESSMENT

Assessment Guideline for enamels and ceramic materials in contact with drinking water (Enamel and Ceramics Assessment Guideline)[1,2]

[1] Notified in accordance with Directive (EU) 2015/1535 of the European Parliament and of the Council of 9 September 2015 laying down a procedure for the provision of information in the field of technical regulations and of rules on Information Society services (OJ L 241, 17/9/2015, p. 1).

[2] Notified under 2025/xxx/D

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Amendments

The following amendments shall be made:

I. In Point 1, the following sentence is added at the end:

The Federal Environment Agency will withdraw these evaluation criteria by 31 December 2032.

II. In Table 5 under Point 6.2.1, the maximum content of barium oxide is increased from 12 to 16%:

Substance	Content in % Min.	Max.
BaO	0	16

III. In Point 6, a new Chapter 6.3 “Coatings” is inserted. This is now changed from 6.3 to 6.3.1 and a new entry ‘6.3.2 Zirconium coatings’ is added:

6.3 Coatings

6.3.1 Mixed metal oxide (MMO) coatings

Titanium external flow anodes for cathodic protection of the inside of storage drinking water heaters made of enamelled, low-alloy steel or stainless steel and titanium external flow anodes for cathodic protection of filter vessels in drinking water treatment made of non-alloy steel (outside the drinking water installation with a permanent flow) or low-alloyed steel with mixed metal oxide coatings of iridium oxide (IrO_2) and tantalum oxide (Ta_2O_5) in a mass ratio between 50%: 50% and 85%: 15% (m/m) are covered.

The application of the titanium anode coatings involves the following manufacturing steps:

The surface of the titanium is degreased to remove impurities and adjust surface roughness, wetly etched (e.g. with hydrochloric acid) and/or sandblasted. After rinsing and drying, an aqueous or alcoholic solution of the salts of iridium and tantalum (e.g. H_2IrCl_6 und $TaCl_5$) is applied by spraying or immersion. Then it is dried at approx. 100 °C. After that, the titanium substrates are calcinated at approx. 500 °C, whereby the oxides of the iridium and tantalum are formed and organic compounds are evaporated. These steps (application of salts, drying and calcination) are repeated until the maximum layer thickness of 20 µm is reached.

If the products described are manufactured as described above, it is not necessary to check the products in accordance with Chapter Error: Reference source not found.

6.3.2 Zirconium oxide coatings

Metallic materials can be coated with zirconium oxide by means of physical vapour deposition (PVD process). The coating can be evaluated as a ceramic coating. The composition of the coating must comply with Table 4 and a test of the products or components in accordance with Chapter 8 is necessary.

IV. <u>The 6th sentence under Point 7.2 is replaced by the following sentence</u>:

Borosilicate glass may only contain either the ingredients listed in Table 2 or, as an alternative, the ingredients listed in Table 1.

V. <u>A new paragraph is added in Point 7.2</u>:

Zirconium oxide coatings may only contain the ingredients listed in Table Error: Reference source not found. The specified content is mandatory but may be modified upon request. Lead and cadmium may be present only as auxiliary substances in small quantities that are technically unavoidable and have not been added intentionally. The content of lead and cadmium must each be less than 0.02% (m/m) and expressed in the composition.

VI. <u>In Point 8.2, a new Point 8.2.6 is inserted:</u>

8.2.6 Zirconium oxide coatings

An analysis of the composition of the component or sample must be undertaken. The purpose of the analysis of the composition is:

1. to check the requirement that the composition of the coating corresponds to the appropriate positive list (see Table Error: Reference source not found),
2. defining the elements to be assessed in the migration water; and
3. identifying the product.

VII. <u>In Point 8.3.4, a new paragraph is added:</u>

Zirconium oxide coatings

Elements of the coating with a criterion in accordance with Table 11 shall be determined. The lead and cadmium content of the migration water quantities being analysed should also be determined. The analysis shall be performed by means of an appropriate measurement method, e.g. ICP-MS in accordance with DIN EN ISO 17294-1.