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**Datasheet for the decision
of 5 July 2017**

Case Number: T 0239/13 - 3.3.06

Application Number: 06777186.5

Publication Number: 1926809

IPC: C11D3/40, C11D3/37, C09B67/00

Language of the proceedings: EN

Title of invention:
Composition of enhanced stability and a process for making such
a composition

Patent Proprietors:
Unilever PLC / Unilever N.V.

Opponent:
The Procter & Gamble Company

Headword:
Dye storage stability / UNILEVER

Relevant legal provisions:
EPC Art. 52(1), 56, 83

Keyword:

Sufficiency of disclosure (main request) : no (first auxiliary request) : yes

Inventive step (first auxiliary request) : yes

Decisions cited:

G 0003/14

Catchword:



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Case Number: T 0239/13 - 3.3.06

D E C I S I O N
of Technical Board of Appeal 3.3.06
of 5 July 2017

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Decision under appeal: **Decision of the Opposition Division of the European Patent Office posted on 29 November 2012 rejecting the opposition filed against European patent No. 1926809 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chairman B. Czech
Members: L. Li Voti
 C. Vallet

Summary of Facts and Submissions

I. The present appeal is from the decision of the Opposition Division to reject the opposition against the European patent No. 1 926 809.

II. The sole independent claim 1 of the patent as granted reads as follows:

*"1. A granule, for use in the preparation of a basic laundry detergent shading composition, said granule having improved storage properties comprising: a dye selected from the group consisting of acid dyes, basic dyes, solvent dyes, hydrolysed reactive dyes, reactive dyes and disperse dyes and having a dye chromophore type of diarylmethane, triarylmethane, diazines, oxazines, or thiazines and, a component selected from the group consisting of: a cogranulent, a binder and a coating, **characterised in that** the component is an acidic component."*

III. An opposition was filed on the grounds of *inter alia* lack of inventive step (Article 100(a) EPC) and insufficiency of disclosure (Article 100(b) EPC).

The documents relied upon by the parties include the following:

D1: EP 1 577 374 A1 (D1a: US 2005/0215460 A1 was also relied upon for translation purposes);

D3: US 4 721 633 A;

D6: "Water soluble polymers - Sokalan[®] Tamol[®] Lupasol[®]"; brochure (five pages) of BASF The

Chemical Company;

D7: WO 2006/053598 A1, filed on 5 September 2005 and published on 26 May 2006;

D8: "The Chemistry of SYNTHETIC DYES" by K. Venkataraman, volume II, 1952, Academic Press Inc., New York; pages 707 to 711;

D9: "DYEING AND CHEMICAL TECHNOLOGY OF TEXTILE FIBRES" by E.R. Trotman, fourth edition, 1970, Griffin London; pages 368 to 373; and

D10: Experimental data filed as "Annex 1" to the Proprietors' letter of 29 August 2012.

IV. In its decision, the Opposition Division found that the patent as granted complied with all the requirements of the EPC.

V. In its statement setting out the grounds of appeal of 9 April 2013, the Appellant (Opponent) maintained *inter alia* that the invention was not sufficiently disclosed and that the subject-matter of claim 1 lacked an inventive step in the light of D7 in combination with document D6 or in the light of D1 taken alone. Together with the statement, the Appellant filed the following further documents supposed to show that it had been well known that dyes falling within the ambit of claim 1, in particular triphenyl methane dyes, were unstable or became colourless on exposure to alkali:

D11: "The Ionization of Basic Triphenylmethane Dyes" by R. J. Goldacre at al., J. Chem. Soc. 1949; pages 1724 to 1732;

- D12: Abstract of "The atmospheric oxidation or dealkylation, of aqueous solutions of methylene blue" by W. C. Holmes et al., U. S. Dept. Agr., Stain Technology (1929), 4 7-10;
- D13: Abstract of "A study on equilibrium and kinetics of carbocation-to-carbinol conversion for di- and tri-arylmethane dye cations in aqueous solutions: relative stabilities of dye carbocations and mechanism of dye carbinol formation" by S. K. S. Gupta et al., Indian Journal of Chemistry, Section A: Inorganic, Bio-inorganic, Physical, Theoretical & Analytical Chemistry (2000), 39A(7), 703-708; and
- D14: Abstract of "Reaction of carbinol bases of triphenylmethane dyes with acetic acid and chloroacetic acid in benzene" by E. Kwiatkowski et al., Matematyka, Fizyka, Chemia (1970), 10, 143-56.

VI. In their reply of 5 August 2013, the Respondents (Patent Proprietors) defended the patent as granted (main request). However, together with the reply, they also filed an amended set of claims as first auxiliary request. Moreover, they expressed their agreement with the findings in the decision under appeal and relied on the written submissions filed before the first instance.

Claim 1 of the set of claims according to the first auxiliary request differs from claim 1 as granted in that the following wording is appended to the latter:

"wherein buffer capacity wherein when 1.00 gm of the granules are dissolved in 50 ml of demineralised water

to provide an acidic solution at least 10 ml of a 0.01 M solution of sodium hydroxide is required to bring the pH of the acidic solution to 9."

Dependent claims 2 to 10 according to this request concern specific embodiments of the granules according to claim 1.

VII. By letter of 10 September 2015 the Appellant submitted additional arguments concerning, in particular, sufficiency of disclosure. It also filed the following new documents in support of its insufficiency objection:

D15: Excerpt from Wikipedia: "Solvent dye"; printout dated "8/28/2015";

D16: Excerpt from Wikipedia: "Disperse dye"; printout dated "9/2/2015"; and

D17: Declaration by Gregory S. Michael, dated 3 September 2015.

VIII. First oral proceedings before the Board were held on 22 September 2015.

At these oral proceedings it was decided (T 0239/13, Reasons, point 2, and Order), in accordance with a request by the Appellant, to stay the appeal proceedings until a decision be issued by the Enlarged Board of Appeal in case G1/15.

IX. After issuance of decision G 1/15 of 29 November 2016 the Board, in a communication dated 11 May 2017, expressed its provisional opinion on some of the issues

to be debated during (second) oral proceedings scheduled for 5 July 2017.

- X. With their reply dated 30 May 2017, the Respondents submitted arguments concerning sufficiency of the disclosure and inventive step and filed two amended sets of claims as second and third auxiliary request, respectively.

- XI. In its letter of 16 June 2017 the Appellant submitted further arguments concerning the validity of the claimed priority date, and maintained insufficiency and inventive step objections, referring also to three further Wikipedia excerpts D18, D19 and D20 (printouts dated "6/5/2017") concerning the acid-base indicator dyes Methyl violet, Neutral red and Thymol blue, respectively, considered to fall within the dye definition of claim 1 as granted.

- XII. With letter dated 30 June 2017 the Respondents replied to the Appellant's letter and filed three further sets of amended claims as fourth, fifth and sixth auxiliary requests.

- XIII. Second oral proceedings were held before the Board on 5 July 2017.

- XIV. Final requests

The Appellant (Opponent) requested that the decision under appeal be set aside and that the European patent No. 1 926 809 be revoked.

The Respondents (Patent Proprietors) requested that the appeal be dismissed, or, in the alternative, that the patent be maintained on the basis of one of the sets of

claims filed as first to sixth auxiliary requests by letters dated 5 August 2013, 30 May 2017 and 30 June 2017, respectively.

XV. The **Appellant's** arguments of relevance here can be summarised as follows:

Sufficiency of disclosure (main request)

- Claim 1 concerns granules having improved storage properties and comprising a shading dye and an acidic component, which are extremely broad defined. Moreover, claim 1 encompasses also granules which *in toto* are not acidic, but alkaline. It is not credible that all possible combinations of shading dye and acidic component encompassed by the claim would result in a granule having such improved storage properties within the meaning of the patent in suit, in particular if the granules are overall alkaline.

- In fact, it was common general knowledge (D8, D9 and D11 to D14) that many of the dyes encompassed by the wording of claim 1 are unstable at alkaline pHs. In particular, triphenyl methane dyes are rendered colourless at an alkaline pH. This is confirmed by the patent in suit that teaches that the classes of dyes encompassed by the claimed invention are unstable at high pH. Therefore, alkaline granules comprising such dyes encompassed by claim 1 at issue would not be expected to fulfill the improved storage properties required by claim 1.

- Moreover, the description of the patent in suit describes only acidic granules. Therefore, it does not contain sufficient information to enable the skilled person to prepare an alkaline granule having improved

storage properties as encompassed by claim 1 and thus to carry out without undue burden the invention throughout the whole ambit of the claim.

- Furthermore, if the added acidic component is supposed to protect the dye from a possible base catalysed hydrolysis in presence of alkali (resulting in an improved dye stability), it is not credible that an improved dye stability would be achieved for any type of dye encompassed by claim 1 at issue and for any amount of acidic component used. For example, a stabilization of water-insoluble dyes encompassed by the wording of claim 1, like disperse or solvent dyes (see D15 and D16), which cannot undergo a base catalyzed hydrolysis, is not to be expected.

- Therefore, the skilled person could only find suitable combinations of dye and acidic component showing the required improved storage properties by testing any possible combination falling under the very broad scope of claim 1, which approach would amount to an undue burden for the skilled person.

- The claimed invention is thus not sufficiently disclosed.

- Moreover, the patent in suit does not clarify how the improved storage properties are to be measured.

- The range of dyes encompassed by claim 1 encompasses acid-base indicators. Consequently, depending on the pH of the granule, of the basic laundry detergent composition and of the laundry liquor obtained therefrom, the original colour of the granules may be different from the colour during storage and from the colour of the laundry liquor. Therefore, not all the

combinations encompassed by claim 1 can show colour stability and improved storage properties.

- Furthermore, as stated in D17, there exists only one known disperse dye having one of the chromophores of claim 1. Disperse dyes with other chromophores, also encompassed by the wording of claim 1, do not apparently exist.

Sufficiency of disclosure (first auxiliary request)

- The additional feature of claim 1 according to the first auxiliary request (see VI, *supra*) concerns the buffer capacity of the granules, which is defined in relation to the minimum amount of a specific NaOH solution to be added to a specific acidic solution of the granule in question in order to reach the pH of 9. However, it is known that at least pH values up to 9 are dependent on the temperature used during measuring. Since the temperature to be used in the determination of the buffer capacity is neither indicated in the claim nor in the description of the patent, the skilled person would not be able to realize the invention.

- Moreover, it is known, for example from D11, that triphenyl methane dyes are already unstable at a pH around 9. However, the patent in suit only exemplifies stable granules comprising as (acidic) binder Sokalan CP13S, which has a solution pH of 4 (see D6). Hence, it is not credible that all possible combinations of dye and acidic component encompassed by the wording of claim 1 would result in granules having improved storage properties. Therefore, also in this case the skilled person would not be able to realize the invention.

- Therefore, the invention according to claim 1 of the first auxiliary request is not sufficiently disclosed also for these additional reasons.

Inventive step (first auxiliary request)

- As regards the subject-matter of claim 1, which does not benefit from the claimed priority date of 22 September 2005, the closest prior art is represented by document D7. D7 discloses granules comprising a shading dye and a binder which are to be used in combination with an alkaline laundry detergent composition for providing shading benefits to the washed fabrics.

- In particular, the most suitable starting point for the evaluation of inventive step is represented by a granule comprising the triphenyl methane dye Solvent Violet 8 (a dye according to claim 1 at issue) and a binder.

- Document D7 clearly teaches to preferably use as binder one of those listed in claim 8, in particular a polyacrylate or a polyacrylate/maleate copolymer. In fact, example 1 of D7 describes a granule comprising the binder Sokalan CP5 which is a polyacrylate/maleate copolymer (see D6).

- Since these granules are intended to be mixed with an alkaline laundry detergent powder and since the skilled person knew that triphenyl methane dyes have the tendency to form colourless carbinols in alkaline environments, it would have been obvious for the person skilled in the art to try to retard the dye fading due to the contact with the alkaline laundry detergent powder by formulating the granule with a more acidic binder component.

- Acidic binders of the same polymeric type as Sokalan CP5 were known and considered suitable for application in the field of detergents (see D6). Therefore, considering (*arguendo*) that the technical problem underlying the claimed invention concerned the improvement of the dye stability upon storage, it would have been obvious for the skilled person to use an acidic binder like Sokalan CP13S as alternative to the neutral binder Sokalan CP5 used in the example 1 of D7 in order to solve the technical problem posed.

- Moreover, the experiments described in the patent in suit and in D10 do not convincingly show that the allegedly improved stability arises from the use of the acidic component in the granule, and that any acidic component encompassed by claim 1 would bring about such an effect. Therefore, the technical problem underlying the invention could merely be formulated as the provision of an alternative granule comprising shading dyes.

- In this respect it would have been obvious for the skilled person to prepare an alternative granule by replacing the neutral binder used in example 1 of D7 with another well known binder, for example one of the acidic binders of the same chemical class, as disclosed in D6.

- As regards subject-matter enjoying the claimed priority date of 22 September 2005, the closest prior art is represented by D1, in particular example 2. D1 discloses granules comprising a dye (an acid-base indicator) and an active ingredient to be used in combination with an alkaline laundry detergent powder, said granules showing improved storage stability of the active substance.

- The claimed subject-matter lacks an inventive step over D1.

XVI. The **Respondents'** arguments of relevance here can be summarised as follows:

Sufficiency of disclosure (main request)

- The description of the patent in suit illustrates how to prepare a granule according to claim 1.

- It is clear from the description of the patent in suit that the "*improved storage properties*" mentioned in claim 1 concern the increased storage stability of the dye in a granule containing also an acidic component in a basic laundry detergent composition, as compared to a similar dye granule without the acidic component. In particular this term has to be understood, as shown in the experimental part of the patent in suit, as the reduction of the fading of the dye upon storage of the granule added to an alkaline laundry detergent powder as measured in the final wash liquor. Such an improvement is shown in the experimental part of the description of the patent in suit and in D10.

- The patent in suit clearly explains how to measure the improved storage properties and that the granule according to the invention and the comparison have to be tested at similar pH.

- The "*improved storage properties*" thus do not concern the invariability of the colour of the dye and it is acceptable that the granules and the final laundry liquor have different colours because, for example, the

dye may be an acid-base indicator which changes its colour at the elevated pHs of the laundry liquor.

- Moreover, the invention does not require that all classes of dyes with all types of chromophores as listed in claim 1 must be known. It is instead sufficient that there exists at least one dye for each class indicated in the claim with at least one of the chromophore types listed.

- All combinations of dye and acidic component encompassed by claim 1 according to the main request, including also combinations with overall alkalinity, which are not excluded by the wording of the claim, have the required improved storage properties.

- The Appellant's allegations concerning the impossibility of achieving improved storage properties or of carrying out the claimed invention without undue burden across the whole ambit of claim 1 are not supported by evidence.

- In particular, as regards granules having overall alkalinity, the skilled person would know from common general knowledge how to adjust the morphology of the granules by creating, for example, regions of the acidic component within or on the surface of the granule, in order to ensure stability. For example, he could just follow the teaching of the description, by applying a coating of the acidic component to the granule. Furthermore, the skilled person would be able to select the right combination of dye, acidic component and morphology of the granule in order to make sure that stability is achieved.

- Furthermore, even admitting the common general knowledge that triphenyl methane dyes are unstable in an alkaline liquor with formation of colourless carbinols, the kinetics of this reaction in a solid granule would not be so fast to affect the shading power of the combination of granules and laundry detergent powder.

- Therefore, the claimed invention is sufficiently disclosed.

Sufficiency of disclosure (first auxiliary request)

- Since claim 1 at issue is limited to acidic granules the invention is clearly disclosed in the description and examples of the patent in suit. The Appellant has in this respect not brought any evidence that the claimed invention would not work throughout the whole ambit of claim 1.

- In the absence of any indication to the contrary it would be clear to the skilled person that buffer capacity has to be measured at room temperature, wherein the change of pH depending on the used temperature is meaningless.

- The objection based on the common general knowledge that triphenyl methane dyes are unstable in an alkaline liquor with formation of colourless carbinols is also not relevant due to the different kinetics of such a reaction in solid granules, which would not lead to formation of the colourless species within a relevant time interval.

- The invention as claimed according to the first auxiliary request is thus also sufficiently disclosed.

Inventive step (first auxiliary request)

- As regards subject-matter not benefiting from the claimed priority date D7 represents the closest prior art.

- However, the skilled person would not find in D7 any suggestion of using an acidic binder instead of the neutral binder used in the examples and for using it in order to improve the storage properties of the shading dye.

- Therefore, even though the skilled person could have tried alternative granules by using different binders, he would not have done it with the expectation of improving the storage properties of the granules.

- In fact, even admitting the common general knowledge that triphenyl methane dyes are unstable in an alkaline liquor with formation of colourless carbinols, the kinetics of this reaction in a solid granule would be in any case very slow and the skilled person would not have expected it to affect the shading power of the combination of granules and laundry detergent powder. As a matter of fact no stability problems were identified in D7 for the disclosed combinations.

Therefore, the claimed subject-matter involves an inventive step over D7.

- As regards subject-matter not benefiting from the claimed priority date, D3, mentioning the use of dyes to shade textiles in a laundry application (column 5, lines 2-6), rather than D1 represents the closest prior

art. The teaching of D3, however, cannot lead to the claimed subject-matter.

- However, even considering D1, the claimed subject-matter would anyway involve an inventive step.

- The claimed subject-matter thus involves an inventive step.

Reasons for the Decision

Admissibility of documents D11 to D20

1. In the course of the appeal proceedings, the Appellant filed documents D11 to D20 as complementary evidence supposed to further support its position regarding sufficiency of the disclosure.
 - 1.1 The Respondents raised no objection regarding their admittance into the proceedings.
 - 1.2 Neither does the Board see any reason for not admitting them.

Main request - Claim 1 as granted - Meaning of the terms

2. Claim 1 (see VI, *supra*) concerns a granule "*for use in the preparation of a basic laundry detergent **shading** composition, said granule having **improved storage properties** comprising:
a dye selected from the group consisting of...and having a dye chromophore type of ... and, a component selected from the group ... that ... is **an acidic component.**"* (emphasis added by the Board).

2.1 Concerning the "*shading composition*"

2.1.1 It is not in dispute that the wording of claim 1 "*for use in the preparation of a basic laundry detergent **shading** composition*" implies that the granule has to be suitable for being used as a component in the preparation of such a laundry detergent composition, and that the dye contained in the granule must be able to provide a shading effect on the fabric washed with the basic laundry detergent composition of which the claimed granule is a component.

2.1.2 As pointed out by the Respondents during oral proceedings, these dyes may have any colour suitable for shading laundry. The colour providing the actual shading was the colour of the washing liquor containing the dissolved "*basic laundry detergent shading composition*", which was not necessarily the same colour as the one conferred by the dye to the granule itself.

2.1.3 Therefore, granules comprising dyes changing their colour when dissolved in the alkaline environment of the laundry liquor, for example acid-base pH indicator dyes, are also encompassed by claim 1, provided the dyes are suitable for providing the intended shading of laundry.

2.2 Concerning the "*improved storage properties*"

2.2.1 The wording of claim 1 does not even implicitly express which particular "*storage properties*" of the claimed granules are supposed to be "*improved*", let alone compared to which other granules.

2.2.2 It is thus not unambiguously clear from the wording of claim 1 *per se* which additional limitations of the granules of claim 1, if any, are implied by the feature "*improved storage properties*", said granules being otherwise defined in terms of their composition (ingredients) and structure (granule).

2.2.3 Since this ambiguous feature was already present in claim 1 as granted it may not, however, be objected to under Article 84 EPC (G 3/14, OJ 2015, A102, Order). Its meaning is thus construed by the Board.

As regards this particular issue, the patent in suit comprises the following indications (emphasis added):

"[0002] We have recently found that some dyes may be incorporated into laundry detergent at low levels and provide a shading benefit to textiles. We have however found that **some of these dyes are not stable in granular detergent compositions.**"

"[0004] It is an object of the present invention to provide a granular composition comprising a dye that has **improved storage properties.**"

"[0005] We have found that the dyes are unstable even when segregated from the bulk of a basic granulated detergent powder. We have found that the presence of an acidic component in the dye composition containing the dye serves to **enhance the stability of the dye in a basic laundry detergent powder.**"

"Measurement of the Dye Level in the Granule." (page 8, line 43).

"[0083] The **level of dye in the granules** was measured

by the UV absorbance following the following protocol."

"[0085] The results in Table 1 show a substantial **advantage** provided by the present invention **to the stability of the dye in the composition** by use of an acidic component."

- 2.2.4 The Board has no doubt that, in view of these indications, the person skilled in the art reading the patent in suit would understand that the expression "*improved storage properties*" in claim 1 qualifies the storage **stability of the dye** component contained in the granule, **when** the latter is **stored as part of a basic laundry detergent composition**, as compared to the stability of the dye component in a similar granule not containing an "*acidic component*" as defined in claim 1 and also stored as part of a basic laundry composition.
- 2.2.5 More precisely, this stability is determined and quantified, as shown in the experimental part of the patent in suit (paragraph [0083] and Table 1), by comparing the spectra
- of a wash liquor comprising the freshly prepared detergent composition including the dye granules and
 - of a wash liquor comprising a dissolved sample of the detergent composition including the dye granules that has been stored for a certain time,
- and measuring the difference in peak absorbance as a function of storage time.
- 2.2.6 Therefore, the Board accepts that, as argued by the Respondents at the oral proceedings, the feature "*improved storage properties*" expresses the lower degree of fading of the dyeing power, measured in the wash liquor, resulting from storing the granule

comprising the acidic component as part of an alkaline laundry detergent powder, as compared to the degree of fading resulting from storing, under the same conditions, a similar granule not comprising the acidic component.

2.3 The wording "*a dye selected from the group consisting of....and having a dye chromophore type of...*"

2.3.1 For the Board, this wording merely expresses that the shading dye according to claim 1 must belong to one of the listed classes and must have at least one of the chromophores listed.

2.3.2 Hence, claim 1 does not require that each and every combination of a dye from one of the classes having one of the listed types of chromophores must actually exist.

2.4 Concerning the "*acidic component*"

2.4.1 Finally, as conceded by the Respondents in the course of the oral proceedings before the Board, claim 1 merely requires the presence of an "*acidic component*" in the claimed granule, but does not exclude granules which, although containing a certain amount of an acidic component, are nevertheless alkaline **overall** (referred to as **alkaline granule(s)** hereinafter), in the sense that an aqueous solution thereof will have an alkaline solution pH.

2.4.2 Indeed, claim 1 as granted does not require the "*granules*" to be acidic or even neutral overall (referred as **acidic granule(s)** and **neutral granule(s)** hereinafter). A solution of the claimed granules *per se* may thus have an alkaline pH, e.g. in the pH range of 8

to 11 of the wash liquor indicated in paragraph [0078] of the patent, despite the presence of some acidic component.

Main request - Sufficiency of the disclosure

3. In the light of the interpretation of the term "*improved storage properties*" above (point 2.2.6), requiring the comparison of the dye stability to be made on the basis of the peak absorbance **in the wash liquor** containing the dissolved dye granule and alkaline laundry detergent powder under comparable pH conditions, a mere change of color of the dye upon its dissolution in the alkaline wash liquor or within the granule in contact with alkaline component is irrelevant, provided that the dissolved dye gives the intended shading effect.

Therefore, the Appellant's objection based on the possible "colour instability" of acid-base indicator dyes (i.e. their possible pH-dependent colour change) falling within the ambit of claim 1 (XV, *supra*), such as the dyes referred to in D18 to D20, is not relevant for the discussion of sufficiency.

4. Moreover, as set out above, paragraph [0083] clearly describes how to measure the "*improved storage properties*" of a granule as claimed. The skilled person would thus encounter no difficulty in preparing a granule falling within the ambit of claim 1.
5. The Board notes also that it was not disputed by the Appellant that there exists at least one dye representative of of each of the listed classes of claim 1 containing at least one of the listed

chromophores.

In view of the Board's interpretation of the wording of claim 1 (2.3.2, *supra*), the Appellant's sufficiency objection (XV, *supra*) based on the argument that only one disperse dye comprising one of the chromophores listed in claim 1 at issue, appears to be known and available to the person skilled in the art (as stated in D17), does not lead to the conclusion that there is an insufficiency of the disclosure.

6. The Appellant also argued (see XV, *supra*) that it was not credible that, as asserted by the Respondents, all possible combinations encompassed by claim 1 and, in particular, any conceivable dye/acidic component combination, would result in "*improved storage properties*" as required according to claim 1.
7. As regards acidic granules
 - 7.1 The Board notes, however, that the patent in suit (see paragraphs [0009] to [0058], [0080] and [0081]) describes in detail the preparation of acidic granules.
 - 7.2 The test contained (paragraph [0082] and Table 1 on page 9) confirms that acidic granules prepared following the teaching of the description (in terms of suitable dyes and acidic components and their formulation) have improved storage properties within the meaning of the patent in suit since the tested acidic granule shows already after 6 days a much greater maintenance of the dye level (97%) than the comparative neutral granule not containing an acidic component (54%).

- 7.2.1 As shown in paragraphs [0080] and [0081], the acidic granule and the comparative neutral granule tested are prepared in a slightly different way and the neutral granule contains also a nonionic surfactant (Lutensol AO30) which is absent in the acidic granule. Despite this difference, the Board finds that this experimental evidence represents a fair comparison of a granule according to claim 1 at issue with a granule outside the scope of claim 1, not comprising the required acidic component. In fact, it is not to be expected that the nonionic surfactant mentioned above could have an influence on the dye stability.
- 7.2.2 The Appellant's allegation that this experimental evidence does not show that the improvement in stability is due to the incorporation of the acidic component into the granule is not corroborated by evidence and thus not convincing.
- 7.3 D10 also shows convincingly that an acidic granule prepared following the teaching of the patent in suit has the required improved storage properties since the dye contained in such a granule is more stable (107.7% and 99.2% of dye remaining in the granule after 16 days storage) than in a reference granule not containing any acidic component (69.9% and 72.6%).
- 7.3.1 Also in this case, the Board cannot follow, in the absence of corroborating evidence, the Appellant's allegation that the experimental evidence on file is not relevant.
- 7.3.2 In fact, it is plausible for the Board that the difference in stability in the tested granules arises from the incorporation into the granule of the acidic component (Sokalan CP13), whilst the reference granule

contains instead Sokalan CP5, which is not acidic and is also not to be expected to have an influence on the dye stability.

- 7.4 The Appellant did also not provide any evidence corroborating that it was not credible that a granule comprising any combination of any acidic component in any concentration with a dye as defined in claim 1 which was insoluble in water and could not undergo base catalysed hydrolysis, such as a "*solvent dye*" or a "*disperse dye*" (as described in documents D15 and D16), would have "*improved storage properties*".
- 7.5 Therefore, as regards the **acidic granules** encompassed by the wording of claim 1, the Board, in the absence of evidence to the contrary, has no reason to call into question the correctness of the Respondents' assertion that any possible combination of dye and acidic component encompassed by claim 1 has "*improved storage properties*".
- 7.6 The Board thus concludes that, as regards such acidic granules, the description provides the skilled person with technical information and guidance sufficient to enable him to prepare, without undue burden, acidic granules having "*improved storage properties*" across the whole ambit of claim 1.
8. As regards alkaline granules
- 8.1 Concerning granules being alkaline overall " (see point 2.4.1, *supra*), i.e. granules leading to an elevated pH upon contact with/dissolution water, the Board remarks that the description neither describes explicitly how to prepare such type of granule nor states, let alone

shows by means of data, that such alkaline granules would also have "*improved storage properties*".

8.2 On the contrary, the patent in suit points out that the shading dyes of claim 1 are unstable in the presence of a basic laundry detergent powder even when segregated from the bulk of the alkaline powder (2.2.3, *supra* and, in particular, the cited paragraphs [0005] and [0085] of the patent) and shows explicitly that alkaline aqueous solutions of at least some triphenyl methane dyes according to claim 1 are unstable at a high pH of above 10 (paragraphs [0086] to [0090]).

8.2.1 This is in accordance with common general knowledge as referred to by the Appellant (D8, passage bridging pages 707 and 708; chart 1 on page 708; page 710, lines 18 and 19; D9, page 372, lines 6 to 7; D11, page 1724, abstract and page 1726, Tables I to III; D12, D13 and D14) according to which especially triphenyl methane dyes encompassed by the wording of claim 1 are unstable in the presence of alkali. In particular, it was known that triphenyl methane dyes are converted into their colourless carbinol species in aqueous solution at an alkaline pH.

8.2.2 Therefore, even though the above mentioned conversion leading to the formation of carbinols would presumably occur at a much lower speed in solid granules, which may take up some humidity during storage, it is credible that triphenyl methane dyes are at least to a certain extent unstable in the strongly alkaline environment of a "*basic detergent laundry composition*".

8.3 Although the entire description exclusively deals in detail with acidic granules (see 7.1, *supra*) the Respondents argued at the oral proceedings that by

following the teaching of the description (paragraphs [0047] or [0052]), or relying on common general knowledge, the person skilled in the art would also be able to provide an overall alkaline granule having regions of the acidic component within or on the surface of the granule.

8.3.1 The Board observes that in a granule which is overall alkaline and which can even have a stronger alkalinity than the remaining components of the "*basic laundry detergent composition*" into which it is to be incorporated, the dye contained within the granule would necessarily be highly exposed to closeby alkaline material.

8.3.2 However, the patent in suit itself teaches that the dyes in question are unstable even when segregated from the bulk of the alkaline detergent powder (paragraph [0005]). Hence, the Board is not convinced that the simple presence in the alkaline granule of, for example, a very minor amount of acidic component present in certain regions within or on the surface of the granule

- could protect the dye from the instability caused by the closeby alkaline material from which the dye is not segregated and, hence
- could bring about "*improved storage properties*".

8.4 In the absence of a concrete teaching in the description of the patent on how to prepare alkaline granules with "*improved storage properties*" the person skilled in the art would thus need to start a research program for finding the suitable combinations of relative amounts of alkaline and acidic components, and/or of dyes sufficiently stable under the chosen environment conditions and/or of structural aspects of

the granule, in order to fulfil all the requirements of claim 1 at issue including the "*improved storage properties*".

8.5 The Board thus concludes that the skilled person, following the teaching of the description, is **not** provided with technical information and guidance sufficient to enable him to prepare granules as claimed without undue burden and across the whole ambit of claim 1.

8.6 The patent as granted is thus objectionable under Article 100(b) EPC.

8.7 The Respondents' main request is thus not allowable.

First auxiliary request - Sufficiency of the disclosure

9. Claim 1 according to the first auxiliary request differs from that according to the main request insofar as it additionally characterises the claimed granules by the features "*wherein buffer capacity wherein when 1.00 gm of the granules are dissolved in 50 ml of demineralised water to provide an acidic solution at least 10 ml of a 0.01 M solution of sodium hydroxide is required to bring the pH of the acidic solution to 9.*"

9.1 Even though this wording manifestly comprises some typing errors, it is directly apparent on a reasonable reading of the claim that this feature concerns the "*buffer capacity*" of the claimed granules which is defined starting from the wording "*when 1.00gm of the granules ...*".

This definition corresponds in fact to that contained in the description (page 5, lines 49 to 51).

- 9.2 From the above wording it is thus clear that the claimed granule cannot be any longer overall alkaline since "*the granules are dissolved in 50 ml of demineralised water to provide an **acidic** solution*".
- 9.2.1 Therefore, the considerations under 8, *supra*, with respect to claim 1 of the main request and the following conclusion concerning the insufficiency of the disclosure (point 8.5) do no longer apply as such to the invention according to the more restricted claim 1 of the first auxiliary request.
- 9.3 The Board agrees with the Respondents that, absent any indication to the contrary, it would be clear to the person skilled in the art that the "*buffer capacity*" mentioned in claim 1 has to be measured at room temperature. Under these conditions, a possible change of pH depending on the used temperature would be very small and, hence, insignificant.
- 9.3.1 Therefore, the person skilled in the art would be able to reliably measure the buffer capacity of the granules as described in paragraph [0084] of the patent.
- 9.3.2 The Appellant's objection (XV, *supra*) based on the absence of an explicit indication in the claim of the temperature to be used when measuring the pH is thus not convincing.
- 9.4 The Appellant raised also an objection based on common general knowledge (D8, D9 and D11 to D14) according to which triphenyl methane dyes encompassed by the wording of claim 1 are unstable in presence of alkali and converted into colourless carbinol species (points 8.2 to 8.2.2, *supra*). In particular, according to the

Appellant it would not be credible that all possible combinations of dye and acidic component would result in granules having improved storage properties in the range of granules having solution pHs of 4 to 9 as encompassed by claim 1.

- 9.4.1 However, claim 1 at issue explicitly encompasses only granules which have an acidic solution pH. Therefore, the argument based on the known instability of triphenyl methane dyes in an alkaline environment is not applicable in the case of acidic granules.
- 9.4.2 Moreover, as already exposed with respect to the main request as regards acidic granules (points 7.2.2, 7.3.1, 7.4), the Appellant did not provide evidence corroborating its objection and, thus, did not discharge the burden of proof resting with it as regards its allegations.
- 9.4.3 The Board holds (see also points 7.5 to 7.6, *supra*) that the description of the patent contains sufficient technical information and guidance enabling the skilled person to prepare acidic granules without undue burden and across the whole ambit of claim 1.
- 9.5 The invention according to claim 1 of the Respondents' first auxiliary request is thus disclosed in a manner sufficiently clear and complete for it to be carried out by the skilled person (Article 83 EPC).

As regards the priority date claimed

10. The Appellant considered that, taking into account decision G 1/15, the priority claim was either invalid *in toto* (as found by the Opposition Division) or, at least partially, to the extent that the claim

encompassed embodiments not disclosed in the priority document. The Respondents did not express themselves in detail regarding this issue.

The issue of the validity of the claimed priority need not, however, be decided in the present case, since the claimed subject-matter is not obvious (*in toto*) having regard to the prior art even considering (*arguendo*) that the priority is invalid *in toto*, as alleged by the Appellant.

First auxiliary request -Inventive step

11. The invention

11.1 The invention of claim 1 (II and VI, *supra*) concerns granules comprising a shading dye, for use in the preparation of a basic laundry detergent shading composition.

11.2 In the description of the patent in suit it is stated (paragraph [0002]) that some dyes which may be incorporated into laundry detergent powders in order to provide a shading benefit to textiles "*are not stable in granular detergent compositions*".

Consequently, according to paragraph [0004], "*[i]t is an object of the present invention to provide a granular composition comprising a dye that has improved storage properties.*"

12. Closest prior art

12.1 The Appellant presented two inventive step attacks based, respectively, on document D7 (to the extent that the subject-matter of claim 1 was not entitled to

priority) and on document D1. The Respondent was, however, of the opinion that either D7 or D3 (rather than D1) had to be considered as the closest prior art. These different approaches are all dealt with below.

12.2 Document D7

12.2.1 D7 concerns granules comprising a shading dye to be used in combination with a laundry detergent composition (page 1, lines 18 to 20 and page 2, lines 1 to 9). The dyes (page 4) may be suitable for shading cotton (hydrolysed reactive dyes, acid dyes, direct dyes) or polyester (hydrophobic dyes, i.e. solvent and disperse dyes). Triphenylmethane is mentioned as a possible chromophore of the hydrophobic dye. D7 also discloses granules comprising a dye with triphenylmethane chromophore (Acid Violet 17: page 12, line 2; Solvent Violet 8: (page 6, line 26).

12.3 The technical problem

The Respondents defined the technical problem in the light of D7 as the provision of a granule comprising a shading dye, intended to be used as a component of a laundry detergent composition and showing improved storage properties in terms of stability of the dye used.

12.4 The solution

As the solution to the technical problem identified above the patent in suit proposes the "granule" according to claim 1 which is characterised in particular in that it comprises "a dye selected from the group consisting of acid dyes, basic dyes, solvent dyes, hydrolysed reactive dyes, reactive dyes and

disperse dyes and having a dye chromophore type of diarylmethane, triarylmethane, diazines, oxazines, or thiazines"

and,

"an acidic component" which is "selected from the group consisting of: a cogranulant, a binder and a coating"

the granule having a

"buffer capacity wherein when 1.00 gm of the granules are dissolved in 50 ml of demineralised water to provide an acidic solution at least 10 ml of a 0.01 M solution of sodium hydroxide is required to bring the pH of the acidic solution to 9".

12.5 Success of the claimed solution

12.5.1 As exposed above (7.2, *supra*), as regards the acidic granules according to claim 1, the Board accepts that the claimed granules have *"improved dye storage properties"* within the meaning of the patent in suit and that the technical problem is, therefore, indeed successfully solved by the granules according to claim 1 at issue.

12.6 Non-obviousness of the solution

12.6.1 Document D7 teaches (claim 8) to use a binder chosen from the group consisting of polyacrylate, polyethylene glycol and polyacrylate/maleate copolymer.

For example, the granule of example 1 of D7 comprises as a binder Sokalan CP5, which is a polyacrylate/maleate copolymer having a solution pH of 8 (see D6).

12.6.2 However, D7 neither discloses nor suggests preparing granules comprising an acidic binder, cogranulant or

coating, let alone granules with a buffer capacity as prescribed by claim 1 at issue. Moreover, D7 does not address the problem of the dye stability upon storage in the alkaline environment of a basic laundry detergent composition.

12.6.3 According to the Appellant, considering that it belonged to common general knowledge that triphenyl methane dyes are unstable in an alkaline environment, the skilled person would have obviously tried to mitigate/retard the increase of pH and the consequent fading of the dyeing power due to the contact of the dye with the alkaline laundry detergent powder by formulating the granule with a more acidic binder component.

12.6.4 However, even though the instability of triphenyl methane dyes in an alkaline aqueous environment was part of common general knowledge (see 8.2.1, *supra*), the Board holds that the person skilled in the art, considering that the overall teaching of D7 does not, despite said common general knowledge, identify any undesirable instability of the dyes used, would not have envisaged departing from the explicit teaching of this document, as represented by its examples and claims, by incorporating an acidic binder in granules to be incorporated into an essentially alkaline detergent composition.

12.6.5 Acidic binders belonging to the chemical class of the polyacrylates and polyacrylate/maleate copolymers and suitable for application in the detergent field, such as Sokalan CP13S, were indeed known in the art (see D6). However, excluding hindsight considerations, the person skilled in the art faced with the technical problem of improving the dye storage stability of the

granule of D7, would not have found in D7 (or D6) any suggestion that the use of an acidic binder or other acidic component, let alone in an amount providing a "buffer capacity" according to claim 1, could bring about such "improved storage properties".

- 12.6.6 Starting from the disclosure of D7, the person skilled in the art would not have arrived in an obvious way at granules falling within the ambit of claim 1.
- 12.6.7 The Board thus concludes that even based on the assumption that the priority date claimed by the patent is invalid *in toto*, the subject-matter of claim 1 and consequently, the subject-matters of claim 2 to 10, involve an inventive step over D7 (Articles 52(1) and 56 EPC).
- 13. Document D3 versus document D1 as the closest prior art
 - 13.1 D1 not closest prior art
 - 13.1.1 The Appellant argued that among all those prior art documents published before the claimed priority date of the patent, D1 was the most relevant and could thus also be considered as the closest prior art.
 - 13.1.2 D1 does not, however, address the technical problem of providing a granule comprising a shading dye to be used in combination with a laundry detergent composition, let alone a granule showing "improved storage properties" in terms of stability of the dye (see 2.2.4, *supra*). This is not in dispute.
 - 13.1.3 D1 concerns, in fact (paragraphs [0001], [0002] and [0008]), solid preparations such as granules comprising sensitive active ingredients like bleach activators,

which can decompose and become inactive when the pH is changed, said preparations comprising additionally an acid-base indicator dye signaling a possible deactivation of the active substance.

13.1.4 Example 2 (paragraphs [0087] to [0092]) concerns, in particular, a granule comprising as bleach activator a trimethylammoniumnitrile tosylate, an acid-base indicator methyl red, which is not one of the dyes encompassed by claim 1 at issue, and the binder Sokalan CP 13S, which is an acidic binder component. Such a granule is used in combination with an alkaline laundry detergent. The dye used according to D1 thus serves a purpose which is totally unrelated to shading the laundry.

13.1.5 In view of this disclosure, the Board thus holds that considering D1 as the starting point for the assessment of inventive step is obviously based on hindsight. Such an approach is not admissible in the context of the problem-solution approach.

13.2 D3 closer prior art than D1

13.2.1 D3 (claim 1; column 5, lines 2 to 6) is concerned with particulate laundry compositions which may contain a shading dye, a phthalocyanine dye being expressly mentioned. Already for this reason, D3 is a more appropriate starting point for the assessment of inventive step, as correctly submitted by the Respondents.

13.2.2 As submitted by the Respondents (letter of 30 May 2017; paragraphs 25 to 28), the preparation of the compositions comprises forming an initial colouring solution comprising polyacrylic acid into detergent

beads (granules) having a coating of neutralized polyacrylic acid (D3: column 7, lines 42 to 48 and column 5, lines 22 to 33). Therefore, such granules differ from those of claim 1 at issue at least insofar as they do not contain a binder, cogranulant and/or a coating which is acidic.

13.2.3 The Respondents argued (paragraph 30 *ff.* of the letter of 30 May 2017) that the skilled person, starting from D3, would not find any pointer, in D3 or in any of the other prior art documents cited, "to apply an acidic binder, cogranulant and/or coating in the dye granule in order to improve the dye stability in a basic detergent powder".

13.2.4 No argument based on D3 or contesting the Respondents' view was presented by the Appellant. The Board is thus satisfied that starting from document D3, it would not have been obvious, to the person skilled in the art having regard to the prior art cited and/or common general knowledge, to provide granules according to claim 1.

14. In the Board's judgement the subject-matter of claims 1 to 10 according to the first auxiliary request thus involves an inventive step over D3 (Articles 52(1) and 56 EPC).

Order

For these reasons it is decided that:

The decision under appeal is set aside.

The case is remitted to the Opposition Division with the order to maintain the patent on the basis of the first auxiliary request filed with letter dated 5 August 2013 and a description to be adapted where appropriate.

The Registrar:

The Chairman:



D. Magliano

B. Czech

Decision electronically authenticated