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**Datasheet for the decision
of 18 May 2017**

Case Number: T 2184/13 - 3.3.03

Application Number: 06832878.0

Publication Number: 1953177

IPC: C08F220/14, C08F265/06

Language of the proceedings: EN

Title of invention:

METHACRYLIC RESIN AND METHOD FOR PRODUCING SAME

Patent Proprietor:

ASAHI KASEI KABUSHIKI KAISHA

Opponent:

Evonik Röhm GmbH

Relevant legal provisions:

RPBA Art. 12(2), 13(1), 13(3)

EPC Art. 100(b), 56

Keyword:

Alleged public prior use and new document submitted as closest
prior art - not admitted
Insufficiency of disclosure (no)
Lack of inventive step (no) - submissions not made in the
light of the prior art

Decisions cited:

G 0002/98, T 0059/08, T 0089/13



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Case Number: T 2184/13 - 3.3.03

D E C I S I O N
of Technical Board of Appeal 3.3.03
of 18 May 2017

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Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office posted on
21 June 2013 concerning maintenance of the
European Patent No. 1953177 in amended form.

Composition of the Board:

Chairman D. Semino
Members: F. Rousseau
C. Brandt

Summary of Facts and Submissions

I. The appeal lies from the interlocutory decision of the opposition division posted on 21 June 2013 according to which European patent No. 1 953 177 as amended according to the claims of the main request submitted with letter of 26 July 2012 and an adapted description thereto meets the requirements of the EPC.

II. Claims 1 and 6 of that request read as follows:

"1. A methacrylic resin characterized in that the methacrylic resin comprises 80 to 98.5 wt% of methyl methacrylate monomer unit and 1.5 to 20 wt% of at least one different vinyl monomer unit copolymerizable with methyl methacrylate, has a weight average molecular weight measured by gel permeation chromatography (GPC) of 60,000 to 230,000 and comprises 7 to 30% of a component having a weight average molecular weight of 1/5 or less of a peak weight average molecular weight (Mp) obtained from a GPC elution curve, based on the methacrylic resin component.

6. A process for producing a methacrylic resin having a weight average molecular weight measured by gel permeation chromatography (GPC) of 60,000 to 230,000 and comprising 7 to 30% of a component having a weight average molecular weight of 1/5 or less of a peak weight average molecular weight (Mp) in a GPC elution curve, characterized in that the process comprises the steps of:

- preparing 5 to 40 wt%, based on the whole methacrylic resin, of a copolymer (1) which comprises 80 to 100 wt% of methyl methacrylate monomer unit and 0 to 20 wt% of a monomer unit composed of at least one different vinyl monomer

copolymerizable with methyl methacrylate and has a weight average molecular weight measured by gel permeation chromatography of 5,000 to 50,000; and - preparing 95 to 60 wt%, based on the whole methacrylic resin, of a copolymer (2), which comprises 80 to 99.5 wt.% of a methyl methacrylate monomer unit and 0.5 to 20 wt.% of a monomer unit composed of at least one different vinyl monomer copolymerisable with methyl methacrylate and which has a weight average molecular weight of 70,000 to 250,000 by adding a raw material mixture containing methyl methacrylate in the presence of the copolymer (1), wherein a percentage M_{al} (wt%) of another vinyl monomer copolymerizable with methyl methacrylate in the copolymer (1) and a percentage M_{ah} (wt%) of another vinyl monomer copolymerizable with methyl methacrylate in the copolymer (2) have a relationship of the formula (3):

$$(M_{ah} - 0.8) \geq M_{al} \geq 0 \dots\dots (3)''$$

III. The patent in suit had been opposed in its entirety on the grounds that its subject-matter lacked novelty and an inventive step (Article 100(a) EPC) and, was insufficiently disclosed (Article 100(b) EPC). The impugned decision referred to the following documents:

D1a: Picture of a bag indicated to comprise the polymer Sumipex MG SS

D1b: Picture indicated to represent an enlarged view of the sticker on the bag shown in D1a

D2: Certificate of analysis indicated to be that of the polymer contained in the bag shown in D1a

D3: Experimental report submitted by the opponent with letter of 3 May 2013 (said document was not numbered in the contested decision).

- IV. According to the contested decision, D3 was admitted into the proceeding but was found not to be relevant to the issue of whether the subject-matter of claim 1 was sufficiently disclosed, because it did not concern an attempt to prepare methacrylic resins which could be analysed by GPC as required by claim 1 of the patent in suit. Moreover, preparing a resin meeting the requirements of claim 1 by the synthesis of a single polymer was neither required by claim 1, nor indicated in the description as a possibility to prepare such a resin. Therefore, whether the skilled person was able to use that type of synthesis to prepare a resin in accordance with claim 1 was not relevant to the issue of sufficiency of disclosure. Sufficiency of disclosure was therefore acknowledged. Novelty over the alleged public prior use of the polymer Sumipex MG SS which had been argued on the basis of documents D1a, D1b and D2 was acknowledged, because neither the nature of the resin concerned, nor its availability to the public could be established. An inventive step was also acknowledged considering that the problem effectively solved was the provision of a polymer having a combination of improved flowability and mouldability, while maintaining heat resistance, appearance, mechanical strength and low occurrence of cracks. It was noted that the opponent had not submitted any prior art to support its inventive step objection.
- V. The opponent (appellant) appealed the decision. The statement setting out the grounds of appeal filed with letter of 31 October 2013 did not contain any submission in respect of lack of novelty.
- VI. The patent proprietor (respondent) submitted with the rejoinder of 14 March 2014 a main request, as well as auxiliary requests 1 to 8. The main request

corresponded to that underlying the contested decision. The respondent argued in respect of inventive step that in the absence of cited prior art, there could be no hint to the solution of the present invention.

VII. Following a communication of the Board sent in preparation for oral proceedings, the appellant submitted with letter of 18 April 2017 the objection for lack of novelty based on the alleged public prior use of the polymer Sumipex MG SS. That objection was based on documents D1a, D1b and D2 submitted before the opposition division and on the following additional items of evidence:

D1c: catalogue of SUMIPEX® ACRYLIC MOLDING RESINS, SUMITOMO CHEMICAL SINGAPORE, November 2007

D1d: JP 2006-131725 A and partial translation thereof in English

D1e: GPC-Measurement of a product indicated to be Sumipex MG SS

D1f: GC-MS Measurement of a product indicated to be Sumipex MG SS.

Prior art document JP-A-04 277545 (hereafter referred to as D4) and a machine translation thereof in English were also submitted with the appellant's letter of 18 April 2017. An analysis of inventive step starting from D4 was provided.

VIII. Oral proceedings took place on 18 Mai 2017.

IX. The appellant's arguments, insofar as they are relevant to the decision, may be summarized as follows:

Sufficiency of disclosure

- (a) The subject-matter of claim 1 allowed the use of cross-linkers such as ethylene glycol dimethacrylate which compound was as indicated in paragraph [0014] of the specification to be used in an amount of at least 1.5 wt%, leading to a resin which was insoluble and therefore could not be analysed with GPC, as demonstrated with experiments 1 and 2 of D3. The opposition division had not taken into account that argument submitted during the oral proceedings. Accordingly, the right to be heard of the opponent had been violated.
- (b) The argument of the respondent that only polymers were claimed which could be measured using GPC was not correct. Furthermore, considering that only workable embodiments could be claimed and those which were not workable were outside of the scope of the claims was diametrically opposed to the purpose of the requirement of sufficiency of disclosure.
- (c) The definition of "a component having a weight average molecular weight of 1/5 or less of a peak weight average molecular weight (Mp) obtained from a GPC elution curve, based on the methacrylic resin component" (hereafter referred to as the "1/5 component" adopting the terminology used by the parties) amounted to the use of an unusual parameter for defining the subject-matter claimed. The specification provided no information on how the amount of that component required by the

present claims was to be adjusted. In the absence of any guidance in the specification and relevant common general knowledge in the art, the skilled person would have as indicated in T 0123/06 to perform a research program in order to find suitable resins meeting that requirement.

- (d) It was not disputed that the subject-matter of claim 1 could encompass "single-polymers", i.e. resins which would not be prepared by the method taught in the specification, i.e. the mixing of two appropriate methyl methacrylate resins. However, the patent in suit was silent on how to prepare those "single-polymers", in particular there was no example in the patent in suit describing "single-polymers". It followed from T 0809/07 that in case of an unusual parameter, in the present case the amount of the "1/5 component", the specification had to disclose how the invention could be carried out outside the scope of the concrete embodiments exemplified therein.
- (e) Accordingly, the disclosure of the patent in suit was not reproducible over its whole scope without undue burden, which meant that the claimed subject-matter lacked sufficiency of disclosure.

Admittance of submissions based on evidence D1c to D1f and D4

- (f) The statement setting out the grounds of appeal already referred in point 1.1 to a lack of novelty and documents D1a, D1b and D2 were expressly referred to in the statement setting out the grounds of appeal. Their information content and the submissions provided in the notice of opposition were sufficient to demonstrate the

public prior use of the claimed resin. The additional documents D1e and D1f were dated 26 November 2001 and 11 October 2001 and bore a reference to a laboratory book which was the same as that mentioned in D2 demonstrating that D1e and D1f also concerned an analysis of Sumipex MG SS before the priority date of the patent in suit. D1e and D1f merely confirmed that Sumipex MG SS was a resin meeting the requirements of claim 1 of the patent in suit. As they did not contain additional information, their admission therefore could not necessitate postponement of the oral proceedings. Concerning the submission of D4, the inventive step argumentation was now based thereon, but had not been changed in substance, since it was still argued that the problem alleged to be solved over the closest prior art was not successfully solved over the whole scope of the claim. In addition D4 was one of the three documents presented in paragraph [0006] of the patent in suit as closest prior art for the claimed invention. Accordingly, that document was part of the opposition or opposition appeal proceedings. In addition, the Board had indicated in their communication that no proper analysis of inventive step would be possible in the absence of any reference to a prior art document. Accordingly, D4 and the objection based thereon that the claimed subject-matter lacked an inventive step should be allowed into the proceedings.

Inventive step

- (g) Experiments 1 and 2 of D3 showed that polymers obtained in accordance with the patent in suit could not be injection moulded or extruded and

therefore were not processable. Furthermore, a comparison of comparative example 10 and example 9 of the patent in suit showed that the heat resistance and the crack resistance were better for the comparative example. In addition, the resin according to comparative example 4 of the patent in suit fulfilled all requirements of claim 6, but did not provide a resin having the required crack resistance. Accordingly, the subject-matter of claims 1 and 6 covered embodiments which did not solve the technical problem mentioned in the patent in suit, namely to provide methacrylic resins having a combination of improved flowability and injection mouldability, while maintaining heat resistance, mechanical strength, appearance and low occurrence of cracks. Accordingly, the problem to be solved was to be seen in the provision of further polymers. The solution to this problem, namely varying the values of single parameters was within the routine activity of the skilled person and therefore obvious. The subject-matter of claims 1 and 6 lacked therefore an inventive step.

- X. The respondent's arguments, insofar as they are relevant to the decision, may be summarized as follows:

Sufficiency of disclosure

- (a) That the methacrylic resin could be measured by GPC was a feature of claim 1. Accordingly, embodiments where such a measurement was not possible were not comprised by the scope of claim 1. Also a person skilled in the art knew that comonomers having more than one double bond could lead to cross-linking which reduced solubility. The person skilled in the art would therefore adjust the amount of cross-

linking monomer and if necessary would also use a non-cross-linking comonomer in order to use at least 1.5 wt.% of the at least one different vinyl monomer copolymerizable with methyl methacrylate as required by claim 1. The experiments shown in D3 were not conducted with a will to understand the underlying technical situation.

- (b) A preparation process for the methacrylic resin of the invention was described starting at paragraph [0031] of the specification. The method described therein consisted in the preparation of two polymers of different molecular weight and their mixing. The requirement for an amount of the "1/5 component" only meant that a low Mw component should be contained in a certain weight range, which amount could be adjusted by mixing said two polymers using the ratios described in paragraphs [0029] and [0030]. Also the examples contained sufficient information to regulate the amount of the "1/5 component" which was achieved by properly selecting the proportions of the polymers to be mixed and the molecular weight of the copolymer. Accordingly, the patent showed at least one method to obtain the claimed resin compositions.
- (c) Though there was no examples describing the production of resins of claim 1 with a single polymer, a skilled person would know how to prepare such embodiments because methods to adjust the low molecular weight fraction of polymers and their molecular weight distribution via the use of chain transfer agents were known to the skilled person.

Admittance of submissions based on evidence D1c to D1f and D4

- (d) Submissions made in the light of D4 had been made at a very late stage of the proceedings and their relevance should not be taken into account. The provisions of Article 13(3) RPBA should take precedence, since the respondent could not be reasonably expected to discuss inventive step starting from that document as the closest prior art. The fact that D4 was mentioned in the patent in suit showed that submissions made based on that document could have been presented before the opposition division, and accordingly should be held inadmissible pursuant to Article 12(4) RPBA.
- (e) The novelty objection in view of the alleged public prior use of the polymer Sumipex MG SS had not been argued in the oral proceedings before the opposition division as shown in point 3 of the minutes and had not been pursued in the statement of grounds of appeal. The GPC measurement were already available at the time the opposition had been filed and it would be unfair to admit them now into the proceedings. Accordingly, the objection and documents related to the alleged public prior use should not be admitted into the proceedings.

Inventive step

- (f) As already indicated in relation to sufficiency of disclosure, polymers which could not be measured by GPC did not belong to the scope of the claims.
- (g) It was not reasonable to compare example 9 and comparative examples 10, because those concerned resins with different amounts of comonomers and

weight-average molecular weights. However, an appropriate comparison of other resins tested in the patent in suit, namely resin 1 (used in examples 1 and 13) and resin 14 (employed in comparative examples 1 and 11) showed the beneficial effect of the content of the "1/5 component" on the flowability of the resin composition. It was also showed with those comparisons that the moulding cycle and the amount of sink marks were reduced when performing injection moulding. The solution proposed by the present invention to adjust the amount of low molecular weight compounds to a certain range dependent on the peak molecular weight, was not obvious. Moreover, in the absence of cited prior art, there could be no hint to that solution. Also the background discussed in the introductory part of the present patent did not point to the claimed solution. As described in paragraphs [0003] to [0005] of the patent in suit, simply widening the molecular weight distribution did not solve the objective of the invention as defined in paragraph [0007] of the patent. The fact that some resins obtainable by the process of claim 6 would not fall within the ambit of claim 1, such as that shown in comparative example 4, and could not solve the problem indicated in the patent in suit, was not detrimental to the allowability of claim 6 with respect to inventive step, because most of the resins obtained were in accordance with claim 1 and some failures could be accepted.

- XI. The appellant requested that the decision under appeal be set aside and that the European patent No. 1 953 177 be revoked.

- XII. The respondent requested that the appeal be dismissed, or alternatively, that the patent be maintained on the basis of any of the auxiliary requests 1 to 8 submitted with the response to the statement setting out the grounds of appeal.

Reasons for the Decision

Main request

Admittance of new objections

1. After the communication of the Board setting out its preliminary view of the case had been received, the appellant submitted one month before the oral proceedings with letter of 18 April 2017 an objection of lack of novelty over the public prior use of the polymer Sumipex MG SS and an objection of inventive step based on document D4. This represents a change to the appellant's complete case as defined in Article 12(2) RPBA and its admittance may thus be considered at the Board's discretion under Article 13(1) RPBA, such discretion being exercised *inter alia* in view of the complexity of the new subject matter submitted, the current state of the proceedings and the need for procedural economy. Article 13(3) RPBA adds that amendments to a party's case sought to be made after oral proceedings have been arranged may not be admitted "if they raise issues which the Board or the other party or parties cannot reasonably be expected to deal with without adjournment of the oral proceedings".
- 1.1 The objection of lack of novelty based on the alleged public prior use of the polymer Sumipex MG SS and already invoked in the notice of opposition was not

elaborated during the oral proceedings before the opposition division, a reference being made to the opponent's written submission (see section 3 of the minutes) and also not pursued with the statement of grounds of appeal. The appellant was aware from the impugned decision that it was questionable whether the alleged public prior use had been proven beyond any reasonable doubt, because it had not been shown that Sumipex MG SS had been sold before the priority date, but also because evidence was missing that a GPC analysis of that polymer carried out before that date would show that it contained the amount of "1/5 component" specified in claim 1 of the patent in suit. Therefore the board considers that there was no justification for the appellant to wait until one month before the oral proceedings to provide additional evidence D1c, D1d, D1e and D1f in order to prove the alleged prior use of the polymer Sumipex MG SS. This is even more the case as both documents D1e and D1f, which are meant among others to show a GPC analysis of a product alleged to be Sumipex MG SS, are dated 26 November 2001 and 11 October 2001 and bear the same reference to a laboratory book as experimental evidence D2 concerning measurements made around the same period. Accordingly, there was no reason for the Board to consider that additional documents D1e and D1f were not readily accessible to the appellant when filing the statement of grounds of appeal, when document D2 had been already submitted before the opposition division.

- 1.2 As to the objection of lack of inventive step starting from D4, the appellant had been informed on page 14 of the rejoinder of the respondent that in the absence of cited prior art, there could be no hint to the solution of the present invention and that the background art discussed in the introductory part of the patent in

suit did not point to the claimed solution, which background art was indicated by the appellant to include a reference to D4. Moreover, as outlined in section 3 below, it is common ground that inventive step is to be assessed having regard to the state of the art as defined in Article 56 EPC. It is also established practice according to the board of appeal case law that inventive is to be examined using the problem-solution approach, which is made on the basis of the available state of the art. Accordingly, the Board's communication which essentially pointed out in respect of the issue of inventive step that the analysis made by the appellant failed to convince, because contrary to the principle enshrined in Article 56 EPC and the established board of appeal case law, it was not made having regard to the state of the art, which also could be also inferred from the rejoinder of the respondent, cannot be taken as a justification to submit D4.

- 1.3 Moreover, although the content of D4 is briefly summarized in paragraphs [0003] and [0004] of the patent in suit, analysing inventive step starting from D4 would require a detailed analysis of its technical content and a proper comparison of the subject-matter of the present claims with the resin disclosed therein, in particular a determination of the content of the "1/5 component" for the resins used in D4 which content was not indicated by the appellant. The fact that the appellant admitted that D4 did not explicitly disclose the amount of "1/5 component" and submitted that it was very likely that resin 4 of D4 fell within the definition of claim 1, or alternatively was highly relevant for the issue of inventive step demonstrates that an objective assessment of the patentability based

on D4 was not possible at the oral proceedings before the Board.

- 1.4 Consequently, the admission to the proceedings of the objections of lack of novelty in view of the alleged public prior use of the polymer Sumipex MG SS and lack of inventive step over D4 would raise new issues, requiring sufficient time for the respondent to reconsider their position and prepare appropriate lines of defense, meaning that the late-filed submissions of the appellant raised issues which the other party or the Board could not reasonably be expected to deal without adjournment of the oral proceedings. On that basis and considering the lack of justification for the late filing the above mentioned objections and new evidence D1c, D1d, D1e, D1f and D4 are not admitted pursuant to Article 13(3) RPBA.

Sufficiency of disclosure

2. Article 100(b) EPC stipulates that an opposition may be filed on the ground that the European patent does not disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art. As for assessing the other grounds of opposition of lack of novelty and lack of inventive step of the invention, assessment of sufficiency of disclosure of the invention is made for the invention for which protection is sought. This follows from the consideration that - in accordance with Rule 43(1) EPC - the invention in the European patent application is defined by the subject-matter of the claims, i.e. the specific combination of features present in the claims, as emphasised in Opinion G 2/98 of the Enlarged Board of Appeal (OJ EPO 2001, 413; point 2 of the Reasons) (see also T0059/08 and T 0089/13). Thus, the question

to be answered is whether a skilled person, on the basis of the information provided in the patent specification and, if necessary, using common general knowledge, is able to carry out the invention as claimed in its whole extent without undue burden.

2.1 The first line of argument of the appellant is that the subject-matter of claim 1 allows the use of cross-linkers such as ethylene glycol dimethacrylate which compound is according to the appellant's reading of paragraph [0014] to be used in an amount of at least 1.5 wt%, leading to a resin which is insoluble and therefore cannot be analysed with GPC, as evidenced by D3.

2.1.1 As a preliminary remark, the appellant's objection confirms that the ability of a methacrylic resin to be measured with GPC is a requirement of the present claims, in line with the view of the respondent and the reasons for the contested decision. Accordingly, any assessment of the sufficiency of disclosure of the invention has to be made having regard to the required ability for the claimed resin that it should be measurable with GPC, i.e. that it should exhibit the required solubility in solvents conventionally used for that type of resins when carrying out GPC measurements.

2.1.2 The first sentence of paragraph [0014] of the specification reads as follows: "*The content of another vinyl monomer unit copolymerizable with methyl methacrylate is 1.5 to 20 wt% based on the methacrylic resin*". The appellant's reasoning is based on a mere linguistic analysis of that sentence and starts from the premise that any vinyl monomer other than methyl methacrylate must be used in said amount, including

cross-linkers, for example ethylene glycol dimethacrylat mentioned in paragraph [0012]. Independently from the correctness of such linguistic analysis, it is rather necessary to address the technical meaning of paragraph [0014] in the context of the whole specification, in particular claim 1 and paragraph [0013]. Claim 1 unmistakably defines that the total amount of methyl methacrylate monomer units is from 80 to 98.5 wt.%, whereas the total amount of *"the at least one different vinyl monomer unit copolymerizable with methyl methacrylate"* is from 1.5 to 20 wt.%. Paragraph [0013] also confirms that these additional different vinyl monomers may be used alone or in combination. Accordingly, the sentence in paragraph [0014] which does not state that any other additional monomer is to be used in an amount of 1.5 to 20 wt.%, but was interpreted as such by the appellant, is merely understood by the skilled person as a repetition of the information provided in claim 1 and cannot be reasonably understood to mean that any vinyl monomer other than methyl methacrylate must be used in an amount of 1.5 to 20 wt.%, as it would among others necessitate less methyl methacrylate, contrary to the definition of claim 1.

- 2.1.3 Moreover, the group of exemplified additional different vinyl monomers listed in paragraph [0012] is not restricted to cross-linkers. Accordingly, the patent in suit allows mixtures of a cross-linker and at least a further additional monomer which is not a cross-linker, as long as their total amount is in the range of 1.5 to 20 wt.% and the resin fulfils the other requirements of claim 1, including its measurability with GPC. The Board has no doubt that the skilled person by reducing the amount of cross-linker, if necessary, would be able

to provide resins which exhibit the required solubility in order to undergo GPC measurements.

- 2.1.4 Accordingly, the patent in suit does not teach the obligation to use at least 1.5 wt.-% of a cross-linker, let alone 4 or 10 wt.-%, like the resins prepared by the appellant with the experiments 1 and 2 of D3. Accordingly, evidence D3, which does not relate to a repetition of the teaching provided by the patent in suit, cannot demonstrate a lack of sufficiency of disclosure.
- 2.1.5 Contrary to the opinion of the appellant, neither the respondent, nor the opposition division held that only workable embodiments could be claimed and those which were not workable were outside of the scope of the claims. This interpretation of the finding of the opposition division and of the submissions of the respondent is based on the understanding by the appellant that each cross-linker such as ethylene glycol dimethacrylate must be used, in accordance with the specification, in an amount of at least 1.5 wt%, which however is a misreading of the technical information contained in the specification, as shown in above sections 2.1.2 and 2.1.3. Accordingly, the argument of the appellant that the views of the respondent were diametrically opposed to the purpose of the requirement for a sufficient disclosure cannot convince.
- 2.1.6 The further argument that the scope of the protection of the patent in suit would become broader with new developments in the GPC technic, since non soluble (meth)acryl resins might become then analysable, also fails on a pure legal reason, since the terms of a claim, including in the present case "measured by gel

permeation chromatography (GPC)" are to be read as they would be by the skilled person at the relevant date (filing or priority) of the application, i.e. in the present case excluding meanings of GPC which would result from further developments of that analytical technic after said relevant date.

2.1.7 It follows from the appellant's submission that the appellant/opponent was given the possibility to address this issue during the oral proceedings before the opposition decision. Furthermore, although paragraph [0014] is not explicitly mentioned in the reasons for the decision, this issue was dealt with on page 8, lines 5-9 of the contested decision and therefore duly considered by the opposition division. Hence, the argument that the contested decision was taken in contravention of the right to be heard, because the opposition division did not take position on the above argumentation based on the meaning attributed to paragraph [0014] also fails to convince.

2.1.8 Consequently, the first line of argument of the appellant submitted in support of lack of sufficiency of disclosure cannot be successful.

2.2 The second line of argumentation of the appellant relates to the requirement that the claimed resins should comprises a defined amount of the "1/5 component", i.e. "a component having a weight average molecular weight of 1/5 or less of a peak weight average molecular weight (Mp) obtained from a GPC elution curve, based on the methacrylic resin component".

2.2.1 Having regard to the literal meaning of claim 1 and paragraphs [0016] and [0067] to [0069] of the

specification, it is not disputed, and the Board has no reason to take a different view, that the "1/5 component" of the resin designates the polymeric chains of the resin which have a molecular weight lower than one fifth of the molecular weight value corresponding to the maximum intensity (Mp) observed on the GPC elution curve. Its amount is determined by computing the proportion of the surface area under the GPC elution curve that corresponds to those polymeric chains.

2.2.2 Although the definition of an amount of "1/5 component" might be unusual in the sense that it might not have been used before, it has nevertheless a concrete meaning, as shown in the previous paragraph. The respondent pointed to various passages of the patent in suit (in particular paragraphs [0029] to [0031]) giving instructions on how to prepare the claimed resins, in particular by mixing two resins (1) and (2) having different molecular weights, which resins are described in paragraphs [0027] and [0028]. The instructions contained in said passages essentially correspond to a description of the process defined in claim 6 of the patent in suit, which instructions are illustrated by the numerous examples shown in Table 3 on pages 20 and 21, the preparation of the exemplified resins consisting in the mixing of two separate resins of different molecular weight as explained in Table 2 on page 19. Having consideration to the meaning of the "1/5 component", the Board has not reason to consider that its amount could not be adjusted by a simple variation of the two resins to be mixed and their respective amounts.

2.2.3 Furthermore, the appellant did not submitted evidence meant to show that the skilled person by following the

instructions given in the patent in suit could not be able to reproduce the resins prepared in the examples or even further resins by selecting other "different vinyl monomers" as those recited in paragraph [0012] of the specification. According to the case law (see Case Law of the Boards of Appeal, 8th Edition, 2016, II.C.8) the objection of lack of sufficient disclosure presupposes that there are serious doubts, substantiated by verifiable facts. Accordingly, in the absence in the present case of substantiating facts and corroborating evidence in support of the objection that the teaching provided in the specification cannot lead to the claimed subject-matter without unreasonable effort, the second line of argument of the appellant amounts to mere speculations which cannot convince the Board.

2.3 The third line of argument of the appellant is that the subject-matter of claim 1 would encompass "single-polymers", i.e. resins which are not prepared by the mixing of two appropriate methyl methacrylate resins as taught in the patent in suit, and that the manner to obtain those "single-polymers" would be insufficiently disclosed. The finding in point 4.3 of the contested decision that neither the wording of the claims nor the description of the granted patent indicates that the methacrylic resins claimed can be obtained by preparation of a single resin is however not disputed.

2.3.1 According to the case law (*supra*, II.C.4.2 and II.C.4.4), an invention is in principle sufficiently disclosed if at least one way is clearly indicated enabling the person skilled in the art to perform the invention in the whole range that is claimed. In the present case the question to be answered in relation to sufficiency of disclosure is therefore whether the

method of mixing two methyl methacrylate resins indicated in the patent in suit, in particular in paragraphs [0029] to [0031] and the various examples of the specification (as already indicated in above section 2.2.2) enabled the person skilled in the art at the date of filing of the patent in suit to prepare the claimed compositions without undue burden, if necessary, using common general knowledge, but not whether an hypothetical further way of preparing the claimed resins which is not addressed at all in the patent in suit might have been accessible to him. Accordingly, the issue of whether the claimed resins could have been prepared by synthesis of a single polymer is of no relevance for the present case and at most might concern a further development of the invention described in the patent in suit, the sufficiency of disclosure of which might need to be addressed only in the framework of a corresponding patent application. Hence, the third line of argument of the appellant with respect to sufficiency of disclosure cannot convince either.

- 2.4 Consequently, the Board concludes that the patent in suit discloses the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art.

Inventive step

3. As prescribed in Article 56 EPC evaluation of inventive step is made having regard to the state of the art. The state of the art comprises everything made available to the public by means of a written or oral description, by use, or in any other way, before the date of filing of the European patent application, or alternatively before the date of priority claimed (Articles 54(2) and

89 EPC). Apart from the objection made starting from D4 submitted shortly before the oral proceedings before the Board, but which was not admitted into the proceedings (see sections 1.2 to 1.4 above), the original submissions of the appellant in respect of inventive step did not refer to any prior art, let alone evidence in this respect and there is no reason for the Board to consider that such prior art would be part of the common general knowledge in the art. Any objective analysis of inventive step in order to show that the claimed subject-matter would be arrived at in an obvious way by the skilled person having regard to the prior art necessitates at least a precise indication of the starting point used by the skilled person (the closest prior art) and an explanation as to why the skilled person, having regard to the context in which that starting point is disclosed, would be motivated to operate a modification of that starting point which would result in the subject-matter as claimed. The objection of the appellant which does not refer to a specific starting point belonging to the prior art and does not provide a technical description thereof, let alone provide evidence for the existence of such starting point, can only be based on an inadmissible ex post facto analysis made with the knowledge of the invention and therefore must fail. Consequently, no case has been made out that the claimed subject-matter lacks an inventive step.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



L. Malécot-Grob

D. Semino

Decision electronically authenticated