MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963-A
COMMONWEALTH OF AUSTRALIA
Patents Act 1952-1962

CONVENTION OR NON-CONVENTION APPLICATION FOR A
PATENT OR PATENT OF ADDITION

INSTRUCTIONS

I/We (a) UNILEVER LIMITED.

of (b) Unilever House
Blackfriars

hereby apply for the grant of a (c) patent/patent of addition for an invention: entitled

(d) DETERGENT COMPOSITIONS AND THE PRODUCTION THEREOF

which is described in the accompanying (e) provisional/complete specification.

I/We request that the patent/patent of addition be
to

(c) the patent applied for on application No. 

{ patent-No. } in the name of

I/We request that the term of the patent of addition be the same as that of the patent
for the main invention or so much of the term of the patent for the main invention as
is unexpired.

This application is a Convention application and is based on the following application or
applications for a patent or patents or similar protection made in the following country or
countries on the following date or dates:

No. (g) 42833/75 in (h) Great Britain on (i) 17th Oct. 1975
No. (g) in (h) on (i) 19
No. (g) in (h) on (i) 19

My/Our address for service is care of CLEMENT HACK & CO., Patent Attorneys,
414 Collins Street, Melbourne, Victoria, Australia.

(j) Dated this 12TH day of OCTOBER 1976

(k) Signature(s) of applicant(s).

(l) Seal of the Company (if any).

To: The Commissioner of Patents,
Commonwealth of Australia.

CLEMENT HACK & CO., Patent Attorneys, 414 Collins Street, Melbourne, Australia.

App./9/75
DECLARATION IN SUPPORT OF A CONVENTION OR NON-CONVENTION APPLICATION FOR A PATENT OR PATENT OF ADDITION

In support of the application made by UNILEVER LIMITED for a patent for an invention entitled DETERGENT COMPOSITIONS AND THE PRODUCTION THEREOF

I/WE, WILLIAM JOHN KERR JAMIESON,

do solemnly and sincerely declare as follows:-

1. I am/we are the applicant(s) for the patent, or am/are authorised by the abovementioned applicant to make this declaration on its behalf.

2. The basic application(s) as defined by Section 141 of the Act was/were made in the following country or countries on the following date(s) by the following applicant(s) namely:-

   in Great Britain on October 17, 1975
   by UNILEVER LIMITED

3. The said basic application(s) was/were the first application(s) made in a Convention country in respect of the invention the subject of the application.

4. The actual inventor(s) of the said invention is/are

   SEE REVERSE

5. The facts upon which the applicant(s) is/are entitled to make this application are as follows:-

   UNILEVER LIMITED are the Assignees of the actual Inventors.

DECLARED at London, England, this 6th day of March, 1980

[Signature]

This form may be completed and filed after the filing of a patent application but the form must not be signed until after it has been completely filled in as indicated by the marginal notes. The place and date of signing must be filled in Company stamps or official seals.
Claim 1. A heavy duty fabric washing powder comprising a surfactant system consisting essentially of a synthetic organic anionic surfactant and water-soluble soap, and a detergency builder system comprising water-soluble soap and sodium tripolyphosphate wherein

(a) the synthetic organic anionic surfactant is present in an amount of from 5 to 50% by weight,

(b) the water-soluble soap is sodium and potassium salts of C₈-C₂₂ fatty acids, a proportion of the soap being a soap of tallow class fats, and is present in an amount of from 10 to 30% by weight, and

(c) the sodium tripolyphosphate is present in an amount of between 10 and 20% by weight,
the balance being conventional fabric washing powder ingredients.
COMPLETE SPECIFICATION
(ORIGINAL)

Application Number:
Lodged:

Complete Specification Lodged:
Accepted:
Published:

Priority:

Related Art:

Name of Applicant(s):
UNILEVER LIMITED

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414 Collins Street
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Complete Specification for the invention entitled:
"DETERGENT COMPOSITIONS AND THE PRODUCTION THEREOF"

The following statement is a full description of this invention, including the best method of performing it known to me/us:

-1-
The invention relates to detergent compositions which are adapted for fabric washing, and in particular to such compositions containing phosphate detergency builders.

The most commonly used detergency builders are the condensed phosphates, especially sodium tripolyphosphate, but it has been suggested that the use of these phosphate detergency builders can contribute to eutrophication problems. There have been very many suggestions for alternative, mainly organic, materials to be used as detergency builders instead of the condensed phosphates, but most of these materials tend to be unsatisfactory for one reason or another, for example they are less efficient or biologically unacceptable, or they may simply be too expensive.

It has also been proposed to mitigate the problems of eutrophication by using decreased levels of condensed phosphate detergency builders, with or without the presence of other detergency builders, but few of these proposals have been acceptable. Thus, when reduced levels of sodium tripolyphosphate are used without supplemental builders, there can be considerable problems when using the compositions in hard water if there is insufficient phosphate to sequester all the calcium ions present, as this causes the precipitation of insoluble calcium phosphate salts which can accumulate on the washed fabrics. When a condensed phosphate builder is used with other types of detergency builders, then they tend to interact and often the former prevents the latter from functioning effectively, especially in the case of other
detergency builders which act by precipitating the calcium salt, for example sodium carbonate.

We have now found that certain mixtures of synthetic organic anionic surfactant, sodium tripolyphosphate and water-soluble soap provide detergency equivalent to compositions containing high amounts of phosphate. According to the present invention there is provided a heavy duty fabric washing powder comprising a surfactant system consisting essentially of a synthetic organic anionic surfactant and water-soluble soap, and a detergency builder system comprising water-soluble soap and sodium tripolyphosphate wherein

(a) the synthetic organic anionic surfactant is present in an amount of from 5 to 50% by weight,

(b) the water-soluble soap is a sodium or potassium salt of C₈–C₂₂ fatty acids, a proportion of the soap being a soap of tallow class fats, and is present in an amount of from 10 to 30% by weight, and

(c) the sodium tripolyphosphate is present in an amount of between 10 and 20% by weight, the balance being conventional fabric washing powder ingredients.

By the suitable choice of the amounts of the sodium tripolyphosphate and soap it is possible to formulate effective detergent compositions containing lower phosphorus levels than in comparable conventional detergent compositions. Insofar as
these two materials function normally in different ways, i.e. sodium tripolyphosphate acting as a sequestrant detergency builder and the soap functioning as a precipitant builder, it is somewhat surprising that a mixture of the
materials functions so effectively. In particular, the tendency for sodium tripolyphosphate to cause inorganic deposition on washed fabrics when it is used at low levels in detergent compositions is decreased in the presence of the soap. Moreover, the sodium tripolyphosphate does not appear to inhibit the detergency building action of the soaps, as it does with many other detergency builders, and any soap not precipitated as the calcium salt, e.g. when the compositions are used in soft water or at higher product concentrations, can function as detergent active compounds, so increasing the detergency of the compositions.

Instead of the sodium tripolyphosphate there may be used the potassium salt, but this is more expensive and for convenience the use of the sodium salt is described and illustrated in the specification.

The soaps used are the sodium, or less desirably potassium, salts of C₈–C₂₂ fatty acids, especially natural fatty acids derived from nut oils, such as coconut oil or palm kernel oil, or tallow class fats, such as beef and mutton tallows, palm oil, lard, some vegetable butters and castor oil. It is essential to use some soaps of tallow class fats, which are soaps of predominantly C₁₄–C₂₀ (mainly C₁₈) fatty acids, of which normally at least about 40% are saturated fatty acids. The tallow class fats may be hardened if desired, so as to decrease the content of unsaturated acids such as oleic acid and linoleic acid, and
this is particularly beneficial if some more highly poly-
unsaturated oils such as soybean oil are desired to be used
as tallow class fats at significant levels.

It is preferred to use mixtures of soaps derived from
tallow class fats and soaps from nut oils, which are soaps
of predominantly \( C_{10-14} \) (mainly \( C_{12} \)) fatty acids, of which
normally at least about 75% are saturated fatty acids; again
the nut oils may be hardened if desired. Such mixtures tend
to have better solubilities than tallow soap alone, coupled
with sufficiently low calcium soap solubilities for
satisfactory detergency building, and sufficiently low
critical micelle concentrations approaching that of tallow
soap alone, to enable any excess of the soap to function as
an extra detergent active component. The preferred mixtures
are from about 9:1 to 3:1 parts by weight of tallow class
soap to nut oil class soap. In general, higher proportions
of tallow class soaps in such mixtures give better detergency
building properties, whilst higher proportions of nut oil
class soaps give better solubility properties. If desired,
tallow class soap can be used alone.

In addition to the tallow class soap, and any optional
nut oil soap, some soap of longer carbon chain length can be
used if desired, especially \( C_{20-24} \) soaps, eg rapeseed soaps,
which are useful for lather-depressing properties, or soaps
of synthetic fatty acid. In contrast to naturally-occurring
or derived fatty acids which have linear carbon chain lengths
of even numbers, synthetic fatty acids can have both odd and
even numbers and they can be of both linear and branched-chain form. Synthetic fatty acids of carbon chain length predominantly \(C_{14-20}\), which are preferably at least about 40% saturated and at least about 75% linear, can be used in partial or full replacement of natural tallow class soaps, and synthetic fatty acids of carbon chain length predominantly \(C_{10-16}\), preferably at least about 75% saturated and at least about 50% linear, can be used in partial or full replacement of natural nut oil soaps. If any branched-chain fatty acids are used they are preferably \(\alpha\)-alkyl, eg \(\alpha\)-methyl branched, rather than being more highly branched.

There have in the past been many suggestions for using sodium tripolyphosphate as a detergency builder in detergent compositions comprising soap as a detergent active material. For example in so-called ternary active mixtures for use in low sudsing compositions, it is usual to have present some soap, at a low level of up to about 8% by weight. Normally such soaps are tallow soaps or soaps of longer-chain length fatty acids. Also, detergent compositions based on soap have contained low amounts of sodium tripolyphosphate. However, to the Applicants' knowledge, it has not been proposed hitherto to use the specific detergency builder mixtures of sodium tripolyphosphate and soap in the proportions as set out below for use in fabric washing powders according to the present invention.

The ratio of the soap to the sodium tripolyphosphate in the detergent composition is preferably less than 1:1,
generally from about 0.75:1 to about 0.9:1 parts by weight. The total amount of sodium tripolyphosphate plus soap is preferably about 25% to about 50%, and especially about 30% to about 50%, by weight of the composition. Lower levels of sodium tripolyphosphate are intended for use either at higher product concentrations or in soft water.

It will be appreciated that the amount of sodium tripolyphosphate is chosen according to the overall phosphate detergency builder level which is desired in the detergent compositions or according to the maximum permitted phosphorus content. An amount of sodium tripolyphosphate is normally used within the range between about 15 and 20% by weight of the composition, for example about 16% by weight. However, if the compositions of the invention are intended to be used with decreased phosphate levels for environmental reasons, then lower amounts are used. A level of less than 20% sodium tripolyphosphate by weight of composition is equivalent to less than about 5% by weight of phosphorus, and it is a feature of the invention that detergent compositions can be prepared with these low phosphate levels and yet have good detergent properties.

The minimum level of soap which should be present is 10% by weight of the composition, and the maximum level is 30% by weight, preferably less than about 25% by weight of the composition, and especially about 15% to about 20% by weight.

The amounts of the sodium tripolyphosphate and soap for use in a particular detergent composition are selected according
to the expected washing conditions. We have found for example that amounts of about 16% and 14% respectively give good performance (at 4% phosphorus level) for compositions intended for use at relatively high product concentrations, i.e., about 0.3% to about 0.8% by weight, as is common practice in Europe, especially in front-loading automatic washing machines. But in compositions intended for use at relatively low product concentrations, i.e., about 0.1% to 0.3%, as is common practice under North American washing conditions, especially in top-loading automatic washing machines, we have found that amounts of about 16% sodium tripolyphosphate and about 30% soap are required.

The detergent compositions of the invention necessarily include an amount of a synthetic organic anionic surfactant. Many suitable detergent active compounds of this type are commercially available and are fully described in the literature, for example in "Surface Active Agents and Detergents", Volumes I and II, by Schwartz, Perry and Berch.

The preferred compounds are water soluble alkali metal salts of organic sulphates and sulphonates having alkyl radicals containing from about 8 to about 22 carbon atoms, the term alkyl being used to include the alkyl portion of higher acyl radicals. Examples of suitable synthetic anionic detergent compounds are sodium and potassium alkyl sulphates, especially those obtained by sulphating the higher \((C_8-C_{18})\) alcohols produced by reducing the glycerides of tallow or coconut oil and especially the \(C_{16-18}\) primary alkyl sulphate;
sodium and potassium alkyl \((C_9-C_{20})\) benzene sulphonates, particularly sodium linear secondary alkyl \((C_{10}-C_{15})\) benzene sulphonates; sodium alkyl glyceryl ether sulphates, especially those ethers of the higher alcohols derived from tallow or coconut oil and synthetic alcohols derived from petroleum; sodium coconut oil fatty acid monoglyceride sulphates and sulphonates; sodium and potassium salts of sulphuric acid esters of higher \((C_9-C_{20})\) fatty alcohol-alkylene oxide, particularly ethylene oxide, reaction products; the reaction products of fatty acids such as coconut fatty acids esterified with isethionic acid and neutralised with sodium hydroxide; sodium and potassium salts of fatty acid amides of methyl taurine; alkane monosulphonates such as those derived by reacting alpha-olefins \((C_8-C_{20})\) with sodium bisulphite and those derived by reacting paraffins with SO\(_2\) and Cl\(_2\) and then hydrolysing with a base to produce a random sulphonate; and olefin sulphonates, which term is used to describe the material made by reacting olefins, particularly alpha-olefins, with SO\(_2\) and then neutralising and hydrolysing the reaction product.

If desired small amounts of nonionic surfactants may be used additionally, for facilitating soap scum dispersion and inhibiting its deposition on washing machine parts. However it is preferred that nonionic surfactants are entirely absent. Examples of suitable nonionic surfactants include the reaction products of alkylene oxides, usually ethylene oxide, with alkyl \((C_6-C_{22})\) phenols, generally 5 to 25 EO; ie 5 to 25 units of ethylene oxide per molecule; the condensation products
of aliphatic (C₈-C₁₈) primary or secondary alcohols with ethylene oxide, generally 6 to 30 EO, and products made by condensation of ethylene oxide with the reaction products of propylene oxide and ethylenediamine. Other so-called nonionic detergent active compounds include long chain tertiary amine oxides, long chain tertiary phosphine oxides and dialkyl sulphoxides, which are properly semi-polar compounds.

Amounts of amphoteric or zwitterionic detergent active compounds can also be used in the compositions of the invention but this is not normally desired due to their relatively high cost. If any amphoteric or zwitterionic detergent active compounds are used it is generally in small amounts. However, some such zwitterionic or amphoteric compounds, especially sulphobetaines such as hexadecyldimethylammoniopropane sulphonate, have useful soap scum dispersion properties.

The amount of the synthetic organic detergent active compound or compounds used is generally in the range of from about 5% to 50%, preferably about 7% to about 15%, by weight of the compositions, depending on the desired properties. Some of the soap added can also act as a detergent active compound in so-called "overbuilt" circumstances, i.e. at higher product concentrations or when using soft water. The ratio of the total detergent compounds to the total of the amount of sodium tripolyphosphate and soap should generally be in the range of from about 10:1 to 1:10, especially about 3:1 to 1:5, parts by weight.
Apart from the detergent active compounds and detergency builders, a detergent composition of the invention can contain any of the conventional additives in the amounts in which such additives are normally employed in fabric washing detergent powders. Examples of these additives include lather boosters such as alkanolamides, particularly the monoethanolamides derived from palm kernel fatty acids and coconut fatty acids, powder flow aids such as silicas and aluminosilicates, lather depressants, anti-redeposition agents, such as sodium carboxy-methylcellulose, oxygen-releasing bleaching agents such as sodium perborate and sodium percarbonate, per-acid bleach precursors, chlorine-releasing bleaching agents such as trichloroisocyanuric acid and alkali metal salts of dichloroisocyanuric acid, fabric softening agents such as clays of the smectite and illite types, anti-ashing agents, starches, soap scum dispersants, inorganic salts such as sodium sulphate, and usually present in very minor amounts, fluorescent agents, perfumes, enzymes such as proteases and amylases, germicides and colourants. In addition, it may be desirable to add slurry stabilisers such as copolyethylene-maleic anhydride and copolyvinylacrylate-maleic anhydride, usually in salt form.

It is also possible to include in the detergent compositions the invention minor amounts, eg not more than about 25% by weight, of other detergency builders, which may be either so-called precipitant builders or sequestrant builders. This may be of particular benefit where it is desired to increase
detergency whilst using particularly low levels of the sodium tripolyphosphate, so as to achieve particularly low phosphorus contents in the detergent compositions. Examples of such other detergency builders are amine carboxylates such as sodium nitri-triaceate, and sodium carbonate. It may also be noted that some minor amounts of sodium pyrophosphate and sodium orthophosphate are normally formed by hydrolysis of sodium tripolyphosphate during spray drying processes to make detergent powders, so low levels of these other phosphate builders may be present in the detergent compositions.

It is desirable to include in the compositions an amount of an alkali metal silicate, particularly sodium ortho-, meta- or preferably neutral or alkaline silicate. The presence of such alkali metal silicate at levels of for example about 5% to about 15% by weight, is usually advantageous in decreasing the corrosion of metal parts in washing machines, besides giving processing benefits and generally improved powder properties. In addition, the amount of silicate can be used to some extent to control the pH of the compositions which should generally be within the range of about 9 to about 11, preferably about 9.5 to about 10.5, in aqueous solution of the compositions at the recommended concentrations. A high pH, ie over about pH 10.5, tends to be more efficient as regards detergency but it may be less desirable for domestic safety.

The fabric washing powder may be produced by any of the techniques commonly employed in the manufacture of fabric
washing compositions, including particularly slurry making and spray drying processes. However, it has been found that the presence of appreciable levels of soap in the detergent slurries tends to give rise to problems in spray drying, notably the production of powders of low bulk density and with high proportions of small particles (fines).

In a further aspect of the invention, it has been found beneficial to produce the detergent compositions by a slurry making and spray drying process in which either none or only a proportion of the soap, preferably not more than about 8% by weight, is added to the slurry and all or the remainder of the soap is post-dosed to the spray dried powder in particulate form, eg as noodles, granules, pellets, ribbons, threads, flakes, small spheres or marumes. It may be beneficial in this case to add minor ingredients, for example perfumes, to the detergent compositions in the post-dosed soap particles. Such soap particles can be made by the usual processes depending on the final shape and size desired, and it is preferable to mill the soap thoroughly before making the particles, as this tends to improve their solubility, especially for particles with a higher content of tallow soap.

Alternatively, it is possible to spray dry two separate slurries, either in the same or different spray drying towers, and then mix them to form the final composition. In this case, one slurry preferably has all the major ingredients in it but not more than about 8% by weight of soap, and the other slurry has a major proportion of soap with other minor ingredients.
The term "spray drying" is used above to include processes in which detergent slurries are sprayed into relatively hot gas, normally air, either in counter-current or co-current processes and processes in which hotter slurries are sprayed into relatively cool air, ie in so-called spray drying or flash drying processes. Conventional slurry and drying gas temperatures are used in such spray drying processes for producing the detergent compositions according to the invention.

The invention is illustrated by the following Examples in which parts and percentages are by weight except where otherwise indicated.

Example 1

A detergent composition was prepared to the following formulation:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium alkyl benzene sulphonate</td>
<td>7</td>
</tr>
<tr>
<td>Nonionic Detergent compound</td>
<td>3</td>
</tr>
<tr>
<td>Soap¹</td>
<td>6</td>
</tr>
<tr>
<td>Soap noodles²</td>
<td>12</td>
</tr>
<tr>
<td>Sodium tripolyphosphate</td>
<td>19</td>
</tr>
<tr>
<td>Sodium sulphate</td>
<td>9</td>
</tr>
<tr>
<td>Sodium silicate</td>
<td>8</td>
</tr>
<tr>
<td>Sodium perborate</td>
<td>25</td>
</tr>
<tr>
<td>Sodium carboxymethylcellulose</td>
<td>1</td>
</tr>
<tr>
<td>Moisture + minor ingredients</td>
<td></td>
</tr>
<tr>
<td></td>
<td>balance to 100</td>
</tr>
</tbody>
</table>

- 14 -
1 Sodium soap made from tallow fatty acids and hardened rapeseed fatty acids (1:1 mixture), added in the detergent slurry.

2 Sodium soap noodles made from mixed tallow soap and coconut soap (70:30).

The above composition was made by spray drying an aqueous slurry of the ingredients except for the soap noodles and the sodium perborate which were post-dosed to the spray dried powder. The composition had a higher bulk density and better powder properties than a powder of like formulation made by spray drying the whole composition except for the sodium perborate.

This composition compared favourably for detergency properties with a commercially available low sudsing formulation containing 35% of sodium tripolyphosphate instead of the mixed sodium tripolyphosphate and soap builders, and otherwise similar ingredients.

Example 2

A spray dried detergent composition was prepared to the following formulation:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Parts</th>
<th>% by weight of finished composition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium alkyl benzene sulphonate</td>
<td>16.0</td>
<td>17.9</td>
</tr>
<tr>
<td>Sodium tripolyphosphate</td>
<td>16.0</td>
<td>13.9</td>
</tr>
<tr>
<td>Sodium alkaline silicate</td>
<td>6.0</td>
<td>5.2</td>
</tr>
<tr>
<td>Sodium carbonate</td>
<td>20.0</td>
<td>17.4</td>
</tr>
<tr>
<td>Sodium carboxymethylcellulose</td>
<td>0.4</td>
<td>0.3</td>
</tr>
<tr>
<td>Water and fluorescent agents</td>
<td>11.6</td>
<td>10.1</td>
</tr>
<tr>
<td>Total</td>
<td>16.0</td>
<td>70.0</td>
</tr>
</tbody>
</table>

- 15 -
This composition was then admixed with 45 parts by weight of a separately spray dried composition having the following formulation:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Parts</th>
<th>% by weight of finished composition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium soap (tallow:coconut, 74:26)</td>
<td>29.7</td>
<td>25.8</td>
</tr>
<tr>
<td>Coconut fatty ethanolamide</td>
<td>1.6</td>
<td>1.4</td>
</tr>
<tr>
<td>Sodium alkaline silicate</td>
<td>6.0</td>
<td>5.2</td>
</tr>
<tr>
<td>Sodium ethylenediamine tetra-acetate</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Fluorescent agent</td>
<td>0.4</td>
<td>0.3</td>
</tr>
<tr>
<td>Moisture</td>
<td>balance to 100</td>
<td></td>
</tr>
<tr>
<td></td>
<td>45.0</td>
<td></td>
</tr>
</tbody>
</table>

The resultant composition was found to compare favourably for detergency properties with commercially available nonionic- and anionic-based detergent compositions containing 33% of sodium tripolyphosphate.

**Example 3**

The procedure of Example 2 was repeated except that instead of the 45 parts of the soap-based spray dried composition, 30 parts of potassium tallow soap in noodle form were added to the spray dried base powder. Similar favourable detergency properties were exhibited.

**Example 4**

A detergent composition was prepared to the following formulation:
<table>
<thead>
<tr>
<th>Ingredient</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alkyl benzene sulphonate</td>
<td>7.0</td>
</tr>
<tr>
<td>Tallow alcohol - 18 EO</td>
<td>1.5</td>
</tr>
<tr>
<td>Sodium tallow soap</td>
<td>15.0</td>
</tr>
<tr>
<td>Sodium hardened fish oil soap</td>
<td>3.0</td>
</tr>
<tr>
<td>Sodium tripolyphosphate</td>
<td>19.0</td>
</tr>
<tr>
<td>Sodium alkaline silicate</td>
<td>5.0</td>
</tr>
<tr>
<td>Sodium carboxymethylcellulose</td>
<td>1.5</td>
</tr>
<tr>
<td>Fluorescent agents and preservative</td>
<td>0.4</td>
</tr>
<tr>
<td>Sodium perborate</td>
<td>30.0</td>
</tr>
<tr>
<td>Water (and minor additives)</td>
<td>18.6</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
</tr>
</tbody>
</table>

This product was produced by a slurry making and spray drying process in which all of the ingredients except for the perborate were added in the slurry, and the perborate was admixed with the resultant powder.

This detergent powder was found to have good detergency properties in comparison with a commercially available detergent powder of higher (30% phosphate) content.
THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A heavy duty fabric washing powder comprising a surfactant system consisting essentially of a synthetic organic anionic surfactant and water-soluble soap, and a detergency builder system comprising water-soluble soap and sodium tripolyphosphate wherein

   (a) the synthetic organic anionic surfactant is present in an amount of from 5 to 50% by weight,
   (b) the water-soluble soap is sodium or potassium salts of C₈-C₂₂ fatty acids, a proportion of the soap being a soap of tallow class fats, and is present in an amount of from 10 to 30% by weight, and
   (c) the sodium tripolyphosphate is present in an amount of between 10 and 20% by weight,

   the balance being conventional fabric washing powder ingredients.

2. A powder according to Claim 1 wherein the soap is present in an amount of from 15 to 25% by weight.

3. A powder according to Claim 1 wherein the soap is present in an amount of between 10 and 15% by weight.
4. A powder according to any one of the preceding claims wherein the soap is a mixture of tallow class fat and coconut oil soap in a weight ratio of 9:1 to 3:1.

5. A powder according to any one of the preceding claims, wherein the ratio soap to tripolyphosphate salt is less than 1:1.

6. A powder according to any one of the preceding claims wherein the synthetic organic surfactant comprises an alkyl sulphate salt.

7. A powder according to Claim 6 wherein the alkyl sulphate salt comprises the sodium salt of primary alkyl C_{16-18} alcohol sulphate.

8. A heavy duty fabric washing powder consisting essentially of a synthetic organic anionic surfactant and a water-soluble soap and a detergency builder system comprising soap and a tripolyphosphate salt, substantially as hereinbefore described in any one of the Examples.

DATED THIS 12TH DAY OF OCTOBER, 1976

UNILEVER LIMITED
By Its Patent Attorneys

CLEMENT HACK & CO.
Fellows Institute of Patent Attorneys of Australia

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