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**Datasheet for the decision
of 7 October 2014**

Case Number: T 1599/10 - 3.3.03

Application Number: 03781467.0

Publication Number: 1565527

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C08F265/06, C08F292/00,
C08K13/02

Language of the proceedings: EN

Title of invention:
ACRYLIC COMPOSITIONS

Applicant:
Lucite International, Inc.

Headword:

Relevant legal provisions:
EPC Art. 123(2), 84

Keyword:
Amendments - added subject-matter (yes)
Claims - clarity (no)

Decisions cited:

Catchword:



**Beschwerdekammern
Boards of Appeal
Chambres de recours**

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Case Number: T 1599/10 - 3.3.03

**D E C I S I O N
of Technical Board of Appeal 3.3.03
of 7 October 2014**

Appellant: Lucite International, Inc.
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Cordova,
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted on 1 March 2010
refusing European patent application No.
03781467.0 pursuant to Article 97(2) EPC.

Composition of the Board:

Chairwoman B. ter Laan
Members: F. Rousseau
C. Brandt

Summary of Facts and Submissions

I. The appeal lies from the decision of the examining division refusing European patent application No. 03 781 467.0, originating from international application No. PCT/US2003/034401 and published as WO-A-2004/039884.

II. Claims 1, 3 and 12 as originally filed read:

"1. A process, comprising

a) mixing particles with a curable composition; and
b) curing said curable composition, prior to the particles substantially swelling, to form said thermoformable sheet.

3. The process of any one of claims 1-2 wherein said curable composition comprises an unsaturated material whereupon contact with said particles causes the particles to swell.

12. The process of any one of claims 1-11 wherein said particles are dispersed in a carrier prior to mixing."

III. The impugned decision, posted on 1 March 2010, was based on the sets of claims according to a main and three auxiliary requests. All requests contained claims directed to a process comprising three steps, as well as a claim reading:

"A thermoformable acrylic sheet prepared according to the process of claim 1".

According to the decision the product-by-process claim of each of the requests lacked novelty over the thermoformable acrylic sheets prepared in D2 (WO 00/24825). The third auxiliary request was

furthermore held to contravene the requirements of Article 123(2) EPC, since the documents as originally filed did not disclose the the matrix (the curable composition) to be a "curable acrylate composition".

- IV. On 12 March 2010, the Applicant (Appellant) lodged an appeal against the above decision and simultaneously paid the prescribed fee. With the statement setting out the grounds for the appeal filed on 25 June 2010, a new set of claims labelled "main request" was filed. Claim 1 of that request which contained only process claims, read as follows:

"1. A process, comprising
a) dispersing particles comprising a polyalkyl(meth)acrylate polymer in a high boiling point hydrocarbon carrier to form a particle mixture;
b) mixing said particle mixture with a curable composition, the curable composition comprising an unsaturated material; and
c) curing said curable composition, to form a thermoformable sheet, wherein the particles swell less than 50% in size prior to curing".

- V. In a communication dated 01 August 2014 sent in preparation for the oral proceedings the Board questioned the allowability of the amendments with respect to Article 123(2) EPC and Article 84 EPC.

In particular, the wording "particles comprising a polyalkyl(meth)acrylate)" was considered to be disclosed in the application as originally filed only in the context of "surface-seeking particles" to which the application as originally filed attributed a specific meaning, which meaning however was not reflected or implied by the terms of present claim 1.

The general terminology "unsaturated material" used in step b) was only disclosed in connection with the requirement that the particles should be able to swell upon contact with the unsaturated material, which meant that the particles should be able to increase by at least 10% in size (relative to their original size), in contrast to "unswollen or substantially not swollen particles". A definition of a minimum degree of swelling was however missing in claim 1. Furthermore, it was questionable whether the use of a polyalkyl(meth)acrylate polymer in combination with the use of a high boiling point hydrocarbon and the requirement that the particles should swell less than 50% in size prior to curing was disclosed in the application as originally filed. As to the requirements of Article 84 EPC, objections were raised in view of the lack of definition of the degree of swelling and the absence of a generally accepted meaning for the expression "high boiling point hydrocarbon".

VI. In response to the Board's communication the Appellant, with letter of 5 September 2014, submitted two sets of claims in replacement of the set of claims submitted with the statement of grounds. Claim 1 of the new main request read as follows (for ease of understanding, deletions made in claim 1 as filed are indicated in ~~strike through~~ and additions in **bold**):

- "1. A process, comprising
- a) **dispersing particles in a carrier to form a particle mixture;**
 - a) b) mixing **said particles mixture** with a curable composition **comprising an unsaturated material, whereupon contact with said particles causes the particles to swell;** and

~~b) c) curing said curable composition, prior to the~~
~~—— particles substantially swelling,~~ to form **a** said
thermoformable sheet, **wherein the particles swell less**
than 50% in size prior to curing.

VII. The wording of claim 1 of auxiliary request 1 differed from that of the main request in that the term "surface-seeking" had been introduced in step a) between the words "dispersing" and "particles".

VIII. During the oral proceedings held on 7 October 2014 the Appellants filed a second auxiliary request, claim 1 of which read as follows (additions are indicated in **bold** and deletions as ~~strike through~~, both as compared to claim 1 of the application as filed):

"1. A process, comprising

a) dispersing surface-seeking particles in a high boiling point hydrocarbon carrier to form a particle mixture the high boiling point hydrocarbon comprising, glycerol, dioctyl adipate, a dialkyl phthalate, such as dibutyl phthalate, diisooheptyl phthalate, dihexyl phthalate, diisooctyl phthalate, diisononyl phthalate, diisodecyl phthalate, diisotridecyl phthalate, diisooctyl adipate, diisononyl adipate, diisodecyl adipate, ditridecyl adipate and mixtures thereof,

~~a) b) mixing said particles mixture~~ with a curable composition **comprising an unsaturated material, whereupon contact with said particles causes the particles to swell;** and

~~b) c) curing said curable composition, prior to the~~
~~particles substantially swelling,~~ to form **said a**
thermoformable sheet."

IX. The Appellants' arguments can be summarized as follows:

- a) As regards Article 123(2) EPC, claim 1 was based on original claims 1, 3 and 12, combined with the passage on page 9, line 7 which described a degree of swelling of the particles of less than 50% in size. In that respect, the skilled person would directly and unambiguously derive from the application as filed that the process as originally disclosed involved the combination of features related to the presence of a carrier, mentioned in original claim 12, and the degree of swelling of less than 50%. It was clear from the formulation of claim 1 as well as the description, in particular page 9 as filed, that the essence of the invention was to cure the curable composition (the matrix) before substantial swelling of the particles took place, the swelling of less than 50% being the smallest range disclosed on page 9, lines 4-7 of the application as filed. The fact that the examples of the application did not specify the degree of swelling of the particles was rather an inventive step issue. In any case, the examples showed the advantages of the process having regard to the gloss of the resulting sheet, which could be directly linked to the swelling of the particles. A reference to specific high boiling hydrocarbon carriers could be found at page 8, lines 24 -30. Thus, claim 1 of the main request met the requirements of Article 123(2) EPC.

- b) The term "swelling" was clear and related in fact to the time of contact between the particles and the matrix before curing, but also to the nature

of the matrix and monomers used. The person skilled in the art knew how to measure the degree of swelling of particles. It was mentioned for example at page 11, last paragraph, that the particles were sieved before contacting the carrier. The particles remained in a discrete state once contacted with the carrier and the polymeric matrix and could thus be easily removed from the dispersion in order to measure their size. Hence, claim 1 of the main request also met the requirement for clarity of Article 84 EPC.

- c) As to auxiliary request 1, the term "surface seeking" now present in claim 1 did not introduce any lack of clarity. It was partly linked to the difference in density between the particles and the matrix which would cause them to sink or float to the bottom or top of the uncured polymer matrix, as mentioned on page 3, last paragraph. There were however other ways to obtain surface-seeking particles, by selecting specific shapes thereof for instance. This term in claim 1 could therefore not be further specified without unduly restricting the subject-matter for which protection was sought. Thus, claim 1 also met the requirement of Article 84 EPC.

- d) As to claim 1 of auxiliary request 2, it specified the nature of the carrier as disclosed on page 8, lines 24-29 of the application as filed. The specific carriers there mentioned were explicitly disclosed in combination with surface-seeking particles. Moreover, the reference to a degree of swelling of less than 50% had been replaced by the terminology "substantially swelling" disclosed in claim 1 as originally filed. These amendments

therefore overcame the objections regarding added subject-matter and clarity raised by the Board.

- X. The Appellants requested that the decision under appeal be set aside and that the main request or alternatively the auxiliary request, both requests filed with letter dated 5 September 2014, or alternatively the second auxiliary request, filed during the oral proceedings of 7 October 2014, be allowed in view of Articles 123(2) and 84 EPC and that the case be remitted to the first instance for consideration of inventive step on the basis of these requests.
- XI. The Board announced its decision at the end of the oral proceedings.

Reasons for the Decision

1. The appeal is admissible.
2. The main and first auxiliary requests, filed one month after the Board's communication sent in preparation for the oral proceedings, constitute a prompt and fair reply to the Board's objections under Article 84 and 123(2) EPC raised in said communication (see above point V). They are therefore admitted to the proceedings (Article 13(1) RPBA).

Main Request

Article 123(2) EPC

3. In order to determine whether or not an amendment adds subject-matter extending beyond the content of the application as filed, it has to be examined whether technical information has been introduced which a skilled person would not have directly and unambiguously derived from the application as filed, either explicitly or implicitly.
- 3.1 Claim 1 now requires that the particles are dispersed in a carrier (step a)). That results inter alia from the insertion in original claim 1 of the option disclosed in original claim 12. That such a step is only optional is in line with the second full paragraph on page 9 of the application as filed, where it is stated that the materials can be mixed in any suitable manner. Preferably the materials are mixed with the surface seeking particles added to the curable material, either directly or in a suspension.
- 3.2 In present claim 1 the use of a carrier to disperse the particles was combined with the requirement to use particles that swell upon contact with the unsaturated material (step b)), the degree of swelling being defined to be less than 50% in size prior to curing (step c)).

In the first full paragraph of page 9 of the application as filed, various degrees of swelling are disclosed, ranging from no swelling or only minimal swelling prior to curing the composition, to swelling not beyond 100% of the original size of the particles (i.e. the size of the particles prior to contact with

the curable material), for example, they swell less than 70% or less than 50% of their original size. At least 80% of the particles may be unswollen or substantially not swollen, for example, at least 90% or at least 95%. An unswollen particle (or substantially not swollen particle) is defined as a particle that has increased less than 10% in size relative to its original size.

In view of that disclosure on original page 9, the requirement that the particles should swell less than 50% cannot be considered as the smallest range disclosed or as reflecting the essence of the invention, i.e. to cure the curable composition before substantial swelling of the particles had taken place, as the Appellant argued.

- 3.3 Also, the application as filed does not provide a link between the selection of particles defined by their ability to swell less than 50% before curing and the use of a carrier. The examples of the application as filed do not even contain a pointer to such a combination as they do not disclose any degree of swelling of the particles prior to curing. Although it can be accepted that the gloss value is indicative of the surface texture of the thermoformed sheet (see page 15, last paragraph) and therefore of whether the particles had moved toward said surface during the process prior to curing, the application as filed does not provide any indication that the tendency of the particles to move towards a surface is exclusively linked to the degree of swelling of the particles prior to curing, i.e. does not depend on the other parameters of the process. Hence, even if the Appellant's argument could be accepted that the average surface gloss of the sheets prepared according to the examples depends on

the achieved degree of swelling of the particles prior to curing - for which there is no support in the application -, it could not be inferred from the examples that the average surface gloss or texture of the thermoformed sheet is the necessary result of a specific maximum degree of swelling of the particles prior to curing of less than 50% as defined in amended claim 1.

4. The Board therefore concludes that the combination of using a carrier and a process step in which the particles undergo swelling before curing but only to a degree of less than 50% of the original size, is not directly and unambiguously disclosed in the application as filed. Hence, the subject-matter of claim 1 of the main request extends beyond the content of the application as filed, contrary to the requirements of Article 123(2) EPC.

Article 84 EPC

5. Article 84 EPC requires that a claim should clearly define the subject-matter for which protection is sought. This requirement serves the purpose of ensuring that it is possible to differentiate between subject-matter that is covered by a particular claim and that which is not.
 - 5.1 Claim 1 relates to a process characterised by a maximum degree of swelling of the particles prior to curing ("less than 50% in size"). For the clarity requirement to be met, the process according to claim 1 has to be defined in such a way that the skilled person can distinguish the claimed process from processes that are not encompassed by claim 1. It has therefore to be determined whether the terminology "the particles swell

less than 50% in size prior to curing" allows this distinction to be made.

- 5.2 Claim 1 of the main request does not specify any method for determining whether a swelling less than 50% has taken place before curing. It is however well recognized in the art and not disputed by the Appellant that various definitions of particle size, in terms of volume or surface area for instance, depending on the method for its measurement, exist.

In the present case there is no definition how the size of the swollen particles should be measured prior to curing when they are present in the curable composition in the presence of a carrier. Moreover, it is not clear whether the degree of swelling refers to the change in size compared to the particles after or before mixing with the carrier. This is particularly relevant since the term "carrier" does not provide any limitation as regards the ability of such compound to cause the particles to swell.

- 5.3 The clarity requirement of Article 84 EPC relates only to the claims. Therefore, the claims should be clear per se for a person skilled in the art without the need to refer to the description in order to understand the scope of the claim, so that information only given in the description cannot be taken into account for the interpretation, i.e. clarity of the claims, for the purpose of complying with Article 84 EPC. The Appellant's argument that the examples of the application indicated that the size of the particles prior to dispersion was known due to the use of mesh screens for preparing said particles, therefore fails to convince. However, even if that information would be incorporated in claim 1, that would not solve the

clarity issue because the method to be used for determining the size of the swollen particles prior to curing would still remain undefined.

6. Under these circumstances, the feature "the particles swell less than 50% in size prior to curing" cannot be regarded as a clear definition suitable to distinguish between a process as claimed and one not being claimed. Thus, the subject-matter of claim 1 lacks clarity within the meaning of Article 84 EPC.
7. The main request is therefore not allowable.

Auxiliary request 1

8. Compared to the subject-matter of claim 1 of the main request, the subject-matter of claim 1 of auxiliary request 1 has been amended by defining the particles as "surface-seeking". That definition does not have any influence on the above finding that the specific degree of swelling and the use of carrier required in present claim 1 have no basis in the application as filed, contrary to the requirements of Article 123(2) EPC.
9. In addition, there is no evidence that the term "surface-seeking" has an accepted and well-established meaning in the art. It can be accepted that whether particles are surface-seeking in a particular process does not only depend on the nature of the particles such as their chemical constitution, size or shape, but also on the overall process including the nature of the other constituents of the composition. In the absence of any definition of criteria for distinguishing between surface-seeking particles and non-surface-seeking particles, let alone of any criteria that would allow an objective assessment of that property in the

context of the present type of process, that term cannot be regarded as a clear definition suitable to distinguish between a process as claimed and one not being claimed. The same holds true also in view of the expression "the particles swell less than 50% in size prior to curing" for the same reasons as given previously, since that feature is not necessarily implied by the term "surface-seeking". Hence, the subject-matter of claim 1 of auxiliary request 1 also lacks clarity.

10. Consequently, auxiliary request 1 is not allowable.

Auxiliary Request 2

11. The second auxiliary request was filed during the oral proceedings as a direct response and in an attempt in particular to address the clarity objection concerning the feature "the particles swell less than 50% in size prior to curing" which had been raised by the Board in this form for the first time during the oral proceedings. The Board in exercising its discretion to accept amended claims even at a late stage of the proceedings admitted the second auxiliary request to the proceedings (Article 13(1) RPBA). The replacement of the definition of a degree of swelling prior to curing of less than 50% by a definition that the particles do not substantially swell can however not overcome the clarity objection since the term "substantially" leaves doubt about the degree of swelling meant. In addition and for the same reasons as indicated above, that claim still does not define any objective criteria to determine whether in a given process the particles are surface-seeking or not and whether swelling occurs to the degree defined by

present claim 1, contrary to the requirements of Article 84 EPC.

12. Therefore, Auxiliary Request 2 is not allowable.

13. As none of the requests of the Appellants fulfils the requirements of the EPC, the appeal has to be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairwoman:



E. Goergmaier

B. ter Laan

Decision electronically authenticated