United States Patent Office

3,196,027

Patented July 20, 1965

3,196,027

COATING MATERIALS FOR INTERIOR OVEN SURFACES

Harrison James White, Cambridge, and Albert M. Creighton, Jr., Manchester, Mass., assignors to Chemical Development Corporation, Danvers, Mass., a corporation of Massachusetts

No Drawing. Filed Aug. 15, 1962, Ser. No. 216,992

2 Claims. (Cl. 106—287)

This invention relates to coating composition comprising a film-forming dimethylpolysiloxane admixed with a suitable volatile vehicle. This composition is useful for providing a continuous coating on metallic or porcelain interior oven surfaces to prevent the adhesion of food particles and cooking vapors to such surfaces when various foods are baked in the oven. The composition of the invention can also be used on the exterior of baking pans and other cooking surfaces.

A preferred embodiment of this invention is to incorporate a finely divided inorganic bodying agent in the composition to prevent films cast from the composition from running or sagging, and to improve the grease resistance of the film. It is also preferred to apply the film by means of an aerosol type of propellant system.

In accordance with the invention, a heat resistant protective film which does not smoke or deteriorate at elevated temperatures is applied to cooking surfaces. It produces a uniform smooth coating on metal, glass, and ceramic surfaces that effectively prevents cooking vapors and particles such as arise from animal greases and fats, sugar and other foods upon being heated to elevated temperatures from forming a bond with the treated surfaces.

The product of the present invention is non-inflammable, non-injurious to humans when used as directed and is completely odorless.

Products which have been applied to cooking surfaces for the same purpose as the present invention heretofore have not been entirely satisfactory, because after short cooking periods the fluids adhere, and at high temperatures, these compositions produce smoke and lose their characteristic to release the spattered food products from the wall of the oven.

The novel composition provided by the present invention has been found to be capable of application by means of an aerosol in which the composition is packed with a suitable propellant to provide a convenient package capable of being operated to produce a uniform coating on the interior of an oven surface by spraying the interior of the oven surfaces before cooking is commenced.

When a uniform coating of the composition of the invention is provided on surfaces of an oven prior to cooking, adhesion of the spattered and vaporized cooking materials to such surfaces is prevented. The cooking wastes deposited upon the surfaces coated by the material of the invention can be readily removed by washing after baking.

For further comprehension of the invention and of the objects and advantages thereof, reference will be had to the following description and to the appended claims in which the various novel features of the invention are more particularly set forth.

In accordance with a preferred form of the invention, a film-forming silicone of a selected molecular weight is combined with a suitable solvent and preferably with a bodying agent to form the composition of the invention. This composition can be used by coating the oven surfaces by wiping or brushing but preferably is applied from an aerosol in which the composition is charged with a suitable propellant.

The silicone material is selected from a range of molecular weights which correspond to a viscosity between 100 to 100,000, preferably 200 to 5000, centistokes at room temperature. This silicone is mixed in ratio from 1% to 30% with a suitable solvent such as methylene chloride. This composition is charged in an aerosol type dispenser with between 60 to 80 parts per hundred of Freon propellant.

Example I

	Percent by weight
Dimethylpolysiloxane (molecular weight for 400 centistokes viscosity)	10
Methylene chloride	90

The above materials consisting of the selected silicone composition and the solvent are mixed together by agitation in a suitable container and at room temperature. The composition so produced is capable of wetting the entire oven surface of ceramic or metal or porcelainized material to produce a continuous impervious coat capable of withstanding the temperatures of baking and preventing the food sticking.

An aerosol type dispensing system is prepared by mixing the above composition with a Freon propellant. The Freon propellant consists of 50 parts of Freon-12 and 50 parts of Freon-11 produced by the E. I. du Pont de Nemours & Company. Twenty parts of the coating composition together with the 80 parts of Freon propellant are charged into a conventional aerosol container to provide a hand-held package with a finger-operated valve for spraying the composition over the interior surface of an oven or similar surface.

By use of the invention prior to cooking, a uniform coating without voids is produced which effectively prevents food materials from adhering to the oven surfaces. After the oven has been used for baking foods, the entire coating on the oven wall can be readily removed by washing with a conventional soap or detergent.

Example II

Ten parts by weight of the dimethylpolysiloxane of Example I is mixed with 89 parts of methylene chloride and 1 part of an inorganic bodying agent, a finely divided silica aerogel (Cab-O-Sil, The Cabot Corporation). This composition is then mixed with 80 parts by weight of the Freon propellant of Example I. The film from this composition is resistant to sagging and presents a surface that is more impervious to grease. In the range of 0.5 to 10 weight percent, based on the silicone, of an inorganic bodying agent can be used in the composition of this invention.

When the percentage of Freon propellant employed is below about 60%, the coating tends to be nonuniform and contains voids. The coating is still satisfactory at the inception of this condition, but further reduction of the propellants is not recommended.

While preferred embodiments of the invention has been described, it will be understood that it is not intended to limit the invention to the precise examples herein disclosed. The invention is to be considered as having a scope which includes the changes and modifications falling within the definition of the appended claims.

We claim:

1. An aerosol composition for coating interior oven surfaces with a clear nonsetting, nonsagging, easily removable protective coating comprising 20 to 40 parts by weight of a film-forming mixture consisting essentially of:

(a) a mixture of 1 to 30 weight percent of a dimethylpolysiloxane having a room temperature viscosity in the range of 200 to 5000 centistokes as a film-forming release agent, and the balance a volatile nonflammable halogenated hydrocarbon solvent, and

(b) 0.5 to 10 weight percent based on said dimethylpolysiloxane of a finely-divided silica aerogel, and 60 to 80 parts by weight of a fluorinated methane aerosol propellant.

2. An aerosol composition for coating interior oven surfaces with a clear nonsetting, nonsagging easily removable protective coating consisting essentially of about 80 parts by weight of a fluorinated methane aerosol propellant and 20 parts by weight of a mixture consisting of 10 parts by weight of a dimethylpolysiloxane having a room temperature viscosity of about 400 centistokes, 1 part by weight of a finely-divided silica aerogel and 89 parts by weight of methylene chloride.

References Cited by the Examiner

UNITED STATES PATENTS

2,462,242	2/49	Webb et al.	106—287
2,793,197	5/57	Brown	260—33.8

MORRIS LIEBMAN, *Primary Examiner.*