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Datasheet for the decision of 11 February 2021

Case Number: T 0028/20 - 3.3.03

Application Number: 10154164.7

Publication Number: 2192154

IPC: C08L33/04

Language of the proceedings: EN

Title of invention:
ACRYLIC BLENDS

Patent Proprietor:
Lucite International UK Limited

Opponent:
ARKEMA FRANCE

Relevant legal provisions:
EPC Art. 56, 100(b), 123(2)
RPBA 2020 Art. 12(4)

Keyword:
Amendment to case - amendment admitted (yes and no)
Grounds for opposition - insufficiency of disclosure (no) - extension of subject-matter (auxiliary request 1: no)
Inventive step - (main request: no)

Decisions cited:
G 0003/14, T 0939/92

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Case Number: T 0028/20 - 3.3.03

D E C I S I O N
of Technical Board of Appeal 3.3.03
of 11 February 2021

Appellant: (Opponent)	ARKEMA FRANCE Département Propriété Industrielle 420, rue d'Estienne d'Orves 92700 Colombes (FR)
Representative:	Arkema Patent Arkema France DRD-DPI 420, rue d'Estienne d'Orves 92705 Colombes Cedex (FR)
Respondent: (Patent Proprietor)	Lucite International UK Limited Cumberland House 15-17 Cumberland Place Southampton Hampshire SO15 2BG (GB)
Representative:	Appleyard Lees IP LLP 15 Clare Road Halifax HX1 2HY (GB)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 24 October 2019 concerning maintenance of the European Patent No. 2192154 in amended form.**

Composition of the Board:

Chairman	D. Semino
Members:	O. Dury
	W. Ungler

Summary of Facts and Submissions

I. The appeal of the opponent is against the interlocutory decision of the opposition division posted on 24 October 2019 concerning maintenance of European patent No. 2 192 154 in amended form according to the claims of auxiliary request 1 as filed during oral proceedings on 1 October 2019 and an adapted description.

II. Said auxiliary request 1 comprised 15 claims, of which claims 1 and 8 read as follows (whereby the features of claim 1 are presented separately by the Board to facilitate the reading):

"1. An impact modified acrylic composition comprising

a. a base polymer of an acrylic polymeric composition comprising a melt blend of a thermoplastic high molecular weight acrylic material (HMWA) and a thermoplastic low molecular weight acrylic material (LMWA),

at least 70% w/w, based on the total weight of the HMWA, of the said HMWA comprising an alkyl (alk)acrylate (co)polymer, the said (co)polymer comprising at least 80% w/w of a first polymer derived from C_1-C_{12} alkyl (C_1-C_8 alk)acrylate monomer units and optionally, up to 20% w/w, based on the said alkyl (alk)acrylate (co)polymer of a first copolymer derived from C_1-C_{12} alkyl(C_0-C_8 alk) acrylate and/or (C_0-C_8 alk)acrylic acid monomer units,

the said HMWA having a weight average molecular weight of between 40k Daltons and 1000k Daltons,

at least 70% w/w, based on the total weight of the LMWA, of the said LMWA comprising an alkyl(alk)acrylate copolymer, the said copolymer comprising at least 80% w/w of a second polymer derived from C_1-C_{12} alkyl (C_1-C_8 alk)acrylate monomer units and up to 20% w/w, based on the said alkyl (alk)acrylate copolymer of a second copolymer derived from C_1-C_{12} alkyl(C_0-C_8 alk) acrylate and/or (C_0-C_8 alk)acrylic acid monomer units,

the said LMWA having a weight average molecular weight of between the entanglement molecular weight (Me) (expressed in k Daltons) and 250k Daltons,

with the proviso that the HMWA has a higher Mw than the LMWA,

wherein the first polymer of the HMWA and the second polymer of the LMWA are the same, and

wherein the weight ratio of HMWA:LMWA in the composition is greater than 1:1; and

b. a core-shell impact modifier, wherein the level of component (b) in the impact modified acrylic polymer composition is in the range 30-50% w/w."

"8. Use of an impact modified acrylic polymer composition as claimed in any of claims 1 or 2 to provide a high Tg melt blended composition or moulded polymer product."

III. A notice of opposition had been filed against the patent as granted, requesting the revocation of the

patent in its entirety.

IV. The following documents were *inter alia* cited in the decision under appeal:

D4: EP 0 781 808
D9: WO 00/78863

V. In the decision under appeal, the opposition division held *inter alia* that:

(a) The subject-matter of claim 1 of the then valid main request (which is not relevant to the present decision) was not novel over D4 (reasons of the decision: section 5.5).

(b) Regarding sufficiency of disclosure of auxiliary request 1 (reasons of the decision: sections 8 and 4.2), the skilled reader would interpret the passage "wherein the first polymer of the HMWA and the second polymer of the LMWA" in claim 1 as "the first polymer unit of the HMWA and the second polymer unit of the LMWA", as this appeared to be the only reasonable interpretation. It appeared to be immediately clear for the skilled reader that methyl methacrylate was not a polymer, but a comonomer, hence a polymer unit.

With regard to the feature "high Tg" present in claim 8, the contested patent disclosed examples for the HMWA and the LMWA components (e.g. base polymers 1 to 3). Although the feature "high Tg" used in claim 8 was vaguely defined and might be unclear, clarity issues did not constitute a ground for opposition.

For these reasons, the opponent's objections regarding lack of sufficiency of disclosure in respect of these features were rejected.

(c) Regarding inventive step of auxiliary request 1, D9 was the closest prior art document.

The subject matter of claim 1 of auxiliary request 1 differed from the disclosure of D9 in that it comprised 30 to 50 wt.% of a core-shell impact modifier, whereas the upper limit in D9 was 29.4 wt%.

In the absence of a fair comparison between the claimed composition and the compositions disclosed in D9, the problem effectively solved resided in the provision of an alternative impact-modified acrylic polymer composition with good processability, thermal resistance and impact properties.

Considering that D9 taught a maximum amount of 29.4 wt.% impact modifier, the skilled person would not deviate from that general teaching of D9 without any clear incentive to do so. Further considering that the preferred range disclosed in D9 for that feature even pointed to significantly lower amounts and in view of the low amount of impact-modifier used in the examples, the skilled person would use significantly less than 29.4 wt.% impact modifier rather than exceed the upper limit, in order to obtain an polymethacrylate compositions with the desired balance of properties. In view of the strict teaching of D9 with regard to the upper limit of impact modifier content, the skilled person would expect that if said value was

exceeded, other properties would be adversely affected.

For these reasons, an inventive step was acknowledged.

(d) In view of the above, the patent could be maintained in amended form on the basis of auxiliary request 1.

VI. The opponent (appellant) appealed against the above decision. With the statement setting out the grounds of appeal filed with letter of 3 March 2020 the appellant requested that the decision of the opposition division be set aside and that the patent be revoked.

VII. With its response to the statement of grounds of appeal, the patent proprietor (respondent) requested that the appeal be dismissed (main request) or, in the alternative, that the patent be maintained in amended form according to any of auxiliary requests 1 to 9 filed therewith (whereby auxiliary requests 2-9 are not relevant to the present decision). Also, the following document was *inter alia* filed and its admittance into the proceedings requested:

D9a: AU 200066877 B2

Claim 1 of auxiliary request 1 (15 claims) differed from claim 1 of auxiliary request 1 dealt with in the decision under appeal (now main request; see section II above) in that the ranges defining the amount of both the first copolymer and the second copolymer were each amended to read "up to 8% w/w" (instead of "optionally, up to 20% w/w" and "up to 20% w/w", respectively).

The wording of claim 8 of auxiliary request 1 was identical to the one of claim 8 of auxiliary request 1 dealt with in the contested decision. Claims 2 to 7 and 9 to 15 of auxiliary request 1 are not relevant to the present decision.

VIII. In a communication accompanying the summons to oral proceedings the Board indicated specific issues to be discussed at the oral proceedings. It was in particular indicated therein that it did not appear that the objection of lack of inventive step based on D4 as closest prior art which was raised in the statement of grounds of appeal was dealt with in the contested decision and/or that the appellant had justified why said objection was raised in the statement of grounds of appeal. Therefore, it did not appear that such an objection satisfied the requirements of Article 12(2) and (4) RPBA 2020. In addition, it did not appear that said objection satisfied the requirements of Article 12(3) RPBA 2020.

IX. With letter of 11 January 2021 the respondent in particular noted that, apart from an objection pursuant to Article 123(2) EPC, the appellant had not raised any further objections against the operative auxiliary requests (section 4.1 of said letter).

X. With the explicit agreement of both parties, oral proceedings were held on 11 February 2021 in the form of a videoconference (the Board was in a room at the premises in Haar and both parties were connected via video link).

XI. The appellant's arguments, in so far as relevant to the present decision, may be summarised as follows:

Admittance of late filed documents

(a) The appellant had no objection regarding the admittance of D9a into the proceedings.

Main request - Sufficiency of disclosure

(b) The skilled person did not have sufficient information in order to choose appropriately the "same" first polymer of the HMWA and second polymer of the LMWA as indicated in operative claim 1, in particular in view of the unclear definition of the wording "same polymer" and of the definition of base polymers 4 to 8 of the patent in suit, which could serve both as either HMWA or LMWA depending on the weight average molecular weight.

There was a further lack of sufficiency of disclosure related to the definition of the term "high Tg" mentioned in claim 8 of the main request.

For these reasons, the requirements of sufficiency of disclosure were not satisfied.

Main request - Inventive step

(c) It was agreed that the disclosure of D9 could be read in the light of the one of D9a.

(d) Starting from D9/D9a as closest prior art document, it was agreed with the analysis of the opposition division regarding the identification of the distinguishing feature and the formulation of the problem solved. However, in order to provide a mere alternative to D9/D9a, the skilled person would

not be hindered from using slightly higher amounts of impact modifier than those explicitly disclosed in D9/D9a, e.g. if he were to aim at further increasing impact strength. For that reason, claim 1 of the main request was not inventive over D9/D9a. The subject-matter of claim 1 of the main request was further obvious over D4 in combination with either common general knowledge or D9/D9a.

Auxiliary request 1

(e) The subject-matter defined in the claims of auxiliary request 1 could only be arrived at after combining passages of the application as filed which were related to the first aspect and the third aspect of the invention. By doing so, a choice from two different lists was made, which infringed the requirements of Article 123(2) EPC.

(f) During the oral proceedings before the Board, in answer to a question by the Board, the appellant explicitly stated that, apart from the above objection pursuant to Article 123(2) EPC, no further objections were raised against auxiliary request 1.

XII. The respondent's arguments, in so far as relevant to the present decision, may be summarised as follows:

Admittance of late filed documents

(a) It was requested to admit D9a, which was a mere English equivalent to D9 into the proceedings.

Main request - Sufficiency of disclosure

(b) Regarding claim 1 of the main request, it was agreed with the opposition division that the skilled person would interpret “first polymer” to mean “first polymer unit” and “second polymer” to mean “second polymer unit” on the grounds that it was obvious, based on the knowledge of the skilled person, that only the monomer units of the polymer could be the same and not the polymer itself. That interpretation was further supported by the patent specification, in particular the examples.

The patent in suit provided in paragraph 87 a clear definition of "high Tg" as defined in claim 8 of the main request. Such "high Tgs" were further demonstrated in the examples of the patent specification.

For these reasons, the objections of the appellant regarding sufficiency of disclosure should be rejected.

Main request - Inventive step

(c) D9/D9a was the closest prior art document, whereby it was agreed that the disclosure of D9 could be read in the light of the one of D9a.

It was agreed with the opposition division that the subject-matter of claim 1 of the main request differed from the compositions of the examples of D9/D9a carried out with 5 wt.% or 10 wt.% low molecular weight component in that it imposed the presence of a higher amount of impact modifier, whereby the amount was higher than the maximum amount taught in D9/D9a. In addition, no information was provided in the examples of D9/D9a

carried out with 5 or 10 wt.% low molecular weight acrylic polymer in respect of the molecular weight of the impact modified acrylic polymer and, in view of the information provided in D9/D9a in that respect, it could not be concluded that that feature was mandatorily met. Finally, no information was provided in D9/D9a or had been provided by the appellant to show that the molecular weight of the low molecular weight acrylic polymer used in the examples of D9/D9a was effectively above Me, as requested by claim 1 of the main request.

During the oral proceedings before the Board, it was further agreed with the formulation of the problem solved over D9 retained by the opposition division, namely the provision of an alternative composition to the ones of D9/D9a.

Regarding the non-obviousness of the solution, it was stressed that, even when aiming at providing a mere alternative to D9/D9a, the skilled person would have no reason to deviate from the clear teaching thereof regarding the maximum amount of impact-modifier to be used. In that respect, it was agreed with the opposition division that the skilled person would expect that, should a higher amount of impact-modifier than the one specifically taught in D9/D9a be used, it could not be ascertained that the other properties would be maintained at the same beneficial level, since it was known in the art that impact-modifiers affected a range of other properties in a polymeric composition, such as optical and tensile properties, weatherability, flammability, as well as heat distortion and processability, i.e. glass

transition temperature and melt flow.

For these reasons, an inventive step starting from D9/D9a as closest prior art should be acknowledged.

(d) The objection of lack of inventive step starting from D4 as closest prior art was raised for the first time in the statement of grounds of appeal and constituted an extension of the case as compared to the opposition proceedings. The precise objection made in writing was further unclear and, in any case, D4 was a less promising starting point than D9/D9a for the analysis of inventive step. For these reasons, that objection should not be admitted into the proceedings.

Auxiliary request 1

(e) Considering that the third aspect of the invention mentioned in the application as filed explicitly made reference to the first aspect of the invention, the appellant's objection pursuant to Article 123(2) EPC was moot and should be rejected.

XIII. The appellant requested that the decision under appeal be set aside and the patent be revoked.

The respondent requested that the appeal be dismissed (main request) or, in the alternative, that the patent be maintained in amended form according to any of auxiliary requests 1 to 9 filed with the rejoinder to the statement of grounds of appeal.

Reasons for the Decision

1. Admittance of D9a

Document D9a was submitted for the first time by the respondent in its rejoinder to the statement of grounds of appeal. The appellant did not raise any objection against the admittance of D9a, which was filed at the outset of the appeal proceedings. Further considering that D9a was relied upon by both parties, in particular during the oral proceedings, whereby both parties indicated that the disclosure of D9a - in English - was equivalent to the one of D9 - in German , and that D9a can therefore be considered as a translation of D9, which was already part of the opposition proceedings, D9a is also in the proceedings.

Main request

2. Sufficiency of disclosure

2.1 In order to meet the requirements of sufficiency of disclosure, an invention has to be disclosed in a manner sufficiently clear and complete for it to be carried out by the skilled person, without undue burden, on the basis of the information provided in the patent specification, if needed in combination with the skilled person's common general knowledge. This means in the present case that the skilled person should in particular be able to prepare a composition according to operative claim 1 or to use such a composition according to operative claim 8, both of which is contested by the appellant.

2.2 Regarding claim 1, the opposition division's conclusion according to which the requirements of sufficiency of disclosure were fulfilled (sections 8 and 4.2 of the reasons) is contested by the appellant for the reason that the skilled person would not have sufficient information in order to choose appropriately the "same" first polymer of the HMWA and second polymer of the LMWA as indicated in operative claim 1, in particular in view of the unclear definition of the wording "same polymer" and of the definition of base polymers 4 to 8 of the patent in suit, which could both serve either as HMWA or as LMWA depending on the weight average molecular weight (sections 5.11 to 5.14 of the statement of grounds of appeal).

2.2.1 In that respect, sufficiency of disclosure is to be assessed in view of the patent specification as a whole and not on the basis of the wording of the claims only. In the present case, although the definition of the first polymer of the HMWA and/or of the second polymer of the LMWA as indicated in operative claim 1 (e.g. "said (co)polymer comprising ... a first polymer and, optionally, ... a first copolymer...") may be unclear, it is agreed with the respondent that it is derivable from paragraph 18 and from the experimental part (paragraphs 108-111) of the patent specification that the skilled person wanting to prepare a composition according to operative claim 1 would understand the terms "first polymer" and "first copolymer", respectively "second polymer" and "second copolymer" indicated in operative claim 1 as meaning "first monomer" and "first comonomer", respectively "second monomer" and "second comonomer" (sections 2.8 to 2.11 of the rejoinder to the statement of grounds of appeal).

Also, no argument was put forward by the appellant to refute the conclusion of the opposition division in that respect, according to which the terms "first polymer" and "second polymer" according to operative claim 1 would be read as "first polymer unit" and "second polymer unit" (first paragraph of section 4.2 of the reasons of the decision).

Under these circumstances, it cannot be agreed with the appellant that the skilled person is not in the position to select appropriately the “same” first polymer of the HMWA and second polymer of the LMWA in order to prepare a composition according to operative claim 1.

2.3 Regarding claim 8, the appellant argued that there was a lack of sufficiency of disclosure related to the definition of the term “high Tg” as given therein.

2.3.1 Claim 8 is a use claim which is characterised by a combination of structural features related to the definition of the HMWA and LMWA materials which have to be mandatorily present, with the additional functional feature "to provide a high Tg melt blended composition or moulded polymer product", whereby there is no reason to consider that said functional feature is mandatorily implicitly satisfied by all the compositions falling under the structural definition of claim 8. Therefore, the question to be answered is whether or not the patent in suit, optionally in combination with common general knowledge, provides sufficient guidance how to achieve such "high Tg".

2.3.2 In that respect, both parties read the term "high Tg" on the basis of the definition of that term given in paragraph 87 of the patent in suit (statement of

grounds of appeal: sections 5.4-5.10; sections 2.3-2.6 of the rejoinder).

However, the normal rule of claim construction is that the terms used in a claim should be given their broadest technically sensible meaning in the context of the claim in which they appear. In particular, if a term present in a claim has a clear, accepted, generic meaning, it may not be held to have a limited meaning in view of the description of the patent specification (Case Law of the Boards of Appeal of the European Patent Office, 9th edition, 2019, section II.A.6.3.1).

In the present case, it makes no doubt that the term "high Tg" refers to a usual property of polymers, namely glass transition temperature. Although the term "high" is a relative one, it only means that said feature will have to be read in its broadest - technically meaningful - sense. On this basis there is no reason to read the term "high Tg" as being limited in the sense of paragraph 87 of the patent in suit.

2.3.3 The objections raised by the appellant in sections 5.5-5.10 of the statement of grounds of appeal are closely related to the definition of "high Tg" according to paragraph 87 of the patent in suit. In view of the conclusion reached in section 2.3.2 above, these objections cannot succeed. In particular, the arguments of the appellant do not show that the skilled person would have any difficulty in providing "high Tg" melt blended compositions using two acrylic materials HMWA and LMWA as defined in operative claim 8. In addition, any objection related to the meaning of the term "high Tg" would be related to the definition of the scope of the claims, i.e. would be an issue of clarity (which, according to G 3/14, OJ EPO 2015, 102

cannot be addressed at the present stage since the feature at stake is already present, in the same context, in claim 8 as granted) rather than sufficiency of disclosure.

2.3.4 The appellant further argued that the selection of monomers to prepare both the HMWA and the LWMA defined in claim 8 so that they exhibit a "high Tg" according to operative claim 1 required an undue burden (section 5.6 of the statement of grounds of appeal). Also, the definition of that term was relative and it was not possible from the data of the patent in suit to distinguish between low and high Tg (sections 5.7-5.9 of the statement of grounds of appeal).

In the Board's view, these arguments are again related to the definition of the scope of the claims and constitute a possible issue of clarity rather than sufficiency of disclosure, as argued by the respondent (section 2.6 of the rejoinder to the statement of grounds of appeal).

2.4 In view of the above, the appellant’s arguments provide no reason for the Board to overturn the opposition division’s decision pursuant to Article 100(b) EPC.

3. Inventive step

3.1 Objections raised

3.1.1 In its statement of grounds of appeal, the appellant not only put forward an objection of lack of inventive step against the subject-matter of claim 1 of the main request starting from D9 as closest prior art - as during the opposition proceedings - but further argued that it lacked inventive step in view of D4 as closest

prior art, in particular examples 4D-1 and 4D-2 thereof, in combination with common general knowledge or D9 (sections 6.18 to 6.20). The question of the admittance of that new objection was addressed in the Board's communication (section 7.5) and the respondent requested at the oral proceedings before the Board that said objection be not admitted.

3.1.2 In that respect, it was not contested by the appellant, in particular at the oral proceedings before the Board, that such an objection of lack of inventive step based on D4 as closest prior art was neither dealt with in the contested decision, nor that there were any reasons justifying the submission of said objection for the first time in the statement of grounds of appeal.

Under these circumstances, that objection does not fall under a party's appeal case as defined in Article 12(2) RPBA 2020 (since it is not directed to an objection on which the decision under appeal was based). Therefore it constitutes an amendment of the appellant's case in the sense of Article 12(4), first paragraph, RPBA 2020, whereby also the stipulations of Article 12(4) 2020, second paragraph are not satisfied, since the appellant has not explained why that objection was first raised in appeal.

In view of the above, the Board finds it appropriate to make use of its discretion pursuant to Article 12(4), first paragraph, second sentence, RPBA 2020 by not admitting into the proceedings the objection of lack of inventive step starting from D4 as closest prior art.

3.2 D9/D9a as closest prior art

3.2.1 During the current proceedings the arguments regarding inventive step were either based on document D9 (decision under appeal; statement of grounds of appeal) or D9a (rejoinder to the statement of grounds of appeal; both parties at the oral proceedings). In the present decision, following the common position of the parties that D9 and D9a are equivalent documents and in the absence of any evidence to the contrary, the assessment of inventive step will be made in respect of document D9. However, the same conclusions would be reached considering D9a.

3.2.2 D9 as closest prior art

Both parties agreed with the opposition division's conclusion according to which D9 constitutes a suitable closest prior art document. There is no reason for the Board to deviate from that view.

In that respect, D9 (claim 1) deals with an impact-strength-modified polymethacrylate moulding compound, characterized by a Vicat softening temperature per ISO 306 (B 50) of at least 90°C, a notched impact strength (Charpy) per ISO 179/1eA of at least 3.0 kJ/m^2 at 23°C, and a melt volume-flow rate MVR (230°C/3.8 kg) per ISO 1133 of at least 11 cm^3/10 min, obtained by mixing, in the melt,

a) 80 to 98 wt% of an impact-strength-modified polymethacrylate moulding compound with

b) 20 to 2 wt% of a low molecular weight polymethacrylate moulding compound,

the impact-resistant moulding compound comprising 70 to 99 wt.% of a matrix of 80 to 100 wt.% of radical-polymerized methyl methacrylate units and if necessary 0 to 20 wt.% of further comonomers that can undergo radical polymerization, and containing 1 to 30 wt.% of an impact-strength modifier,

and the low molecular weight polymethacrylate molding compound comprising 80 to 100 wt.% of radical-polymerised methyl methacrylate units and 0 to 20 wt.% of further comonomers that can undergo radical polymerisation, and having a viscosity number ($\eta_{sp/c}$) of 25 to 35 ml/g as measured in chloroform per ISO 1628 Part 6.

In particular, the examples of D9 (pages 9-11) disclose the preparation of samples by injection-moulding of a composition comprising:

- an impact-strength modified moulding composition comprising 92.5 wt.% of a matrix polymer and 7.5 wt.% of a core-shell impact modifier, whereby the matrix polymer is made of 91 wt.% methyl methacrylate and 9 wt.% methyl acrylate;

- an amount of either 0, 5 or 10 wt.% of a low molecular weight moulding compound comprising 85 wt.% methyl methacrylate and 15 wt.% methyl acrylate units with a weight average molecular weight of about 50,000 g/mol.

In view of the above, the examples of D9 carried out with 5 wt.% and 10 wt.% low molecular weight moulding compound constitute a particularly appropriate starting point for the analysis of the inventive step.

3.3 Distinguishing feature(s) over D9

3.3.1 It was undisputed by the parties that the subject-matter of operative claim 1 differs from the compositions prepared in the examples of D9 carried out with 5 wt.% and 10 wt.% low molecular weight moulding compound in that it comprises a higher amount of impact-modifier (30-50 wt.%), in particular an amount which is even higher than the maximum amount taught in D9 (29.4 wt.%, as derivable from claim 1 thereof).

3.3.2 However, the parties disagreed whether or not the following features specified in operative claim 1 were effectively satisfied by the examples of D9 carried out with either 5 wt.% or 10 wt.% of low molecular weight moulding compound:

(a) The requirement in terms of the molecular weight of the HMWA component, which should be between 40k Daltons and 1000k Daltons and above the one of the LMWA component;

(b) The requirement in terms of the molecular weight of the LMWA component, which should be between the entanglement molecular weight Me and 250k Daltons.

3.3.3 Regarding above feature (a)

It is correct that no explicit disclosure in respect of the molecular weight of the matrix polymer used to prepare the impact-strength modified moulding composition is provided in D9.

However, in the Board's view, the skilled person would understand the disclosure of D9 as a whole as implying that the molecular weight of the impact modified

polymer matrix should be higher than the one of the so-called low molecular weight polymethacrylate moulding compound. Firstly, the terminology used in D9 to indicate the second component (low molecular weight) implies that it has a lower molecular weight than the matrix. Secondly, the only ranges of molecular weight for the matrix indicated in D9 (90.000 to 200.000 g/mol, preferred 100.000 to 150.000 g/mol, page 4, lines 9-11), albeit as a preferred feature, provide values which are all largely above the molecular weight of the low molecular weight component indicated in the general disclosure (30.000 to 70.000 g/mol, in particular 40.000 to 60.000 g/mol, page 7, lines 2-3) and in the examples of D9 (50 000 g/mol, i.e. 50k Daltons). On top of that, the fact that in the examples of D9 the addition of the low molecular weight component leads to an increase in the melt flow rate of the impact modified polymer composition (D9: table on page 11) confirms that the impact modified polymer matrix must have a higher weight average molecular weight than the low molecular weight component, as put forward by the appellant during the oral proceedings before the Board. Therefore, it is derivable from D9 as a whole that the polymethacrylate matrix used in the examples of D9 implicitly, but directly and unambiguously, has a weight average molecular weight higher than 50k Daltons, which is both above 40k Dalton and higher than the molecular weight of the low molecular weight polymer component used therein, as required by claim 1 of the main request.

In addition, it was not objected to by the respondent that the impact modified polymethacrylate matrix used in the examples of D9 could not have a weight average molecular weight above 1000k Daltons, as also specified

in claim 1 of the main request. The Board has also no reason to deviate from that view, in particular because there is no reason to expect that that requirement would not be met in view of the very high value of the higher limit of the range of molecular weight indicated in claim 1 (1000k Daltons) and taking into account the preferred values indicated in D9 (90.000 to 200.000 g/mol, preferred 100.000 to 150.000 g/mol, page 4, lines 9-11).

For these reasons, the requirement in terms of the molecular weight of the HMWA component specified in claim 1 of the main request does not constitute a distinguishing feature over the examples of D9 carried out with either 5 wt.% or 10 wt.% of the low molecular weight moulding compound.

3.3.4 Regarding above feature (b)

The component of D9 corresponding to the LMWA material defined in operative claim 1 is the low molecular weight polymethacrylate disclosed therein, which in the examples of D9 is a copolymer of 85 wt% methylmethacrylate and 15 wt.% methyl acrylate having a weight average molecular weight of 50 000 g/mol (D9: page 10, last paragraph). Although it is correct that there is no information in D9 if said molecular weight is above the entanglement molecular weight Me, the question to be answered is if said requirement is implicitly satisfied, as put forward by the appellant in view of the information provided in the patent in suit in respect of said feature Me (statement of grounds of appeal: sections 6.8-6.9). In this respect the molecular weight of the low molecular weight moulding compound disclosed in the examples of D9 (50 000 g/mol) is not only according to all preferred

embodiments indicated in paragraph 46 of the patent in suit, but also much higher than the molecular weight of the low molecular weight component used in the examples of the patent in suit (see "base polymer 3" in paragraph 106, with a weight average molecular weight of 22.1k Daltons). Taking into account in addition the similarity of the copolymers in the examples of D9 and of the patent in suit, the Board finds it not credible that the molecular weight of the low molecular weight component in the examples of D9 may be below the entanglement molecular weight Me. Although that issue was mentioned in the Board's communication (section 7.5.3), no argument or evidence was provided by the respondent to show that there were any reason to consider that the low molecular weight component used in the examples of D9, in particular characterised in that it has a weight average molecular weight of 50 k Daltons, may not have satisfied the Me requirement defined in claim 1 of the main request. Under these circumstances, the Board holds that the requirement in terms of the molecular weight of the LMWA component specified in operative claim 1 is implicitly satisfied in the examples of D9.

For these reasons, the requirement in terms of molecular weight of the LMWA component specified in claim 1 of the main request does not constitute a distinguishing feature over the examples of D9 carried out with either 5 wt.% or 10 wt.% of the low molecular weight moulding compound.

3.3.5 In view of sections 3.3.1, 3.3.3 and 3.3.4 above, the subject-matter of claim 1 of the main request only differs from the examples of D9 carried out with either 5 wt.% or 10 wt.% of the low molecular weight moulding compound in that it requires the presence of a higher

amount of impact-modifier, as already concluded by the opposition division.

3.4 Problem effectively solved over the closest prior art

During the oral proceedings before the Board, both parties agreed with the findings of the opposition division that the problem effectively solved over the examples of D9 carried out with either 5 wt.% or 10 wt.% of the low molecular weight moulding compound resided in the provision of an alternative impact-modified acrylic polymer composition with good processability, thermal resistance and impact properties. The Board has no reason to deviate from that view, in particular because there is no evidence on file in support of a fair comparison between the subject-matter being claimed and the above identified closest prior art, i.e. it was not shown that the above indicated distinguishing feature is related to any technical effect. In that respect, it was in particular clarified at the oral proceedings that the improvement relied upon by the respondent in writing (letter of 11 January 2021: sections 3.7 and 3.8; see in particular Figure 4 of the patent in suit) was based on the comparison of compositions as claimed with compositions which do not illustrate the teaching of the closest prior art D9/D9a and are not related to the above indicated distinguishing feature (higher amount of impact modifier). Rather, the improvements claimed to be achieved (both in the patent in suit and in the respondent's letter of 11 January 2021) by the compositions claimed are discussed with respect to compositions comprising only HMWA copolymers having similar molecular weight but comprising higher levels of acrylate commoners (as indicated in paragraph 86 of

the patent in suit).

3.5 Obviousness

3.5.1 The question has to be answered whether the skilled person, desiring to solve the problem indicated above, would, in view of the closest prior art, possibly in combination with other prior art or with common general knowledge, have modified the disclosure of the closest prior art in such a way as to arrive at the claimed subject matter.

3.5.2 In that respect, it was undisputed by the parties that the most general teaching of D9 is that the impact-modifier may be used in an amount of up to 29.4 wt.% (as derivable from e.g. claim 1 of D9). Therefore, it makes no doubt that D9 alone would at least render obvious to solve the problem defined in above section 3.4 by increasing the amount of impact-modifier up to that value.

3.5.3 It remains to be assessed whether the skilled person aiming at solving that problem would contemplate using even higher amounts of impact-modifier, in particular amounts in the range of 30-50% w/w as defined in claim 1 of the main request.

a) In that respect, it is first noted that while D9 indeed discloses a maximum amount of 29.4 wt.% impact-modifier, it contains no teaching not to use higher amounts thereof or no disclosure that would prevent the skilled person from doing so.

b) The respondent and the opposition division both argued that the skilled person would not increase the amount of impact-modifier because it was unpredictable

how the properties of the whole composition would be affected, in particular taking into account that the compositions prepared in D9 were a complex chemical system.

However, the established decisive principle governing the answer to the question as to what a person skilled in the art would have done depends on the result he wished to obtain (T 939/92, OJ EPO 1996, 309: point 2.5.3 of the reasons). In the case in hand, it must therefore be considered that the skilled person is deemed to be merely seeking to provide further impact-modified compositions in alternative to the ones of D9 but is not wishing to necessarily keep all properties obtained with the compositions of the examples of D9 at the same level. Thus, the skilled person would consider an increase in the amount of impact-modifier even in amounts higher than the ones taught in D9 as a useful and obvious measure, in particular to further increase the impact resistance of the compositions so prepared. In doing so, the skilled person would be merely accepting possible disadvantages (which were not demonstrated in the present case but only alleged, both by the opposition division and the respondent) related to the use of higher amounts of impact modifiers. In that respect, it is further noted that it is not credible to the Board that increasing the amount of impact-modifier from a maximum of 29.4 wt.% as taught in D9 to a slightly higher amount of 30 wt.% as defined in claim 1 of the main request may be expected to lead to so dramatic changes in the properties of the composition that the skilled person would be deterred from using such an amount of impact modifier.

In the Board's view, the fact that D9 indeed discloses that the preferred range of impact modifier is far

removed from the upper end disclosed therein and that a rather low amount of impact modifier is used in the examples of D9, as argued by the opposition division and the respondent, does not affect the above conclusion because the problem to be solved is, as indicated above, to provide a mere alternative to the closest prior art. Therefore, these arguments are rejected.

For these reasons, the arguments put forward by the respondent and those retained by the opposition division are not persuasive.

c) In view of the above and in particular in the absence of any effect related to an amount of impact-modifier in the range of 30-50% w/w as indicated in claim 1 of the main request, said feature can only be seen as being arbitrary. Therefore, it would be obvious for the skilled person aiming at providing an alternative composition to the ones of the closest prior art defined above to increase the amount of impact-modifiers to an amount in the range of 30-50% w/w, thereby arriving at the subject-matter of claim 1 of the main request.

3.6 In view of the above, the subject-matter of claim 1 of the main request is not inventive in view of D9 as closest prior art and the main request is not allowable.

Auxiliary request 1

4. Article 123(2) EPC

4.1 The appellant argued that subject-matter defined in the claims of auxiliary request 1 could only be arrived at

after combining passages of the application as filed which were related to the first aspect and the third aspect of the invention, which amounted to making a choice from two different lists.

4.2 However, the application as filed when discussing these embodiments defined as "aspects of the present invention", disclosed in particular:

- An acrylic polymeric composition comprising a melt blend of thermoplastic HMWA and LMWA components as defined in the paragraph bridging pages 4 and 5 of D1 ("first aspect");

- An impact modified acrylic polymer composition comprising a base polymer in accordance with the acrylic polymeric compositions according to the first aspect and a core-shell impact modifier (application as filed: page 16, lines 15-21; "third aspect").

Under these circumstances, the combination of the first and third aspects of the invention is directly and unambiguously derivable from the application as filed and does not amount to a choice from different lists. Therefore, the appellant's objection pursuant to Article 123(2) EPC is rejected.

5. The appellant confirmed at the oral proceedings before the board that no other objections were present against auxiliary request 1 (see section XI f) above). Since the sole objection put forward by the appellant in respect of auxiliary request 1 is not successful, the decision under appeal is to be set aside and the patent is to be maintained in amended form on the basis of the

claims of said auxiliary request 1, after any consequential amendment of the description.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the department of first instance with the order to maintain the patent in amended form on the basis of claims 1 to 15 of auxiliary request 1 filed with the letter dated 15 July 2020 and after any consequential amendment of the description.

The Registrar: The Chairman:

B. ter Heijden D. Semino

Decision electronically authenticated