



## Materials intended to come into contact with food

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Copper materials are also used in applications that come into contact with food. Definitions, general requirements and labelling obligations for articles intended to come into contact with food are largely harmonised in food law. They are formulated in the "Regulation (EC) 1935/2004 of the European Parliament and of the Council of 27 October 2004 on materials and articles intended to come into contact with food". ([http://www.rechtliches.de/EU/info\\_LMMatGegVO.html](http://www.rechtliches.de/EU/info_LMMatGegVO.html)).

### Legal framework

This regulation describes the Community framework for the manufacture and placing on the market of food contact materials and articles and creates the legal basis for further implementing legislation at (European) Community level to specify individual material areas. The regulation defines food contact materials and articles as "finished products which are intended to come into contact with food or which are already in contact with food or can reasonably be expected to come into contact with food or to transfer constituents to food under normal or foreseeable conditions of use" (Art. 1 para. 2 VO 1935/2004). In this respect, food law requirements only apply to objects or materials that come into direct or indirect contact with food, but not to parts of machines and complex systems that are not intended to come into contact with food (e.g. housings).

In Germany, the legal requirements are laid down in (the respectively updated) versions of the "Lebensmittel-, Bedarfsgegenstände- und Futtermittelgesetzbuch" (LFGB, <http://www.gesetze-im-internet.de/lfgb/index.html>) as well as the "Bedarfsgegenstände-Verordnung" (German Ordinance on Commodities) (<http://www.gesetze-im-internet.de/bedggstv/index.html>).

The above-mentioned European and German regulations define boundary conditions, but do not make any concrete statements on material evaluation. In recent years, activities of the CoE (Council of Europe) have devoted themselves to this initially somewhat unsatisfactory situation, resulting in a compilation of corresponding guidelines (<https://www.edqm.eu/en/Cosmetics-packaging-guides-1486.html>). This overview also contains references to specifics for metals and alloys. This will be discussed in the following [sections](#).



### Migration studies & certification for metals and alloys

For desired certifications, studies on substance migration and compliance with limit values are required. Authorized and certified laboratories must be commissioned for this purpose.

The corresponding Guidance Document of the CoE can be found in extracts at [https://www.edqm.eu/medias/fichiers/list\\_of\\_contents\\_metals\\_and\\_alloys\\_1st\\_edition.pdf](https://www.edqm.eu/medias/fichiers/list_of_contents_metals_and_alloys_1st_edition.pdf).

(Unfortunately the complete document must be purchased).

### Specific characteristics of copper and copper alloys

If materials made of copper and/or copper alloys are to be used for the processing, transport or storage of food, the suitability of these materials for contact with (specific) foodstuffs must – as for other materials – be clarified with the supplier (and should follow the above document). Taking into account possible corrosion processes and/or the migration of metals, a classification is suitable for this purpose, according to which the areas of application of copper and copper alloys for specific food and food compositions are defined. This should be done with the aid of empirical values and the results of the tests described in the above-mentioned Guidance Document. If necessary, a case-by-case examination should be carried out.

Like iron or zinc, copper functions as an essential trace element in plants and animals and is therefore a natural component of most foods and can therefore be detected in the food itself. Consequently, copper contents found in food analyses are not necessarily due to migration from the material used. Rather, the respective concentration proportions (naturally occurring vs. migration-related) must be estimated and attention must be paid to compliance with the migration limits.

### Further criteria for the selection of suitable copper materials

In some cases, when a food comes into contact with copper or copper-containing alloys, copper components can be dissolved out of the corresponding material. Care must therefore be taken to ensure that the quantity of material that may be dissolved does not exceed the technically unavoidable level, and that the (health-related) migration values are not exceeded.

Especially contact with acidic foods (e.g. fruit juices, jams, salads, pickled food) can increase the migration rate in a self-explanatory way and therefore requires a particularly intensive and targeted assessment.

Nevertheless, in principle many copper materials are suitable for use in the food sector. There is a wealth of past and present experience regarding the contact of food with copper materials:

- Pure copper tableware/vessels are needed in the production of certain types of cheese. Many types of cheese (e.g. Emmentaler, Appenzeller) require contact with copper during the maturing process. Metabolic processes that influence the taste are controlled by copper ions that are released. Phosphorus-deoxidised copper (Cu-DHP) is also used in the food sector.
- The successful use of various copper materials is described for seawater desalination and the extraction of common salt.
- Some copper-aluminium as well as copper-tin alloys are required for the production of specific structural parts in the food industry.



## Special case drinking water

Materials and products that come into contact with drinking water are subject to separate legislation at both European and national level and must therefore also be mentioned in a separate sub-chapter.

Based on Article 10 of the European Drinking Water Directive 1998 and - in Germany - the Drinking Water Ordinance (TrinkWW) today there is, among other things, a positive list for metals and metal alloys, which - taking into account the respective application in drinking water - is not only valid in Germany.

This list is the result of a very long process of unification in Europe (which has not yet been fully completed). The very complex events and details cannot and should not be discussed here. The following link provides direct access to the list [http://www.umweltbundesamt.de/sites/default/files/medien/376/dokumente/bewertungsgrundlage\\_fuer\\_metallene\\_werkstoffe\\_im\\_kontakt\\_mit\\_trinkwasser\\_0.pdf](http://www.umweltbundesamt.de/sites/default/files/medien/376/dokumente/bewertungsgrundlage_fuer_metallene_werkstoffe_im_kontakt_mit_trinkwasser_0.pdf).

The positive list itself is constantly being expanded to include materials that have successfully completed a very long and complex test procedure and thus demonstrated their suitability for use in the drinking water sector. Valuable information on the background and status of European drinking water regulations can be found at <http://www.umweltbundesamt.de/themen/wasser/trinkwasser/trinkwasser-verteilen/erkennung-harmonisierung-4ms-initiative>.

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