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**Datasheet for the decision
of 29 November 2019**

Case Number: T 1543/17 - 3.3.03

Application Number: 03707139.6

Publication Number: 1478672

IPC: C08F236/12, C08F2/22,
C08L13/02, A61B19/04

Language of the proceedings: EN

Title of invention:

DIP-FORMING LATEX, DIP-FORMING COMPOSITION AND DIP-FORMED
ARTICLE

Patent Proprietor:

Zeon Corporation

Opponent:

ARLANXEO Deutschland GmbH

Relevant legal provisions:

RPBA Art. 12(4)
EPC Art. 56

Keyword:

Late-filed evidence - submitted with the statement of grounds
of appeal (admitted: yes)
Inventive step - main request (yes)



Beschwerdekammern

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Case Number: T 1543/17 - 3.3.03

D E C I S I O N
of Technical Board of Appeal 3.3.03
of 29 November 2019

Appellant: ARLANXEO Deutschland GmbH
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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 4 May 2017
rejecting the opposition filed against European
patent No. 1478672 pursuant to Article 101(2)
EPC.**

Composition of the Board:

Chairman D. Semino
Members: O. Dury
 R. Cramer

Summary of Facts and Submissions

I. The appeal by the opponent lies from the decision of the opposition division rejecting the opposition filed against European patent No. 1 478 672.

II. Claim 1 of the granted patent read as follows:

"1. A process of producing a dip-forming latex comprising the step of copolymerizing 50 to 89.5 parts by weight of a conjugated diene monomer, 10 to 40 parts by weight of an ethylenically unsaturated nitrile monomer, 0.5 to 10 parts by weight of an ethylenically unsaturated acid monomer and 0 to 20 parts by weight of other copolymerizable ethylenically unsaturated monomer, provided that the total of these monomers is 100 parts by weight,

by initiating said copolymerization with a monomer mixture comprising at least 80% by weight of the amount of conjugated diene monomer used, at least 50% by weight of the amount of ethylenically unsaturated nitrile monomer used, 30 to 85% by weight of the amount of ethylenically unsaturated acid monomer used and at least 80% by weight of the amount of other copolymerizable ethylenically unsaturated monomer used, and thereafter,

adding the remainder of ethylenically unsaturated acid monomer to a polymerization system while the polymerization conversion of the total monomers added is within a range of 20 to 80%, and adding the remainders of conjugated diene monomer, ethylenically unsaturated nitrile monomer and other copolymerizable ethylenically unsaturated monomer to the polymerization

system at any time before the termination of copolymerization,

followed by continuation of copolymerization."

III. A notice of opposition to the patent was filed requesting revocation of the patent in its entirety.

IV. In that decision the following documents were *inter alia* cited:

D1: WO 01/00726
D1.1: EP-A-1 209 192
D2: EP-A-0 779 300
D3: EP-A-0 915 133
D4: EP-A-0 778 288
D4.1: US 5 763 521
D5: WO 01/053388
D5.1: EP-A-1 266 927
D6: EP-A-0 704 459

V. In the contested decision, the opposition division held *inter alia* that the subject-matter of the claims of the patent in suit as granted was inventive in view of document D5 as closest prior art, in particular because there was no hint in the cited prior art documents to improve the tensile strength of dip formed articles by preparing a dip-forming latex using an incremental addition of carboxylic acid monomers as defined in granted claim 1, which had been shown to be achieved in view of example 4 and comparative example 3 of the patent in suit.

VI. The opponent (appellant) lodged an appeal against the above decision and requested that the decision of the opposition division be set aside and the patent be

revoked. Also, new experimental data (D9) were submitted.

VII. In the reply 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 4 filed with letter of 21 March 2017, or of auxiliary requests 5 and 6 filed with that rejoinder. The respondent further requested that the experimental data D9 be not admitted into the proceedings.

VIII. In a communication sent by the Board, issues to be discussed at the oral proceedings were specified, whereby it was in particular indicated that "should D9 not be admitted into the proceedings or the problem effectively solved be held to reside in the provision of a process of producing a dip-forming latex for making dip formed articles with improved tensile strength, there would be no reason for the Board to overturn the opposition division's decision on inventive step. In particular, the arguments submitted by the appellant in sections IV.3 to IV.10 of the statement of grounds of appeal only concern the case in which the problem effectively solved over D5 resides in the provision of an alternative process to the one according to D5 (and not in an improvement in terms of tensile strength)" (section 6.4.2 of the communication).

IX. Oral proceedings were held on 29 November 2019 in the presence of both parties.

- X. The appellant's arguments, as far as relevant to the present decision, were essentially as follows:

Main request (patent in suit)

Admittance of D9

- (a) D9 had been filed in order to refute the opposition division's conclusion according to which the problem to be solved resided in the provision of a process which led to dip formed articles having improved tensile strength as compared to the ones prepared according to the process of D5. In that respect, D9 showed that said problem was not solved over the whole scope of the claims, the consequence being that the problem to be solved had to be formulated as the provision of a mere alternative to D5 (and not as an improvement).
- (b) D9 was submitted in direct reaction to the contested decision, whereby the same line of argumentation was pursued as in the final stage of the opposition proceedings. Therefore, D9 did not lead to a complete change of case but was submitted in order to strengthen an objection which had not convinced the opposition division.
- (c) Under these circumstances, it was not justified to hold D9 inadmissible.

Inventive step

- (d) It was agreed with the opposition division that the subject-matter of granted claim 1 differed from the process according to production example 1 of D5, which constituted the closest prior art, in that it

required the addition of 15-70 wt.% of unsaturated acid monomers to the polymerisation system when the polymerisation conversion of the total monomers added was within a range of 20-80%.

Although it was derivable from example 4 and comparative example 3 of the patent in suit that such an incremental addition of carboxylic acid monomers led to an improvement in terms of the tensile strength of dip-formed articles, it was shown in D9 that said problem was not solved over the whole scope of the claims. Therefore, the problem effectively solved retained by the opposition division was not valid and should be reformulated as residing in the provision of another process of producing a dip-forming latex having good tensile strength, in alternative to the one of the closest prior art.

Considering that it was known in the art that the manner of introducing monomers used in a process of producing a dip-forming latex was not limited and could take place in an incremental way (see either D5 itself or any of D1 to D6), it was obvious to solve the above problem by adding, in an incremental manner as defined in granted claim 1, the unsaturated monomers used in the process of production example 1 of D5.

In view of the above, the subject-matter of granted claim 1 was not inventive.

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

Main request (patent in suit)

Admittance of D9

- (a) D9 was late-filed and, in view of the file history, there was no justification for filing these comparative data only at the appeal stage.
- (b) The data of D9 were further not *prima facie* relevant not only because the process carried out therein was not a proper rework of the experiments described in the patent in suit but also because it was evident at first sight that the processes reported in D9 had not been carried out at the same conversion rate of polymerisation, so that no fair comparison between the examples of D9 could be made.
- (c) For these reasons, D9 should be held inadmissible.

Inventive step

- (d) It was agreed with the opposition division that the subject-matter of granted claim 1 differed from the process according to production example 1 of D5, which constituted the closest prior art, in that it required the addition of 15-70 wt.% of unsaturated acid monomers to the polymerisation system when the polymerisation conversion of the total monomers added is within a range of 20-80%. However, the process of granted claim 1 further differed from the one of the closest prior art in that after the incremental addition of monomer(s), the polymerisation had to be continued, which was not indicated in D5.

The objective problem solved over the closest prior art was to provide a process of producing a dip-forming latex which led to an improvement in terms of the tensile strength of dip formed articles, which, as indicated in the contested decision, had been shown to be achieved in the patent in suit (see example 4 and comparative example 3).

The comparisons made in D9 were not related to the sole distinguishing feature over the prior art since they were additionally made at different conversion rates, which was not correct. Besides, it could not be concluded from the information provided in D9 that the experiments carried out in D9 constituted a fair rework of the teaching of the patent in suit. Also, the data of examples VV1.1, VV1.2a, VV1.2b and VV2 of D9 could not be fairly compared with the ones of example 4 and comparative example 3 of the patent in suit, since the latter had not been repeated in D9. Finally, the results of D9 were dubious since they did not reflect the expectations of the skilled person working in the present technical field. In these circumstances, the appellant's arguments based on D9 should be rejected and there was no reason to formulate the technical problem effectively solved in a different manner than had been done by the opposition division.

Considering that none of the cited prior art documents provided a hint to improve the tensile strength of dip formed articles by preparing a dip-forming latex using an incremental addition of carboxylic acid monomers as defined in granted claim 1, the subject-matter of granted claim 1 was

inventive.

- XII. The appellant requests that the decision under appeal be set aside and that the patent be revoked.

The respondent requests that the appeal be dismissed, or alternatively that the decision under appeal be set aside and the patent be maintained in amended form on the basis of one of the sets of claims according to auxiliary requests 1 to 4 filed with the letter of 21 March 2017, or according to auxiliary requests 5 or 6 filed with the reply to the statement of grounds of appeal. The respondent further requests that document D9 not be admitted into the proceedings.

Reasons for the Decision

Main request (patent in suit)

1. Admittance of D9
 - 1.1 Considering that D9 was submitted together with the appellant's statement of grounds of appeal, it was filed pursuant to Article 12(2) RPBA and subject to the stipulations of Article 12(4) RPBA according to which the Board has the power to hold inadmissible facts and evidence which could have been presented in the first instance proceedings.
 - 1.2 In that respect, D9 was filed in order to refute the opposition division's conclusion according to which the problem to be solved resided in the provision of a process which led to dip formed articles having improved tensile strength as compared to the ones

prepared according to the process of D5 (contested decision: page 4, third paragraph). According to the appellant, D9 showed that said problem was not solved over the whole scope of the claims, the consequence being that the problem to be solved should be formulated as the provision of a mere alternative to D5 (and not as an improvement).

1.3 In the Board's opinion, it may be agreed with the respondent that, in view of the file history, D9 could have been filed earlier, in particular because:

- The opposition division had already indicated in its preliminary opinion which was sent together with the summons to the oral proceedings (communication dated 26 August 2016, which was sent more than 6 months before the date of the oral proceedings: see page 3, fourth paragraph) that the problem effectively solved over D5 resided in an improvement, i.e. that it was not to provide an alternative to D5.
- The respondent had already argued in its reply to said preliminary opinion (letter of 21 March 2017: section III.4.1) that the appellant's objection regarding the formulation of the problem to be solved as an alternative was not supported by any evidence and should, therefore, be rejected.

1.4 However, it has also to be taken into account that the filing of D9 may be seen as a direct reaction to the contested decision, whereby the appellant pursues in appeal the same line of argumentation as in the final stage of the opposition proceedings, i.e. D9 does not lead to a complete change of case, but it is submitted in order to strengthen the appellant's objection, which

did not convince the opposition division.

1.5 The question whether or not D9 is a fair rework of the experiments carried out in the patent in suit is not relevant for the assessment of the admittance into the proceedings of D9, but it is an issue which will have to be taken into account at a later stage, when the question of the meaningfulness of D9 will be addressed. Same is valid regarding the respondent's argument in relation to the fairness of the comparisons that could be made between the data reported in D9. Therefore, the respondent's observations in that respect are not convincing.

1.6 In view of the above, it is not justified that the Board makes use of its power to hold D9 inadmissible pursuant to Article 12(4) RPBA for the sole reason that said document could in principle have been filed earlier. Therefore, the respondent's request is rejected and D9 is in the proceedings.

2. Cited document(s)

In the current proceedings, both parties read the content of document D5, which is a prior art document pursuant to Article 54(2) EPC in Japanese, on the basis of the corresponding family document D5.1, which is a European application drafted in English but published between the priority date(s) and the filing date of the European patent application on which the patent in suit is based. In the present decision, following the common position of the parties and in the absence of any objection concerning the equivalence of the two documents, the content of D5 is read accordingly, namely on the basis of the one of D5.1.

3. Inventive step

3.1 Closest prior art and distinguishing feature(s)

3.1.1 Both parties, as the opposition division, considered that D5 represents the closest prior art document. During the oral proceedings before the Board, it was further agreed by the parties that the process according to production example 1 of D5 (paragraph 79 of D5.1) was particularly relevant and constitutes a good starting point for the assessment of the inventive step.

3.1.2 The parties further agreed with the opposition division's finding according to which the subject-matter of granted claim 1 differs from the process of production example 1 of D5 in the addition of 15-70 wt.% of unsaturated acid monomers to the polymerisation system when the polymerisation conversion of the total monomers added is within a range of 20-80% (decision: page 4, first paragraph; in production example 1 of D5, all acid monomers are charged at the beginning of the polymerisation, i.e. not in an incremental manner).

3.1.3 The respondent argued that the subject-matter of granted claim 1 further differed from the process of production example 1 of D5 in that the copolymerisation was continued after the addition of said acid monomer (and optionally of the other monomers).

However, the fact that the polymerisation is "continued" as defined in granted claim 1 is directly related to the incremental addition of 15-70 wt.% of unsaturated acid monomers identified in section 3.1.2 above: as a consequence of said separate addition of

the acid monomer, the remaining acid monomer can only be added at a subsequent stage, at which point it is evident, from a technical point of view, that the polymerisation must be pursued to some extent (it would not make any technical sense to add monomers and stop the polymerisation directly afterwards). Therefore, the respondent's argument that a further separate difference is present is rejected.

3.1.4 Under these circumstances, the Board has no reason to depart from the finding of the opposition division indicated in sections 3.1.1 and 3.1.2 above.

3.2 Problem effectively solved

3.2.1 In the contested decision (page 4, third full paragraph), the opposition division held that example 4 and comparative example 3 of the patent in suit showed that the problem effectively solved by granted claim 1 over D5 was to provide a process of producing a dip-forming latex for making dip formed articles with improved tensile strength, which was agreed upon by the respondent. In that respect, although example 4 and comparative example 3 of the patent in suit were carried out at a higher polymerisation conversion rate than production example 1 of D5.1 (97 % as indicated in paragraph 103 of the patent in suit versus 92 % in example 1 of D5.1 as indicated in paragraph 79 of D5.1), said conversion rate is according to the general teaching of D5 (see paragraph 32 of D5.1) and allows a fair comparison between these examples of the patent in suit. Therefore, there is no reason to deviate from the finding of the opposition division.

3.2.2 Although the appellant agreed that an improvement in terms of tensile strength was shown by example 4 and

comparative example 3 of the patent in suit, he contested that said problem was effectively solved over the whole scope of the claims, whereby the objection was based on the experiments carried out in D9.

The experiments reported in D9 deal with the production of a dip-forming latex by copolymerising a conjugated diene monomer (BD), an ethylenically unsaturated nitrile monomer (ACN) and an ethylenically unsaturated acid monomer (MA) in amounts according to granted claim 1 (see table 1 of D9, which is copied below).

Table 1.

Monomer Composition (parts)	SP* Ex.4	SP* CEX.3	VV** 1.1	VV** 1.2a	VV** 1.2b	VV** 2
1,3-butadiene (BD) (initial charge)	73	73	73	73	73	73
Acrylonitrile (ACN) (initial charge)	23	23	23	24	24	23
Methacrylic acid (MA) (initial charge)	3	4	2	3	1	3
% of initially charged MA to total MA	75	100	50	100	33.3	75
Amount of MA added after initiation of polymerization [parts]	1	-	2	0	2	1
Polymerization conversion at time of MA addition [%]	60	-	50	50	50	25
Total polymerization conversion [%]	97	97	84.5	87.6	81.7	46.6
Properties of Dip-Formed Article						
Tensile stress at 300% elongation [MPa]	2.0	2.3	2.0	1.7	3.5	2.9
Tensile strength [MPa]	22.3	16.5	14.5	16.6	15.4	13.8
Elongation at break [%]	600	590	567	643	444	487

*results from EP1478672

**test results related to SP Ex.4

In said table 1 of D9, SP Ex.4 and SP CEx.3 are example 4 and comparative example 3 of the patent in suit, respectively, whereby example 4 was carried out by charging said acid monomer in an incremental manner as defined in operative claim 1 while comparative example 3 was carried out by charging all the ethylenically unsaturated acid monomer at the beginning of the polymerisation. Examples VV1.1, VV1.2b and VV2 of D9 are indicated in D9 as illustrating a process according to operative claim 1 and carried out at various conversion rates (84.5, 81.7 and 46.6 %). Also, example VV1.2a of D9 is a comparative example carried

out in a manner similar to comparative example 3 of the patent in suit, i.e. by adding all the acid monomer at the beginning of the polymerisation according to the teaching of the closest prior art, albeit at a different conversion rate (87.6 %).

It may be seen from the data reported in table 1 of D9 that the processes carried out in examples VV1.1, VV1.2a, VV1.2b and VV2 of D9 were all carried out at conversion rates of the polymerisation which not only differ one from the other (84.5, 87.6, 81.7 and 46.6 %, respectively), but which also differ significantly from the conversion rate of example 4 and comparative example 3 of the patent in suit (97 %). Therefore, any comparison made between the examples reported in table 1 of D9, apart from the one between SP Ex4 and SP Cex.3 (i.e. between example 4 and comparative example 3 of the patent in suit) concerns examples differing in at least two features, namely the incremental addition of the acid monomer and the conversion rate of the polymerisation reaction. Therefore, such comparisons cannot allow to conclude that the differences in terms of tensile strength reported for these examples is mandatorily related to the distinguishing feature over the closest prior art (namely the incremental addition of the acid monomers), contrary to the appellant's view. In that respect, although it is correct that the conversion rate is not mentioned in granted claim 1, it remains that a fair comparison can only be made by carrying out the polymerisation process at the same conversion rate because it cannot be expected that stopping the polymerisation at different conversion rates cannot have an impact on the properties of the polymers thus prepared. Under these circumstances, the comparison of any of examples VV1.1, VV1.2a, VV1.2b and VV2 of D9 either with one another, with example 4 or

with comparative example 3 of the patent in suit cannot allow to conclude that the claimed improvement in tensile strength related to the above indicated distinguishing feature (incremental addition of the acid monomer) is not achieved by processes encompassed by granted claim 1 (see Case Law of the Boards of Appeal of the EPO, 9th edition, 2019, I.D.4.1, in particular the paragraph related to T 519/07).

3.2.3 In view of the above, there is no need for the Board to address in the present decision any other issue in dispute between the parties in respect of D9, in particular regarding whether or not the experiments carried out in D9 are a fair rework of the teaching of the patent in suit and/or if the data of examples VV1.1, VV1.2a, VV1.2b and VV2 of D9 may be fairly compared with the ones of example 4 and comparative example 3 of the patent in suit (since the latter were not repeated in D9), and/or if the subject-matter of granted claim 1 is anyhow limited in terms of the polymerisation conversion rate, which was in dispute between the parties, in particular during the oral proceedings before the Board.

3.2.4 In view of the above, since the data of D9 cannot demonstrate that a problem is not solved over the whole scope of the claims, as argued by the appellant, and no other evidence or convincing argument is available in this respect, the problem effectively solved over the closest prior art is seen as residing in the provision of a process of producing a dip-forming latex for making dip formed articles with improved tensile strength as compared to the process of the closest prior art, as already established by the opposition division.

3.3 Obviousness

3.3.1 The question remains to be answered if the skilled person, desiring to solve the problem identified as indicated in section 3.2.4 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.

3.3.2 However, the arguments submitted in appeal by the appellant (see in particular: sections IV.3 to IV.10 of the statement of grounds of appeal and section II.1.d of the letter of 29 October 2019) only concern the case in which the problem effectively solved over D5 were to reside in the provision of an alternative process to the one according to D5. In fact, no case was made by the appellant in appeal to contest the finding of the opposition division regarding inventive step when the problem effectively solved is found to reside in the provision of a process of producing a dip-forming latex for making dip formed articles with improved tensile strength. In particular, no argument was put forward by the appellant in reaction to the Board's communication in which said issue was identified (see section IX above).

3.3.3 Under these circumstances, there is no reason for the Board to overturn the opposition division's decision according to which the subject-matter of granted claim 1 is inventive.

3.3.4 The appellant did not provide any separate objection against any other of the granted claims, which therefore do not need to be analysed in any detail.

4. Considering that the appellant's objections submitted against the respondent's main request are not successful, the appeal is to be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



B. ter Heijden

D. Semino

Decision electronically authenticated