

7

PATENT SPECIFICATION

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(54) RELEASE COATINGS

- (71) We, THE PRESTIGE GROUP LIMITED, a British company of, Prestige House, 14—18, Holborn, London E.C.1. do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—
- This invention relates to a process for producing release coatings, that is coatings of the kind which are used, for example, on non-stick kitchen utensils and which rely upon the properties of the range of resins which are normally referred to as silicones of which methyl phenyl silicone is a typical example.
- Attempts have been made to produce coloured release coatings but these have always been unsuccessful due to the reduction in release properties caused by the addition of pigment to the silicone resins. Coatings of this kind are suitable for use on baking tins and other similar kitchen utensils and the object of the present invention is to provide a method of producing a successful coloured release coating.
- According to the present invention a process for producing a coloured release coating on an article includes first applying a pigmented synthetic resin base coating material and partly curing it sufficiently to allow adherence but prevent cross transfer of the pigment to a top coating of unpigmented silicone resin material which is subsequently applied over it, and then fully curing both coatings.
- The invention thus involves a two-stage coating process where the base coat is a pigmented resin material coating and the top coat resin material only, thus achieving colour but retaining the release characteristics of the silicone in the top coating. If desired the gloss level of the top coat resin can be controlled with a suitable addition of matting base. Also if desired the base coat can include resins, single or in combination, to provide reinforcement, such as epoxy or styrene-maleic anhydride resins.
- The process may be used with short cure silicones or other silicone resins could be used with appropriately adjusted time/temperature curing cycles. Preferably the base coating is also a silicone resin material, and the base and top coatings can be the same material but with the addition of pigment to the base coat.
- In a preferred process the silicone resin material includes approximately 30% by weight silicone resin and remainder solvent, and in the base coating the percentage of pigment to resin preferably does not exceed 60% by weight.
- The invention also includes an article, for example a kitchen utensil, provided with such a coloured coating applied in such manner.
- The invention may be performed in numerous ways but one process will now be described by way of example.
- In the process to be described the article, for example, a baking tin, of tin plate is to be coated. The tin is first cleaned by a solvent degrease for example trichloroethylene or by a suitable water base cleaning followed by drying. A coloured pigmented base coating consisting of silicone resin material which includes approximately 30% by weight silicone resin and remainder solvent with the addition of a coloured pigment, the percentage of which to the silicone resin does not exceed 60% by weight is now applied by any suitable means; for example, spraying or dipping and this coat is partly cured at a correct time/temperature so that when a top coating is applied it will adhere satisfactorily but there will be no cross transfer of pigment from the base coating into the top coat, a typical time/temperature cycle being 15 minutes at 100°C.
- A top coating of silicone resin material similar to the base coating but without the pigment, which will produce a release film is now applied, again by any suitable means such as spraying and the whole coating system is cured. A typical sequence for tinplate substrates would be 30 minutes at 235°C. For aluminium articles higher tempera-

8

ture/shorter times can be used such as 290°C for 15 minutes.

5 The process described above utilises short cure silicones but other silicone resins could be used with an appropriately adjusted time/temperature curing cycle. As the base coating is also a silicone resin the release properties of the finished article are durable because on penetration of the top coating, 10 for example, through scratching, the release properties will not be affected unless both coatings are penetrated.

15 If desired the top or both coatings could include additional release additives in the silicone resin such as an additional silicone resin having better release properties than the basic resin material.

WHAT WE CLAIM IS:—

20 1. A process for producing a coloured release coating on an article which includes applying a pigmented synthetic resin base coating material and partly curing it sufficiently to allow adherence but prevent cross transfer of the pigment to a top coating of 25 unpigmented silicone resin material which is subsequently applied over it, and then fully curing both coatings.

30 2. A process as claimed in claim 1 in which the base coating is also a silicone resin material.

3. A process as claimed in claim 2 in which the base and top coatings are of the same silicone resin material but with the addition of pigment in the base coat.

4. A process as claimed in claims 1—3 in which the silicone resin material includes approximately 30% by weight silicone resin the remainder being solvent. 35

5. A process as claimed in claim 4 in which in the base coating the percentage of pigment to resin does not exceed 60% by weight. 40

6. A process as claimed in any one of claims 1—5 in which the base coat includes resins, single or in combination, to provide reinforcement. 45

7. A process as claimed in claim 6 in which the reinforcing resins are epoxy or styrene-maleic anhydride resins.

8. A process for producing a release coating substantially as described herein. 50

9. An article provided with a coloured release coating applied by the process set forth in any one of the preceding claims. 55

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If desired the top or both coatings could include additional release additives in the 15 silicone resin such as an additional silicone resin having better release properties than the basic resin material.

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3. A process as claimed in claim 2 in which the base and top coatings are of the same silicone resin material but with the addition of pigment in the base coat.

4. A process as claimed in claims 1—3 in which the silicone resin material includes approximately 30% by weight silicone resin the remainder being solvent. 35

5. A process as claimed in claim 4 in which in the base coating the percentage of pigment to resin does not exceed 60% by weight. 40

6. A process as claimed in any one of claims 1—5 in which the base coat includes resins, single or in combination, to provide reinforcement. 45

7. A process as claimed in claim 6 in which the reinforcing resins are epoxy or styrene-maleic anhydride resins.

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