(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 138 410**
A1

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **84306414.8**

(22) Date of filing: **19.09.84**

(51) Int. Cl.⁴: **C 11 D 3/40**

(30) Priority: **21.09.83 GB 8325326**

(43) Date of publication of application: **24.04.85 Bulletin 85/17**

(84) Designated Contracting States: **AT BE CH DE FR GB IT LI NL SE**

(71) Applicant: **UNILEVER PLC, Unilever House Blackfriars P O Box 68, London EC4P 4BQ (GB)**
(84) Designated Contracting States: **GB**

(71) Applicant: **UNILEVER NV, Burgemeester s'Jacobplein 1 P.O. Box 760, NL-3000 DK Rotterdam (NL)**
(84) Designated Contracting States: **BE CH DE FR IT LI NL SE AT**

(72) Inventor: **Davies, Richard Llewellyn, 59 Chorley Way Bebington, Wirral Merseyside (GB)**
Inventor: **Don, Nigel Anderson, 6 Tyburn Road Spital, Bebington Merseyside L63 9HJ (GB)**

(74) Representative: **Mole, Peter Geoffrey et al, UNILEVER PLC Patents Division P.O. Box 68 Unilever House, London EC4P 4BQ (GB)**

(54) Process for the manufacture of coloured detergent powder.

(57) Coloured detergent powder, either spray-dried or prepared by an agglomeration or granulation step may be prepared by admixing white powder with particulate colourant. This produces a satisfactory coloured powder without the disadvantages associated with other methods.

EP 0 138 410 A1

PROCESS FOR THE MANUFACTURE OF COLOURED DETERGENT POWDER

This invention relates to a process for the manufacture of coloured detergent powder.

Coloured detergent powders are normally made by adding dye or pigment to a crutcher slurry and converting the slurry to a powder by spray-drying. Alternatively dye solution can be injected into the main feed to the nozzles of the spray-drying tower with similar results. The disadvantage of these processes is that they contaminate the whole of the spray-drying plant with dyestuff so that when a white powder is subsequently to be made it is necessary to clean down, with consequent loss of production time.

One of the ways of avoiding this disadvantage is to spray a solution of dyestuff onto white powder. The main difficulty with this is that of contacting each individual particle, to an equal extent. It that is not achieved, then a speckled or mottled powder results.

United States Patent No 4 162 228 relates to a method of colouring detergent flakes which contain nonionic surfactant as an essential component. The method involves mixing a dry colourant into the flakes whereupon the nonionic surfactant dissolves the colourant, imparting an overall hue to the flakes. Flakes are, of course, easier to colour than powders since they are translucent, and the whole formulation is contained within the flake. In contrast, powders normally consist of two components - a spray-dried portion and a dry-dosed portion which may have different affinities for colourant resulting in the powder having a mottled appearance.

We have now discovered contrary to what would have been expected that coloured powder can be manufactured by simply mixing a particulate colorant with a detergent powder.

Accordingly, the present invention provides a process for the manufacture of a coloured detergent powder which comprises admixing a particulate colourant with the powder.

If desirable or necessary, after the mixing step, the coloured powder may be sprayed with a small percentage, for example 1-5% by weight, of water or of an ethoxylated alcohol nonionic surfactant in liquid or molten form. This can help to accentuate the colouration.

When choosing the colourant system it is important to select substances which will colour the powder adequately and yet not produce staining problems in the wash. We have found a combination of the pigment Ultramarine Blue, the dyestuff Duasyn Acid Blue and the blue-whitener Polar Brilliant Blue to give excellent results on all types of detergent powder.

Other dyestuffs which have been found to be satisfactory are Carbolan Violet, Gulf Acid Blue 6JSO and Milling Blue 2BR, all of which are available from Imperial Chemical Industries Limited.

Preferably the mean particle size of the colourant is 0.5 to 5 microns, most preferably abut 2 microns.

The process may be applied to powder which has been prepared by spray-drying, spray-cooling, granulation or agglomeration or any combination of these techniques. Additionally, any of the powder so produced may be dosed with conventional detergent powder additives such as sodium perborate tetrahydrate without altering the effectiveness of the process.

The apparatus used for mixing the particulate colourant and the powder is not critical to the process. We have found a rotating drum mixer to be perfectly satisfactory and also, a Patterson-Kelly (Trade Mark) batch blender has performed well.

The invention will be further described in the following example.

Example

White, spray-dried detergent powder is first fed down a chute at a flow rate of about 350 Kg/hour controlled by a slide valve into one end of the interior of a rotatable drum mixer without internal baffles. The axis of the drum mixer is approximately horizontal but the mean residence time of the powder in the drum which is about 2 minutes can be adjusted to some extent by moving the axis up or down by a few degrees. The drum is rotated and a

finely powdered mixture of the following colourants is fed into the drum from a variable speed dosing unit:

	% by weight
Ultramarine Blue	0.0800
Duasyn Acid Blue	0.0016
Polar Brilliant Blue	0.0020

Substantially uniformly blue coloured powder emerges from the discharge end of the drum mixer.

If desired the small quantity of water or nonionic surfactant referred to above, say 1-3% by weight may be sprayed onto the powder in the drum through spray nozzles located along the axis.

There are several advantages to the process described above. Most importantly it avoids colouration of the spray-drying plant, but also it appears to be independent of formulation, and is suitable for colouring fully-formulated powder and not just the spray-dried portion.

CLAIMS

1. A process for the manufacture of coloured detergent powder characterised by admixing particulate colourant with the powder.

2. A process according to claim 1 wherein the coloured powder is sprayed with from 1 to 5% by weight of water.

3. A process according to claim 1 or claim 2 wherein the coloured powder is sprayed with from 1 to 5% by weight of an ethoxylated alcohol nonionic surfactant in liquid or molten form.

4. A process according to any one of the preceding claims wherein the mean particle size of the colourant is from 0.5 to 5 microns.

5. A process according to claim 4 wherein the mean particle size of the colourant is about 2 microns.

0138410

European Patent Office

. Application number

EP 84 30 6414

EUROPEAN SEARCH REPORT

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
Y	DE-A-2 257 163 (PROCTER & GAMBLE CO.) * Claims 1,2,6,7 *	1	C 11 D 3/40
D,Y	US-A-4 162 228 (E.C. ROBLES) * Claim 1 *	1	
A	FR-A-2 262 085 (ROCKWELL INTERNATIONAL CORP.) * Claims 1,8,12 *		

TECHNICAL FIELDS SEARCHED (Int. Cl.4)

C 11 D 3/00

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
BERLIN	06-12-1984	SCHULTZE D

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO Form 1503. 03.82