

[72] Inventors **Alfred P. Brill**
5522 E. Tomahawk Drive, Greensboro,
N.C. 27410;
Leroy H. Keiser, 4001 Moorland Drive,
Midland, Mich. 48640
 [21] Appl. No. **879,530**
 [22] Filed **Nov. 24, 1969**
 [45] Patented **Oct. 26, 1971**

3,196,027	7/1965	White et al.	106/287 SB
3,271,322	9/1966	Stiles	134/2 UX
3,303,052	2/1967	Hatch et al.	106/2 X
3,460,523	8/1969	Stiles et al.	134/2 UX
3,481,768	12/1969	Gowdy	106/2 X
3,498,922	3/1970	Zisman	134/40 X
3,527,659	9/1970	Keil	117/135.1 X
3,542,574	11/1970	Payne	106/287 SB

[54] **PROCESS FOR CLEANING OVENS AND LIKE DEVICES**
12 Claims, No Drawings

Primary Examiner—Morris O. Wolk
Assistant Examiner—Barry S. Richman
Attorneys—Robert F. Fleming, Jr., Laurence R. Hobey, Harry
 D. Dingman, Howard W. Hermann and Jack E. Moermond

[52] U.S. Cl. **134/29,**
106/2, 106/287 SB, 117/135.1, 134/2, 134/4,
134/6, 134/22 R, 134/39, 134/40, 134/42
 [51] Int. Cl. **B08b17/02,**
B08b 3/08, C09k 3/00
 [50] Field of Search. **134/2, 4, 6,**
29, 40, 42, 22 R, 39; 106/2, 287 SB; 117/135.1

[56] **References Cited**
UNITED STATES PATENTS
 2,473,887 6/1949 Jennings et al. 106/2 X
 2,743,192 4/1956 White

ABSTRACT: A process for cleaning food spills from ovens and the like devices which comprises the steps of applying a composition which consists essentially of from 1 to 35 percent by weight of a polydimethylsiloxane having a viscosity of at least 3000 cs. at 25°C., from 0.5 to 5.5 percent by weight of a siloxane resin composed of SiO_{4/2} units and (CH₃)₃SiO_{1/2} units in the ratio of 1:0.6–1.2, from 0.1 to 9 percent by weight of a metal oxide, and the balance solvent, to the clean and essentially dry surfaces of the oven or like device, and then, after the oven or device has been employed one or more times for heating food, cleaning the food spills therefrom, said cleaning being facilitated by said composition.

PROCESS FOR CLEANING OVENS AND LIKE DEVICES

The care and cleaning of ovens is a difficult and usually thankless task, particularly for the housewife. Attempts to make this task easier can be classified into three or four basic categories. In one category there is the pyrolytic ovens which are "self-cleaning" in nature. Such ovens are cleaned by heating the interior of the oven to such a high temperature that any food spills are oxidized or burned away. Aside from any inadequacies of the cleaning job that such ovens do, they have the obvious disadvantages attendant to the use of high temperatures, namely, providing ample insulation to prevent damage from heat or a fire and means for ventilating and cooling the surrounding areas. The problems inherent in the pyrolytic ovens has led to the development of the second category which is the self-cleaning catalytic ovens. Catalytic ovens are much the same as pyrolytic ovens, and perhaps should be categorized with them, but by one means or another they provide for the presence of a catalyst on the interior surfaces whereby the pyrolytic oxidation and/or burning away of food spills is supposedly achieved at lower temperatures. However, these catalytic ovens do not entirely overcome the above problems of the pyrolytic ovens and are less than thorough in cleaning away food spills.

In the third category there are the chemical compositions which when applied to the soiled oven surfaces are supposed to remove the food spills. Basically these compositions usually contain strong or harsh alkaline detergents and/or solvents. The problem with this approach has been that the compositions will remove some types of food spills but not the full range of food spills encountered by the average housewife. Moreover, when one attempts to formulate a composition which would provide the desired cleaning action in a reasonable amount of time, it has been found that the compositions are too dangerous for safe use in the home.

The processes of cleaning ovens involving application of a substance to the surface of an oven to facilitate the removal of food spills with mild detergents or cleaning agents such as soap constitutes the fourth category. It is into this category which the present invention falls. Early efforts in this area involved the application of silicone resins to the oven surfaces which were then cured to form a film thereon. However, such films became broken during use exposing the oven surface and did not facilitate removal of all types of food spills. Subsequently, the use of silicone fluids was tried for the protection of oven surfaces and while reapplication of this material to any area of the oven where necessary was now practical, these compositions still failed to facilitate removal of all of the basic types of food spills normally encountered.

It is an object of this invention to provide a process for cleaning ovens and the like devices whereby the removal of food spills therefrom is facilitated.

Another object of this invention is to provide a process for cleaning industrial ovens and similar devices which are employed for baking, cooking and heating foods and from which food spills must be periodically removed whereby the cleaning of the food spills therefrom is facilitated.

Still another object of this invention is to provide a composition for use in the above process which aids in the cleaning process.

Other objects and advantages of this invention will be apparent to those skilled in the art from the following detailed description.

This invention relates to a process for cleaning food spills from ovens and the like devices which comprises the steps of applying a composition which consists essentially of from 1 to 35 percent by weight of a polydimethylsiloxane having a viscosity of at least 3000 cs. at 25° C., from 0.5 to 5.5 percent by weight of a siloxane resin composed of $\text{SiO}_{4/2}$ units and $(\text{CH}_3)_3\text{SiO}_{1/2}$ units in the ratio of 1:0.6-1.2, from 0.1 to 9 percent by weight of a metal oxide, and the balance solvent, to the clean and essentially dry surfaces of the oven or like device, and then, after the oven or device has been employed one or more times for heating food, cleaning the food spills therefrom, said cleaning being facilitated by said composition.

In the process, the composition can be applied to the desired surfaces, for example those of an oven, by any of the conventional means for applying materials. For example, the composition can be brushed, dabbed, wiped or sprayed onto the surface. Probably the most convenient means of applying the composition and obtaining a relatively uniform application is via an aerosol. Any of the well-known propellants used in aerosols, such as isobutane, nitrogen, nitrous oxide and the halocarbons, can be employed. The halocarbon propellants are preferred. When the composition is applied, the surface should be both clean and essentially dry. The exact amount of the composition applied to the surface to be treated is not critical but should be enough to form a substantially complete coating on the surface. More than this can be applied but is not known to provide any additional benefit. After application it is best to allow a waiting period of 20 to 30 minutes before use of the oven.

Once the composition employed in the process is applied to the surface it does not cure but as a general rule forms a tacky or wet coating thereon. After use of the oven or other device one or more times, with attendant food spillage, the spills are removed. Cleaning or spill removal can be by any of the usual means employing a mild detergent and in most instances using only warm soapy water and a dish cloth, paper towel or sponge. In the event of a stubborn spill, this can be removed with a plastic scrubber and minimal effort. One of the advantages of the process of this invention is that it is not necessary to clean the oven after each use or spill but it can be cleaned weekly, monthly or even less often (depending on usage) without worrying about the food spills baking onto the surface. Moreover, it is not necessary to heat the oven to high temperatures, cleaning being accomplished in a cold (i.e., room temperature) oven. However, once one spot cleans or thoroughly cleans the surfaces it is necessary to apply more of the composition to insure proper performance.

The composition employed in the process of this invention for facilitating the cleaning of ovens and the like devices consists essentially of from 1 to 35 percent by weight of a polydimethylsiloxane having a viscosity of at least 3,000 cs. at 25° C., from 0.5 to 5.5 percent by weight of a siloxane resin composed of $\text{SiO}_{4/2}$ units and $(\text{CH}_3)_3\text{SiO}_{1/2}$ units in the ratio of 1:0.6-1.2, from 0.1 to 9 percent by weight of a metal oxide, and the balance solvent.

In the basic composition the first essential component is a polydimethylsiloxane having a viscosity of at least 3,000 cs. at 25° C. So far as is known at this time there is no critical upper limit as to the viscosity of this siloxane and even polydimethylsiloxane gums (a gum being a material having a viscosity greater than 1,000,000 cs. at 25° C.) can be employed. For best results, however, it is preferred that the polydimethylsiloxane be a fluid having a viscosity in the range of about 12,500 to 40,000 cs. at 25° C. It should be noted at this point that when the term "viscosity" is employed herein, it can refer to the property of a fluid composed of a single siloxane or of a fluid composed of two or more siloxanes which have been blended together to obtain the desired viscosity. It is not necessary that all of the siloxanes in a blend have a viscosity of at least 3000 cs., i.e. some siloxanes can have viscosities of less than 3000 cs., so long as the ultimate viscosity of the fluid used is at least 3000 cs. So far as is known at this time any polydimethylsiloxane can be employed in the composition of this invention regardless of the method by which it is prepared. Many such siloxanes are commercially available and thus would be the siloxanes normally used. While the polydimethylsiloxane can constitute from 1 to 35 percent by weight of the composition, for best results the amount employed should be within the range of 10 to 15 percent.

The second essential component in the composition is a siloxane resin composed of $\text{SiO}_{4/2}$ units and $(\text{CH}_3)_3\text{SiO}_{1/2}$ units. The ratio of $\text{SiO}_{4/2}$ units to $(\text{CH}_3)_3\text{SiO}_{1/2}$ units in this resin must be within the range of 1:0.6-1.2. This resin is commercially available and can be prepared by various processes known to those skilled in the art. One such process is

described in U.S. Pat. No. 2,676,182 the disclosure of which is incorporated herein by reference. As prepared, this resin normally contains about 2 to 3 percent by weight of silicon-bonded hydroxyl groups, i.e., SiOH groups. It was found quite unexpectedly that when the content of the silicon-bonded hydroxyl groups on the siloxane resin was reduced to less than 1.0 percent by weight, not only was the compositions ability to facilitate the removal of all types of food spills enhanced, but also the period of time over which removal of such spills is facilitated was extended. The content of the silicon-bonded hydroxyl groups in the resin can be reduced in several ways. The simplest way to accomplish this result is to mix a triorganosilylamine or bis(triorganosilyl)amine with the resin as prepared. This results in the replacement of the hydroxyl groups with triorganosilyl groups. This reaction is illustrated by the equations below wherein R represents any hydrocarbon radical. Specific examples of suitable amines are dimethylvinylsilylamine and bis(trimethylsilyl)amine.



The amount of siloxane resin in the composition must be within the range of 0.5 to 5.5 percent by weight and is preferably within the range of 0.75 to 2.5 percent by weight. It should be noted that this resin will usually be incorporated in the composition of this invention in the form of a solvent (for example xylene) solution for ease of handling but that the ranges of resin specified above and elsewhere refers to the resin solids and not the amount of the solution added.

The third essential component in the basic composition described above is from 0.1 to 9 percent by weight of a metal oxide. It is not completely understood how the metal oxide functions in the composition but it is known that its presence, in the above stated quantity, extends the time during which the composition facilitates the cleaning of ovens and the like devices. This component also accelerates the process whereby fat and grease spills tend to shrink in size, crack and peel from the surface when the composition is used. For example, the oxides of vanadium, chromium, molybdenum, manganese, iron cobalt, nickel, copper, aluminum, tin, titanium, silicon, bismuth and cerium can be employed herein.

The fourth essential component, which makes up the balance of the composition, is the solvent. Any solvent can be employed since the function of this component is merely that of a vehicle or means for applying the other components to the desired surface. For reasons of safety, particularly when a household product is involved, it is preferred that the solvent be one which has a high flash point or which is nonflammable, and presents little hazard to physical health. By way of illustration one can employ any of the well known organic (i.e., non-silicone) solvents such as toluene, xylene, petroleum naphtha, acetone, VM & P naphtha, stoddard solvent, mineral spirits, benzene methylisobutyl ketone, butyl alcohol, tetrachloroethane, monochlorobenzene, ethyl acetate, 1, 1, 1-trichloroethane and hexane. At this time it is preferred that the solvent be a hydrocarbon or a halogenated hydrocarbon solvent. The term "solvent" as used herein is intended to include mixtures of solvents as well as a single solvent. As stated above, the solvent makes up the balance of the composition which is from 50.5 to 98.4 percent by weight of the composition.

The compositions employed in the instant process are prepared by simply mixing the ingredients together in the appropriate proportions. So far as is known at this time, there is no critical order in which the ingredients are mixed. With respect to the metal oxide, it has been found that this can best be added by mixing it with the polydimethylsiloxane prior to mixing with the other ingredients. After the composition has been prepared, if it has been standing for some time, it should be shaken well to make sure that the metal oxide is thoroughly dispersed throughout the composition prior to the application of the composition in accordance with the process.

Now in order that those skilled in the art may better understand how the present invention can be practiced, the fol-

lowing examples are given by way of illustration and not by way of limitation. All parts and percents referred to herein are on a weight basis, and all viscosities measured at 25° C., unless otherwise specified.

In the examples the various compositions prepared were evaluated according to the following procedure.

A clean, dry, gray, 4 inch $\times$ 6 inch porcelain panel was placed vertically in an exhaust hood. The composition to be tested was shaken vigorously and poured into a Jet-Pak Spray Unit. The spray unit was shaken and then the composition sprayed onto the panel. The spray operation consisted of slow, sweeping, horizontal motions and moving from top to bottom of the panel. A substantially complete coating of the composition was applied to the panel by this technique.

Next, the panels were placed in an electric oven and heated for about 1/2 hour at 350° F. To these hot panels there was applied a glob of a commercial cherry pie filling and a glob of a commercial cheese paste. Then a warm mixture of hamburger grease and chicken grease was splattered onto the panels using a spatula. These materials are believed believed to represent the most difficult types of food spills to remove.

Both shelves of the oven were used to hold the panels, with the shelves being set at the lowest levels. No more than ten panels were placed on a shelf at one time.

The panels containing the food spills were subjected to a 20 hour variable temperature heating cycle which involved heating for two hours at each of the following temperatures in the order indicated: 300° F., 375° F., 325° F., 400° F., 350° F., 300° F., 375° F., 325° F., 400° F., and 350° F. After the first 10 hours of heating, the shelves were rotated so as to allow equal exposure to the lower heating coil. Twenty hours of heating in this cycle represents approximately 25 $\pm$ 5 calendar days of normal oven usage.

Upon completion of the heating cycle the panels are removed from the oven, allowed to cool to room temperature and then subjectively evaluated for ease of cleaning according to the following rating systems.

Cherry pie filling and cheese spills

Excellent (E)—spill slides from the surface with no crust remaining.

Very Good (VG)—spill slides from the surface with only a few scattered spots of crust remaining.

Good (G)—most of the spill slides from the surface but some effort needed and with a slight amount of crust remaining.

Fair (F)—only one-half or less of the spill removes from the surface with considerable effort needed.

Poor (P)—very little or none of the spill removes from the surface despite considerable effort.

Grease spills

The term "wiping action" as used herein means the use of a moist, soapy, paper towel, cloth, sponge or plastic scrubber to affect a cleaning.

Excellent (E)—splatters break easily and slide from the surface with a slight wiping action.

Very Good (VG)—splatters break easily and slide from the surface after somewhat more wiping action than an excellent rating.

Good (G)—about one-half of the splatters break from the surface after about the same wiping action required for a very good rating.

Fair (F)—only a slight amount of the splatters removed after considerable wiping action.

Poor (P)—splatters are firmly attached to the surface despite considerable wiping action.

The degree of shrinkage of the grease spills was evaluated according to the following scale:

Very Good (VG)

Good (G)

Slight (S)

Very Slight (VS)

Very Very Slight (VVS)

None (N)

The feel of the composition of the panel after the heating cycle and cooling was rated according to the following system.

Dry (D)
Wet or fluid (W)
Slightly Wet (SW)
Very Slightly Wet (VSW)
Tacky (T)
Very Tacky (VT)
Slightly Tacky (ST)
Very Slightly Tacky (VST)

EXAMPLE 1

A series of compositions was prepared which consisted essentially of about 4 percent of various polydimethylsiloxanes with varying viscosities, about 1 percent of a siloxane resin composed of $\text{SiO}_{4/2}$ units and $(\text{CH}_3)_2\text{SiO}_{1/2}$ units in the ratio of 1:0.6-1.2 and containing about 0.66 percent of silicon-bonded hydroxyl groups, about 0.5 percent of manganese dioxide and the balance 1,1,1-trichloroethane as the solvent. The siloxane resin was added as a 68 percent solids solution in xylene. The compositions were prepared by simply mixing the ingredients together.

The above-prepared compositions were evaluated according to the procedure described above and the results are set forth in the table below. The specific nature of the polydimethylsiloxanes employed is also set forth in the table.

EXAMPLE 3

A series of compositions was prepared which consisted essentially of about 4 percent of a polydimethylsiloxane having a viscosity of about 30,000 cs. (prepared by blending 3.33 percent of a 60,000 cs. polydimethylsiloxane and 0.67 percent of a 1000 cs. polydimethylsiloxane), varying amounts of the siloxane resin of example 1, about 0.5 percent of manganese dioxide and the balance 1,1,1-trichloroethane. These com-

10

Composition	Percent siloxane resin	Ease of spill removal			Grease shrinkage	Composition feel
		Cherry pie filling	Cheese	Grease		
A ¹	0.17	E	E	P	N	ST
B ¹	0.34	E	E	P	N	T
C ¹	0.68	E	E	E	S-G	T
D ¹	1.02	E	E	E	S-G	T
E ¹	1.36	E	E	E	S-G	T
F ¹	2.72	E	E	E	G	VT
G ¹	5.44	E	VG	G	S	VT
H ¹	8.16	VG	G	P	VS	VST
I ¹	13.6	VG	VG	P	VVS	D
J ¹	20.4	VG	VG	P	N	D
K ¹	27.3	E	E	P	N	D
L ¹	34.0	VG	E	P	N	D

¹ Included for purposes of comparison.

25

Composition	Polydimethylsiloxane	Viscosity (cs.)	Ease of spill removal			Composition feel
			Cherry pie filling	Cheese	Grease	
A ¹	Hydroxyl endblocked.....	300	VG	G	P	N
B ¹	do.....	1300	P	P	P-F	N
C ¹	do.....	2900	E	E	G	VS
D ¹	do.....	11,000	E	E	E	S-G
E ¹	do.....	18,150	E	E	VG-E	S-G
F ¹	do.....	48,700	E	E	E	G
G ¹	Trimethylsilyl endblocked.....	100	P	P	P	N
H ¹	do.....	200	P	P	P	N
I ¹	do.....	350	G	P	P	N
J ¹	do.....	500	P	P	P	N
K ¹	do.....	1000	G	F	P	N
L ¹	do.....	3000	F	F	VG-E	G
M ¹	do.....	12,500	E	E	F-G	VS
N ¹	do.....	30,000	E	E	E	G
O ¹	do.....	60,000	E	E	E	G
P ¹	do.....	100,000	F	F	E	G
Q ²	do.....	>1,000,000	E	E	G	VS
R ²	do.....	>1,000,000	VG	E	F	VS

¹ Included for purposes of comparison.

² Added as 10% solution in 1,1,1-trichloroethane.

³ Gum.

EXAMPLE 2

A series of compositions was prepared as in example 1 except that the siloxane resin employed contained about 2.4 percent of silicon-bonded hydroxyl groups. These compositions were evaluated as in example 1 and the results are set forth in the table below.

positions were evaluated as in example 1 and the test results are set forth in the table below as well as the amount of resin in the composition.

EXAMPLE 4

A series of compositions was prepared as in example 3 except that the amount of siloxane resin employed was about 1

55

Composition	Polydimethylsiloxane	Viscosity (cs.)	Ease of spill removal			Composition feel
			Cherry pie filling	Cheese	Grease	
A ¹	Hydroxyl endblocked.....	300	E	E	F	N
B ¹	do.....	1300	E	E	F	N
C ¹	do.....	2900	E	E	P	N
D ¹	do.....	11,000	E	E	P	N
E ¹	do.....	18,150	E	E	P	N
F ¹	do.....	48,700	E	E	P	N
G ¹	Trimethylsilyl endblocked.....	100	E	P	P	N
H ¹	do.....	200	E	P	P	N
I ¹	do.....	350	E	F	P	N
J ¹	do.....	500	E	VG	P	N
K ¹	do.....	1000	E	VG	P-F	N
L ¹	do.....	3000	E	E	G-VG	VS
M ¹	do.....	12,500	E	E	G	VVS
N ¹	do.....	30,000	E	E	G	VS
O ¹	do.....	60,000	G	E	G-VG	VS-S
P ¹	do.....	100,000	E	VG	G	VS
Q ²	do.....	>1,000,000	E	E	P	N
R ²	do.....	>1,000,000	E	E	P	N

¹ Included for purposes of comparison.

² Added as 10% solution in 1,1,1-trichloroethane.

³ Gum.

percent and the amount of the manganese dioxide varied. These compositions were evaluated as in example 1 and the test results are set forth in the table below as well as the amount of manganese dioxide in the composition.

Composition	Percent manganese dioxide	Ease of spill removal				Composition feel
		Cherry pie filling	Cheese	Grease	Grease shrinkage	
A.....	0.10	VG	VG	E	G	T
B.....	0.20	F	F	G	S	T
C.....	0.30	E	E	E	S-G	T
D.....	0.50	E	E	E	S-G	T
E.....	0.75	E	E	E	S	T
F.....	1.0	E	E	E	S-G	T
G.....	3.0	E	E	F	N	W
H.....	5.0	E	VG	F	VVS	SW
I ¹	10.0	E	E	F	N	VSW
J ²	20.0	E	E	(2)	N	VSW-D

¹ Included for purposes of comparison.

² Absorbed into coating.

EXAMPLE 5

A series of compositions was prepared as in example 3 except that the amount of siloxane resin employed was about 1 percent and that various metal oxides were employed. These compositions were evaluated as in example 1 and the test results are set forth in the table below as well as the metal oxides employed.

Composition	Metal oxide	Ease of grease spill removal	Grease shrinkage	Composition feel
A.....	MnO ₂	E	VG	T
B.....	MnO ₂	E	G-VG	T
C.....	Co ₂ O ₄	E	S-G	T
D.....	CeO ₂	E	S-G	T
E.....	MoO ₃	E	G-VG	T
F.....	Bi ₂ O ₃	E	G	T
G.....	Cr ₂ O ₃	E	G	T
H.....	Fe ₂ O ₃	E	S-G	T
I.....	V ₂ O ₅	E	G	T
J.....	Al ₂ O ₃	E	G	T
K.....	NiO	E	S-G	T
L.....	CuO	E	VS-S	T
M.....	SnO ₂	VG-E	VS-S	T
N.....	TiO ₂	E	S-G	T
O.....	SiO ₂	G-VG	S	ST

EXAMPLE 6

A series of compositions was prepared as in example 3 except that the amount of siloxane resin employed was about 1 percent and the amount of the polydimethylsiloxane varied. These compositions were evaluated as in example 1 and the test results are set forth in the table below as well as the amount of the polydimethylsiloxane in the composition.

Composition	Percent polydimethylsiloxane	Ease of spill removal				Composition feel
		Cherry pie filling	Cheese	Grease	Grease shrinkage	
A ¹	0.10	P-F	P-F	P	N	D
B ¹	0.20	P	P	P	N	D
C ¹	0.30	E	E	P-F	N	D
D ¹	0.50	E	E	VG-E	S	VST
E ¹	0.75	E	E	VG-E	S	VST
F.....	1.0	E	E	E	S-G	ST
G.....	2.0	E	E	E	G-VG	T
H.....	4.0	E	E	E	G	T
I.....	8.0	E	G	VG	VS-S	T
J.....	12.0	E	E	E	S	T

¹ Included for purposes of comparison.

EXAMPLE 7

A composition was prepared which consisted essentially of about 4 percent of a polydimethylsiloxane having a viscosity of about 30,000 cs. (prepared by blending 3.33 percent of a 60,000 cs. polydimethylsiloxane and 0.67 percent of a 1000 cs. polydimethylsiloxane), about 1 percent of a siloxane resin composed of SiO_{4/2} units and (CH₃)₃SiO_{1/2} units in the ratio of 1:0.6-1.2 and containing about 0.66 percent of silicon-bonded hydroxyl groups, about 0.5 percent of manganese dioxide, about 0.5 percent xylene (solvent in which the siloxane resin was added), about 29 percent 1,1,1-trichloroethane, about 40 percent of trichloromonofluoromethane and about 25 percent of dichlorodifluoromethane, the latter two ingredients functioning as solvents as well as propellants. This composition was placed in an aerosol container. When this composition was applied to the walls of a clean, dry oven, and then the oven used for heating foods, the food spills could be easily removed by cleaning the oven with warm soapy water and paper towels.

That which is claimed is:

1. A process for cleaning food spills from ovens and the like devices which comprises the steps of applying a coating composition which consists essentially of from 1 to 35 percent by weight of a polydimethylsiloxane having a viscosity of at least 3000 cs. at 25° C., from 0.5 to 5.5 percent by weight of a siloxane resin composed of SiO_{4/2} units and (CH₃)₃SiO_{1/2} units in the ratio of 1:0.6-1.2 from 0.1 to 9 percent by weight of a metal oxide, and the balance solvent, to the clean and essentially dry surfaces of the oven or like device, and then, after the oven or device has been employed one or more times for heating food, cleaning the food spills therefrom, said cleaning being facilitated by said composition.

2. A process as defined in claim 1 wherein the metal oxide is selected from the group consisting of the oxides of vanadium, chromium, molybdenum, manganese, iron, cobalt, nickel, copper, aluminum, tin, titanium, silicon, bismuth, and cerium.

3. A process as defined in claim 1 wherein in the composition there is from 10 to 15 percent of a polydimethylsiloxane having a viscosity in the range of 12,500 to 40,000 cs., and from 0.75 to 2.5 percent of the siloxane resin.

4. A process as defined in claim 3 wherein the composition is applied via an aerosol and the cleaning step is performed by contacting the soiled coating with warm soapy water.

5. A process as defined in claim 3 wherein the metal oxide is selected from the group consisting of the oxides of vanadium, chromium, molybdenum, manganese, iron, cobalt, nickel, copper, aluminum, tin, titanium, silicon, bismuth and cerium.

6. A process as defined in claim 5 wherein the metal oxide is manganese dioxide.

7. A process as defined in claim 5 wherein the metal oxide is aluminum oxide.

8. A process as defined in claim 3 wherein in the composition the siloxane resin contains less than 1.0 percent by weight of silicon-bonded hydroxyl groups.

9. A process as defined in claim 8 wherein the composition is applied via an aerosol and the cleaning step is performed by contacting the soiled coating with warm soapy water.

10. A process as defined in claim 8 wherein the metal oxide is selected from the group consisting of the oxides of vanadium, chromium, molybdenum, manganese, iron, cobalt, nickel, copper, aluminum, tin, titanium, silicon, bismuth and cerium.

11. A process as defined in claim 10 wherein the metal oxide is manganese dioxide.

12. A process as defined in claim 10 wherein the metal oxide is aluminum oxide.

* * * * *

U.S. PATENT OFFICE
UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,615,826

Dated: 10/26/71

Alfred P. Brill and Leroy A. Keiser

It is certified that errors appear in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

No Assignee is given for this patent, please add

"Assignee - Dow Corning Corporation
Midland, Michigan"

This assignment was recorded in the United States Patent Office on March 31, 1971 on Reel 2705, Frames 644, 645.

Signed and sealed this 2nd day of May 1972.

(SEAL)
Attest:

EDWARD M. FLETCHER, JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents