Intended Application of the Substance

In this guide

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Food Contact Material

39. Calcium tert-butylphosphonate is intended to be used as a nucleating agent in the manufacture of polyolefin food contact materials and articles including polypropylene (PP), linear low-density polyethylene (LLDPE), low-density polyethylene (LDPE) and high-density polyethylene (HDPE), at a maximum level of 0.15 weight per cent of the polyolefin.

Technological Function/Maximum Process Temperature

40. The relevant supporting information for this section was submitted by the Applicant.

41. In PP, calcium tert-butylphosphonate reduces the processing cycle time of injection moulded parts, thereby increasing the stiffness of the part, and, to a greater degree, reducing the haze of the parts.

42. In PE, including both rigid and film articles, the primary effects of calcium tert-butylphosphonate are highly modified shrinkage properties (indicative of strong nucleation), reduction of haze, increased gloss and/or clarity, and/or reduction of water vapor and oxygen permeation rates. The most desirable functionality of calcium tert-butylphosphonate is demonstrated by the large effects on permeation rate. In HDPE blown film, calcium tert-butylphosphonate functions to significantly reduce the permeation rate of water vapour and oxygen.

43. Polyolefins that contain calcium tert-butylphosphonate will experience a maximum temperature of 190°C during extrusion and 230°C during injection moulding.

Maximum Percentage in Formulation

44. Calcium tert-butylphosphonate will be used at a maximum level of 0.15 weight percent (1.5 mg/kg) in polyolefins.

Contact with Food

45. Polyolefins containing calcium tert-butylphosphonate will be used in contact with all types of food (i.e. dry, aqueous, acidic, alcoholic, and fatty), including infant formula and human milk.

Contact Time and Temperature

46. Calcium tert-butylphosphonate is intended to be used in polyolefins in contact with food without limitations on temperature. Actual temperature contact conditions will be limited only by the physical and chemical properties of the finished polymer containing calcium tert-butylphosphonate at the target use level.

47. Polyolefins containing calcium tert-butylphosphonate are expected to contact foods at temperatures up to and including 130°C for short durations (e.g. < 15 minutes), such as microwave applications (excluding susceptor (i.e. microwaving with a metallic-film cover) applications), as well as longer durations of up to 2 hours cooking and storage, where the polymer remains stable in contact with food at temperatures up to and including 100°C.

Migration

48. In migration studies, the conventional surface-to-volume ratio of 6 dm2/kg was used.

Treatment of food contact material prior to use

49. No specific treatment of polyolefins containing calcium tert-butylphosphonate (e.g. sterilisation, cleaning, rinsing, irradiation) is required prior to use in contact with food. The finished polyolefin should otherwise be technically suitable for the intended use in food contact applications