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**Datasheet for the decision
of 13 March 2013**

Case Number: T 0161/10 - 3.3.03

Application Number: 01204089.5

Publication Number: 1203779

IPC: C08F 220/18, C10M 149/06,
C10M 149/04

Language of the proceedings: EN

Title of invention:

Dispersant (Meth) acrylate copolymers having excellent low
temperature properties

Patent Proprietor:

Afton Chemical Intangibles LLC

Opponent:

Evonik RohMax Additives GmbH

Headword:

-

Relevant legal provisions:

EPC Art. 56
RPBA Art. 13

Keyword:

"Inventive step: no (main request - auxiliary requests 1-7)"
"Late submitted request: not admitted (auxiliary request 8)"

Decisions cited:

-

Catchword:

-



Case Number: T 0161/10 - 3.3.03

D E C I S I O N
of the Technical Board of Appeal 3.3.03
of 13 March 2013

Appellant: Afton Chemical Intangibles LLC
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 27 November 2009
revoking European patent No. 1203779 pursuant
to Article 102(3)(b) EPC.

Composition of the Board:

Chairman: B. ter Laan
Members: O. Dury
C.-P. Brandt

Summary of Facts and Submissions

I. The appeal by the patent proprietor lies against the decision of the opposition division posted 27 November 2009 to revoke European patent N°. EP 1 203 779, based on application N°. 01 204 089.5.

II. The granted patent was based on 11 claims which are however not relevant for the present decision.

III. A notice of opposition against the patent was filed on 7 June 2006, in which the revocation of the patent in its entirety was requested on the grounds of Art. 100 (a) EPC (lack of an inventive step) and Art. 100 (b) EPC. During the opposition procedure the following documents were *inter alia* cited:

- D5: EP-A-0 439 254
- D26: "Versuchsbericht 2" filed with letter of 10 October 2007
- D27: "Testbericht D27" filed with letter of 18 September 2008
- D28-D36: Datasheets of Anglamol 99, Nexbase 3043, Nexbase 3030, KPE 100 SN, Enerpar, AP/E SN 130, AP/E Core, S-Oil, Nexbase 3020, respectively

The decision of the opposition division was based on a main and two auxiliary requests.

Claims 1, 2, 5, 8, 9 and 10 of the main request read as follows:

"1. A polyalkyl (meth)acrylate copolymer, comprising units derived from:

- A) 12 to 18 weight percent methyl methacrylate;
- B) 75 to 85 weight percent of at least one C₁₀-C₁₅ alkyl (meth)acrylate; and
- C) 2 to 5 weight percent of at least one nitrogen-containing dispersant monomer selected from dialkylamino alkyl (meth)acrylamides, dialkylaminoalkyl acrylates and N,N-dimethylaminoethyl thiomethacrylate, wherein the copolymer optionally contains monomers other than (A), (B) and nitrogen-containing dispersant monomers polymerizable with monomers (A), (B) and (C) and, if such other monomers are present, said copolymer contains less than 3 weight percent of said other monomers."

"2. A polyalkyl (meth)acrylate copolymer comprising the reaction product(s) of:

- A) 12 to 18 weight percent methyl methacrylate;
- B) 75 to 85 weight percent of at least one C₁₀-C₁₅ alkyl (meth)acrylate; and
- C) 2 to 5 weight percent of at least one nitrogen-containing dispersant monomer selected from dialkylamino alkyl (meth)acrylamides, dialkylaminoalkyl acrylates and N,N-dimethylaminoethyl thiomethacrylate, wherein the copolymer optionally contains monomers other than (A), (B) and nitrogen-containing dispersant monomers polymerizable with monomers (A), (B) and (C) and, if such other monomers are present, said copolymer contains less than 3 weight percent of said other monomers."

"5. A lubricating oil composition comprising:

- (A) an oil of lubricating viscosity; and

(B) a polyalkyl (meth)acrylate copolymer according to claim 2."

"8. A method for improving the low temperature properties of an oil, said method comprises adding to an oil of lubricating viscosity a polyalkyl (meth)acrylate copolymer according to claim 2."

"9. A method for increasing the viscosity index of an oil, said method comprising adding to an oil of lubricating viscosity a polyalkyl (meth)acrylate copolymer according to claim 2."

"10. An automatic transmission fluid comprising:
(A) an oil of lubricating viscosity;
(B) a polyalkyl (meth)acrylate copolymer according to claim 2; and
(C) a detergent/inhibitor package, wherein the detergent/inhibitor package comprises at least one additive selected from the group consisting of oxidation inhibitors, corrosion inhibitors, friction modifiers, antiwear and extreme pressure agents, detergents, dispersants, antifoamants, and pour point depressants;
wherein the automatic transmission fluid has a percent shear stability index, as determined by the 20 hour Tapered Bearing Shear Test, in the range of 1% to 80%."

Claims 1-2 of auxiliary request 1 corresponded to claims 1-2 of the main request.

Claims 1-2 of auxiliary request 2 corresponded to claims 1-2 of the main request wherein the polyalkyl (meth)acrylate copolymer was further characterised as

"having a relative number average molecular weight between 5000 and 50000, as determined by gel permeation chromatography using polymethyl methacrylate standards".

In its decision, the opposition division held in particular that the main request did not fulfil the requirements of Art. 83 EPC because the patent in suit failed to provide a clear teaching which detergent/inhibitor packages and which kind of oil was to be used in order reliably to prepare an automatic transmission fluid according to claim 10 of the main request. Novelty of claim 1 of auxiliary request 1 over D5 was denied. Finally, auxiliary request 2 was held not to fulfil the requirements of Art. 56 EPC starting from D5 as the closest prior art.

IV. On 25 January 2010, the patent proprietor (appellant) lodged an appeal against the above decision. The prescribed fee was paid on the same day. In its statement of grounds of appeal filed on 5 April 2010 the appellant requested that the decision of the opposition division be set aside and the patent in suit be maintained in amended form according to either the main request or any of auxiliary requests 1-2 filed during the oral proceedings before the opposition division on 4 November 2009 as attached to the impugned decision. Further auxiliary requests 3 to 7 as well as additional arguments and means of proof were filed with letter dated 24 January 2013.

Claims 1-2 of the third and fourth auxiliary requests corresponded to claims 1-2 of the main request.

Claims 1-2 of the fifth, sixth and seventh auxiliary requests corresponded to claims 1-2 of auxiliary request 2.

- V. By letter dated 30 September 2010 the opponent withdrew its opposition.
- VI. In a communication dated 23 October 2012 the Board set out its preliminary view of the case, *inter alia* regarding inventive step.
- VII. During the oral proceedings held on 13 March 2013 the appellant filed three further auxiliary requests, two of which were withdrawn later. The remaining request, auxiliary request 8, consisted of a single claim reading as follows:

"1. Use of a polyalkyl (meth)acrylate copolymer having a relative number average molecular weight between 5000 and 50000, as determined by gel permeation chromatography using polymethyl methacrylate standards, comprising the reaction product(s) of:

- A) 12 to 18 weight percent methyl methacrylate;
- B) 75 to 85 weight percent of at least one C₁₀-C₁₅ alkyl (meth)acrylate; and
- C) 2 to 5 weight percent of at least one nitrogen-containing dispersant monomer selected from dialkylamino alkyl (meth)acrylamides, dialkylaminoalkyl acrylates and N,N-dimethylaminoethyl thiomethacrylate, wherein the copolymer optionally contains monomers other than (A), (B) and nitrogen-containing dispersant monomers polymerizable with monomers (A), (B) and (C) and, if such other monomers are present, said copolymer

contains less than 3 weight percent of said other monomers
to improve the Brookfield viscosity at -40°C of an oil having a measurable Brookfield viscosity at -40°C."

VIII. The appellant's arguments relevant for the present decision may be summarised as follows:

Main request

Inventive step

- (a) Starting from D5 as the closest prior art, the problem to be solved as specified in the patent in suit was to provide (meth)acrylate copolymers that exhibit excellent low temperature performance in a wide variety of base oils.
- (b) It was derivable from the examples and from paragraph [0040] of the patent in suit that excellent low temperature performance in a wide variety of base oils meant an improvement of the Brookfield viscosity at -40°C of an oil having a measurable Brookfield viscosity at -40°C, i.e. which was liquid at that temperature.
- (c) The solution of that problem resided in the copolymers according to claims 1-2, which provided a significant, unexpected improvement in low temperature properties as compared to those of D5.
- (d) As shown in Examples VII-4, VII-6 and VII-7 of the patent in suit, the copolymers according to claims 1-2 could be used to prepare compositions

having Brookfield viscosities at -40°C below 20 000 cP.

- (e) No direct comparison with compositions according to the examples of D5 could be made since D5 failed to provide any information regarding e.g. the base oil used. However, the copolymer prepared in comparative example VII-3 (Table 1) of the patent in suit illustrated the teaching of D5. A comparison of comparative example VII-3 with examples VII-4, VII-6 and VII-7 (all illustrative of the main request) showed a general improvement in terms of Brookfield viscosity at -40°C for various base oils. That one out of twelve examples (Example VII-7/Group III(1)) failed to show such an improvement could not cast doubts on the overall effect demonstrated in the other eleven examples.

- (f) Whereas a pour point depressant was used in the oil compositions of most of the examples of D5, the oil compositions prepared in the patent in suit did not contain a pour point depressant. Table 3 of D5 showed that the pour point depressant significantly reduced the Brookfield viscosity at -40°C of an oil composition, so that the improvement in terms of Brookfield viscosity at -40°C of the copolymers according to present claim 1 over those of D5 was even larger than what was shown by the comparison of the examples of D5 with those of the patent in suit.

- (g) In the experiments of D26 and D27, in which copolymers illustrative of the subject-matter now

being claimed were *inter alia* used, the opponent varied the type and amount of base oil and/or the amount of the copolymer used so that no fair comparison could be made either within those data or with D5.

The fact that compositions according to D26 and D27 were solid at -40°C did not prevent them from having other improved low temperature properties e.g. at temperatures of -10°C or -12°C , which corresponded to industry specifications e.g. for tractor oil or automotive gear lubricants.

It was not disputed that by a judicious choice of ingredients such as base oil and additive package, the skilled person could formulate oil compositions comprising a copolymer according to claims 1-2 that were solid. The invention, however, was based on the concept that for oil compositions having a measurable Brookfield viscosity at -40°C , i.e. were liquid, the copolymers defined in claims 1-2 provided an unexpected benefit.

- (h) Therefore, the problem to provide a significant, unexpected improvement in low temperature properties as compared to the compositions of D5 was effectively solved by the copolymers according to claims 1-2 of the main request.

- (i) The combination of monomers in the amounts according to claims 1-2 was not specifically disclosed in D5 and could only be arrived at after performing a series of choices within the ambit of D5.

- (j) D5 disclosed a monomer (a) which could be methyl methacrylate (corresponding to present monomer A), however in an amount of "up to 5 weight percent" (D5, page 3, lines 5-6). That information taught away from the subject-matter now being claimed, which required an amount of methyl methacrylate A) of 12 to 18 w.%. Therefore, the claimed subject matter was not obvious.

Auxiliary request 2

Inventive step

- (k) The limitation in terms of molecular weight according to claim 1 restricted the subject-matter claimed to polymers having better shear stability. There was no indication in D5 that the copolymers disclosed therein fulfilled that requirement. There was in particular no evidence on file that a skilled person following the teaching given on page 3, line 56 to page 4, line 2 of D5, upon which the opposition division had relied, would necessarily arrive at the subject-matter of present claims 1-2. Hence, following the same reasoning as for the main request, the claimed subject-matter was not obvious.
- (l) Asked by the board, the appellant acknowledged during the oral proceedings that they had no data showing that the specific range of molecular weight defined in claims 1-2 was related to any technical effect.

Auxiliary requests 3 to 7

- (m) For auxiliary requests 3 and 4 the arguments regarding the main request were valid. For the 5th, 6th and 7th auxiliary requests the arguments for the second auxiliary request were valid.

Auxiliary request 8

Admissibility

- (n) Auxiliary request 8 was filed as a *bona fide* answer to the objection of lack of inventive step. That request was very relevant and aimed at better distinguishing the claimed subject-matter from compositions according to D26 and D27. It significantly narrowed down the scope of the claims. Finally, it represented the last opportunity for the patent proprietor to protect a valuable, commercially very successful invention.
- (o) The amendments made were derivable from paragraphs [0044]-[0045] together with Table 3 of the patent in suit. The improvement specified in claim 1 was to be understood as compared to the same composition without copolymer. It was also an improvement as compared to D5. The results reported in Table 3 of the patent in suit supported the presence of an inventive step, as already discussed for the main request and auxiliary request 2.

Auxiliary request 8 should, therefore, be admitted to the proceedings.

- IX. The appellant (patent proprietor) requested that the decision under appeal be set aside and the patent be maintained in amended form according to either the main request or any of auxiliary requests 1-2 filed during the oral proceedings before the opposition division on 4 November 2009, or, alternatively, on the basis of any of auxiliary requests 3-7 filed with letter of 24 January 2013 or on the basis of auxiliary request 8 (claim 1) filed during the oral proceedings before the board of appeal on 13 March 2013.
- X. The Board announced its decision at the end of the oral proceedings.

Reasons for the Decision

1. The appeal is admissible.

Main request

2. Inventive step
- 2.1 Closest prior art
- 2.1.1 The patent in suit relates to dispersant (meth)acrylate copolymers having excellent low temperature properties and their use as viscosity index improvers (VII) for lubricating oils (paragraph [0001] of the patent in suit).
- 2.1.2 Such copolymers are known from D5, which the appellant as well as the opposition division considered to be the

closest prior art document. The Board sees no reason to deviate from that view.

- 2.1.3 D5 (claim 1) discloses oil-soluble polymers comprising, as polymerized monomers, monomers selected from:
- (a) alkyl methacrylates in which the alkyl group contains from 1 to 4 carbon atoms;
 - (b) alkyl methacrylates in which the alkyl group contains from 10 to 15 carbon atoms;
 - (c) alkyl methacrylates in which the alkyl group contains from 16 to 20 carbon atoms; and
 - (d) N,N-dialkylaminoalkyl methacrylamides;
- and wherein said polymer contains:
- i) 0 to 5% of (a), 74 to 97% of (b), up to 15% of (c) and 2 to 6% of (d); or
 - ii) up to 15% of (a), 79 to 97% of (b), and 2 to 6% of (d); and wherein the total of (a), (b), (c) and (d) equals 100% by weight of the polymer.

According to claim 2 and page 3, lines 5-6, the preferred amounts of a), b) and d) for alternative ii) of claim 1 of D5 are up to 5 w.%, from about 83 to 96 w.% and about 4 w.%, respectively.

According to claim 3 and page 3, lines 18-19 of D5, methyl methacrylate is preferably used as monomer (a), claim 3 encompassing in particular polymers prepared from

- (i) up to 15 % of methyl methacrylate which corresponds to compound A) according to present claims 1-2;
- (ii) 79-97 % of a monomer (b) corresponding to compound B) according to present claims 1-2;

(iii) 2-6 % of a monomer (d) corresponding to compound C) according to present claims 1-2; wherein the total of (a), (b) and (d) equals 100 % by weight of the polymer (claim 3, alternative (ii)).

2.1.4 The copolymers of D5 are used as viscosity improvers in lubricating oils, in particular for automatic transmission fluids (ATFs) (D5: claims 8-10; page 2, lines 1-7 and 45-49; Tables 1-3).

2.2 Problem to be solved

2.2.1 Paragraph [0002] of the patent in suit identifies the problem to be solved as being that of providing dispersant (meth)acrylate copolymers which, as viscosity index improvers, exhibit excellent low temperature performance in a wide variety of base oils.

2.2.2 The appellant interpreted the problem to be solved as providing (meth)acrylate copolymers that improved the Brookfield viscosity at -40°C of lubricants and ATFs having a measurable Brookfield viscosity at -40° , i.e. which were liquid at that temperature.

2.2.3 Such a definition of the oils to which the copolymers should be added is however not explicitly mentioned in the application as filed. Although suitable base oils are detailed in paragraphs [0027] to [0037] of the patent in suit, it is nowhere specified that a certain criticality resides in the choice of the base oil or in the property of the base oil composition in which the copolymers according to present claims 1-2 are to be used.

In paragraph [0040] of the patent in suit reference is made to the use of the claimed copolymers for preparing automatic transmission fluids (ATFs). According to the appellant, ATFs are known in the art to be compositions that should have a measurable Brookfield viscosity at -40°C . In accordance with that statement, the data of Table 3 of the patent in suit show oil compositions fulfilling that requirement. However, the patent in suit provides no information whether or not those oil compositions, in the absence of a viscosity modifier according to present claims 1-2, effectively have a measurable Brookfield viscosity at -40°C . That property is neither explicitly mentioned in the patent in suit nor has it been shown that it could be derived from the properties of the base oils used in the examples, in particular as indicated in Table 2.

Furthermore, the oil compositions used in the examples contain other ingredients such as detergents and inhibitors (page 6, line 39 of the patent in suit), the exact composition of which is not known. In the absence of any indication regarding the nature of the base oil and of the additive package used, it is not possible to conclude that the lubricants and/or ATFs have a measurable Brookfield viscosity at -40°C before the addition of the claimed copolymers.

- 2.2.4 In addition, the appellant's interpretation of the problem to be solved is based on the examples of the patent in suit. However, those examples all concern a single type of copolymer prepared from the three following monomers: methyl methacrylate as component A), lauryl methacrylate as component B) and dimethylaminopropyl methacrylamide as component C)

(Examples VII-4, VII-6, VII-7). Example VII-3 of the patent in suit, although being within the ambit of D5, further does not illustrate the preferred embodiments of alternative ii) of D5. Hence, there is no evidence on file that the technical effect on which the appellant relies for its interpretation of the problem to be solved is indeed achieved over the whole scope of the claim e.g. for other monomers C) according to claims 1-2 and/or as compared to the preferred embodiments of D5.

The comparison of examples VII-3 and VII-7 for a group III(1) oil in Table 3 of the patent in suit further shows that the improvement on which the appellant relies upon for its interpretation of the problem to be solved is not achieved at least for one copolymer according to present claims 1-2. Hence, also for that reason, it is not credible that the technical problem as reformulated by the appellant is effectively solved over the whole scope of the claims. Contrary to the argument of the appellant that fact can not be neglected and/or counterbalanced by the other eleven examples.

2.2.5 Under such circumstances, the interpretation of the problem to be solved contemplated by the appellant cannot be followed and the properties of the base oils cannot be taken into account in the definition of the problem to be solved according to the patent in suit. Therefore, the problem to be solved remains to provide dispersant (meth)acrylate copolymers which, as viscosity index improvers, exhibit excellent low temperature performance in a wide variety of base oils, as stated in paragraph [0002] of the patent in suit.

2.3 Solution

The solution to the problem identified in paragraph [0002] of the patent in suit resides in the copolymers defined in present claims 1-2. The subject-matter thus claimed differs from D5, in particular claim 3, alternative (ii), in the specific ranges for each of components A), B) and C) according to claims 1-2, the combination of which is not as such disclosed in D5.

2.4 Success of the solution - Problem effectively solved

- 2.4.1 In Table 1 of the patent in suit various viscosity index improvers (VII) are prepared. VII-4, VII-6 and VII-7 (Table 1) are copolymers of methyl methacrylate, lauryl methacrylate and dimethyl aminopropyl methacrylamide (according to present claims 1-2). They were used, together with an undefined additive package not comprising a pour point depressant (page 6, lines 39-40), in four different types of base oils, classified as Group I, Group II, Group III(1) and Group III(2) according to paragraphs [0031]-[0032], of which details are given in Table 2 of the patent in suit. Table 3 shows that all those compositions exhibit a good Brookfield viscosity at -40°C. It also shows that VII-7 leads, for a given base oil Group III(1), to a higher Brookfield viscosity at -40°C, i.e. a worse result, than VII-4 and VII-6.
- 2.4.2 VII-3 (Table 1) of the patent in suit is a copolymer composed of the same monomers as VII-4, VII-6 and VII-7, the amount of methyl methacrylate however being 11.3 w.%, i.e. lower than the amount of 12 to 18 w.%

specified in present claims 1-2. VII-3 is, thus, not according to present claims 1-2.

Copolymer VII-3 was prepared using monomer amounts according to claim 3, alternative ii) of D5. Those amounts are, however, not within the preferred ranges disclosed on page 3, lines 5-6 of D5. Therefore, example VII-3 is a comparative example illustrative of the teaching of D5 although not according to its preferred embodiments.

Table 3 of the patent in suit shows that the performance of VII-3 in terms of Brookfield viscosity at -40°C is not as good as that of each of VII-4 and VII-6 for all four types of oils. VII-3 is also worse than VII-7 in three types of oils, while being better with the Group III(1) oil.

However, not only example VII-3 but also examples VII-4 and VII-6 illustrate the copolymers of D5, since each of those VII corresponds to an embodiment falling under claim 3 of D5, alternative (ii). Example VII-7 is the sole example of the patent in suit that is in accordance with present claims 1-2 but not with D5 (the amount of methyl methacrylate being 17.9 w.%).

2.4.3 Under such circumstances, it can not be concluded that the subject-matter of claims 1-2 leads to an improvement over the closest prior art D5.

2.4.4 The data presented in D26 and D27 cannot change the above conclusion. Examples AC, AD, AF, AG, AH and AI in Tables 3-4 of D26 as well as examples 5, 12, 13, 18 in Table 2 of D27 deal with oil compositions comprising a

VII according to present claims 1-2. According to the data given by the opponent with regard to D26-27 and the information provided by D28 to D36, those compositions fulfil many of the preferred criteria taught in the description of the patent in suit in terms of

- (a) the nature of the base oil (paragraphs [0027] to [0037]) and of the "additive package" (paragraphs [0026] and [0040]);
- (b) a preparation "in a conventional manner" (paragraph 0021));
- (c) the kinematic viscosity of the base oil (ranging from 1 to 40 cSt at 100°C according paragraph [0027]);
- (d) the amounts of VII, additive package and base oil (being such that the finished composition has a kinematic viscosity at 100°C of approximately 7.6 cSt: paragraph [0044]); and
- (e) regarding D27, the number average molecular weight of the VII (between 5000 and 50,000 according to paragraph [0022]).

However, the data reported in D26 and D27 show that most of those oil compositions are either solid at -40°C and, thus, do not have a measurable Brookfield viscosity at -40°C, or exhibit a Brookfield viscosity at -40°C significantly higher than that reported in Table 3 for example VII-3. As a consequence, it is concluded that the problem as identified by the appellant (section 2.2.2) is not solved over the whole scope of the claims so that the conclusion that the subject-matter of claims 1-2 does not represent an improvement over the closest prior art D5 is confirmed.

2.4.5 The appellant argued that the term "low temperature performance" was not solely related to the Brookfield viscosity at -40°C but also encompassed other properties e.g. the Brookfield viscosity at a temperature of -10°C or -12°C. However, the sole "low temperature performance" mentioned in the patent in suit concerns the determination of the Brookfield viscosity at -40°C (paragraphs [0044]-[0045]; Table 3). No other low temperature properties are either specified or at least derivable from the patent in suit. The argument that the copolymers according to present claims 1-2 improved other low temperature properties as compared to the VII according to D5 is also not supported by any facts and can therefore not be considered for the assessment of inventive step.

2.4.6 The presence or not of a "pour point depressant" in the claimed compositions, as further argued by the appellant, is irrelevant because such additives are not excluded from the scope of the claims. Besides, D5 also explicitly specifies that pour point depressant are not mandatory (page 2, line 4; page 4, lines 12-13).

2.4.7 In view of the above, the technical problem effectively solved by the subject-matter of present claims 1-2 can only be seen as to provide further VII copolymers to those according to D5.

2.5 Obviousness

Although D5 does not explicitly disclose polymers prepared using more than 8.2 w.% methyl methacrylate (examples; Tables 1-3) and although the preferred range for monomer (a) in alternative ii) according to D5 is

disclosed as "up to 5 %" (page 3, lines 5-6), using an amount of (a) methyl methacrylate as high as 15 w.% is without any doubt within the ambit of D5 (claims 1 and 3, alternative ii); page 3, line 5). As a consequence, the skilled person seeking a mere alternative to the VIIs specifically disclosed by D5 would find an incentive in the disclosure of D5 to prepare copolymers by varying the amounts of (a), (b) and (d) within the ranges taught therein, including those corresponding to the monomers in the ranges according to present claims 1-2.

3. Therefore, the main request does not fulfil the requirements of Art. 56 EPC.

Auxiliary request 1

4. As claims 1-2 of auxiliary request 1 are identical to claims 1-2 of the main request, auxiliary request 1 is not allowable for the same reasons as the main request.

Auxiliary request 2

5. Inventive step
 - 5.1 Auxiliary request 2 only differs from the main request in that the copolymers according to claims 1-2 are further characterised in terms of their relative number average molecular weight.
 - 5.2 The data provided in the patent in suit, in particular those concerning VII-4, VII-6 and VII-7, all dealing with copolymers having various molecular weights within the range defined in claims 1-2, do not show any effect,

- in particular in terms of Brookfield viscosity at -40°C , related to the molecular weight. The appellant confirmed during the oral proceedings before the board that they had no data in that respect.
- 5.3 Although the issue related to the lack of an effect in relation to the molecular weight defined in present claims 1-2 was already discussed during opposition proceedings (see last two full paragraphs on page 5 of the minutes of the oral proceedings before the opposition division) and had led the opposition division to conclude that auxiliary request 2 then valid (corresponding to present auxiliary request 2) lacked an inventive step (point 3 of the reasons of the contested decision), the appellant has, also in the appeal proceedings, not provided any evidence that the selected range of molecular weight was related to any effect.
- 5.4 The copolymers of D27 considered in section 2.4 above and those of examples VII-3, VII-4, VII-6, and VII-7 of the patent in suit all have a number average molecular weight between 5000 and 50,000 according to claims 1-2 (see Table 1 of the patent in suit; Table 1 on page 2 of D27). Hence, the argumentation followed above for the main request is still applicable with regard to auxiliary request 2 and the problem effectively solved remains the same as that considered for the main request: to provide further VIIs to those of D5.
- 5.5 According to page 3, line 56 to page 4, line 4 of D5, the copolymers prepared therein may have molecular weights within a broad range; two different ways of obtaining a "targeted" molecular weight are indicated.

Hence, following the same reasoning as for the main request, it is obvious to provide further VIIIs to those specifically disclosed in D5 by preparing a copolymer according to claims 1 and 3, alternative (ii) of D5, varying the amounts of the monomers (a), (b) and (d) within the broadest ranges taught in D5 and thus to arrive at the ranges of components A), B) and C) and having a molecular weight according to present claims 1-2.

- 5.6 Auxiliary request 2 therefore does not fulfil the requirements of Art. 56 EPC.

Auxiliary requests 3 to 7

6. Claims 1-2 of each of auxiliary requests 3 and 4 are identical to claims 1-2 of the main request and claims 1-2 of each of auxiliary requests 5 to 7 are identical to claims 1-2 of auxiliary request 2, so that those requests are not allowable for the same reasons as the main request and auxiliary request 2, respectively.

Auxiliary request 8

7. Admissibility

- 7.1 Auxiliary request 8 was filed at a very late stage of the proceedings, namely during the oral proceedings, after the board had informed the appellant of its provisional opinion regarding all other requests already on file. Its admission to the proceedings is subject to the Board's discretion (Art. 13(1) RPBA).

7.2 The appellant justified the late filing of auxiliary request 8 as a means to remove the relevance of the experimental data of D26 and D27 for inventive step. However, those data had already been on file at the opposition stage and their relevance regarding inventive step for the requests then on file, including the present main request and auxiliary requests 1-2, had been addressed in the communication of the board. Hence, auxiliary request 8 could have been filed earlier.

7.3 Apart from its late filing, auxiliary request 8 further raises *prima facie* concerns related to substantive issues, e.g. in relation to

- Art. 84 EPC: it is unclear which reference is to be considered for the claimed "improvement". At least two possibilities may be encompassed, namely either the same composition in the absence of a copolymer or a composition comprising another VII e.g. according to D5;
- Art. 123(2) EPC: as pointed out in section 2.2.3 above, the question arises whether it is directly and unambiguously derivable from the application as filed that the (base) oil composition should have a measurable Brookfield viscosity at -40°C;
- Art. 56 EPC: it is further questionable whether the proposed amendment removes the objection related to the lack of improvement in Brookfield viscosity at -40°C as compared to D5 over the whole scope of the claims.

For those reasons, claim 1 of auxiliary request 8 is not clearly allowable.

7.4 Under such circumstances, the board decided not to admit auxiliary request 8 into the proceedings (Art. 13(1) RPBA).

8. Since none of the requests of the appellant/patent proprietor is allowable, the patent cannot be maintained.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

E. Görgmaier

B. ter Laan