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**Datasheet for the decision
of 15 December 2022**

Case Number: T 0628/18 - 3.3.02

Application Number: 07759354.9

Publication Number: 2001983

IPC: C10M143/12

Language of the proceedings: EN

Title of invention:

Lubricating compositions containing a styrene-butadiene
diblock copolymer

Patent Proprietor:

The Lubrizol Corporation

Opponent:

Afton Chemical Corporation

Headword:

Relevant legal provisions:

EPC Art. 123(2)

Keyword:

Amendments

Decisions cited:

Catchword:



Beschwerdekammern

Boards of Appeal

Chambres de recours

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Case Number: T 0628/18 - 3.3.02

D E C I S I O N
of Technical Board of Appeal 3.3.02
of 15 December 2022

Appellant: The Lubrizol Corporation
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Representative: D Young & Co LLP
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Respondent: Afton Chemical Corporation
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Representative: J A Kemp LLP
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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 11 January 2018
revoking European patent No. 2001983 pursuant to
Article 101(3) (b) EPC.**

Composition of the Board:

Chairman M. O. Müller
Members: P. O'Sullivan
L. Bühler

Summary of Facts and Submissions

I. The appeal of the patent proprietor (hereinafter appellant) lies from the decision of the opposition division according to which European patent EP 2 001 983 was revoked.

II. The following documents, submitted in the course of opposition proceedings, were among those cited in appeal proceedings:

D5: EP 0 747 467 A1

D7: WO 2004/087849 A1

With the statement of grounds of appeal, the appellant submitted *inter alia* the following document:

D13: H. Hsieh *et al.*, "Anionic Polymerisation", pages 307-331.

III. In preparation for oral proceedings, scheduled according to the parties' requests, the board issued a communication pursuant to Article 15(1) RPBA 2020. Therein the board provided the preliminary opinion that claim 1 of the main request contravened Article 123(2) EPC.

IV. Oral proceedings by videoconference were held as scheduled on 15 December 2022 in the presence of both parties.

V. Requests relevant to the present decision

The appellant (patent proprietor) requested that the decision under appeal be set aside, and that the patent be maintained on the basis of the set of claims of the main request, or, alternatively, on the basis of one of the sets of claims of auxiliary requests 1 to 5, all filed with the statement of grounds of appeal, or of auxiliary request 6 submitted with the letter dated 25 January 2019.

The appellant further requested:

- that the respondent's objection under Article 123(2) EPC in relation to the feature "Low SAP Engine Oil" not be admitted into the proceedings,
- that the respondent's objection under Article 123(2) EPC in relation to the feature "0-49 wt% of a performance additive" not be admitted into the proceedings, and
- that auxiliary request 6 be admitted into the proceedings.

The respondent requested that the decision under appeal be upheld, implying dismissal of the appeal.

The respondent also requested not to admit into the proceedings:

- the sets of claims of auxiliary requests 5 and 6,
- the appellant's defence that the term "styrene-butadiene copolymer" used in paragraph [0124] and in the preparative examples 1 to 20 of the application as filed, referred exclusively to a "diblock copolymer", and

- the appellant's defence that the term "copolymer" without denomination "functionalised" as used in the lubricating oils exemplified in paragraphs {0130} et seq. of the application as filed, referred to "unfunctionalised" copolymers.

VI. Independent claim 1 of the main request is directed to a lubricating composition comprising components (a), (b) and (c). For the text of claim 1, reference is made to the Reasons for the Decision, below.

VII. The appellant's submissions insofar as relevant to the present decision may be summarised as follows:

Main request

- Claim 1 of the main request fulfilled the requirements of Article 123(2) EPC. For the appellant's detailed arguments, reference is made to the Reasons for the Decision.

VIII. The respondent's submissions insofar as relevant to the present decision may be summarised as follows:

Main request

- Claim 1 of the main request resulted from a combination of several different embodiments taken from the application as filed, with no pointer to do so. Consequently, the requirements of Article 123(2) EPC were not fulfilled. For the respondent's detailed arguments, reference is made to the Reasons for the Decision.

Reasons for the Decision

Main request

1. Admittance - objections

During oral proceedings the board decided to admit:

- the respondent's objection under Article 123(2) EPC in relation to the feature "Low SAP Engine Oil",
- the respondent's objection under Article 123(2) EPC in relation to the feature "0-49 wt% of a performance additive", and
- the appellant's defences that unfunctionalised diblock copolymers are employed in the examples of the application as filed.

Since neither of the respondent's objections were relevant to the final decision (*infra*), there is no need for the board to provide its reasons in this regard.

Additionally, although the board admitted the appellant's defences set out above, in view of the final decision in the respondent's favour, there is no need for the board to provide its reasons in this regard.

2. Article 123(2) EPC

2.1 Contested claim 1 reads as follows; underlined and deleted text respectively indicating addition and deletion compared to claim 1 of the application as filed:

"A lubricating composition comprising:

(a) 1 to 99.99 wt.% of an oil of lubricating viscosity and

(b) 0.01 to 50 wt% of an unfunctionalised hydrogenated copolymer comprising at least one olefin polymer block (block A) and at least one vinyl aromatic polymer block (block B) with mole ratio of block A/(block A+B) of 0.5 to 0.9,

wherein block A contains repeat units with 5 mol % to 95 mol % of branched alkyl groups, with the proviso that when the copolymer comprises a tapered copolymer block A contains repeat units with greater than 38.5 mol% to 95 mol% of branched alkyl groups,

~~wherein the branched alkyl groups of block A are optionally further substituted; and~~

wherein the hydrogenated copolymer is a diblock copolymer which comprises a backbone of styrene and butadiene repeat units; and

wherein butadiene polymerises by 1,2-addition; and

(c) 0 to 49 wt% of a performance additive;

wherein the lubricating composition is an engine oil, and

wherein the composition has (i) a sulphur content of 0.5 wt% or less, (ii) a phosphorus content of 0.1 wt% or less, and (iii) a sulphated ash content of 1.5 wt% or less

~~optionally further functionalised by at least one of the following routes:~~

~~(i) block A or block B being further functionalised with a pendant carbonyl containing group, and wherein the pendant carbonyl containing group is optionally further substituted to provide an ester, amine, imide or amide functionality, and~~

~~(ii) block A being further functionalised with an amine functionality bonded directly onto the olefin block polymer."~~

2.2 The respondent submitted that the combination of features of contested claim 1 of the main request was not directly and unambiguously disclosed in the application as filed. In particular there was no pointer to the individual selections required in the application as filed, and therefore to the combination of selections required, in order to arrive at contested claim 1.

The selections concerned included *inter alia*:

- the selection of unfunctionalised copolymers,
- the selection of the recited amounts of components (a), (b) and (c) in claim 1, and
- the selection of diblock copolymers.

2.3 It is established case law of the Boards of Appeal that unless there are pointers in the application as filed to the combination of features claimed, a multiple selection results in subject-matter extending beyond the content of the application as filed, contrary to the requirements of Article 123(2) EPC.

It must therefore be established whether the application as filed discloses pointers to the above-mentioned selection combination. Each selection will first be addressed in turn in the following.

2.4 The selection of unfunctionalised copolymers

2.4.1 Contested claim 1 specifies in component (b) that the hydrogenated copolymer is unfunctionalised. Claim 1 of

the application as filed on the other hand specifies that the hydrogenated polymer is "optionally further functionalised" by one of two possible routes (i) and (ii).

- 2.4.2 The appellant submitted that as well as being based on claim 1 of the application as filed, this amendment found basis in table 1a of paragraph [0122], which described embodiments of a lubricating composition comprising "unfunctionalised polymer". Furthermore, the examples of the application as filed did not solely concern functionalised polymers as alleged by the respondent, but also unfunctionalised polymers. Hence, said examples served as a pointer to the selection of unfunctionalised polymers in contested claim 1.
- 2.4.3 The board acknowledges that claim 1 of the application as filed, by virtue of the expression "optionally further functionalised", includes the possibility that the polymers are unfunctionalised. Claim 1 is thus a selection from the disclosure of claim 1 of the application as filed. However, the board does not accept the appellant's argument that table 1a of paragraph [0122] and the examples of the application as filed serve as pointers to this selection.
- 2.4.4 First, paragraph [0122] of the application as filed discloses embodiments for both functionalised and unfunctionalised copolymers with no preference expressed for one or the other. Hence, a selection is required from the two alternative disclosed therein.
- 2.4.5 Second, the application as filed describes a "styrene-butadiene copolymer" functionalised with maleic anhydride (paragraph [0125]; preparative examples

1-10), and further functionalised with an amine (paragraph [0126]; preparative examples 11-20).

The appellant did not contest that these preparative examples exclusively concerned functionalised copolymers. The appellant however submitted during oral proceedings that the subsequent examples concerning lubricating compositions (paragraph [0130] and table 5 et seq.) employed unfunctionalised copolymer.

Specifically, table 5 indicated the use of "Styrene Butadiene copolymer" (table 5, first column, second entry) for the examples according to the invention, which was an unfunctionalised copolymer. Thus, examples EX1, EX2 and EX3 in table 5 comprised unfunctionalised copolymer as required by contested claim 1.

Furthermore, examples EX4 and EX5 (paragraph [0137], sentence bridging pages 37 and 38) were said to "*have a styrene-butadiene polymer as defined by the invention*". The same language was used in table 13 (page 40) in which example 8 ("EX8") comprised a "Styrene Butadiene copolymer". Hence, when the copolymer of the application as filed was functionalised, this was explicitly mentioned. Thus, when functionalisation was not indicated in the application as filed, the copolymer was unfunctionalised.

2.4.6 The board does not share the appellant's view. Firstly, as stated by the respondent, it is normal practice that the "use" examples of a patent application (in the present case the "lubricating compositions" of paragraph [0130] et seq.) are assumed to demonstrate the implementation of the concrete preparative examples of the application (i.e. preparative examples 1-20 in the present case), unless explicitly provided otherwise. Such an explicit provision is however absent from the examples of the application as filed

concerning lubricating compositions. Furthermore, as stated by the respondent at oral proceedings, the comparative examples of table 5 (page 35; first column, first entry; examples CE1, CE2 and CE3) and table 13 (CE10) all comprise an "olefin copolymer". While the nature of said olefin copolymer is not provided in relation to table 5, the olefin polymer used in table 13, according to paragraph [0142], is a maleic anhydride functionalised olefin polymer. Since this functionalisation is not indicated in table 13 in the entry "Olefin copolymer", there is no reason to assume that the entry "Styrene Butadiene copolymer" in table 13, used in example EX8, refers necessarily to an unfunctionalised styrene-butadiene copolymer, solely by virtue of the fact that functionalisation thereof is not mentioned in said table. Therefore, the examples of the application as filed cannot be understood to directly and unambiguously disclose unfunctionalised copolymers. There is therefore no pointer in the examples of the application as filed to the selection of unfunctionalised copolymers in contested claim 1.

- 2.4.7 No further pointer to unfunctionalised copolymers in the application as filed was proposed by the appellant, and none could be identified by the board. Hence, there is no pointer in the application as filed to the selection of unfunctionalised copolymers.

- 2.5 The selection of the recited amounts of components (a), (b) and (c)

- 2.5.1 The lubricating composition of contested claim 1 comprises component (a) in an amount of from 1 to 99.99 wt%, component (b) in an amount of 0.01 to 50 wt% and component (c) in an amount of 0 to 49 wt%.

- 2.5.2 These amounts are absent from claim 1 of the application as filed. Paragraph [0122] of the application as filed discloses the amounts of copolymer and certain additives which may be comprised within the lubricating compositions of the invention. Table 1a pertains to unfunctionalised polymers, while table 1b pertains to functionalised polymers. Table 1a comprises four different embodiment for the amounts of components (a), (b) and (c), namely A, B, C and D. The amounts provided for embodiment A are identical to the amounts provided in contested claim 1.
- 2.5.3 The board takes the view that the choice of embodiment A represents a selection among the ranges disclosed in embodiments A, B, C and D of table 1a.
- 2.5.4 The appellant argued that since embodiments A-D of table 1a were nested ranges (i.e. of decreasing broadness), they would be understood by the skilled person as being in implicit order of preference. Hence, there was an implicit preference in table 1a for embodiment A, and hence a pointer thereto, because it represented the broadest of the ranges disclosed therein.
- 2.5.5 The board does not agree. No preference for a particular embodiment is explicitly indicated in table 1a, and as noted by the respondent, none can be derived from the examples, which are exclusively directed to functionalised hydrogenated copolymers falling outside the scope of contested claim 1 (see point 2.4 above). Nevertheless, if the skilled person were to understand any of the embodiments in table 1a as preferred, it would be in a convergent manner, i.e. increasing in preference towards the more narrowly defined range, embodiment D in table 1a, normally viewed as reflecting

optimised conditions. There is therefore no indication explicit or implicit in the application as filed that the ranges in embodiment A of table 1a are preferred. Hence, the application as filed does not comprise any pointer to the choice of embodiment A of table 1a, and thus the amounts of components (a), (b) and (c) as defined in claim 1.

2.6 The selection of diblock copolymers

2.6.1 Contested claim 1 stipulates that the hydrogenated copolymer is a "diblock copolymer". This feature is absent from claim 1 of the application as filed.

2.6.2 As argued by the respondent, the choice of "diblock" for the copolymer of contested claim 1 requires a further selection from within the disclosure of the application as filed. Specifically, paragraph [0043] of the application refers to the class of block copolymers including diblock AB copolymers and triblock ABA copolymers. Other possible embodiments of the copolymer besides block copolymers were mentioned in paragraph [0053] of the application as filed.

2.6.3 Even if, to the appellant's advantage, one assumes that the selection of diblock copolymers represents a choice from only diblock AB copolymers and triblock ABA copolymers disclosed in paragraph [0043] of the application as filed, a selection from at least these two alternatives is still required to arrive at the subject-matter of contested claim 1.

2.6.4 The appellant argued that the application as filed disclosed pointers to the selection of "diblock" copolymers. Specifically:

- the feature "diblock" found basis in claim 6 as filed, and was therefore individualised in the original claim set,
- the statement "*often, the polymer is a di-block AB copolymer*" in paragraph [0043] of the application as filed indicated that diblock copolymers were preferred,
- the copolymer structure provided in paragraph [0015] of the application as filed was a diblock structure, and
- the specific polymer mentioned in paragraph [0058], namely Lubrizol®7409A, was a diblock copolymer by virtue of the reference to "*an unfunctionalised copolymer with X, Y and Z groups defined as hydrogen from formulae above*", "the formulae above" being a reference to the diblock copolymers of paragraph [0015].

2.6.5 The board's view is as follows.

Claim 6 as originally filed is dependent only on claim 1, and therefore any individualisation of the subject-matter of claim 6 is only present in combination with the subject-matter of claim 1 upon which it depends. The combination of claims 1 and 6 as filed however does not equate to the subject-matter of contested claim 1. Furthermore, claim 6 of the application as filed cannot be considered as a pointer to diblock copolymers, at least because claim 10, also dependent on claim 1, is directed to a sequential block polymer, which does not require the copolymer to be "diblock". Hence, also on this basis a selection from two equal alternatives, diblock, and sequential block copolymers is needed.

The board also agrees with the respondent that the term "often" in paragraph [0043] is not synonymous with the

term "preferred", and therefore cannot be considered to unambiguously indicate a preference in the application as filed for diblock copolymers.

The board agrees with the appellant that the structure provided in paragraph [0015] of the application as filed is a diblock copolymer. However, there is no indication that this particular structure is preferred. Even if it were preferred, as noted by the respondent, the copolymer depicted in paragraph [0015] is necessarily functionalised, since at least one of X, Y and Z must be a pendant carbonyl-containing group (page 5, lines 6-8). Hence, it could only potentially serve as a pointer in relation to functionalised copolymers, which are excluded from contested claim 1 as set out above.

Finally, the board notes that the reference to the "formulae above" in paragraph [0058] pertains not only to paragraph [0015], which describes a diblock copolymer, but also to paragraph [0014] which describes a structure with no limitation in relation to the number of blocks which may be present. Hence, there is no indication that Lubrizol®7409A mentioned in paragraph [0058] is in fact a diblock copolymer, and there is therefore no pointer in this regard to a preference for diblock over triblock copolymers.

Hence, none of these disclosures in the application as filed can be considered as unambiguous pointers towards the selection of diblock copolymers in contested claim 1.

2.6.6 The appellant further submitted that all of the examples of the application as filed employed a diblock copolymer, thus representing a specific pointer to this

selection over triblock copolymers. Specifically, D13, a book chapter entitled "Block Copolymers" disclosed the common shorthand notation for block copolymers (table 12.1), in which a letter represented a block of the corresponding monomer units, e.g. A-B for diblock and A-B-A for triblock. Hence, the "styrene-butadiene" copolymers disclosed in the examples of the application as filed, by virtue of the hyphen, could only be understood as A-B copolymers in the sense of table 12.1 of D13, and were thus necessarily diblock copolymers.

The board does not agree with the appellant's interpretation of D13. The fact that "A-B" can be used as a notation to represent "diblock" does not mean that the same can unambiguously be inferred for the term "styrene-butadiene" in reference to the examples of the application as filed. Specifically, as noted by the respondent, patent documents D5 and D7 indicate that this may not be the case. More specifically, D5 concerns a "styrene-diene" viscosity modifier (page 2, line 5), among which triblock copolymers are included (e.g. page 5, line 35), while D7 refers in paragraph [0055] to the preparation of "styrene-diene copolymers", with the subsequent paragraph referring to the preparation of a triblock copolymer. Although as noted by the appellant, these documents are not representative of the common general knowledge, they are at least indicative of a lack of consistency in the notation to be applied in relation to block copolymers. Furthermore, the board notes that although "styrene-butadiene" copolymer is employed as starting material in the preparation examples 1-20 (paragraph [0124]), tables 5 and 13, discussed by the parties, refer to "Styrene Butadiene" copolymers, i.e. without a hyphen, and thus do not conform to the alleged standard notation according to D13.

Hence, it cannot unambiguously be concluded that the examples of the application as filed concern diblock copolymers. Thus, the examples do not represent a unambiguous pointer to this selection in contested claim 1.

2.7 As argued by the respondent, in addition to lacking a specific pointer to the individual selections as set out above, the various selections from different embodiments are not indicated as being linked with each other in the application as filed. For example, no link is provided between the specific selection of embodiment A of table 1a with the selection of a diblock copolymer. Indeed, the application as filed is drafted in such a way that it refers to distinct and separate embodiments (e.g. paragraphs [0043], [0044], [0053]-[0058]). This structure is also supported by the claims as originally filed, which due to the dependency of the majority of dependent claims on claim 1 alone, do not disclose a combination of, e.g. claim 6, which relates to a diblock copolymer, with other dependent claims, but rather present these as separate embodiments.

2.7.1 The appellant submitted that it was not the structure of the claims as originally filed which was decisive in determining the disclosure of the application as filed, but rather what the skilled person, using common general knowledge, would directly and unambiguously derive from the disclosure of the application as a whole. The board agrees with this view, but as set out above, concludes that the application as filed fails to directly and unambiguously disclose the selections required to arrive at the subject-matter of contested claim 1.

2.7.2 It follows therefore *a fortiori* that there is no pointer to the combination of the above individual selections, required in order to arrive at the subject-matter of contested claim 1.

2.8 Consequently, contested claim 1 contravenes Article 123(2) EPC.

2.9 For the sake of completeness, the board notes that the appellant at oral proceedings before the board argued compliance with Article 123(2) EPC starting from dependent claim 25 in combination with claim 1 of the application as filed.

Claim 25 however relates to the SAP content of the engine oil. This feature is present in contested claim 1, and was objected to by the respondent in the context of Article 123(2) EPC. Since however the present conclusion is not dependent on this feature, any assessment of Article 123(2) EPC starting from this viewpoint would necessarily result in the same conclusion as provided above.

3. Auxiliary requests

Claim 1 of auxiliary request 1 differs from claim 1 of the main request in that it is specified that the hydrogenated copolymer is a diblock "*sequential block*" copolymer.

Claim 1 of auxiliary request 2 differs from claim 1 of the main request in the addition of the requirement that the diblock copolymer is defined as comprising "*a backbone derived from 5 to 70 mol% styrene and 30 to 95 mol% of butadiene*", and in ingredient (c) in which "*a*

performance additive" was amended to "*at least one performance additive*".

Claim 1 of auxiliary request 3 differs from claim 1 of the main request in that it is specified that the hydrogenated copolymer is a diblock "*sequential block*" copolymer (as for claim 1 of auxiliary request 1), and ingredient (c) was amended as for claim 1 of auxiliary request 2.

Claim 1 of auxiliary request 4 comprises, compared to claim 1 of the main request, the amendments to claim 1 of auxiliary requests 1 and 2.

Claim 1 of auxiliary request 5 differs from granted claim 1 in that it is reworded as a use claim directed to the "*use of an unfunctionalised hydrogenated copolymer in an engine oil lubricating composition as a viscosity modifier and/or dispersant modifier, and for soot and sludge handling ...*".

Claim 1 of auxiliary request 6 differs from claim 1 of auxiliary request 5 in the addition of the feature in relation to the low SAP content of the composition, comprised within claim 1 of the main request.

3.1 Admittance

The respondent requested that the sets of claims of auxiliary requests 5 and 6 not be admitted into the proceedings. However, since the board decided that none of the auxiliary requests fulfilled the requirements of the EPC (infra), there was no need for admittance to be addressed in this regard.

3.2 Article 123(2) EPC

Claim 1 of each respective auxiliary request comprises at least the same selections as set out for claim 1 of the main request, above. At oral proceedings, the appellant provided no further arguments in respect of the auxiliary requests over those submitted for the main request. Hence, for at least the same reasons, the respective claim 1 of each auxiliary request contravenes Article 123(2) EPC.

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

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



N. Maslin

M. O. Müller

Decision electronically authenticated