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Datasheet for the decision of 31 May 2012

Case Number: T 0961/10 - 3.3.09

Application Number: 98965528.7

Publication Number: 1144534

IPC: C09J 153/00, C09J 7/02, C08F 297/02, C08F 293/00

Language of the proceedings: EN

Title of invention:
Block coploymer hot-metal processable adhesives, methods of their preparation, and articles therefrom

Patent Proprietor:
MINNESOTA MINING AND MANUFACTURING COMPANY

Opponent:
Müller-Boré & Partner

Headword:
-

Relevant legal provisions:
EPC Art. 54, 56, 84, 99(1), 114(1)

Keyword:
"Admittance of documents"
"Main request (novelty - yes; inventive step - no)"
"Auxiliary request 1 (novelty - yes; inventive step - yes)"

Decisions cited:
T 0381/02, T 0656/02, T 1076/02, T 1812/06

Catchword:
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Case Number: T 0961/10 - 3.3.09

D E C I S I O N
of the Technical Board of Appeal 3.3.09
of 31 May 2012

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Decision under appeal: **Interlocutory decision of the Opposition Division of the European Patent Office posted 2 March 2010 concerning maintenance of European patent No. 1144534 in amended form.**

Composition of the Board:

Chairman: W. Sieber
Members: N. Perakis
R. Menapace

Summary of Facts and Submissions

I. This decision concerns the appeals by both the proprietor of European patent No. 1 144 534 (Minnesota Mining and Manufacturing Company) and the opponent against the interlocutory decision of the opposition division that the patent as amended met the requirements of the EPC.

II. The patent was granted with 12 claims, claims 1 and 8 reading as follows:

"1. A hot-melt processable adhesive composition comprising:
100 parts by weight of at least one block copolymer comprising at least two A blocks and at least one B block,
wherein the A and B blocks are derived from monoethylenically unsaturated monomers; and
wherein at least one of the A and B blocks is derived from (meth)acrylate monomers; and
greater than 40 parts by weight of at least one tackifier based on total weight of the block copolymer."

"8. A hot-melt, processable adhesive composition according to claim 1, wherein the block copolymer is essentially free of iriferter *(sic)* residue."

III. An opposition was filed by Müller-Boré & Partner requesting revocation of the patent in its entirety relying on Article 100(a) EPC (lack of novelty and lack of inventive step).

Together with the notice of opposition, the opponent filed *inter alia* the following documents:

D1: US-A-5 006 582;
D2: JP-A-10 025459;
D3: P.A. Mancinelli, "Advancements in Acrylic HMPSA's via Bock Copolymer Technology", *Matériaux et Techniques*, 1990, Mars-Avril, 41-46; and
D5: JP-A-10 298248.

With a letter dated 17 July 2007 the patent proprietor submitted full translations of D2 and D5. Any reference to D2 and D5 in this decision is to those translations.

With a letter dated 24 November 2009 the opponent filed three further documents:

D8: EP-A-0 349 270;
D9: US-A-5 677 387; and
D10: JP-A-06 093 060 (together with an English translation thereof).

IV. By an interlocutory decision announced orally on 27 January 2010 and issued in writing on 2 March 2010 the opposition division maintained the European patent in amended form with claims 1-11 according to auxiliary request 1 filed with a letter dated 19 January 2010. Claim 1 of auxiliary request 1 reads as follows:

"1. A hot-melt processable adhesive composition comprising:
100 parts by weight of at least one block copolymer comprising at least two A blocks and at least one B block,

wherein the A and B blocks are derived from monoethylenically unsaturated monomers; and
wherein at least one of the A and B blocks is derived from (meth)acrylate monomers; and
greater than 40 parts by weight of at least one tackifier based on total weight of the block copolymer,
wherein the block copolymer is essentially free of iniferter residue."

The opposition division's position can be summarised as follows:

- The late-filed documents D9 and D10, unlike D8, were not *prima facie* relevant and therefore not admitted.

- The hot-melt processable adhesive composition of claim 1 as granted was novel in view of D8 but lacked an inventive step in view of D2. The claimed subject-matter differed from the disclosure of D2 only with regard to the amount of tackifier which according to claim 1 had to be greater than 40 pbw based on the total weight of the block copolymer. However, there was no technical evidence to show that the increase of the amount of tackifier to more than 40 pbw necessarily provided an unexpected effect. Thus, the claimed composition was an obvious alternative to the composition of D2.

- As regards auxiliary request 1, its subject-matter fulfilled all the requirements of the EPC. In particular, claim 1 could not be objected to for lack of clarity since it resulted from the combination of granted claims 1 and 8. Furthermore, none of the cited documents disclosed the claimed

combination of features. Finally, the subject-matter of claim 1 of auxiliary request 1 also involved an inventive step. The skilled person starting from D2 as the closest state of the art and aiming at improving the properties of the known hot-melt processable adhesive compositions would not find in any of the cited documents the necessary motivation to use a block copolymer which was essentially free of iniferter residue, i.e. a block copolymer which was manufactured in the absence of an iniferter initiator.

V. On 21 April 2010 the appellant opponent (hereinafter the opponent) filed an appeal and on the same day paid the appeal fee. The opponent requested that the decision under appeal be set aside and that the patent be revoked in its entirety.

The statement setting out the grounds of appeal was filed on 9 July 2010. It included the following additional document:

D11: JP-A-10 168 271 (together with an English translation).

The opponent took issue with the non-admittance of documents D9 and D10 and reiterated the issues of lack of clarity and lack of inventive step raised before the opposition division.

VI. The appellant patent proprietor (hereinafter the patent proprietor) filed its appeal on 4 May 2010 and on the same day paid the appeal fee. The patent proprietor requested that the decision under appeal be set aside

and that the patent be maintained as granted. The statement setting out the grounds of appeal was filed on 9 July 2010. It included auxiliary requests 1-9.

VII. By letters dated 31 January 2011 and 21 April 2012 the opponent filed observations on the appeal of the patent proprietor, raising objections to the auxiliary requests and submitting further arguments. The opponent filed also the following document:

D12: P.A. Mancinelli, "New Developments in Acrylic Hot Melt Pressure Sensitive Adhesive Technology, 1989, 161 ff.

VIII. By letters dated 23 December 2010 and 16 March 2012 the patent proprietor filed observations on the appeal of the opponent, together with further arguments.

IX. Oral proceedings before the board were held on 31 May 2012. The final requests of the parties were as follows:

(1) The appellant patent proprietor requested that the decision under appeal be set aside and that the patent be maintained as granted (main request) or, alternatively, that the appeal of the opponent be dismissed or that the patent be maintained on the basis of one of auxiliary requests 2 to 9 filed on 9 July 2010.

(2) The appellant opponent requested that the decision under appeal be set aside and that the European patent No. 1 144 534 be revoked.

X. The relevant arguments put forward by the opponent in its written submissions and during the oral proceedings may be summarised as follows:

Admittance of documents

- Documents D9 and D10 should be taken into consideration, being highly relevant for the assessment of inventive step. These documents were known to the patent proprietor at the priority date and therefore already reflected in the introductory part of the opposed patent. They both disclosed block copolymers obtained by living anionic polymerisation, said copolymers being intended for use as additives in pressure sensitive adhesive (PSA) formulations as disclosed e.g. in document D2 or D8.

- Documents D11 and D12 should be admitted as they were relevant for the issue of inventive step.

Inventive step of the main request

- The subject-matter of claim 1 of the main request lacked an inventive step. D2 should be considered to represent the closest state of the art as it disclosed a hot-melt processable PSA composition comprising a block copolymer and a tackifier.

- According to D2, the addition of more than 40 pbw of a tackifier having poor solubility to 100 pbw of block copolymer led to a reduction of the adhesive properties such as the initial adhesion. As D2 did not make any reference to other properties of the adhesive such as shear strength it did not prevent

the skilled person from using such a poorly soluble tackifier in an amount greater than 40 pbw.

- Furthermore D2 disclosed that besides poorly soluble tackifiers also more soluble tackifiers could be used in the PSA composition, with the result that the sum of tackifiers would exceed 40 pbw for 100 pbw of the block copolymer.

- Moreover, according to the correct translation of paragraph [0037] of D2, the mixing ratio of the poorly soluble tackifier was only preferably between 5 and 40 pbw, with the consequence that the alleged warning in D2 against exceeding 40 pbw of the total tackifier was a far-fetched interpretation by the patent proprietor.

- Indeed, the only difference between the claimed composition and the composition of D2 was the amount of tackifier. However, there was no technical evidence in the patent in suit to show any advantage due to the addition of a tackifier exceeding 40 pbw.

- In particular there was no evidence to show that an amount of tackifier just over 40 pbw was technically critical. The actual amount of tackifier used in the examples of the opposed patent ranged between 69 and 150 pbw. Thus a PSA composition with a tackifier just above 40 pbw was an obvious alternative to compositions disclosed in D2.

- The argument of the patent proprietor that the technical evidence in the patent in suit showed a trend in the improvement of the shear strength when

increasing the concentration of the tackifier from 25 to 100 pbw was not convincing, and even based on an incorrect evaluation of the relevant data.

- Even if one were to assume that the skilled person found no motivation in D2 itself to increase the tackifier content to above 40 pbw, he would certainly find it in D3, which was a document in the same technical field and which disclosed the use of a tackifier in amounts of greater than 40 pbw in order to optimise the properties of the composition.

- The subject-matter of claim 1 of the main request lacked an inventive step also in view of the obvious combination of D5 with D3.

Clarity of auxiliary request 1 (claims as maintained by the opposition division)

- The subject-matter of claim 1 of auxiliary request 1 lacked clarity. Although claim 1 of this request resulted from the combination of granted claims, the highly unclear feature "essentially free of iniferter residue" could be challenged in view of the decision T 656/07.

Inventive step of auxiliary request 1

- The subject-matter of claim 1 of auxiliary request 1 did not involve an inventive step. Beside the explanations given in the context of the inventive step of the main request, namely that it was obvious to increase the amount of tackifier in a hot-melt processable adhesive composition to more than 40 pbw,

the use of iniferter-free block copolymers was also obvious in view of D2, which disclosed various methods leading to the manufacture of iniferter-free block copolymers.

– Again, the technical evidence in the patent in suit did not show any improvement in the properties of the adhesive compositions due to the use of a block copolymer which was essentially free of iniferter residue. Therefore the allegation of the patent proprietor that the technical problem had to be seen as improving the balance of properties of the adhesive composition was not technically confirmed. The technical problem could only be seen in the provision of an alternative block copolymer to be used in the adhesive composition of D2. The solution of this technical problem was obvious in view of the disclosure of D2.

– Even if it were accepted that the skilled person would not find any hint to the solution of the technical problem in D2, he would however find in D3 and D5 the motivation to use iniferter-free block copolymers in hot-melt processable adhesive compositions and would arrive at the claimed subject-matter without the need for an inventive step.

XI. The relevant arguments put forward by the patent proprietor in its written submissions and during the oral proceedings may be summarised as follows:

Admittance of documents

– D8 should not have been admitted by the opposition division as the opponent had not provided arguments for the late filing, and in particular because this document had been cited as background art in the patent in suit. D9 and D10 had been correctly considered inadmissible by the opposition division as they were not *prima facie* relevant.

– Documents D11 and D12, filed during the appeal proceedings, should also be considered inadmissible. No arguments had been given for their late filing and no explanations had been provided regarding their *prima facie* relevance.

Inventive step of the main request

– The subject-matter of claim 1 as granted involved an inventive step. D8 represented the closest state of the art. This document disclosed block copolymer pressure-adhesive compositions which optionally contained a tackifier when the block copolymer was not tacky in order to improve tackiness and peel strength. The amount of tackifier typically ranged between 0 and 150 pbw per 100 pbw of ABA block copolymer. However, D8 did not address the issue of improving shear strength; nor did it give the skilled person any hint how such an improvement could be achieved.

– The subject-matter of claim 1 as granted involved an inventive step also if D2 was considered to represent the closest state of the art. D2 gave the skilled person a clear warning not to exceed 40 pbw of tackifier in admixture with 100 pbw of block

copolymer, so that deterioration of the properties of the adhesive composition could be avoided, and this irrespective of the disclosure that the range of between 5-40 pbw was a preferred one. This was a reasonable interpretation of D2 since it did not disclose any value outside this "preferred" range. Indeed, all exemplified compositions comprised an amount of tackifier which was either 10 or 20 pbw for 100 pbw of the block copolymer.

- The opponent was not correct when in maintaining that D2 disclosed compositions combining poorly soluble and soluble tackifiers in block copolymers whose total amount exceeded 40 pbw. In reality the range of 5-40 pbw concerned the total amount of all kinds of tackifiers involved in the composition.

- Furthermore, the skilled person would not be motivated to combine the disclosure of D2 with that of D3, the latter being a marketing brochure, the content of which was neither complete nor reproducible. Additionally, D3 was very similar to D1, a document disclosing random copolymers, which were different from the ABA block copolymers of claim 1. Thus neither D3 nor D1 gave the skilled person the hint to increase the amount of the tackifier of D2 to values greater than 40 pbw for 100 pbw of the block copolymer.

- The technical problem of the main request concerned the provision of a hot-melt processable adhesive composition with improved shear strength. The technical evidence of the patent in suit (examples of tables C1-C4) showed clearly a constant trend

concerning the improvement of shear strength of a hot-melt processable adhesive composition when the amount of tackifier was greater than 40 pbw for 100 pbw of the block copolymer.

– The skilled person starting from the adhesive compositions of D2 and looking for the improvement of their shear strength would not find in the state of the art any motivation to increase the amount of the tackifier as claimed in order to achieve his goal. Therefore the modification was not obvious and the claimed subject-matter involved an inventive step.

Clarity of auxiliary request 1 (claims as maintained by the opposition division)

– The subject-matter of claim 1 of auxiliary request 1 could not be objected to for lack of clarity. The contested expression "essentially free of iniferter residue" corresponded to the particular embodiment of granted claim 8. Since lack of clarity was not a ground for opposition under Article 100 EPC, neither the feature of claim 8 nor its incorporation into the subject-matter of granted claim 1 could be objected to. Decision T 656/07, cited by the opponent, concerned a specific situation which did not apply to the present case.

– Moreover, the feature "essentially free of iniferter residue" objected to would be understood by a person skilled in the art in the light of paragraph [0013] of the patent specification.

Inventive step of auxiliary request 1

- The subject-matter of claim 1 of auxiliary request 1 involved an inventive step. D2 was the closest state of the art. D2 explicitly stated that adhesives with disadvantageous properties were obtained when using one or more tackifiers in an amount greater than 40 pbw based on 100 pbw of the block copolymer. Furthermore, D2 focused on polymerisation methods using an iniferter as an initiator since all working examples of D2 used such an initiator.

- The technical problem was the provision of an adhesive composition with an improved balance of properties. The patent in suit contained sufficient technical evidence showing that the combination of a block copolymer essentially free of iniferter residue with a tackifier in an amount greater than 40 pbw resulted in an adhesive composition with an improved balance of properties compared to those of the adhesive composition of D2.

- The skilled person starting from D2 and wishing to improve the balance of properties did not find in D2 any indication in favour of block copolymers free of iniferter residue over block copolymers containing iniferter residue. Nor would he find any motivation to do so in any other prior art document.

- D5 disclosed PSA compositions which comprised block copolymers essentially free of iniferter residue. The use of a tackifier in these PSA compositions was optional and one among many other additives. None of the working examples of D5 used a tackifier and D5

did not disclose any amount. Therefore, even if the skilled person combined D2 with D5, he would not arrive at the claimed subject-matter.

– D3 failed to give any structural information on the acrylic block copolymer or the acrylic base additive. Furthermore, D3 (page 44, left column, 2nd full paragraph) taught away from using tackifiers in the claimed range since it disclosed adhesive delamination of the polyester film (a fatal failure mode) for tackifier amounts greater than approximately 30 pbw for 100 pbw of copolymer.

Reasons for the Decision

1. The appeals are admissible.

2. Admittance of documents

2.1 The patent proprietor requested that D8 not be admitted into the proceedings. The board observes, however, that the opposition division had admitted D8 into the proceedings on the basis of its *prima facie* relevance and took this document into consideration during the examination of the novelty of the granted claims. The patent proprietor did not show that the opposition division had not properly exercised its discretionary power under Article 114(1) EPC. The board thus confirms that D8 was correctly admitted into the proceedings.

2.2 Unlike D8, the opposition division did not consider documents D9 and D10 as *prima facie* relevant and did not admit them into the proceedings. The board concurs

with the opposition division's finding that these documents are not more relevant than the documents filed within the time limit of Article 99(1) EPC and concludes that the opposition division correctly did not admit them into the proceedings.

2.3 Regarding the additional documents D11 and D12 filed during the written appeal proceedings, they were not considered to be more relevant than the documents already on file. Even the opponent, who had filed these documents, did not base its arguments on them during the oral proceedings before the board. Consequently there was no need to decide on the admittance of these documents.

Main request (claims as granted)

3. Novelty

The finding of the opposition division that the subject-matter of claim 1 as granted is novel over the disclosure of D1 and D8 was not challenged in appeal. In fact, novelty was not an issue in the appeal proceedings.

4. Inventive step

4.1 The invention relates to block copolymer hot-melt processable adhesives which possess adequate cohesive strength after application. The increase in cohesive strength cannot come, however, at the expense of hot-melt processability (paragraph [0016] of the patent specification).

4.2 The closest state of the art

4.2.1 The board concurs with the opponent that D2, mentioned in paragraph [0012] of the patent in suit, represents the closest state of the art. D2 discloses pressure-sensitive adhesive compositions (PSA) comprising at least one block copolymer (I) and a tackifier resin (claim 1). The PSA compositions have excellent cohesive strength and peel resistance regardless of the type of adherent used (paragraphs [0001] and [0003]). Paragraph [0043] of document D2 states that the hot-melt coating method is desirable. Thus, the PSA compositions of D2 are hot-melt processable.

The block copolymer (I) has a linear structure and may be represented by the general formula $(A-B)_a-A$ (i.e. the block copolymer comprises at least two A blocks and at least one B block, as required by claim 1 of the main request). As disclosed in paragraphs [0009] and [0010] the A block represents a polymer made of methyl(meth)acrylate and the B block is a polymer comprising an alkyl(meth)acrylate, said alkyl group having from 1 to 12 carbon atoms (i.e. the A and B blocks are derived from monoethylenically unsaturated monomers and at least one of the A and B blocks is derived from (meth)acrylate monomers as required by claim 1 of the main request).

As set out in paragraph [0037] of D2, the mixing ratio of the tackifier resin is **preferably** in the range of 5 to 40 parts by weight for 100 parts by weight of the block copolymer (I) in terms of **the total amount of the tackifier resin added** (i.e. comprises less than the

amount of tackifier required by claim 1 of the main request).

4.2.2 Concerning **the total amount of tackifier resin**, D2 also discloses that:

- the tackifier resin used in the adhesive composition has poor solubility with the polymer made of methylmethacrylate (paragraphs [0033]),
- it is possible to use two or more types of such poorly soluble tackifier resins (paragraph [0036]), and
- in addition to poorly soluble tackifiers soluble tackifiers with the methylmethacrylate may also be used in amounts which do not interfere with the cohesive strength (paragraph [0036]).

Thus the total amount of the tackifier resin disclosed in paragraph [0037] of D2 relates to all possible different types of tackifiers mentioned in the previous paragraphs. Contrary to the opponent's interpretation, D2 does not disclose amounts of tackifier greater than 40 pbw for 100 pbw of the block copolymer.

4.2.3 Concerning the disclosure that the amount of tackifier is **preferably** in the range of 5-40 pbw, the opponent argued that it should be interpreted to mean that a broader range exceeding 40 pbw was implicitly part of the disclosure of D2. The board does not agree for the following reasons:

The specific values disclosed in this document always fall within the range of 5-40 pbw:

- claim 2 discloses 10 pbw of tackifier resin for 100 pbw of the block copolymer;

– the examples (paragraphs [0051], [0052], [0057] and [0058]; table 1) disclose 20 and 10 pbw of tackifier resin for 100 pbw of the block copolymer.

D2 clearly warns the skilled reader that amounts greater than 40 pbw would detrimentally affect the properties of the adhesive composition. Thus, paragraphs [0004] and [0037] state:

> *"When a tackifier resin is mixed with the pressure-sensitive adhesive composition, a significant increase in peel resistance can be achieved, but the cohesive strength is reduced."*

> *"… when the mixing ratio exceeds 40 parts by weight, a reduction in the adhesive properties such as initial adhesion occurs."*

On the basis of the above considerations the board concludes that D2 does not disclose any amount of tackifier outside the range of 5-40 pbw for 100 pbw of the block copolymer.

4.2.4 Thus the adhesive composition of claim 1 of the main request differs from the adhesive composition of D2 only as far as the amount of tackifier is concerned. Claim 1 as granted requires that this amount is greater than 40 pbw for 100 pbw of the block copolymer whereas D2 discloses that the **total amount** of tackifiers varies within the range of 5-40 pbw for 100 pbw of the block copolymer.

4.2.5 The board does not concur with the patent proprietor that D8, which likewise refers to pressure sensitive

adhesives (PSA), should be considered to represent the closest state of the art. D8 appears to be less relevant than D2, because, firstly, the monomeric material from which the A block is formed is not necessarily constituted by methacrylate monomers (page 4, lines 3-5; claim 1), and, secondly, the PSA composition does not necessarily contain a tackifier resin (page 5, lines 14-15; page 8, lines 20-22).

4.2.6 During the written phase of the appeal proceedings the opponent considered D5 also to represent the closest state of the art. However, this line of attack was not pursued during the oral proceedings. Nevertheless the board notes that, as in D8, the PSA compositions of D5 do not necessarily contain a tackifier. A tackifier is simply disclosed as one among many possible additives to be used in the PSA composition (paragraph [0093]).

4.3 The technical problem

4.3.1 During the oral proceedings before the board, the patent proprietor argued that the technical problem to be solved consisted in the provision of a hot-melt processable adhesive composition with improved shear strength. This is consistent with the patent specification (paragraphs [0016], [0022] and [0056]), which discloses that the aim of the claimed invention is a hot-melt processable adhesive with adequate **cohesive strength** after application. **Shear strength** and cohesive strength are interrelated since according to paragraph [0124] of the patent specification shear strength is a measure of the cohesive strength of an adhesive.

4.3.2 According to the patent proprietor this technical problem is successfully solved by the distinguishing feature of the claimed composition over D2, namely by increasing the amount of the tackifier so that it is greater than 40 pbw for 100 pbw of the block copolymer.

4.3.3 However, in view of the lack of technical evidence in the patent in suit, the board is not convinced that the actually set technical problem is solved over the whole range claimed. The relevant data in tables C1 to C4 of the patent in suit compare adhesive compositions containing 25 pbw of tackifier (corresponding to the disclosure of D2) with compositions containing 100 pbw of tackifier. This evidence is, however, insufficient to demonstrate that the technical problem has been solved over the whole claimed range, because the lower limit for the tackifier resin in claim 1 is just above the upper limit of the closest state of the art. It has not been shown that an adhesive composition containing just above 40 pbw tackifier resin has any advantages over a composition containing 40 pbw tackifier, i.e. the upper limit disclosed in D2.

4.3.4 This deficiency can also not be overcome by the patent proprietor's argument that the comparisons in tables C1 to C4 show a "trend" regarding the improvement of shear strength when the amount of tackifier is increased from 25 pbw to 100 pbw. Even if this were true (and in fact this was challenged by the opponent), these experiments cannot establish the criticality of the lower limit of the claimed range.

4.3.5 On the basis of the above considerations the technical problem has to be reformulated as the provision of a

hot-melt processable adhesive composition **alternative** to the composition of D2. There is no doubt that in view of the experimental part of the patent this technical problem has been solved.

4.4 Obviousness

The skilled person starting from D2 and seeking to obtain a composition alternative to that of D2 would have no difficulty during the exercise of his normal duties and in compliance with the disclosure of D2 to increase the amount of the tackifier to values just higher than 40 pbw for 100 pbw of the block copolymer. The warning in D2 (paragraph [0037]) not to exceed 40 pbw of tackifier in order to avoid a reduction in the adhesive properties such as initial adhesion would not prevent the skilled person from investigating the adhesive properties of the composition at least for the amounts of tackifier immediately above the upper limit of 40 pbw of tackifier. He would therefore come to the claimed subject-matter without the exercise of any inventive skill.

4.5 Since the subject-matter of claim 1 of the main request lacks an inventive step, this request is not patentable.

Auxiliary request 1 (claims as maintained by the opposition division)

5. Clarity

5.1 The opponent objected to the clarity of claim 1 of auxiliary request 1 in view of the wording "wherein the block copolymer is essentially free of iniferter

residue". This wording, resulting from a combination of granted claims 1 and 8, led to a "fundamental" lack of clarity which could not be ignored.

5.2 As correctly pointed out by the opponent, claim 1 of auxiliary request 1 is based on claim 1 as granted and includes the further limitation that the block copolymer is essentially free of iniferter residue. This limitation stems from claim 8 as granted (point II above). This basically means that granted claim 8 becomes the new independent product claim in which the reference to granted claim 1 has been replaced by the full text of granted claim 1. It is established case law that such a "reformulation" of a granted claim is not objectionable under Article 84 EPC (e.g. T 1076/02, point 2.1 of the reasons, T 381/02, points 2.3.2 to 2.3.5 of the reasons and T 1812/06, point 7.2 of the reasons, not published in the OJ EPO).

5.3 The board is aware of decision T 656/07 referred to by the opponent. However, in the present case the board sees no "fundamental lack of clarity" occasioned by the mere reformulation of granted claim 8, nor has such a fundamental lack of clarity been convincingly demonstrated by the opponent. Thus, the board sees no reason to deviate from the general principle set out above.

5.4 As regards the expression "essentially free of" itself, the board agrees with the opponent that this expression is rather vague and should have been objected to during examination. However, as pointed out by the patent proprietor, the skilled person would understand from the context of the patent in suit that this expression

means not using iniferters for polymerisation, in particular when reading paragraph [0013] of the patent specification.

6. Inventive step

6.1 The closest state of the art

In agreement with the parties, D2 is still considered to represent the closest state of the art for the subject-matter of claim 1 of auxiliary request 1, in particular because D2 also discloses iniferter-free polymerisation (paragraphs [0021] to [0023]). D2, however, focuses on polymerisation methods which involve an iniferter initiator such as N,N-diethyldithiocarbamate (see working examples, pages 17-18 and 20).

The claimed adhesive composition differs from the adhesive composition of D2 by (i) the amount of tackifier, which is greater than 40 pbw for 100 pbw of the block copolymer, and (ii) the essential absence of iniferter residue in the block copolymer, i.e. the block copolymer has been polymerised without the use of an iniferter.

6.2 The technical problem

6.2.1 The patent proprietor saw the technical problem to be solved in the provision of a hot-melt processable adhesive composition which has **an improved balance** of adhesive properties (including peel strength, shear strength and shear displacement) compared to the compositions of D2.

6.2.2 The board is satisfied that the technical evidence in the patent in suit (the adhesive compositions of examples 7-13 containing block copolymer prepared without iniferter versus the adhesive compositions of comparative examples 5-8 containing block copolymers prepared with iniferter) illustrates that an improved balance of properties is achieved by monitoring (i) the amount of tackifier so that it is greater than 40 pbw for 100 pbw of the block copolymer, and (ii) the content of the iniferter residue in the block copolymer so that the block copolymer remains free of such a residue. This is in particular apparent from the data relating to the 180° peel strength, the shear strength and the shear displacement. Thus the patent in suit contains convincing evidence that the objective technical problem has indeed been solved.

6.3 Obviousness

6.3.1 The skilled person starting from D2 and aiming at an improved balance of adhesive properties of the hot-melt processable adhesive compositions of D2 would not find in D2 itself any motivation to use (i) an amount of tackifier greater than 40 pbw for 100 pbw of block copolymer, and, at the same time, (ii) a block copolymer essentially free of iniferter residue. In particular, there is no hint in D2 to use iniferter-free polymerisation in the synthesis of the block copolymers in order to improve the balance of adhesive properties. In fact, all the examples of D2 use an iniferter.

6.3.2 Concerning D3, it fails to provide any information about the preparation method of the copolymers and would not be retained by the skilled person as a relevant disclosure when considering the issue of the synthesis of the block copolymers, with or without an iniferter initiator. Furthermore, D3 (page 44, left column, 2nd full paragraph) teaches away from using tackifiers in the claimed range, since it discloses adhesive delamination of the polyester film (a fatal failure mode) for tackifier amounts greater than approximately 30 pbw for 100 pbw of copolymer. Finally, as pointed out by the patent proprietor during the oral proceedings, the copolymers of D3 relied upon by the opponent appear to be the graft or combed copolymers disclosed in D1 (cf. D1: abstract, column 3, lines 19-23; claim 1). This could be deduced from the fact that both D3 and D1 originate from the same company and mention the same person as author/inventor, and the figure of D1 which is identical to figure 4 of D3). Thus D3 does not give any hint to the skilled person towards the solution of the technical problem set.

6.3.3 Concerning D5, this document discloses PSA compositions which comprise block copolymers essentially free of iniferter residue. However, the use of a tackifier in these PSA compositions is optional. In fact, a tackifier is merely one among many other additives. None of the working examples of D5 uses a tackifier and D5 does not disclose any amount. Therefore the skilled person would not find in D5 the necessary information to solve the technical problem.

6.4 On the basis of the above considerations, the subject-matter of claim 1 of auxiliary request 1 is not obvious

over the state of the art and this claim therefore involves an inventive step.

6.5 Since the subject-matter of claim 1 involves an inventive step, the subject-matter of dependent claims 2-10, which corresponds to specific embodiments of claim 1, involves an inventive step *mutatis mutandis*. This applies also to the subject-matter of claim 11, which concerns a method of preparing the product of claim 1.

Order

For these reasons it is decided that:

The appeals are dismissed.

The Registrar: The Chairman:

G. Röhn W. Sieber