Internal distribution code:

(A) [-] Publication in OJ
(B) [-] To Chairmen and Members
(C) [-] To Chairmen
(D) [X] No distribution

Datasheet for the decision of 3 May 2017

Case Number: T 0864/13 - 3.3.03

Application Number: 02786022.0

Publication Number: 1462458

IPC: C08F8/22, C08F214/26

Language of the proceedings: EN

Title of invention:
MOLDING MATERIAL FOR OZONE-RESISTANT ARTICLES AND OZONE-RESISTANT INJECTION-MOLDED ARTICLES

Patent Proprietor:
DAIKIN INDUSTRIES, LTD.

Opponent:
Solvay Specialty Polymers Italy S.p.A.

Relevant legal provisions:
RPBA Art. 12(4)
EPC Art. 83

Keyword:
Document submitted with the statement of grounds of appeal - not hold inadmissible
Sufficiency of disclosure (no) - all requests

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern
Boards of Appeal
Chambres de recours

European Patent Office
D-80298 MUNICH
GERMANY
Tel. +49 (0) 89 2399-0
Fax +49 (0) 89 2399-4465

Case Number: T 0864/13 - 3.3.03

D E C I S I O N
of Technical Board of Appeal 3.3.03
of 3 May 2017

Appellant: (Opponent)	Solvay Specialty Polymers Italy S.p.A. Via Lombardia, 20 20021 Bollate (MI) (IT)
Representative:	Benvenuti, Federica Solvay S.A. Département de la Propriété Intellectuelle Rue de Ransbeek, 310 1120 Bruxelles (BE)
Respondent: (Patent Proprietor)	DAIKIN INDUSTRIES, LTD. Umeda Center Building, 4-12, Nakazaki-nishi 2-chome, Kita-ku Osaka-shi, Osaka 530-8323 (JP)
Representative:	Hoffmann Eitle Patent- und Rechtsanwälte PartmbB Arabellastraße 30 81925 München (DE)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 20 February 2013 concerning maintenance of the European Patent No. 1462458 in amended form.**

Composition of the Board:

Chairman	D. Semino
Members:	F. Rousseau
	R. Cramer

Summary of Facts and Submissions

I. The appeal lies against the interlocutory decision of the opposition division posted on 20 February 2013 according to which European patent No. 1 462 458 as amended according to the documents of the auxiliary request, i.e. claims 1 to 6 submitted with letter of 14 October 2011 and an adapted description thereto submitted during the oral proceedings, met the requirements of the EPC.

II. Claim 1 of that request read as follows:

"1. A molding material, which has a melt flow rate of 0.1-50 g/10 min. and comprises a copolymer (A) which
- comprises tetrafluoroethylene and a ≥ 3.5 wt.-% perfluorovinylether units,
- has a melting point of ≥ 295°C,
- contains ≤ 50 unstable terminal groups per 1 x 10^6 carbon atoms, and
- has an MIT value satisfying formula (1):
(MIT value) ≥ [7 x 10^6 x (melt flow rate)$^{-2}$] (1)"

III. According to the reasons of the decision, amended claim 1, which was a combination of claims 1 and 5 as granted, met the requirements of Articles 123(2) and (3) EPC. The ground of opposition under Article 100(b) EPC was *prima facie* relevant and therefore admitted into the proceedings, but it was concluded that the opponent had not shown that the claimed invention lacked sufficiency of disclosure. In this respect, paragraph [0060] of the specification taught the skilled person that the MIT value could be increased by increasing the molecular weight, which molecular weight also influenced the melt flow rate (hereafter MFR). If

the skilled person wanted to increase the molecular weight of the tetrafluoroehtylene(TFE)/ perfluoro(propylvinylether)(PPVE) copolymer, he would note that a higher amount of PPVE would lead to copolymers having a MIT value inside the range of claim 1. Increasing the amount of PPVE to a content of higher than 5.5 wt.% could be seen as "a concept fit for generalisation" enabling the skilled person to provide a polymer which met the parametric definition of claim 1. For copolymers having a PPVE content in the range of 3.5 to 5.5 wt.% the opponent, on which the burden of proof laid, had not shown that it was not possible to achieve the desired MIT value, for example by varying factors such as amount of initiator, regulator and reaction time. By starting from synthesis example 1, there was sufficient information in synthesis example 2 concerning the parameters to be altered in order to be within the scope of claim 1. Novelty and inventive step were also acknowledged. Therefore, the auxiliary request comprising an adapted description met the requirements of the EPC. The main request comprising the same set of claims and description, but with an amended table 2 of page 15, was refused as said amendment was held to be in contravention of Article 123(2) EPC.

IV. The opponent (here after appellant) appealed the decision of the opposition division. The statement setting out the grounds for the appeal included *inter alia* the following document:

D15: "Rugged New Fluoropolymer Builds More Reliability Into High-Purity Processes" - Technical publication by the E.I. du Pont de Nemours and Company on Teflon PFA HP *plus*, 2000.

V. The patent proprietor (respondent) submitted with its rejoinder of 7 January 2014 a main request, as well as first to third auxiliary requests. The claims of the main request corresponded to those of the main request underlying the contested decision. In claim 1 of the first to third auxiliary requests the wording "perfluorovinylether units" was replaced in all requests by "perfluoro(propylvinylether) units" and the amount of those "perfluoro(propylvinylether) units" was defined to be "4.0 to 6 wt.-%", "more than 4.0 to 6 wt.-%" and "4.5 to 6 wt.-%", respectively.

VI. Oral proceedings took place on 3 Mai 2017.

VII. The appellant's submissions, as far as relevant for the decision, can be summarised as follows:

(a) The patent should provide sufficient information to obtain the invention over the whole scope of the claims without having recourse to undue experimental work. The resins defined in claim 1 could contain further monomers in addition to TFE and PFVE, meaning that the scope of claim 1 was extremely large. The patent in suit, however, contained a very limited information on how to meet all parametric requirements of present claim 1.

(b) The sole synthesis in accordance with the invention as defined in present claim 1 were synthesis example 2 (for examples 2 and 3) and synthesis example 4 (for examples 5 and 6) which only concerned a specific PTFE/PPVE copolymer comprising 5.5 wt.-% of PPVE units having a MFR of either about 15 or about 6 g/10 min. On the basis of those examples it was not possible for the skilled person to extrapolate any information to be retrieved from

those examples to other copolymers comprising various types and amounts of comonomers. The patent itself provided experimental evidence that moulding compositions consisting of a copolymer of TFE and 4.2 wt.-% PPVE as in example 1 based on synthesis example 1 had MFR and MIT value which did not satisfy relationship (1).

(c) The patent in suit did not indicate what should be changed at constant amount of PPVE units in order to meet requirement (1) if the copolymer initially prepared did not meet that condition, as was the case for synthesis example 1. It was simply left to the skilled person to perform a research activity in order to understand the various conditions which would allow to meet all requirements of claim 1. The patent in suit did not address molecular weight distribution of copolymer (A), let alone its influence on the MIT value. Accordingly, the fact that the skilled person would know how to modify the molecular weight distribution of copolymer (A) did not provide any information on how condition (1) could be met. The argument of the respondent that the molecular weight distribution should be also adjusted in order to obtain suitable MIT and MFR values demonstrated even more the difficulty for the skilled person to obtain compositions meeting inequality (1).

(d) In principle the same arguments were valid for all requests, even for auxiliary request 3, because the examples of the patent in suit did not allow to gain any teaching enabling the skilled person to prepare copolymer (A) within the whole ambit of claim 1. The invention of claim 1 could only be performed for a limited number of moulding

materials, namely those consisting of a TFE copolymer having a PPVE content of at least 5 wt.-%.

(e) Accordingly, none of the claim requests met the requirement of sufficiency of disclosure.

VIII. The respondent's submissions, as far as relevant for the decision, can be summarised as follows:

(a) The concept of defining fluoropolymers in terms of both their flexibility expressed by a MIT value and their flowability expressed by a MFR value was usual in the art, as demonstrated by D15, which showed that both parameters were related.

(b) As shown by synthesis example 5, a material having a PPVE content of 3.3 wt.-% could also fulfil the claimed relationship between MIT and MFR. That example was a comparative example only due to its content of PPVE units below the claimed limit of 3.5 wt.-%. Accordingly, it was not correct that only copolymers with a high content of PPVE of 5.5 wt.-% units were capable of fulfilling that relationship. As could be seen from the specification, the PPVE content in the polymer could be adjusted by setting appropriate amounts of chain transfer agent (methanol) and PPVE monomer, decreasing the amount of PPVE monomer and increasing the amount of chain transfer agent resulting in a reduced PPVE content in the polymer.

(c) Paragraph [0060] of the specification taught that the MIT value could be substantially increased by increasing the amount of perfluorovinylether (hereafter PFVE), as confirmed for PPVE by

synthesis examples 4 and 5. It could also be gathered from the specification that the PPVE content had only a minor influence on the MFR.

(d) Furthermore, from a comparison of synthesis example 5 with synthesis example 3, the skilled person would recognize that for a given PPVE content the MIT value could be dramatically increased by increasing the molecular weight and thus decreasing the MFR. The same could be taken from a comparison of synthesis example 4 with synthesis example 2. When going from a MFR of about 15.0 g/10 min to a MFR of about 6.7 g/10 min, MIT values were increased by a factor of 12 and 4 for a content of PFVE units of 3.3 wt.-% and 5.5 wt.-%, respectively.

(e) The fluorine treatment did not have a large influence on the MIT value as shown by examples 2 and 3 and comparative example 2.

(f) It was also known in the art that the MIT and the MFR values depended on the molecular distribution of the copolymer, which the skilled person would adjust based on the common general knowledge by selecting appropriate amounts of initiator and chain transfer agent. The necessity to adjust the molecular weight distribution was not explicitly mentioned in the patent in suit, but could be implicitly understood by an analysis of the examples, although it was acknowledged that a direct comparison of the examples of the patent in suit in order to determine the influence of the amounts of chain transfer agent and polymerisation initiator was difficult because many variables had been changed between those examples.

(g) Hence, following the teaching of the patent in suit, the skilled person would be able using the common general knowledge in the art to adjust the reaction conditions such as time, pressure, temperature, amounts of initiator and transfer agent in order to prepare the claimed polymers. Therefore, if inequality (1) was not met, the skilled person would know that this condition could be met by e.g. increasing the amount of PFVE units. Starting from the specific embodiments described in the patent in suit, to obtain copolymers fulfilling that inequality would require only few experiments which could easily be performed and would not amount to undue burden. Which measures should be taken depended on what the skilled person sought to achieve. He knew that, even if one could not always obtain optimum properties, it would be possible in a reasonable manner to balance flexibility and flowability of the composition. The invention was not about fixing the content of monomer and find all measures to be applied to meet all requirements of claim 1.

(h) In principle the same arguments were valid for all requests. Considering that the copolymer of synthesis example 1 with a content of PPVE of 4.2 wt.-% exhibited a MIT value close to the value of $7 \times 10^6 \times (\text{melt flow rate})^{-2}$, it was expected that the copolymer having a higher content of PPVE in the range of 4.5 to 6 wt.-% would meet requirement (1).

(i) Accordingly, the requirement of sufficiency of disclosure was met.

IX. The appellant requested that the decision under appeal be set aside and that the patent be revoked.

X. The respondent requested that the decision under appeal be set aside and the patent be maintained in amended form on the basis of the claims of the main request or of one of the first to third auxiliary requests, all filed with the letter of 7 January 2014, and with an amended page 15 of the patent specification as submitted during the oral proceedings before the opposition division.

Reasons for the Decision

Main request

1. The moulding material subject-matter of claim 1 is defined in terms of structural features - it comprises a copolymer (A) which comprises TFE and PFVE units in an amount of ≥ 3.5 w.-% - as well as in terms of parametric features, which include a MFR of the moulding material of 0.1-50 g/10 min, a melting point of the copolymer of ≥ 295°C, a number of unstable terminal groups of the copolymer of ≤ 50 per 1 x 10^6 carbon atoms, and wherein the MIT value of the copolymer satisfies the condition expressed by inequality (MIT value) ≥ [7 x 10^6 x $(MFR)^{-2}$] (1).

Preliminary remarks

2. The range of MFR values as defined in claim 1 is a characteristic of the moulding material, which moulding material comprises copolymer (A) in an unspecified amount. The fact that the MFR values are determined on the moulding material comprising copolymer (A) and not

necessarily consisting of copolymer (A) is confirmed by paragraph [0045] of the specification according to which said copolymer is present in a predominant amount.

The other parametric features defined in claim 1, namely amount of PFVE, melting point, number of unstable terminal group and MIT values are defined to be characteristics of copolymer (A). However, the definition in claim 1 that the MIT value is also that of copolymer (A) is in contradiction with the definition given in paragraph [0061] of the specification, according to which the MIT value is the value determined by the measurement on a moulded article as prepared from said ozone-resistant moulding material, i.e. the moulding material comprising copolymer (A).

The objection of the appellant did not take into account the possibility for the moulding composition to contain further components in addition to copolymer (A). It was merely made in relation to compositions where no other additional component is added to said copolymer (A), as can be seen from the arguments put forward based on the compositions of the examples and comparative examples of the patent in suit, all concerning moulding compositions consisting of copolymer (A). Consequently, the assessment by the Board of the issue of sufficiency of disclosure is made in relation to the embodiments of claim 1 addressed by the appellant, namely compositions of claim 1 consisting of copolymer (A).

Sufficiency of disclosure

3. The objection to a lack of sufficiency of disclosure with respect to claim 1 concerns the ability of the skilled person to prepare a moulding material that meets the inequality (MIT value) $\geq [7 \times 10^6 \times (MFR)^{-2}]$ (1) in addition to the other requirements of that claim, in particular for any content of PFVE units of at least 3.5 wt.%. It originates from the ascertainment that copolymer (A) prepared in "example 1" in table 2 of the patent in suit with an amount of 4.2 wt.% of PPVE (i.e. a particular PFVE) does not meet requirement (1) despite the fact that it meets all other requirements of claim 1 and from the argument that the patent in suit does not contain explicit instructions on how that inequality is to be met. Example 1 which was an embodiment of claim 1 as granted was not in accordance with its dependent claim 5 which defined inequality (1) as a further requirement of the moulding composition. This additional requirement of claim 5 was introduced into claim 1 in the course of the opposition proceedings.

Meaning of inequality (1)

4. It follows from paragraph [0060] of the specification that a material meeting inequality (1) is a moulding material meant to have an excellent crack resistance and a suitable melt processability, the crack resistance being expressed by the MIT value which is an index of folding endurance (see paragraph [0059]) measured using a conventional standard test method and apparatus (see paragraph [0100]).

The respondent relied on D15 in order to show that the MIT values represented at the date of filing of the

patent in suit a usual parameter for defining fluoropolymer resins, in particular in connection with their MFR. That document has been submitted by the appellant with the statement setting out the grounds of appeal and its admittance into the proceedings disputed by the respondent, albeit only with respect to the issues of novelty and inventive step. Under these circumstances and in particular in view of the fact that the party contesting the admittance of the document made use of it in its argumentation, the Board sees no reason to make use of its discretionary power under Article 12(4) RPBA to hold inadmissible the information content of D15 relevant for the issue of sufficiency of disclosure, which therefore is taken into consideration in the appeal proceedings.

D15 is a technical leaflet concerning specific fluoropolymers. It contains a figure 2 on which for two families of commercial fluoropolymer resins each resin is represented in a x y coordinate system, the MIT value of each resin (expressed in said document as MIT Flex life) being represented on the y-axis versus the corresponding MFR value on the x-axis. Both parameters are represented on a base 10 logarithmic scale. The $\log_{10}$ value of the MIT Flex life appears on that diagram for each family of polymers to vary linearly with the $\log_{10}$ value of the MFR.

5. Accordingly, the Board is satisfied that it was not completely unusual in the art at the date of filing of the patent in suit to describe a fluoropolymer by its flexibility and flowability expressed in terms of MIT and MFR values, respectively. Moreover, taking into account the observations made in the above paragraph the Board also notes that it was even not completely unusual to use a linear relationship between the $\log_{10}$

values of MIT and MFR when describing such resin families. Representing the composition of operative claim 1 in a diagram of the type used in D15, inequality (1) would mean that only the resins having for a given MFR a $\log_{10}$(MIT) value on or above the line represented by $\log_{10}$ (7 x 10^6) - 2 x $\log_{10}$(MFR) are in accordance with claim 1. However, the mere fact that it was not unusual at the date of filing of the patent in suit to define a fluoropolymer by its MIT value as a function of its MFR value, does not answer the question whether the skilled person was able in the particular context of present claim 1 to prepare a moulding material (copolymer (A)) meeting specific condition (1), on the basis of the information provided in the patent specification and, if necessary, using common general knowledge, without undue burden, i.e. with reasonable effort, over the whole scope of the claim.

Teaching of the patent in suit with respect to inequality (1)

6. The respondent did not point to explicit instructions contained in the patent in suit on how said relationship between MIT and MFR values can be met, but to the influence of various factors affecting MIT values, as can be taken from the specification. The information provided therein in relation to the MIT and MFR values of the claimed copolymers is analysed in what follows.

Preparation of the copolymers

6.1 The patent in suit indicates for the preparation of copolymer (A) the type of comonomers to be used and their amount (paragraph [0028] to [0034]), as well as the manner to reduce the amount of unstable terminal

groups which is explained in paragraphs [0049] to [0057], i.e. a fluorine gas treatment. A more precise description of the method for producing the claimed compositions, in particular for preparing copolymers (A), is not indicated, but all examples rely on the same type of synthesis, namely polymerisation in the presence of water and perfluorocyclobutane of the monomers TFE and PPVE, using a polymerisation initiator and methanol as chain transfer agent. These measures are those employed for preparing the copolymer of example 1, which fulfills all requirements of claim 1 with the exception of inequality (1). There is no explicit indication in those examples on how the parameters of the polymerisation have any influence on the achievement of inequality (1).

6.2 The respondent argued that the molecular weight distribution (hereafter MWD) would be known to the skilled person to influence the MIT value. No evidence for such common general knowledge was submitted, let alone any indication provided on how the MWD should be modified to increase the MIT values. Furthermore, despite the fact that the MWD is a well known manner of characterising polymers and that it could be influenced in a known manner by varying the amounts of transfer agent or initiator, as argued by the respondent, no information is available to conclude that the amounts of these ingredients in the examples were chosen in order to influence the MIT values, while keeping at the same type the MFR values in a range which allows to meet inequality (1). The examples do not provide any explicit or implicit comparison between the amounts of chain transfer agents or initiators and the corresponding changes of MIT and MFR values. The respondent even admitted that the examples could not be directly compared for the purpose of assessing the

effect of those compounds on the MIT and MFR values, as the synthesis methods used differed in other aspects. Accordingly, the arguments of the respondent that the skilled person would know how to vary the MWD in order to vary the MIT and MFR values must be considered in the absence of corroborating evidence as an unsubstantiated allegation which therefore must be disregarded.

Content of PFVE units

6.3 Paragraph [0036] of the patent in suit, in line with the conventional knowledge in the art, indicates that the melting point of copolymer (A) decreases with increasing proportions of PFVE units and paragraph [0060] indicates that the upper limit of MIT is determined by the lower limit of the melting point of copolymer (A) (i.e. 295°C as defined in claim 1) or by the upper limit of PFVE unit content resulting in said melting point. It follows from the above that the MIT value is taught in the patent in suit to increase with increasing contents of PFVE comonomer.

6.4 However, having regard to comparative example 5 it is also demonstrated that a moulding material meeting condition (1), as well as the MFR and the number of unstable terminal groups defined in claim 1 can be obtained even if the amount of PFVE units (here PPVE) is of 3.3 wt.%, i.e. below the minimum amount required by claim 1. As outlined by the respondent on page 9 of the reply to the statement of grounds of appeal (see point (iv)), comparative example 5 was marked as comparative only because the amount of PPVE units was below that required by the claim. It is also not disputed that the skilled person would be able, based on the teaching of the patent in suit and the common

general knowledge, to prepare copolymers (A) containing at least 5.5 wt.-% of PFVE units that meet all requirements of claim 1. The synthesis of such copolymers comprising 5.5 wt.-% of PFVE (here PPVE) units is taught in the examples.
Accordingly, inequality (1) does not impose any implicit restriction in respect of the minimum amount of comonomer, at least in respect of PPVE.
Consequently, operative claim 1 encompasses copolymers comprising 3.5 wt.-% of PPVE units and also higher amounts such as 4.2 or 5.5 wt.-%.

6.5 Consequently, contrary to the finding of the opposition division, an increase of the amount of PPVE cannot be seen as "a concept fit for generalization" enabling the skilled person to carry out the invention, because claim 1 indisputably aims at encompassing copolymers having for example 3.5 or 4.2 wt.-% of PFVE units, as concluded in above point 6.4.

Fluorine treatment

6.6 The respondent conceded that the fluorine treatment has little influence on the MFR and MIT values of copolymer (A). A comparison on the basis of the copolymers prepared with synthesis example 2 (comparison example 2, examples 2 and 3) and an additional comparison on the basis of the copolymers prepared with synthesis example 4 (comparative example 6, examples 5 and 6) confirm this and cannot even reveal a uniform trend concerning the influence of the fluorine treatment on the MIT value. Accordingly, the obligatory fluorine treatment in order to reduce the total number of unstable terminal groups below the level required by claim 1 will not be considered by the skilled person as an appropriate measure to reduce the gap between the

two terms of inequality (1) when the condition represented by inequality (1) is not met.

Molecular weight

6.7 Paragraph [0060] of the specification teaches the skilled person that the MIT value can be increased by increasing the molecular weight (or decreasing the MFR), which is confirmed by a comparison of comparative example 3 with comparative example 5. This also is confirmed by a comparison of example 2, example 3 and comparative example 2 (all synthesis example 2 with a MFR of 15.0 to 14.6 and various degrees of fluorine gas treatment) with example 6, example 5 and comparative example 5, respectively (all synthesis example 4 with a MFR of about 6.7 and the corresponding degrees of fluorine gas treatment). These comparisons demonstrate that a decrease of the MFR from about 15 g/10 min to about 6.7 g/10 min leads to an increase of the MIT value by a factor of 12 and 4.4 for a content of PFVE units of 3.3 wt.-% and 5.5 wt.-%, respectively. This, however, does not imply that an increase of the molecular weight would be the appropriate tool in order to meet inequality (1), as such an increase also means an increase of the other term $7x10^{6}x(MFR)^{-2}$ of inequality (1). Moreover, the Board is not convinced that the skilled person would consider the above comparisons of only two experiments as a statistically relevant source of information enabling him to deduct a reliable teaching on the influence of the molecular weight for meeting inequality (1). Even if he did so, he would note conflicting indications on an increase of the molecular weight as a hypothetical means to close the gap between the terms of inequality (1) if the latter is not fulfilled. As can be shown by the experiments referred to by the respondent, an increase

of the term $7x10^{6}x(MFR)^{-2}$ (denoting an increase of the molecular weight) between synthesis example 3 and synthesis example 5 by a factor of about 5.1, and between synthesis example 2 and synthesis example 4 by a factor of about 4.7, is accompanied by a corresponding increase of MIT values by a factor of 12 and 4,4, respectively.

6.8 Other factors which might be understood from the specification to influence MIT values were not indicated.

Common general knowledge - required experimentation

7. The respondent referred to measures belonging to the general knowledge in the art and to a limited amount of experimentation, which could easily be performed by the skilled person in order to obtain copolymers (A) also meeting inequality (1). The respondent, however, failed to specify which concrete measures, allegedly known in the art, or which specific experimental protocol should be used for that purpose. Evidence in support of these allegations, i.e. either for the general knowledge in the art or for a limited amount of experimentation necessary to supplement the teaching of the patent in suit, was not submitted. Hence, the arguments based on the existence of such common general knowledge in the art and the need for a limited amount of experimentation are nothing more than unsubstantiated allegations, which therefore cannot convince the Board.

Conclusion with respect to the main request

8. Summing up it follows from the above that inequality (1) is not an inherent feature of a copolymer (A) meeting all other requirements of claim 1 and the

patent in suit does not contain explicit instructions on how that inequality is to be achieved over the whole scope of claim 1. Furthermore, the skilled person is unable to identify, within the information provided in the patent in suit, implicit instructions on how the MIT values of copolymer (A) can be varied while obtaining at the same time a MFR to meet inequality (1) over the whole scope of claim 1. There are in particular no instructions provided in the whole specification, even implicit ones, regarding the measures to be taken in case of a failure, i.e. what to change in case inequality (1) of claim 1 is not met, as is for example the case for example 1. Finally, an indication of measures belonging to the common general knowledge in the art or of an experimental protocol allowing with a reasonable effort to supplement the teaching of the patent in suit for obtaining copolymers (A) as defined in claim 1 was not provided, let alone evidence in that respect. Consequently, the Board concludes that the patent in suit does not contain adequate information to enable the skilled person to prepare copolymer (A) with the envisaged excellent crack resistance and melt processability expressed by condition (1) over the whole scope of claim 1 using common general knowledge and without undue burden. Thus, the subject-matter of claim 1 lacks sufficient disclosure and the patent cannot be maintained on the basis of the main request.

Auxiliary requests

9. The amendments introduced into the first to third auxiliary requests consist in defining that the PFVE unit of copolymer (A) is a PPVE unit whose amount in the copolymer is of 4.0 to 6 wt.-%, more than 4.0 to 6.0 wt.-% or 4.5 to 6 wt.%, respectively. Although

increasing the minimum content of PPVE in copolymer (A) can be seen as a means to increase the MIT value (see above point 6.3) and therefore to assist to meet inequality (1), there is no evidence on file that a level of PPVE units as defined in the auxiliary requests corresponds to copolymers (A) in accordance with claim 1 which the skilled person based on the information of the patent in suit would be able to prepare over the whole scope of that claim using common general knowledge and without undue burden. Obviously, this cannot be the case for auxiliary requests 1 and 2 whose claims 1 still encompass copolymers comprising 4.2 wt.-% of PPVE units in respect of which a lack of sufficiency of disclosure was concluded in relation to the main request. Concerning auxiliary request 3, the respondent argued that copolymer (A) with a content of PPVE of 4.2 wt.-% (i.e. that of example 1 of the patent in suit) exhibited a MIT value close to the value of $7x10^{6}x(\text{melt flow rate})^{-2}$ and accordingly copolymers (A) with a higher content of PPVE in the range of 4.5 to 6 wt.-% should be expected to meet requirement (1). In the absence of any supporting evidence for this allegation, which therefore must be disregarded, the Board concludes that the amendment introduced into claim 1 of auxiliary request 3 has not been shown to remedy to the lack of sufficiency of disclosure concluded with respect to the main request.

10. Consequently, the objection under Article 100(b) EPC holds also against the first to third auxiliary requests and those requests also have to be refused.

11. In view of this there is no need for the Board to deal with any other issue and the patent is to be revoked.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The patent is revoked.

The Registrar: The Chairman:

B. ter Heijden D. Semino

Decision electronically authenticated