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Datasheet for the decision of 22 November 2024

Case Number: T 1674/22 - 3.3.03

Application Number: 12820003.7

Publication Number: 2739695

IPC: C09J123/12, C08J5/18

Language of the proceedings: EN

Title of invention:
ADHESIVES AND USE THEREOF

Patent Proprietor:
Henkel IP & Holding GmbH

Opponent:
Clariant Produkte (Deutschland) GmbH

Relevant legal provisions:
EPC Art. 113(1), 54, 56
EPC R. 103(1)(a)
RPBA 2020 Art. 12(4), 12(6)

Keyword:

Right to be heard - violation (yes)
Reimbursement of appeal fee (no) - absence of causal link between substantial procedural violation and filing of appeal
Main request - Novelty (yes) Inventive step (no) - obvious alternative
Amendment to case - reasons for submitting auxiliary requests 1 to 3 in appeal proceedings (no) - reasons for submitting evidence in appeal proceedings (yes in part)
Auxiliary requests 4 to 7 - Inventive step (no) - obvious alternative

Decisions cited:

T 0004/00, T 0939/92

Beschwerdekammern

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Case Number: T 1674/22 - 3.3.03

DECISION
of Technical Board of Appeal 3.3.03
of 22 November 2024

Appellant:
(Patent Proprietor)

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Decision under appeal: **Decision of the Opposition Division of the European Patent Office posted on 14 June 2022 revoking European patent No. 2739695 pursuant to Article 101(3)(b) EPC.**

Composition of the Board:

Chairman M. Barrère
Members: F. Rousseau
A. Bacchin

Summary of Facts and Submissions

I. The appeal by the patent proprietor lies from the decision of the opposition division revoking European patent No. 2 739 695.

The decision was based on the patent as granted as the main request, auxiliary requests 1 to 3 submitted with letter of 4 March 2022 and auxiliary request 4 submitted during the oral proceedings.

II. The decision was taken having regard among others to documents:

D1: WO 03/083003 A1
D3: EP 1 788 055 A1
D9: Ullmann's Encyclopedia of Industrial Chemistry, Wiley, 7th Edition, Vol. 29, 2011, pages 382-416.

III. According to the reasons for the contested decision which are relevant to the appeal proceedings:

(a) Given the reference to EP 384 264 in paragraph [0049] of D3, it was concluded that the wax 1 contained in example 1 of D3 had a polydispersity within the range required for the metallocene catalysed polypropylene component of claim 1 of the main request. On this basis, claim 1 of the main request was found to lack novelty over the adhesive of example 1 of D3.

(b) Auxiliary requests 1 to 3 did not comply with the requirements of Rule 80 EPC and those of Article 84 EPC.

(c) Claim 1 of auxiliary request 4 lacked an inventive step over the adhesive composition of example 5 of D1 considered to represent the closest prior art.

(d) The patent was therefore revoked

IV. An appeal was filed by the patent proprietor (appellant). The appellant submitted with its statement of grounds of appeal auxiliary requests 1 to 7 and the following document:

D20: "Experimental Results".

V. With its reply to the statement of grounds of appeal, the opponent (respondent) submitted, *inter alia*, the following documents:

D21: EP 0 384 264 A1
D26: Statement by Mr Bodendorfer dated 9 February 2023.

VI. In preparation for the oral proceedings, a communication pursuant to Article 15(1) RPBA containing the Board's provisional opinion was issued.

VII. Oral proceedings before the Board were held on 22 November 2024.

VIII. The final requests of the parties were as follows:

The appellant requested that the decision under appeal be set aside and that the patent be maintained according to the main request (patent as granted) or, as an auxiliary means, according to the claims of any of auxiliary requests 1 to 7 filed with the statement of grounds of appeal. The appellant also requested that the decision be set aside due to a procedural violation.

The respondent requested that the appeal be dismissed. The respondent requested in addition that the case be remitted to the first instance, should one of auxiliary requests 1 to 3 be admitted to the proceedings, or one of auxiliary requests 5 to 7 be found to meet the requirements of Articles 84 and 123(2) EPC and Rule 80 EPC.

IX. The claims which are relevant to the present decision are as follows:

Main request

Claim 1 which reads:

"1. An adhesive comprising:

a) at least 70 wt% of a polymer blend which comprises

i) a metallocene catalyzed polypropylene polymer that has a density range of 0.70 to 0.91g/cm^3, a melt viscosity less than 50,000 mPas (cP) at 190°C and a polydispersity index of less than 3, and
ii) a Ziegler-Natta catalyzed amorphous atactic polymer selected from the group consisting of polybutene copolymer, polypropylene copolymer and mixtures thereof, having a viscosity of 500 to 10,000 mPas (cP) determined in accordance with ASTM D3236;

b) more than 0 but less than 30 wt% of a tackifier and/or diluent;
c) at least one antioxidant; and

d) optionally up to 10 wt% of a wax;

wherein the adhesive has a viscosity below 11,000 mPas (centipoise) at 150°C, determined in accordance with ASTM D3236; and the total weight adds to 100 wt%."

Auxiliary request 1

Claim 1 which corresponds to claim 1 of the main request with the following amendment of the definition of the melt viscosity (additions indicated by the Board in bold and underlined) "a melt viscosity **<u>from 500 to</u>** less than 50,000 mPas (cP) at 190°C".

Auxiliary request 2

Claim 1 which corresponds to claim 1 of auxiliary request 1 with the additional feature

"wherein the ratio of (i) the metallocene catalyzed polypropylene polymer to (ii) the Ziegler-Natta catalyzed amorphous polymer ranges from about 1 : 10 to about 1 : 1;"

Auxiliary request 3

Claim 1 which corresponds to claim 1 of auxiliary request 2 with the following modification of the definition of the Ziegler-Natta catalyzed amorphous polymer (deletions being indicated by the Board in strike through and additions in bold and underlined):

"a Ziegler-Natta catalyzed amorphous atactic polymer selected from the group consisting of polybutene copolymer, **<u>which comprises a C_2-C_3, C_5-C_{10} α-olefin comonomer, and</u>** polypropylene copolymer ~~and mixtures~~

~~thereof~~, **which comprises a C_2, C_4-C_{10} α-olefin comonomer,** having a viscosity of 500 to 10,000 mPas (cP) determined in accordance with ASTM D3236;"

Auxiliary request 4 (corresponding to auxiliary request 4 underlying the contested decision)

Claim 1 which corresponds to claim 1 of the main request the additional feature

"wherein the ratio of (i) the metallocene catalyzed polypropylene polymer to (ii) the Ziegler-Natta catalyzed amorphous polymer ranges from about 1 : 10 to about 1 : 1;"

Auxiliary request 5 (corresponding to auxiliary request 1 underlying the contested decision)

Claim 1 which corresponds to claim 1 of auxiliary request 4 request with the following modification of the definition of the Ziegler-Natta catalyzed amorphous polymer:

"a Ziegler-Natta catalyzed amorphous atactic **poly-α-olefin** polymer selected from the group consisting of polybutene copolymer, polypropylene copolymer and mixtures thereof having a **melt** viscosity of **greater than** 500 to 10,000 mPas (cP) **at 190°C** determined in accordance with ASTM D3236, **wherein the comonomer of the polybutylene copolymer is a C_2-C_3, C_5-C_{10} α-olefin comonomer, and wherein the comonomer of the polypropylene copolymer is a C_2, C_4-C_{10} α-olefin comonomer;"**

Auxiliary request 6 (corresponding to auxiliary request 2 underlying the contested decision)

Claim 1 which is identical to claim 1 of auxiliary request 5

Auxiliary request 7 (corresponding to auxiliary request 3 underlying the contested decision)

Claim 1 which corresponds to claim 1 of auxiliary request 5 with the following amendment of the definition of the melt viscosity "a melt viscosity **from 500 to** less than 50,000 mPas (cP) at 190°C".

X. The parties' submissions, in so far as they are relevant to the present decision, can be derived from the reasons for the decision set out below. They essentially concerned an alleged procedural violation by the opposition division in deciding a lack of novelty over the adhesive composition of example 1 of D3, the novelty and inventive step of the claimed adhesive over example 5 of D1, as well as admittance of auxiliary requests 1 to 3 and documents D20 and D26.

Reasons for the Decision

Right to be heard (Article 113(1) EPC)

1. The appellant contends that the absence of a decision on the relevance and admittance of EP 0 384 264 during the oral proceedings (filed as D21 with the reply to the statement of grounds of appeal) without giving the patent proprietor any time to study that document or to comment on its admissibility, since it was apparently

and unexpectedly found to be highly relevant to the decision, represents a procedural violation of the appellant's right to be heard. For this reason alone, the decision of the opposition division should be set aside.

1.1 The opposition division found that the adhesive composition of example 1 of D3 was novelty destroying for claim 1 of the patent as granted. This finding was based on the argument that wax 1, which is a component of said adhesive composition, is a metallocene catalysed polypropylene polymer in accordance with feature i) of granted claim 1, in particular as it would necessarily exhibit a polydispersity index of at most 2.6 in view of examples 1 to 16 of EP 0 384 264 referred to in paragraph [0049] of D3 (contested decision, page 9, last paragraph to page 10, second full paragraph).

It is uncontested that a reference to examples 1 to 16 of EP 0 384 264 in support of the argument that the polydispersity index of wax 1 was less than 3 was made for the first time during the oral proceedings. Although the appellant did not request a break in order to comment on this new argument, the Board is not convinced that this new argument could reasonably have been understood by the appellant as crucial for the decision concerning novelty over example 1 of D3, as the Reasons for the decision show. The respondent's argument (rejoinder, page 2, last paragraph) that this document was the subject of the debates of the oral proceedings and accordingly admitted into the proceedings without being numbered is not convincing, since this document was neither filed, nor did the opposition division deal with its admittance, so that its status in the proceedings was unknown. It can be seen from the minutes that no passage from EP 0 384 264 was cited during the oral proceedings, where the disclosure of a MWD "between 2.2-2.6" was merely reported (minutes, page 6, 5th paragraph). This is consistent with the filing of EP 0 384 264 A1 as document D21 with the reply to the statement of grounds of appeal and the respondent's request to admit that document into the proceedings (rejoinder, page 2, last paragraph).

On this basis, the appellant was taken by surprise by the reasons of the decision concerning the novelty of granted claim 1 over example 1 of D3, which was crucially based on the disclosure of EP 0 384 264. This constitutes an infringement of the right to be heard, which amounts to a substantial procedural violation (Article 113(1) EPC; Case Law of the Boards of Appeal of the EPO, 10th edition 2022, in the following "Case Law", III.B.2.3.1).

1.2 Although the appellant did not request a reimbursement of the appeal fee, this could be decided by the Board on its own motion. The Board however finds that the conditions for a reimbursement are not met in the present case. A condition for reimbursing the appeal fee pursuant to Rule 103(1)(a) EPC is where the appeal is allowable, if the reimbursement is equitable by reason of a substantial procedural violation.

According to the established case law of the boards of appeal reimbursement of the appeal fee requires a causal link between the substantial procedural violation and the necessity to file the appeal (Case Law, V.A.11.7.1). An alternative approach is to consider that a procedural violation is not to be deemed substantial if the outcome of the proceedings would not have been different had the violation not occurred (T 4/00, Reasons No. 2.6).

In the case at hand claim 1 of auxiliary request 4 which corresponds to claim 1 of the main request with the restriction defining a ratio of (i) the metallocene catalysed polypropylene polymer to (ii) the Ziegler-Natta catalysed amorphous polymer of from about 1 : 10 to about 1 : 1 was found by the opposition division to lack an inventive step over the adhesive composition of example 5 of D1 taken as starting point for the assessment of inventive step (Reasons, point 13). In particular, the use of an antioxidant, which was the second distinguishing feature over this starting point in addition to the ratio of polymers (i) to (ii), was considered to be obvious in the light of D1. This finding was independent of the disclosure of D21.

Under these circumstances, granted claim 1, the subject-matter of which encompassed that of claim 1 of auxiliary request 4, would also have been found by the opposition division to lack an inventive step over example 5 of D1. It follows that the outcome of the proceedings would not have been different irrespective of the finding of the opposition division concerning novelty over example 1 of D3, which means that the appellant would have had to lodge an appeal anyway, regardless of the procedural violation.

Accordingly, in the absence of a causal link between the substantial procedural violation and the filing of the appeal, the reimbursement of the appeal fee would not be equitable. For the same reason, the decision is not to be set aside solely on the basis of the above mentioned procedural violation.

Main request (patent as granted)

Novelty over D1

2. Example 5 of D1 describes a hot melt adhesive prepared by blending REXTAC^{TM}2730 (a copolymer of 67.5 mol % propylene, 30.5 mol % butene and 2 mol % ethylene), ESCOREZ^{TM}5637 (a thermally polymerised aromatic modified cyclopentadiene based hydrogenated hydrocarbon resin) and IPP (a metallocene catalysed polypropylene) (page 21, lines 31-32; page 22, Table 1 and passages explaining the meaning of these designations on page 20, lines 19-26 and page 21, lines 1-23). The respondent objects that the adhesive composition of operative claim 1 would lack novelty over the adhesive of example 5 of D1, whereas the appellant submits that it would differ therefrom in that (i) the metallocene catalysed polypropylene polymer would have a density in the range of 0.70 to 0.91 g/cm^3 and a melt viscosity of less than 50 000 mPa.s at 190°C and (ii) the adhesive composition would comprise an antioxidant.

Density of IPP

2.1 As regards the density of the IPP component, the Board shares the view of the respondent, based on an excerpt from an encyclopedia in the present technical field (D9, page 401), and therefore a reliable source of information, that the homopolymer of polypropylene has a density of 0.905 g/cm^3, which means that the IPP component inevitably has a density in the range defined in operative claim 1 (reply to the statement of grounds of appeal, page 9, first paragraph).

The appellant, in contrast, merely argues that the disclosure of D9 does not exclude the possibility that the homopolymer IPP of D1 has a slightly higher density, for example of 0.92 g/cm^3, which would make it fall outside the scope of operative claim 1 (statement of grounds of appeal, page 4, section 3.2, 5th paragraph). The appellant, however, did not provide any technical explanation, let alone evidence, as to why such a value would be possible for a homopolypropylene. The appellant's statement that the density of the IPP of example 5 of D1 could be outside the range defined in operative claim 1 is therefore a mere assertion which, in the absence of supporting evidence, is not persuasive.

The appellant's argument that the density of the metallocene catalysed polypropylene as defined in claim 1 could be varied in a broad range from 0.70 to 0.91 g/cm^3 says nothing about possible variations in density for the homopolymer of polypropylene. Such a broad range with values well below 0.91 g/cm^3 is obviously due, for the skilled person, to the fact that the metallocene catalysed polypropylene polymer may comprise a C_2-C_{10} α-olefin comonomer, as shown in dependent claim 3, which comonomers, according to common general knowledge reduce the crystallinity and thus the density of the polypropylene polymer, as was correctly pointed out by the respondent during the oral proceedings.

On this basis, the Board has no reason to consider that the density of the metallocene catalysed polypropylene polymer component of the adhesive of operative claim 1 represents a distinguishing feature over the adhesive described in example 5 of D1.

Viscosity of IPP

2.2 With respect to the viscosity of the IPP component used in the adhesive of example 5 of D1, i.e. an inventive example of D1, it can be seen, having regard to the chemical nature of the components (a) to (c) described in claim 1 of D1, that the IPP component can only correspond the third component (c) of the adhesive composition defined in said claim 1, the viscosity of component (c) being defined in claim 1 to be 1500 mPa.s or less at 190°C. Accordingly, there is no reason to expect that the IPP component of the adhesive of example 5 of D1 would have a viscosity exceeding the upper limit of 50 000 mPa.s defined in operative claim 1.

Moreover, a comparison of the viscosity value obtained for the adhesive compositions of examples 3 and 6 of D1 (page 22, table 1) comprising the same amount of REXTAC^{TM}2730 indicates that this IPP component must have a lower viscosity than ESCOREZ^{TM}5637, used in example 6 as a partial replacement of ESCOREZ^{TM}5637, since this partial replacement results in a drop in viscosity. Furthermore, considering that ESCOREZ^{TM}5637 must have a lower viscosity than REXTAC^{TM}2730, which can be seen by comparing the compositions of examples 1 to 3, in which the gradual replacement of REXTAC^{TM}2730 by ESCOREZ^{TM}5637 results in a gradual decrease in viscosity, it can be concluded that the IPP component has a lower viscosity than REXTAC^{TM}2730, whose viscosity is 3630 mPa.s at 190°C according to Table 1 of D1.

Accordingly, a viscosity of less than 50 000 mPa.s at 190°C for the metalocene catalysed polypropylene is not a feature that distinguishes the adhesive of operative claim 1 from the composition of example 5 of D1.

Presence of an antioxidant

2.3 As regards the presence of an antioxidant, the respondent's contention is that the adhesives of examples 1 to 6 would have been prepared as described on page 19, lines 13 to 16 of D1, i.e. by mixing the polymer, the tackifier, the antioxidant and the other components. The amounts indicated in Table 1 on page 22 would not correspond to the amounts of all the components of the adhesives, but only to the amounts of REXTAC^{TM}2730, ESCOREZ^{TM}5637 and IPP, since obviously, only their quantities would have been varied (rejoinder, page 9, second paragraph).

First, the paragraph bridging pages 21 and 22 in which the preparation of the samples tested in examples 1 to 6 is described, discloses that enough material to make up 10 g of the hot melt blends described in Table 1 were placed in a 50 mL beaker and were heated on a hot plate until the components were molten with stirring until uniform and were cooled to room temperature. This, in the Board's opinion describes the preparation of a mixture consisting of the components listed in Table 1, i.e. which does not comprise additional ingredients. The further indication that 3-4 g of each hot melt was melted and a drop of it was transferred to the substrate and bond to create the adhesive construct excludes the use of an antioxidant for the compositions tested in examples 1 to 6 of D1. This leaves no room for the presence of additional components in the compositions of examples 1 to 6.

Secondly, the passage on page 19 relied upon by the respondent, in order to demonstrate that an antioxidant was added is to be found under the heading "Adhesive Testing". It reads "*A number of hot melt adhesive compositions were prepared by blending the polymer, tackifier, antioxidant, and other ingredients such as plasticizer oil, wax, and liquid resin tackifiers, under low or high shear mixing at elevated temperatures to form a fluid melt. Mixing temperatures varied from about 130°C to about 200°C, preferably from about 150°C to about 190°C. Adhesive test specimens were created by bonding the substrates together with a drop of molten adhesive and compressing the bond with a 500 g weight until cooled to room temperature*". The use of the words "*such as*" and the indication of a range of temperatures for mixing the components and of a preferred range of temperatures for this purpose, show that this passage provides general instructions as to how to test adhesive compositions. This passage does not refer to examples 1 to 6. It does not even indicate that the results of these tests are reported in D1. On this basis, it is not appropriate to read examples 1 to 6 in conjunction with the passage mentioning the use of antioxidants.

2.4 In view of the above analysis, it is concluded that the hot melt adhesive composition of operative claim 1 is not anticipated by that of example 5 of D1, but differs therefrom by the sole presence of at least one antioxidant.

Inventive step over D1

3. It is a matter of consensus that the hot melt adhesive composition of example 5 of D1 constitutes the closest prior art and therefore the starting point for

assessing inventive step of the subject-matter of operative claim 1. As concluded in point 2.4 above, the hot melt adhesive according to operative claim 1 differs from the closest prior art in that it contains at least one antioxidant. The parties were also in agreement at the oral proceedings that the problem successfully solved over the closest prior art by the subject-matter of claim 1 resides in the provision of a further hot melt adhesive composition. It therefore remains to be decided whether, having regard to the disclosure of D1, possibly in combination with other prior art documents or with common general knowledge, the skilled person wishing to solve the above problem would have found the suggestion to add at least one antioxidant to the composition of the closest prior art.

As pointed out by the respondent, D1 teaches on page 16, lines 29-30 the addition of less than 3 wt% antioxidant. This is undisputed. The appellant, however, contends that the skilled person starting from the composition of the closest prior art, would not have known which modifications of the specific hot melt composition of the closest prior art were required when adding an antioxidant, i.e. he/she would not have known how to adapt the specific components of the adhesive composition of the closest prior art when adding an antioxidant. For this reason, the claimed solution would not have been obvious to a skilled person.

This is not convincing. As shown in point 2.3 above, the hot melt adhesive of the closest prior art consists of the polymeric components listed in Table 1, i.e. REXTAC^{TM}2730, ESCOREZ^{TM}5637 and IPP, without any additional ingredients. D1 does not describe that the addition of an antioxidant would present any difficulties, in particular as concerns the proportion of the polymeric components.

The last paragraph of page 16 of D1, which describes the use of antioxidants, teaches that "the combinations described above", i.e. the mixture of polymeric components described under the heading "Formulations of the Polymers" (passage starting on page 15, line 14), in particular the mixture of copolymer, hydrocarbon resin and polypropylene (page 16, lines 17-28) of which the hot melt adhesive composition of example 5 of D1 represents a particular embodiment, are combined with less than 3 wt% of antioxidant without any indication of the necessity to adjust the proportion of these polymeric components. The appellant has not provided any explanation as to why the skilled person would need to modify the proportions of the polymeric components of the adhesive of example 5 of D1 and even if this were the case, why this would present any difficulty for the skilled person. This is all the more so as the patent in suit also teaches the addition of small amounts of antioxidants to the hot melts without any further consideration of the need to adjust the hot melt composition (paragraphs [0045] and [0046]).

Consequently, starting from the hot melt adhesive of example 5 of D1 and faced with the problem of providing a further hot melt adhesive composition, the skilled person would have found it obvious to add an antioxidant to said hot melt adhesive, thereby arriving in an obvious way at an adhesive in accordance with operative claim 1.

The main request is therefore not allowable, as its subject-matter is devoid of an inventive step.

Auxiliary requests 1 to 3

Admittance

4. It is undisputed that auxiliary requests 1 to 3 are new claim requests filed with the statement of grounds of appeal. They are therefore to be regarded as an amendment to the appellant's case, whose admittance to the proceedings, contested by the respondent, is subject to the discretionary power of the Board in accordance with Article 12, paragraphs (4) to (6) RPBA. According to the second paragraph of Article 12 (6) RPBA, the Board shall not admit requests, facts, objections or evidence which should have been submitted, or which were no longer maintained, in the proceedings leading to the decision under appeal, unless the circumstances of the appeal case justify their admittance.

4.1 Claim 1 of auxiliary request 1 corresponds to claim 1 of the main request with the further limitation that the melt viscosity of the metallocene catalysed propylene polymer is defined to have a minimum value of 500 mPa.s. (see point IX. above for the exact wording of claim 1 of auxiliary request 1).

The appellant submits that this feature had already been included in the previous auxiliary request 3, which contained further amendments which the opposition division found not to comply with the requirements of Rule 80 EPC and Article 84 EPC. It is further submitted that present auxiliary request 1 could not have been filed earlier, as the opponent and the opposition division did not raise these objections until the oral proceedings, which could not have been anticipated (statement of grounds of appeal, page 5, section 4.1, first paragraph). The appellant also contends that a viscosity below that lower limit would lead to an undesirable increase in creep resistance, which the appellant had demonstrated (statement of grounds of appeal, page 6, fourth paragraph, first sentence). Moreover, operative auxiliary request 1 was expected to succeed since the preferred ranges of viscosity for the polypropylene component (c) used in D1 were "between 100-500 mPa.s" at 190°C and more preferably between "150 and 300 mPa.s", as described on page 8, lines 10-12 and 24-27 of D1, which meant that the IPP used in the adhesive of the closest prior art was expected to be in those ranges and therefore to exhibit an increased creep resistance.

4.2 This is not convincing.

First of all, the modification in present auxiliary request 1 of the definition of the metallocene catalysed polypropylene by specifying a lower value of 500 mPa.s for the melt viscosity at 190°C cannot be seen as a response to the respondent's and opposition division's objections concerning former auxiliary requests 1 to 3, as those objections concerned the Ziegler-Natta catalysed amorphous atactic polymer, which was considered among others not to comply with the requirements of Rule 80 and Articles 84 but not the metallocene catalysed polypropylene.

Moreover, before the opposition division, the appellant had not linked the melt viscosity value of the metallocene catalysed polypropylene to the achievement of creep resistance, let alone that the lower limit of the melt viscosity was decisive in this respect.

Furthermore, auxiliary request 4, which was submitted during the oral proceedings after the opposition division had indicated that auxiliary requests 1 to 3 were not allowable, did not contain the limitation defining a lower limit of 500 mPa.s for the melt viscosity of the metallocene catalysed polypropylene, which was now included in claim 1 of operative auxiliary request 1. In the Board's opinion, a further auxiliary request containing such limitation should have been submitted at that stage of the opposition proceedings, if it was considered that this amendment was crucial for the issue of inventive step, all the more so since that limitation was already part of the former auxiliary request 3.

Finally, as to the timing of the objection against former auxiliary request 3, it must be noted that this request was filed within the time limit for submissions in preparation of the oral proceedings under Rule 116(2) EPC, namely only two months before the oral proceedings, without any justification as to why no auxiliary request had been filed until then. In the Board's opinion such a justification is not apparent, particularly when the opposition division had issued 18 months prior to the oral proceedings a negative opinion on the existence of an inventive step over the adhesive composition of example 5 of D1, whereby it was pointed out that both a different density for the metallocene catalysed polypropylene and the presence of an antioxidant could not contribute to an inventive step (annex to the communication of the opposition division of 20 September 2021, pages 8 and 9, section 5). The opposition division had also indicated that nothing could be said about the presence of an effect in relation to the creep performance, since no comparison with an adhesive as defined in D1 had been provided (annex to the communication, *supra*, page 9, lines 20-23).

On that basis, the alleged lateness of the respondent's objections concerning Rule 80 and Article 84 EPC of the former auxiliary requests 1 to 3 made during the oral proceedings cannot be imputed to the behaviour of the respondent, but was rather caused by the filing by the appellant of said auxiliary requests at an advanced stage of the opposition proceedings.

Accordingly, the Board concludes that the need to file further auxiliary requests on appeal comprising a limitation defining a lower limit of 500 mPa.s for the melt viscosity of the metallocene catalysed polypropylene results from a deliberate choice of the appellant and not from an unexpected course of events before the opposition division, especially not as a reaction to the finding that the definition of the ZN catalysed amorphous atactic polymer ii) constituted a violation of Rule 80 and Article 84 EPC.

4.3 In these circumstances, and having regard to Article 12(4) RPBA, third sentence and Article 12(6) RPBA, second sentence, the Board exercised its discretion under Article 12(4) RPBA by not admitting auxiliary request 1 into the proceedings.

4.4 Auxiliary requests 2 and 3 (see point IX. above) also include the additional limitation defining a lower limit of 500 mPa.s for the melt viscosity of the metallocene catalysed polypropylene i). With regard to the admittance of these auxiliary requests, the appellant merely referred at the oral proceedings to its submissions in the statement of grounds of appeal. However, the latter do not contain any arguments concerning the admittance of these auxiliary requests, i.e. no additional arguments to those submitted in relation to auxiliary request 1. On that basis, the board finds that as regards the common amendment to the lower limit for the melt viscosity of the metallocene catalysed polypropylene i), the same reasons for non-admittance as those provided in relation to auxiliary request 1 apply. Thus, the Board exercised its discretion under Article 12(4) RPBA by not admitting auxiliary requests 2 and 3 into the proceedings.

Auxiliary request 4

Inventive step over D1

5. Claim 1 of auxiliary request 4 (see point IX. above) differs from claim 1 of the main request in that the ratio of (i) the metallocene catalysed polypropylene polymer to (ii) the Ziegler-Natta catalysed amorphous polymer is from about 1 : 10 to about 1 : 1, whereas it is 1 : 16 in the adhesive of example 5 of D1. This, in addition to the use of an antioxidant, constitutes a further distinguishing feature over the closest prior art.

5.1 A functional interdependence between the selection of a different ratio of the metallocene catalysed polypropylene polymer to the Ziegler-Natta catalysed amorphous polymer and the use of an antioxidant has not been argued by the appellant, nor has any evidence been submitted in this respect. Under these circumstances, it has to be examined whether each of these features, is separately obvious in the light of the prior art (Case Law, I.D.9.3.2). As shown in point 3 above for the main request, the use of an antioxidant is considered to be obvious to the person skilled in the art.

5.2 With respect to the use of a higher ratio of the metallocene catalysed polypropylene polymer to the Ziegler-Natta catalysed amorphous polymer in the range of from about 1 : 10 to about 1 : 1, the appellant contends that the problem successfully solved by said distinguishing feature should be seen as the provision of an adhesive with improved creep resistance, as would be demonstrated by a comparison of the creep (%) values obtained for comparative sample B in Table 2 and sample 1 according to the invention in Table 3 of the opposed patent.

5.2.1 According to established case law, where comparative tests are relied upon to demonstrate an inventive step on the basis of an improved effect, the nature of the comparison with the closest state of the art must be such that the alleged advantage or effect is convincingly shown to have its origin in the feature(s) distinguishing the invention from the closest state of the art (Case Law, I.D.4.3.2), in the present case a higher ratio of the metallocene catalysed polypropylene polymer to the Ziegler-Natta catalysed amorphous polymer in the range of from about 1 : 10 to about 1 : 1.

5.2.2 As pointed out by the respondent, the comparison offered by the appellant is not suitable to demonstrate that the alleged improvement is caused by that higher ratio, since the Ziegler-Natta catalysed amorphous polymer Rextac RT 2830 comprised in a proportion of 100 wt% in the composition of comparative sample B has not only been partially substituted in the composition of sample 1 by the metallocene catalysed polymer L-

MODU400, but also partially replaced by the same amount of a third polymer, namely a tackifier.

Moreover, as also pointed out by the appellant, the test methods used to measure the creep resistance of sample 1 and comparative sample B are based on a different type of coating application method, as is apparent from the titles of Tables 2 and 3.

Therefore, the experimental data relied upon by the appellant cannot demonstrate that the change in the ratio of the metallocene catalysed polypropylene polymer to the Ziegler-Natta catalysed amorphous polymer which is operated vis-à-vis the closest prior art is causative for the alleged technical effect.

According to established case law, alleged advantages to which the patent proprietor merely refers, without offering sufficient evidence to support the comparison with the closest prior art, cannot be taken into consideration in determining the problem underlying the invention and thus in assessing inventive step (Case Law, I.D.4.3.1).

On that basis, the Board concludes, in line with the finding of the opposition division, that the problem successfully solved by the subject-matter of operative claim 1 over example 5 of D1 resides in the provision of a further adhesive suitable for disposable absorbent articles.

5.3 As to the obviousness of using such a ratio between the two polymers, the appellant submits that the skilled person would have had no incentive to increase the amount of the metallocene-catalysed polymer while keeping the amount of tackifier within the claimed range, since the best results would be obtained in D1 by using a lower amount or no metallocene-catalysed polymer. Moreover, the skilled person would be cautious about making changes to the adhesive composition of example 5 of D1. For the skilled person, it would be more obvious to modify the amount of tackifier in order to decrease the viscosity of the adhesive. Any other interpretation of D1 would be based on an inadmissible hindsight analysis.

5.4 This is not convincing. It is an established principle that the answer to the question as to what a person skilled in the art would have done depends on the result he/she wished to obtain (T 939/92, point 2.5.3 of the Reasons).

In the present case, the skilled person is seeking to provide a further adhesive suitable for disposable absorbent articles, i.e. whether or not the properties of the adhesive initial adhesion, the aged adhesion and the shear adhesion are improved.

Moreover, the skilled person would not have been discouraged, but rather would have found it appropriate to increase the proportion of metallocene-catalysed polymer (IPP) in the adhesive composition of example 5 of D1 having a melt viscosity at 190°C of 2045 mPa.s (see Table 1), since such an increase in the ratio of the metallocene catalysed polypropylene polymer (IPP) to the Ziegler-Natta catalysed amorphous polymer (REXTAC^{TM}2730) would be understood by the skilled person to result in an adhesive having a lower melt viscosity (see point 2.2 above, second paragraph), in accordance with the teaching of D1 to prepare an adhesive having a melt viscosity at 190°C which is more preferably 2000 or less, even more preferably 1000 or less (page 17, lines 21-24).

In view of the indication on page 15, lines 26-29 of D1 (rejoinder, page 25, 4th and 5th paragraphs) or in claim 35 of that document that the polypropylene can be present up to an amount of 50 wt.% based on the weight of the copolymer (REXTAC^{TM}2730 for example 5 of D1) and the polypropylene, more preferably between 10 and 30 wt.%, the skilled person faced with the problem identified in point 5.2 above, would have found it obvious following the teaching of D1 to increase the amount of the IPP component in the adhesive composition of example 5 of D1 up to an amount of 50 wt.%, thereby arriving in an obvious manner at the subject-matter of operative claim 1.

In this respect, in view of the fact that (i) a viscosity below 11 000 mPas at 150°C for the adhesive of operative claim 1 has not been argued to represent a distinguishing feature over the adhesive of example 5 of D1, and (ii) the IPP component has the lowest viscosity among the components of the adhesive composition of example 5 of D1, the Board concludes that the obvious modification applied to the adhesive composition of example 5 of D1 which consists in increasing the proportion of the metallocene catalysed polypropylene polymer (IPP) to the Ziegler-Natta catalysed amorphous polymer (REXTAC^{TM}2730) results in an adhesive composition whose viscosity is also below 11 000 mPas at 150°C, as required by operative claim 1.

5.5 For these reasons, the Board concludes that the subject-matter of claim 1 of auxiliary request 4 does not involve an inventive step within the meaning of

Article 56 EPC. Auxiliary request 4 is therefore not allowable.

Auxiliary requests 5 and 6

Inventive step over D1

6. Claim 1 of auxiliary request 5 differs from claim 1 of auxiliary request 4 in that the Ziegler-Natta catalysed amorphous atactic polymer is defined as a poly α-olefin selected from the group consisting of polybutene copolymer, polypropylene copolymer and mixtures thereof having a melt viscosity of greater than 500 to 10 000 mPas (cP) at 190°C determined in accordance with ASTM D3236, wherein the comonomer of the polybutylene copolymer is a C_2-C_3, C_5-C_{10} α-olefin comonomer, and wherein the comonomer of the polypropylene copolymer is a C_2, C_4-C_{10} α-olefin comonomer (see point IX. above).

The appellant submits that this amendment would represent an additional distinguishing feature over the adhesive composition of example 5 of D1, since the Ziegler-Natta catalysed amorphous atactic polymer of that composition REXTAC^{TM}2730 would not consist of two monomers as would be defined by this amendment, but would be a terpolymer, i.e. of 67.5 mol % propylene, 30.5 mol % butene and 2 mol % ethylene (see point 2 above). It is therefore argued that the Ziegler-Natta catalysed amorphous atactic polymer in accordance with claim 1 of auxiliary 5 are bipolymers of butylene or propylene with a monomer selected from C_2-C_3, C_5-C_{10} α-olefin monomer and C_2, C_4-C_{10} α-olefin monomer, respectively. The appellant did not argue that such a further modification would result in a specific technical effect, but that the person skilled in the art, faced with the problem of providing a further adhesive composition would not find it obvious to use the Ziegler-Natta catalysed amorphous atactic bipolymers defined in operative claim 1, as it would require an additional adjustment to those already operated with respect to the adhesive of example 5 of D1.

6.1 This is not convincing.

First, it is questionable whether the amendment introduced in claim 1 of auxiliary request 5 limits the Ziegler-Natta catalysed amorphous atactic polymer defined therein to bipolymers. In this respect, it is undisputed that the reasoning given and the conclusion arrived at for claim 1 of auxiliary request 4 would equally apply to the subject-matter of claim 1 of auxiliary request 5, if the amended definition of the Ziegler-Natta catalysed amorphous atactic polymer were not considered to be limited to bipolymers, in which case the additional modifications operated in claim 1 of auxiliary request 5 would not introduce a further distinguishing feature over the closest prior art, as the Ziegler-Natta catalysed amorphous atactic polymer REXTAC^{TM}2730 is a terpolymer of propylene, butene and ethylene, i.e. monomers which are all falling within the definition of operative claim 1.

6.2 However, even if, to the benefit of the appellant, the Ziegler-Natta catalysed amorphous atactic polymer according to claim 1 of auxiliary 5 were considered to be a bipolymer of butylene or propylene with a monomer selected from C_2-C_3, C_5-C_{10} α-olefin monomer and C_2, C_4-C_{10} α-olefin monomer, respectively, this additional modification over the closest prior art consisting in the suppression of one of the comonomers used in REXTAC^{TM}2730 would not contribute to an inventive step.

As pointed out by the respondent, D1 teaches that the presence of a third monomer in addition to butene and propylene is optional (D1, page 2, lines 14-16; rejoinder, page 31, section 7.4, second full paragraph), the same teaching also being given in claim 1 of that document. Accordingly, the person skilled in the art, considering the problem of providing a further adhesive composition to that described in example 5 of D1 would find it obvious following the suggestion given in the same document to retain the mandatory monomers butene and propylene, but to dispense with the third optional monomer used in example 5 of D1, all the more so since it is used in a small quantity in said example.

6.3 On this basis, claim 1 of auxiliary request 5 is not allowable either.

7. The same conclusion applies to auxiliary request 6, claim 1 of which is identical to claim 1 of auxiliary request 5 (see point IX. above).

Admittance of D20 and D26

8. The submission of documents D20 and D26 is to be regarded as an amendment to the appellant's and respondent's case, respectively, within the meaning of Article 12(4) RPBA. Their admittance to the proceedings is also subject to the discretionary power of the Board in accordance with Article 12, paragraphs (4) to (6) RPBA.

8.1 D20 is an experimental report filed by the appellant in order to demonstrate that the selection of a lower limit of 500 mPa.s for the viscosity of the metallocene

catalysed polypropylene polymer in accordance with feature i) of claim 1 is causative for an improved creep resistance over the adhesive compositions disclosed in D1, in particular those of the exemplified compositions of that document (statement of grounds of appeal, page 6, second to fourth paragraphs).
Contrary to the appellant's assertion, it had not been already shown that a viscosity of the metallocene catalysed polypropylene polymer i) below 500 would result in an undesirable increase in creep resistance. It is not even apparent that such an argument was already put forward before the opposition division.

The only argument concerning this lower limit for the viscosity of the metallocene catalysed polymer concerned obviousness of the solution in relation to auxiliary request 3 filed with letter of 4 March 2022 (see point 5.3 of that letter, second and third paragraphs). Moreover, paragraph [0026] of the patent in suit referred to in the first paragraph of section 5.3 of this letter merely indicates that a range of 500 to 50 000 mPa.s is preferred for the melt viscosity of the metallocene catalysed polypropylene polymer at 190°C, but without giving any reason for this preference.

Moreover, 18 months before the oral proceedings, the opposition division had issued a negative opinion on the existence of an inventive step over the adhesive composition of example 5 of D1. In this respect, it was pointed out that both a different density for the metallocene catalysed polypropylene and the presence of an antioxidant could not contribute to an inventive step (annex to the communication of the opposition division of 20 September 2021, pages 8 and 9, section 5). The opposition division had also pointed out that nothing could be said about the presence of an effect in relation to the alleged creep performance, since no comparison with an adhesive as defined in D1 had been provided (annex to the communication, *supra*, page 9, lines 20-23). On that basis, the appellant should not have waited until the appeal proceedings to submit experimental tests meant to demonstrate which features were, in the appellant's view, critical for such property, but should have done so at least in response to the opposition division's preliminary opinion.

Furthermore, D20 does not appear to be suitable to address the issues which led to the decision under appeal, i.e. to overcome the opposition division's finding of lack of an inventive step over the adhesive of example 5 of D1, since D20 does not provide a comparison with this prior art, as stressed by the respondent (rejoinder, point 1.1 and pages 20-21, section c). As a consequence, the Board also fails to see a reason to admit D20 in appeal in view of the circumstances which lead to the appeal proceedings (Article 12(6) RPBA).

In view of the foregoing and having regard to Article 12(4) RPBA, third sentence and Article 12(6) RPBA, second sentence, the Board did not admit D20 into the proceedings.

8.2 Document D26 is a statement containing experimental data whose purpose is to demonstrate that the definition of a lower limit of 500 mPa.s at 190°C for the metallocene catalysed polypropylene polymer does not introduce an additional distinguishing feature over the adhesive of example 5 of D1 (D26, sections III to V). Its filing constitutes, in the Board's view, a legitimate and timely reply to the submission of auxiliary request 3 two months before the oral proceedings before the opposition division, now renumbered as auxiliary request 7. It admittance was not contested by the appellant.

On this basis, the Board exercised its discretion under Article 12(4) RPBA by admitting D26 into the proceedings.

Auxiliary request 7

Inventive step over D1

9. Claim 1 of auxiliary request 7 differs from claim 1 of auxiliary request 5 in that a lower limit of 500 mPa.s determined at 190°C is set for the metallocene catalysed polypropylene polymer (see point IX. above).

9.1 It is the appellant's contention that the viscosity of the IPP used in example 5 of D1 is not disclosed, but that it must be within the preferred ranges defined on page 8, lines 10-12 and 24-27, i.e. between 100 and 500 mPa.s at 190°C, more preferably between 150 and 300 mPa.s (statement of grounds of appeal, page 6, second full paragraph).

In agreement with the definition in claim 1 of D1 that component c) of the adhesive composition has a viscosity of 1500 mPa.s or less at 190°C (see point 2.2 above, first paragraph), the passages of D1 referred to by the appellant also describe that the polypropylene preferably has a viscosity of between 50 and 1000 mPa.s. However, the fact that narrower ranges may be considered more preferred does not mean that the examples of D1 concern an IPP having a viscosity within these more preferred ranges, i.e. below the lower limit of 500 mPa.s now defined in operative claim 1.

According to page 21, lines 19-23 of D1, the IPP component of the adhesive composition of example 5 of D1 has Mw and Mn values of 26 300 and 12 000, respectively. The respondent has shown with D26 that the commercial polypropylene homopolymer Licocene® PP 6502 has Mw and Mn values of 27 000 g/mol and 11 800 g/mol, respectively. This product has a viscosity of 825 mPa·s at 190°C at a shear rate of 180 s^{-1}. It can therefore be expected that the homopolypropylene IPP component of the adhesive composition of example 5 of D1, which has a similar molecular weight distribution to the homopolypropylene Licocene® PP 6502, would also have a viscosity of about 825 mPa·s at 190°C and a shear rate of 180 s^{-1}, i.e. within the range defined in operative claim 1.

On that basis, the Board considers it credible that the additional amendment comprised in auxiliary request 7 does not introduce a further distinguishing feature over the adhesive of example 5 of D1.

Consequently, the analysis and conclusion provided in relation to the question of inventive step of claim 1 of auxiliary request 5 apply equally to claim 1 of auxiliary request 7.

9.2 For the sake of completeness, even if the appellant had demonstrated, for example by providing technical reasons as to why D26 was not suitable to demonstrate that the IPP component of the adhesive of example 5 of D1 had a melt viscosity at 190°C of at least 500 mPa.s (which it did not do), the Board would have no reason to consider the selection for the metallocene catalysed polypropylene polymer of the range of melt viscosity now defined in operative claim 1, i.e of at least 500 mPa.s and less than 50 000 mPa.s at 190°C, to result from an inventive activity.

In the absence of any evidence in the proceedings that the lower limit of 500 mPa.s for the viscosity of the metallocene catalysed polypropylene polymer would represent a relevant threshold for achieving a particular technical effect, since the only evidence in this respect was D20, which was not admitted into the proceedings for the reasons given in point 8.1 above, particularly because of the lack of a comparison with the closest prior art, the problem successfully solved over the closest prior art by selecting a range of melt viscosity for the metallocene catalysed polypropylene polymer of from 500 mPa.s to less than 50 000 mPas at 190°C can be only be formulated as the provision of a further adhesive composition.

As to the obviousness of this measure, the appellant's argument that the more preferred ranges recommended in D1 for the melt viscosity of the polypropylene would be between 150 and 300 mPa.s (page 8, lines 10-12 and 24-27) and would teach away the skilled person from selecting the range now defined in operative claim 1 is unconvincing.

Considering that the selection of a lower limit of 500 mPa.s at 190°C for the viscosity of the metallocene catalysed polypropylene polymer has not been shown to result in a technical effect and must therefore be considered to be arbitrary, it is concluded that any value for this parameter taught in D1 would be an equally valid and promising measure for the skilled person faced with the mere task of preparing a further adhesive composition. By doing so the skilled person would thus arrive, without any inventive ingenuity, at melt viscosity values for the polypropylene falling within the definition of operative claim 1.

9.3 In view of the foregoing auxiliary request 7 is not allowable, since the subject-matter of its claim 1 does not involve an inventive step, contrary to the requirements of Article 56 EPC.

10. In view of the conclusion reached concerning auxiliary requests 1 to 3 and 5 to 7, the respondent's conditional request for remittal (see point VIII. above) is obsolete.

11. Since none of the appellant's requests is found allowable, the appeal is to be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

Beschwerdekammern des Europäischen Patentamts
Boards of Appeal of the European Patent Office
Chambres de recours de l'Office européen des brevets

D. Hampe M. Barrère

Decision electronically authenticated