

**Internal distribution code:**

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

**Datasheet for the decision  
of 17 December 2013**

**Case Number:** T 0873/10 - 3.3.03

**Application Number:** 01909287.3

**Publication Number:** 1263877

**IPC:** C08L27/18, C09J127/18, C08J5/18

**Language of the proceedings:** EN

**Title of invention:**  
PROCESS FOR PRODUCING ARTICLES VIA MELT-PROCESSING OF  
TETRAFLUOROETHYLENE COPOLYMERS

**Patent Proprietor:**  
Eidgenössische Technische Hochschule Zürich

**Opponent:**  
3M Innovative Properties Company

**Headword:**

**Relevant legal provisions:**  
EPC Art. 100(c)

**Keyword:**  
Grounds for opposition - added subject-matter (yes)

**Decisions cited:**

**Catchword:**



**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 0873/10 - 3.3.03

**D E C I S I O N  
of Technical Board of Appeal 3.3.03  
of 17 December 2013**

**Appellant:** Eidgenössische Technische Hochschule Zürich  
(Patent Proprietor) Rämistrasse 101  
8092 Zürich (CH)

**Representative:** den Hartog, Jeroen H.J.  
Hoyng Monegier LLP  
Rembrandt Tower, 31st Floor  
Amstelplein 1  
1096 HA Amsterdam (NL)

**Respondent:** 3M Innovative Properties Company  
(Opponent) 3M Center  
2501 Hudson Road  
St. Paul MN 55144-1000 (US)

**Representative:** Kurz, Arnd  
3M Deutschland GmbH  
3M Office of Intellectual Property Counsel  
Carl-Schurz-Strasse 1  
41453 Neuss (DE)

**Decision under appeal:** **Decision of the Opposition Division of the  
European Patent Office posted on 25 February  
2010 revoking European patent No. 1263877  
pursuant to Article 101(3) (b) EPC.**

**Composition of the Board:**

**Chairwoman:** B. ter Laan  
**Members:** F. Rousseau  
C. Vallet

## Summary of Facts and Submissions

- I. The appeal by the Patent Proprietors (hereafter the Appellants) lies from the decision of the opposition division posted on 25 February 2010 revoking European patent EP-B-1 263 877 in respect of European patent application No. 01 909 287.3, which is based on the International application PCT/US2001/005182 filed on 16 February 2001 and published under WO 2001/060911.
- II. The Opponents (Respondents) had requested in the notice of opposition the revocation of the patent in its entirety inter alia on the ground that its subject-matter extended beyond the content of the application as filed (Article 100(c) EPC).
- III. The impugned decision was based on the documents of the patent as granted, claim 1 of which read as follows:
- "1. Method for producing an article from a PTFE composition via melt processing consisting of the steps of:
- i) heating the PTFE composition to above its crystalline melting temperature
  - ii) shaping the melt into the desired form under processing conditions involving extensional or shear flow, in which this step results in an article which displays orientation of the polymer molecules
  - iii) cooling the composition below the crystalline melting temperature, to obtain an article which displays orientation of the polymer molecules such that upon heating to a temperature that is 10°C above its melting temperature, after melting the article displays a change in size of at least about 5% in at least

one dimension wherein the PTFE composition comprises a melt-processable tetrafluoroethylene co-polymer, said co-polymer having

- a peak melting temperature of at least 320 °C;
- a strain at break of greater than 10 % or a stress at break of greater than 15 MPa at room temperature and a strain rate of 100%/min (sic)
- an amount of co-monomer less than 1 mol%, said co-monomer being selected from hexafluoropropylene, perfluoro(alkyl vinyl ether), and perfluoro-(2,2-dimethyl-1,3,-dioxole);
- a melt-flow index according to ASTM D 1238-88 at 380°C under a 21.6 kg load of greater than 0.25 g/ 10 min, and less than 75 g/10 min."

IV. According to the impugned decision, the application as filed did not disclose a method for producing an article from a PTFE composition comprising a melt-processable tetrafluoroethylene copolymer having an amount of co-monomer of not more than 1 mol.% and a maximum melt flow rate of 75g/10 min. In the application as filed that maximum amount of co-monomer was correlated with a maximum melt flow rate of 15 g/ 10 min. Hence, the subject-matter of claim 1 of the patent as granted extended beyond the content of the application as originally filed (Article 100 (c) EPC).

V. A notice of appeal was filed on 20 April 2010 and the appeal fee was paid on the same day. The statement setting out the grounds of appeal was filed on 2 July 2010, to which were attached two auxiliary requests, claim 1 of each of which was identical to claim 1 as granted. Additional written submissions by the Appellants were received with letter of 15 November 2013.

- VI. In preparation of the oral proceedings, the Board issued a communication on 18 November 2013, pointing out that for assessing Article 100 (c) EPC the question was not only whether in the application as filed an upper limit of 75 g/10 min for the melt flow index of the PTFE polymer was associated with a content of co-monomer of less than 1 mol. %, but also whether that upper limit of the melt flow index was disclosed at all in the context of PTFE copolymers.
- VII. The Respondents who had replied to the statement setting out the grounds of appeal with letter of 18 November 2010, indicated with letter of 16 December 2013 that they would not attend the oral proceedings.
- VIII. Oral proceedings before the Board took place on 17 December 2013 in the absence of the Respondents, in accordance with Rule 115(2) EPC.
- IX. The Appellants' arguments, in so far as they are relevant for the present decision, can be summarised as follows:
- a) The application as filed had to be read with the eyes of a person willing to understand the invention. The subject-matter of present claim 1 related to the second embodiment disclosed in the application as filed, according to which PTFE having higher melt flow values could be processed under extensional or shear flow conditions.
  - b) The Opposition Division had ignored the disclosure on page 8 line 17 of the application as filed according to which the monomer content was

generally defined to be preferably less than 1 mol.%. Furthermore, MFI values for the PTFE grades were said to be preferably up to about 75 g / 10 min for process conditions involving extensional or shear flow, as disclosed on page 9, lines 14 to 18. The skilled person would understand from the application as filed that the upper limit of the melt flow index of less than 75 g / 10 min applied both to PTFE homopolymers as well as to PTFE copolymers.

- c) Claim 1 as granted was based on the more preferred features according to the application as filed (up to 1 % comonomers and an upper limit for the melt flow index of 75 g / 10 min, using extensional or shear flow conditions), which preferences or limitations were combinable because they corresponded to general teachings of the application as filed concerning the copolymer and its application.
- d) Since there was no direct relationship between the melt flow index and the comonomer content, one was free to combine the upper limits indicated for those two features.
- e) Whether the disclosure on page 9 of the application as filed suggested that the upper limit for the melt flow index of 75 g/ 10 min was disclosed only in connection with PTFE copolymers was of no relevance, as the skilled person would rely on the passages on page 8, lines 16-18 and page 10, lines 18-22, disclosing a more preferred amount of comonomer of less than about 1 mol. % and a more preferred upper limit of about 75 for the melt flow index, respectively, to provide a

basis for the combination of melt flow index and comonomer content defined in present claim 1.

f) Hence, the subject-matter of claim 1 of the granted patent did not extend beyond the content of the application as filed.

g) The same was valid for Auxiliary Requests I and II containing an identical claim 1.

X. The arguments of the Respondents can in essence be summarised as follows:

a) In the application as filed the upper limit of 75 g / 10 min for the melt flow index of the PTFE polymer was associated only with a comonomer content of less than 1 mol. %.

b) Even if those values were not associated with one another, that combination could only result from a two-fold selection out of the two lists defining various values for the upper limits of the melt flow index and the comonomer content, respectively.

c) The argument that the upper limit of 75 g / 10 min and the comonomer content of less than 1 mol.% were disclosed as preferred embodiments ignored the fact that more preferred upper limits and comonomer contents had been disclosed.

d) Hence, the combination of an upper value of 75 g / 10 min and a comonomer content of less than 1 mol.% was not directly and unambiguously disclosed in the application as filed.

e) Moreover, the application as filed only disclosed PTFE compositions that were blends, so that the co-polymers implicitly had low molecular weight. Those features, however, were absent from present claim 1.

f) Thus, claim 1 of the granted patent and of the auxiliary requests offended against the requirements of Article 123(2) EPC.

XI. The Appellants requested that the decision under appeal be set aside and that the patent be maintained as granted or, in the alternative, on the basis of the claims of any of auxiliary requests I and II, both submitted with letter of 2 July 2010.

XII. The Respondents requested that the appeal be dismissed.

XIII. At the end of the oral proceedings, the decision of the Board was announced.

## **Reasons for the Decision**

1. The appeal is admissible.

### *Main Request*

2. In accordance with the established case law of the Boards of Appeal of the EPO, the relevant question to be decided in assessing whether the subject-matter of



claim 1 of the main request extends beyond the content of the application as filed is whether that claim comprises technical information that a skilled person would not have directly and unambiguously derived from the application as filed, either explicitly or implicitly.

3. Claim 1 according to the main request concerns a method for producing an article from a PTFE composition via melt processing. The composition is defined as comprising a melt-processable tetrafluoroethylene copolymer having a melt-flow index - according to ASTM D 1238-88 at 380°C under a 21,6 kg load - of greater than 0,25 g/ 10 min, and less than 75 g/10 min and an amount of co-monomer of less than 1 mol%, said co-monomer being selected from hexafluoropropylene, perfluoro(alkyl vinyl ether), and perfluoro-(2,2-dimethyl-1,3,-dioxole). The method is defined inter alia as comprising the step of shaping the melt into the desired form under processing conditions involving extensional or shear flow, resulting in an article that displays orientation of the polymer molecules.
  
4. The only passages of the application as filed disclosing an upper limit for the melt-flow index of 75 g/10 min are to be found in the first paragraph of page 9, lines 14-18 and on page 10, lines 17-22. According to the first passage (page 9, lines 14-18) "In embodiments in which the PTFE grades are employed in articles which are produced under processing conditions involving extensional or shear flow, and display orientation of the polymer molecules as defined above, the PTFE grades are characterized by a preferred range of the melt flow index of an upper limit of 200 g/10 min; more preferred the upper limit is about 75,

and most preferred 50." The identical wording is to be found on page 10, lines 17-22. Before that passage on page 10 (in lines 15-17), it is stated that "articles are said to be oriented when, upon heating to a temperature that is 10°C above its melting temperature, after melting the article displays a change in size of at least about 5% in at least one dimension." That definition of the concept of orientation is the same as provided in claim 1 as granted.

5. The above cited passages disclosing an upper limit of 75 for the melt flow index of the PTFE grades form part of the original disclosure starting on page 8, line 8 to page 14, line 3 and more in particular to page 10, line 22, where the poly(tetrafluoroethylene)s to be used in the claimed process and their flow behaviour are described.
6. According to page 8, lines 9-15 of the application as filed, the PTFEs to be used are generally polymers of tetrafluoroethylene comprising minor amounts of one or more co-monomers such as hexafluoropropylene, perfluoro(methyl vinyl ether), perfluoro(propyl vinyl ether), perfluoro-(2,2-dimethyl-1,3-dioxole), and the like, provided however that the latter do not significantly adversely affect the unique properties, such as thermal and chemical stability of the PTFE homopolymer.
7. On page 8, lines 28-33, it is explained that an indication of the thermoplastic flow behaviour of the polymer can be readily analyzed by determination of a melt-flow index (MFI), as measured according to ASTM D1238-88, at 380 °C under a load of 21,6 kg. Under these experimental conditions, the PTFE grades according to the present invention have a non-zero MFI

- (380/21,6) in a maximum extrudate-collection time of 1 hr (page 9, lines 3-4).
8. According to the first full paragraph on page 9, in particular lines 4-7, the PTFEs are preferably characterized by an MFI (380/2,6) of greater than about 0,005, more preferably of greater than about 0,2 g/10 min and most preferably of greater than 0,25 g/10 min. The maximum value of the melt-flow index of the PTFE grades used in the present invention is said to depend on the particular end product and processing technique (page 9, lines 7-9). An upper value of the MFI of about 10 g/10 min is indicated to be preferred for most applications in which the polymer solid is substantially isotropic; more preferred is an upper value of the MFI of about 5 g/10 min, and most preferred is 2,5 g/10 min (page 9, lines 9-11).
  9. The last sentence of that first full paragraph (page 9, lines 14-18), concerns, in contrast to the above mentioned applications in which the polymer solid is substantially isotropic, embodiments in which the PTFE grades are employed in articles that are produced under processing conditions involving extensional or shear flow, and display orientation of the polymer molecules. In those situations, the PTFE grades are characterized by a preferred range of the melt flow index of an upper limit of 200 g/10 min; more preferred the upper limit is about 75, and most preferred 50 (page 9, lines 16-18). This is the passage that, according to the Appellants, provides the basis for an upper limit of the melt flow index of less than 75.
  10. The second full paragraph on page 9 of the application as filed reads: "If in this case the PTFE grades according to the present invention comprise a

relatively high content of comonomer the upper limit of the MFI range of the preferred grades could be higher. For example, if the PTFE contains up to 3 mol% of comonomer, the upper limit of the MFI range could extend up to about 25 g/10 min, and a preferred range would be between 0.1 up to about 15; when the comonomer content is about 1 mol% or less, the MFI range may extend up to about 15 g/ 10 min, more preferably the MFI range would be between 0.1 up to about 10 g/10 min; and at a content of 0.3 mol % or less the suitable MFI the preferred range would not exceed about 5 g/10 min and more preferably would have an MFI value in the above-noted range for PTFE polymers. In the event the PTFE comprises a comonomer and is oriented even higher MFI index could be useful including MFI ranges up to about 300 g/min and more preferably 250 g/min or less."

11. Hence, the second full paragraph of page 9 exclusively deals with the situation where the PTFEs contain co-monomers, the presence of more of the co-comonomers resulting in a higher upper limit of the MFI range which can be even higher when the PTFE not only contains a co-monomer but also is oriented. This is in line with page 3, lines 16-20 of the application as filed, according to which the introduction of certain co-monomers in the PTFE macromolecular chains leads to co-polymers of reduced viscosity and melting temperature.
12. From the above it appears that all upper values indicated in the first paragraph of page 9, both for embodiments concerning substantially isotropic and for oriented articles, are lower than the corresponding upper values for PTFE's comprising co-monomers. This, in view of the principle acknowledged on original page 9, according to which the presence of co-monomers

increases the upper limit of the melt flow index of the PTFE, confirms that the first full paragraph on page 9 of the application as filed does not concern PTFEs comprising co-monomers. Therefore, the first paragraph on page 9 which discloses an upper value of 75 g/10 min for the PTFE grades does not concern situations where co-monomers are used, in contrast to the second paragraph.

13. The structure chosen in the application as filed for defining the preferred upper values for the melt flow index of the PTFEs can therefore only be seen as first describing non-oriented homopolymer with a maximum MFI of 10, 5 or 2.5 g/ 10 min (page 9, lines 3-14), then describing oriented homopolymer with a maximum MFI of 200, 75 or 50 g/ 10 min (page 9, lines 14-18), then describing non-oriented copolymer with a maximum MFI of 25, 15, 10 or 5 g/ 10 min (page 9, lines 19-28) and finally describing oriented copolymer with a maximum MFI of 300 or 250 g/ 10 min (page 9, lines 8-30).
14. Consequently, the application as filed does not disclose an upper limit of the melt flow index of 75 g/ 10 min in connection with PTFE containing co-monomers, let alone with a specific amount of those co-monomers.
15. The Appellants' argument that the disclosure on page 9 of the application as filed could be ignored because sufficient basis for the combination of an upper limit of 75 g/10 min for the maximum melt flow index with the presence of less than 1 mol.-% of co-monomer in the PTFE could be found on page 8, lines 16-18 and page 10, lines 18-22 , fails to convince. That argument disregards the principle that any amendment to the parts of a European patent (application) relating to the disclosure can only be made within the limits of

what a skilled person would derive directly and unambiguously, using common general knowledge, and seen objectively and relative to the date of filing, from the whole of these documents as filed (G 2/10, point 4.3. of the reasons). It means that the passages on page 8, lines 16-18, and page 10, lines 18-22, relied upon by the Appellants, have to be interpreted taking into account the whole section describing the polytetrafluoroethylenes, so that the content of page 9 in its entirety cannot be disregarded.

16. Consequently, the subject-matter of claim 1 according to which the PTFE contains specific co-monomers in an amount of less than 1 mol%, which polymer should also have an upper limit of the melt flow index of less than 75 g/10, comprises technical information that a skilled person would not have directly and unambiguously derived from the application as filed, so that it extends beyond the content of the application as filed.
17. Therefore, the ground of opposition raised under Article 100(c) EPC prejudices the maintenance of the patent. The main request is therefore not allowable.

*Auxiliary requests I and II*

18. Claim 1 of auxiliary requests I and II is identical to claim 1 of the main request. Consequently, for the same reasons as above, none of those auxiliary requests is allowable.

**Order**

**For these reasons it is decided that:**

1. The appeal is dismissed.

The Registrar:

The Chairman:



E. Goergmaier

B. ter Laan

Decision electronically authenticated