Siloxanes in silicone products intended for food contact: Selected samples from the Norwegian market in 2016

Silicone is used in food contact materials due to its excellent physical and chemical properties. It is thermostable and flexible and is used in bakeware and kitchen utensils. Silicone is also used to coat paper to make it water and fat resistant. There is no specific regulation in EU which covers silicone as food contact materials, but in Regulation 1935/2004 on materials intended to come into contact with food it is stated that materials should be manufactured so it do not transfer their constituents to food in quantities which could endanger human health. Silicone may contain residual siloxane oligomers which might migrate to the food when the product is being used. DTU has proposed two action limits for low molecular weight siloxanes in food contact materials. For the sum of cyclic siloxanes D3 to D8 the limits are 12 mg/kg food for adults and 2 mg/kg food for children. For the sum of cyclic siloxanes D3 to D13 and linear siloxanes L3-L13 the limit is 60 mg/kg food. In 49 samples of silicone products intended for food contact from the Norwegian markets content of siloxanes has been measured. Coated paper for baking constituted 8 of the samples and in none of those samples siloxanes were found above the detection limits. In all of the 41 remaining samples siloxanes were found in content above the quantification limits. The siloxanes were predominately cyclic siloxanes. The types of products were baking moulds and mats, muffin cups, kitchen utensils, boxes and teats. Compared to the proposed actions limits for the sum of D3 to D8 and for the sum of D3 to D13 plus L3 to L13, 24 of the samples exceeded these limits. However, the contents were determined by extraction of the total amount of the analysed siloxanes. After migration test to evaluate the migration of siloxanes into a food simulant it could be concluded, that none of the samples would exceed the action limits based on migration estimation. The silicone product exhibited a wide range of siloxane concentrations and a hypothesis could be that the products with the highest siloxane content were not properly cured. Based on the available sample documentation obtained from the producers it was not possible to draw any conclusion about this aspect.

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