

PATENT SPECIFICATION

NO DRAWINGS

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COMPLETE SPECIFICATION

Improvements relating to Methods of Producing Decorative Bodies of Synthetic Resin Material

I, LEWIN BASIL OSWALD TUGWELL, a British subject of 1, Bridgefield, Farnham, Surrey, do hereby declare the invention for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The invention concerns improvements relating to methods of producing decorative bodies on a basis of unsaturated polyester resin material.

Unsaturated polyester resins when cast in solid form may, due to the heat given out in the setting action and the contraction on cooling, form internal cracks, generally a few large cracks. An object of the invention is to provide internal cracking in a controlled manner to produce a desirable and decorative shatter effect within the set resin.

Thus according to the invention there is provided a method of producing a decorative body of an unsaturated polyester resin which comprises forming a settable liquid mixture containing said unsaturated polyester resin and water, casting, moulding or otherwise shaping the said mixture to a desired form and thereafter allowing the mixture to set, the setting of the resin generating sufficient heat to evaporate the water and thereby cause internal cracks in the set shape. The water may be added as water *per se*, or included as a water content of another material, e.g. a colouring material.

Advantageously, to the unsaturated polyester resin in liquid state there are added an accelerator, colouring material if appropriate, a quantity of water, and a hardener to commence the setting action.

Embodiments of the invention are herein after described by way of example:—

Generally, for a moulding or casting operation the method involves measuring out a

certain quantity of liquid unsaturated polyester resin, to which is added an accelerator, any appropriate colouring material, a quantity of water and finally a hardener. At this stage the setting action commences and the mixture is poured into a suitable mould. The mix first gels and at this stage the mass starts to generate its own heat by chemical action. It then hardens and at a certain stage when the temperature is sufficiently high, the resin commences an internal cracking or shatter effect due to a vaporising action of the water within the resin, the boiling point of the water being less than the maximum temperature reached during the setting action. The amount of cracking and the size of the cracks is determined by the quantity of water added to a specific quantity of resin. This shatter effect produced within the set resin forms numerous internal reflective surfaces imparting to the body a desirable decorative effect.

The method is applicable to the production of decorative bodies of any form, size or shape, solid or hollow, for example panels or screens such as fire screens, windows for private houses, public buildings and churches, articles such as tiles, table tops, table lamp standards, paperweights and other decorative objects, or bodies of block, rod, bar or other form for subsequent manufacture into articles.

In many applications, special translucent colouring materials may be added to the resins used to heighten the decorative effect. Such colouring materials do not normally have any water content. However, in accordance with the invention other colouring materials not normally used for colouring resins, e.g. Indian ink, may be used having a water content which provides or in part provides the water addition to produce the desired shatter effect.

[Price 4s. 6d.]

Price 5s. 0d.

The following Examples will serve to illustrate the invention.

EXAMPLE I:

5 For a table lamp standard (of approximate dimensions $11'' \times 3\frac{1}{2}'' \times 3\frac{1}{2}''$) a typical pouring will involve 5 lb. unsaturated polyester resin, 30 c.c. of accelerator, e.g. a cobalt accelerator, a small quantity of translucent resin colouring pigment, 15 c.c. of water and 10 finally 40 c.c. of hardener, e.g. a peroxide hardener. The interior shatter is generally made up of small planes of interior cracking of maximum dimensions from about $\frac{1}{4}''$ to $\frac{1}{2}''$.

15 A mix of similar proportions to give a similar shatter size is suitable for other articles, e.g. paper weights, although the total quantities will, of course, be more or less according to the size of the moulding.

EXAMPLE II:

20 For a thin tile (of dimension $9'' \times 9'' \times \frac{1}{4}''$), 2lbs of unsaturated polyester resin, 8 ccs. of accelerator, colouring pigment to suit, 4 ccs. of water and then 15 ccs. of hardener will 25 give a size of cracking planes of maximum dimensions of about $\frac{1}{4}''$.

A mix of similar proportions to give a similar shatter size is suitable for other articles.

EXAMPLE III:

30 For a table top (of dimensions $18'' \times 14'' \times 1\frac{1}{4}''$), 14lbs of unsaturated polyester resin, 80 ccs. of accelerator, pigment to suit, 42 ccs. of water and 112 ccs. of hardener will give 35 planes of cracking of maximum dimensions ranging from about $\frac{1}{4}''$ up to $\frac{3}{4}''$, within places larger planes of shatter of maximum dimensions about $\frac{1}{2}''$ to $\frac{3}{4}''$.

40 A mix of similar proportions to give a comparable shatter effect is suitable for other articles, e.g. for a large decorative screen or window.

45 The actual results are also partially dependent upon the usual working variables such as the temperatures of the resin and working atmosphere, the dimensions of the body, and the amounts and types of resins, accelerators

and hardeners used, following usual resin moulding practice.

It has been found that without the addition 50 of water or with the addition of other forms of liquids, the shatter effect is not obtained, although there may be some limited and probable undesirable cracking effect principally due to internal stresses in the self 55 heating and cooling action on setting as indicated above. No liquid has been found to give anything resembling the same desirable shatter effect as is obtained with the water addition of the invention. 60

This shatter effect consists of numerous reflective planes of cracking of varying dimensions as described giving a desirable visual effect in the finished article, and is not to be confused with the well known plastic foaming 65 techniques which involve a quite different effect.

WHAT I CLAIM IS:—

1. A method of producing a decorative body of an unsaturated polyester resin which comprises forming a settable liquid mixture containing said unsaturated polyester resin and water, casting, molding or otherwise shaping the said mixture to a desired form and thereafter allowing the mixture to set, the setting of the resin generating sufficient heat to evaporate the water and thereby cause internal cracks in the set shape. 70

2. A method according to Claim 1 wherein to the resin in liquid state there are added an accelerator, colouring material if appropriate, a quantity of water, and a hardener to commence the setting action. 75

3. A method of producing a decorative body of unsaturated polyester resin material substantially as set forth in any one of the Examples. 80

4. Decorative bodies of unsaturated polyester resin material produced in accordance with any of Claims 1 to 3. 85 90

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The following Examples will serve to illustrate the invention.

EXAMPLE I:

For a table lamp standard (of approximate dimensions $11" \times 3\frac{1}{2}" \times 3\frac{1}{2}"$) a typical pouring will involve 5 lb. unsaturated polyester resin, 30 c.c. of accelerator, e.g. a cobalt accelerator, a small quantity of translucent resin colouring pigment, 15 c.c. of water and finally 40 c.c. of hardener, e.g. a peroxide hardener. The interior shatter is generally made up of small planes of interior cracking of maximum dimensions from about $\frac{1}{4}"$ to $1\frac{1}{4}"$.

A mix of similar proportions to give a similar shatter size is suitable for other articles, e.g. paper weights, although the total quantities will, of course, be more or less according to the size of the moulding.

EXAMPLE II:

For a thin tile (of dimension $9" \times 9" \times \frac{1}{4}"$), 2lbs of unsaturated polyester resin, 8 ccs. of accelerator, colouring pigment to suit, 4 ccs. of water and then 15 ccs. of hardener will give a size of cracking planes of maximum dimensions of about $\frac{1}{4}"$.

A mix of similar proportions to give a similar shatter size is suitable for other articles.

EXAMPLE III:

For a table top (of dimensions $18" \times 14" \times 1\frac{1}{4}"$), 14lbs of unsaturated polyester resin, 80 ccs. of accelerator, pigment to suit, 42 ccs. of water and 112 ccs. of hardener will give planes of cracking of maximum dimensions ranging from about $1\frac{1}{4}"$ up to $3"$, within places larger planes of shatter of maximum dimensions about $6"$ to $8"$.

A mix of similar proportions to give a comparable shatter effect is suitable for other articles, e.g. for a large decorative screen or window.

The actual results are also partially dependent upon the usual working variables such as the temperatures of the resin and working atmosphere, the dimensions of the body, and the amounts and types of resins, accelerators

and hardeners used, following usual resin moulding practice.

It has been found that without the addition of water or with the addition of other forms of liquids, the shatter effect is not obtained, although there may be some limited and probable undesirable cracking effect principally due to internal stresses in the self heating and cooling action on setting as indicated above. No liquid has been found to give anything resembling the same desirable shatter effect as is obtained with the water addition of the invention.

This shatter effect consists of numerous reflective planes of cracking of varying dimensions as described giving a desirable visual effect in the finished article, and is not to be confused with the well known plastic foaming techniques which involve a quite different effect.

WHAT I CLAIM IS:—

1. A method of producing a decorative body of an unsaturated polyester resin which comprises forming a settable liquid mixture containing said unsaturated polyester resin and water, casting, molding or otherwise shaping the said mixture to a desired form and thereafter allowing the mixture to set, the setting of the resin generating sufficient heat to evaporate the water and thereby cause internal cracks in the set shape.

2. A method according to Claim 1 wherein to the resin in liquid state there are added an accelerator, colouring material if appropriate, a quantity of water, and a hardener to commence the setting action.

3. A method of producing a decorative body of unsaturated polyester resin material substantially as set forth in any one of the Examples.

4. Decorative bodies of unsaturated polyester resin material produced in accordance with any of Claims 1 to 3.

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