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Datasheet for the decision of 12 October 2007

Case Number: T 0684/02 - 3.3.03

Application Number: 90310971.8

Publication Number: 0423995

IPC: H01B 3/44

Language of the proceedings: EN

Title of invention:
Low dissipation-factor fluorocarbon resins and cables prepared therefrom

Patentee:
E.I. DU PONT DE NEMOURS AND COMPANY

Opponent:
Dyneon LLC

Headword:
-

Relevant legal provisions:
EPC Art. 52(1), 54, 104(1), 123(2), 123(3)

Keyword:
"Amendments - reinstatement of features (no)"
"Amendments - opposition proceedings"
"Costs - apportionment - (no)"
"Novelty - Effects of processes"
"Novelty - prior disclosure and common general knowledge"

Decisions cited:
G 0002/88, G 0006/88, T 0012/81, T 0119/82, T 0170/83, T 0201/83, T 0068/85, T 0139/85, T 0153/85, T 0231/85, T 0958/90, T 0939/92, T 0210/93, T 0570/96, T 1149/97, T 0037/99

Catchword:
1. The Enlarged Board of Appeal limited its Orders in G 0002/88 (part (iii)) and in G 0006/88 explicitly to a claim to the "use of a known compound", in which a technical effect should be interpreted as a functional technical feature.

In the Board's view, this leaves no room for further expansion of this ruling to claims worded otherwise (Nos. 5.3.4 and 5.3.5 of the reasons).

2. The Board shares the view expressed in No. 3.2.3 of the reasons in T 0210/93 that the use of a process for a particular purpose is "nothing but that very same process" (No. 5.6 of the reasons).

Case Number: T 0684/02 - 3.3.03

D E C I S I O N
of the Technical Board of Appeal 3.3.03
of 12 October 2007

Appellant 1: (Patent Proprietor)
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Decision under appeal:
Interlocutory decision of the Opposition Division of the European Patent Office dated 7 March 2001 and posted 15 April 2002 concerning maintenance of European patent No. 0423995 in amended form.

Composition of the Board:

Chairman: R. Young
Members: A. Däweritz
C. Heath

Summary of Facts and Submissions

I. The grant of European patent No. 0 423 995 in respect of European patent application No. 90 310 971.8, claiming the priority of 6 October 1989 of an earlier patent application in the USA (418406), was announced on 11 March 1998 (Bulletin 1998/11). The patent contained eight claims, Claims 1, 4 and 5 thereof reading as follows:

1. Use of a process for improving the dissipation factor of a melt processible copolymer of tetrafluoroethylene with at least one copolymerizable perfluoro(n-alkyl vinyl) ether wherein the alkyl group has 1 to 5 carbon atoms such as e.g. perfluoro(propyl vinylether) (PPVE), wherein the PPVE is contained in an amount less than 5.0% by weight based on the weight of the copolymer and the amount of comonomer is sufficiently low that the melting point of the copolymer is at least 250°C, said process comprising fluorinating the copolymer at above room temperature until said copolymer has less than 50 end groups other than $-CF_3$ per million carbon atoms.

4. Use according to any one of claims 1 to 3 wherein the copolymerizable ether is perfluoro(propyl vinyl ether).

5. Use according to any one of claims 1 to 4 wherein the process includes the additional step of melt extruding the fluorinated copolymer around an electrical conductor to provide electrical insulation therefor.

6. Use according to claim 5 wherein the electrical conductor is a central conductor for a cable.

The further dependent Claims 2, 3, 7 and 8 concerned further elaborations of the use according to Claim 1 or Claim 5, respectively.

In addition to the above abbreviation in Claim 1, PPVE, the following short terms will be used herein: TFE for tetrafluoroethylene, HFP for hexafluoropropylene and PAVE for the above perfluoro(n-alkyl vinyl) ethers.

II. Claims 1, 2, 5, 10, 11, 20 and 22 of the application as originally filed, from which the patent in suit derived, read as follows:

1. An elongate article comprising at least one elongate metallic conductive element and an elongate insulator contacting the conductor and consisting essentially of at least one melt processible copolymer of tetrafluoroethylene with at least one copolymerizable perfluorinated comonomer other than tetrafluoroethylene in an amount less than about 11.5% based on the weight of the copolymer and sufficiently low that the melting point of the copolymer is at least about 250° C, said copolymer being fluorinated at elevated temperature after polymerization.

2. An elongate article comprising at least one elongate metallic conductive element and an elongate insulator contacting the conductor and consisting essentially of at least one melt processible copolymer of tetrafluoroethylene with at least one copolymerizable perfluorinated comonomer other than tetrafluoroethylene in an amount less than about 11.5% based on the weight of the copolymer and sufficiently low that the melting point of the copolymer is at least about 250° C, said copolymer having substantially exclusively $-CF_3$ end groups.

5. The article of any one of claims 1 to 4 wherein the additional comonomer is selected from the group consisting of perfluoroalkenes of the formula $R_FCF=CF_2$ where R_F is a perfluoroalkyl group having 1-5

carbon atoms and perfluoro(n-alkyl vinyl) ethers wherein the alkyl group has 1 to 5 carbon atoms, and mixtures thereof.

10. The article of claim 5 wherein the additional comonomer is perfluoro(propyl vinyl ether).

11. The article of claim 10 wherein the amount of perfluoro(propyl vinyl ether) is less than about 5% by weight.

20. A process for preparing a cable comprising a central conductor and a polymeric dielectric layer, which method comprises melt extruding around the central conductor a composition of a polymeric insulator consisting essentially of at least one melt processible copolymer of tetrafluoroethylene with at least one copolymerizable perfluorinated comonomer other than tetrafluoroethylene in an amount less than about 11.5% based on the weight of the copolymer and sufficiently low that the melting point of the copolymer is at least about 250° C, said copolymer being fluorinated at elevated temperature after polymerization.

22. A process for preparing a cable comprising a central conductor and a polymeric dielectric layer, which method comprises melt extruding around the central conductor a composition of a polymeric insulator consisting essentially of at least one melt processible copolymer of tetrafluoroethylene with at least one copolymerizable perfluorinated comonomer other than tetrafluoroethylene in an amount less than about 11.5% based on the weight of the copolymer and sufficiently low that the melting point of the copolymer is at least about 250° C, said copolymer having substantially exclusively -CF_3 end groups, around a central conductor, and placing an outer conductive layer around the polymeric insulator.

In this decision, underlined references in *italics* refer to the *application text as filed*, those in regular type to EP-A-0 423 995 as printed, and those in square brackets to the [patent] as granted, eg *page 1, line 1*/page 1, line 1 and Claim [1], respectively.

III. An Opposition was filed on 11 December 1998 on the basis of Article 100(a) EPC, namely lack of novelty and of inventive step under Article 52(1), 54 and 56 EPC, respectively, with reference to four documents and four "Annexes". The cited documents included

D1: US-A-4 743 658 and
D2: CA-A-1 248 292.

(1) In the course of the opposition proceedings, an objection under Article 100(c) EPC was additionally raised and admitted by the Opposition Division.

(2) On 7 March 2001, oral proceedings before the Opposition Division were held. Whilst, according to the minutes of these proceedings, a new Auxiliary Request I filed with a letter of 7 February 2001 had been made

the new Main Request by the Patent Proprietor, it was stated in the Facts and Submissions of the decision under appeal, that the Main Request was directed to the maintenance of the [patent], and that, in the alternative, it was requested that the patent be maintained on the basis of Auxiliary Request I referred to above, or of one of Auxiliary Requests II to V, as filed at the above oral proceedings. Auxiliary Requests I to III, which played a role in the proceedings, are summarised herein below:

(3) Thus, Claim 1 of Auxiliary Request I read as follows:

"Use of a process for improving the dissipation factor of a melt processible copolymer of tetrafluoroethylene with at least one copolymerisable perfluorinated comonomer other than tetrafluoroethylene, wherein at least one of said comonomer(s) is a copolymerizable perfluoro(n-alkyl vinyl) ether wherein the alkyl group has 1 to 5 carbon atoms, said comonomer(s) being present in an amount less than 11.5% by weight based on the weight of the copolymer and the amount of comonomer is sufficiently low that the melting point of the copolymer is at least 250°C, said process comprising fluorinating the copolymer at above room temperature until said copolymer has less than 50 end groups other than $-CF_3$ per million carbon atoms."

Dependent Claims 2 to 8 remained as granted.

(4) Claim 1 of Auxiliary Request II read as follows:

"Use of a process for improving the dissipation factor of a melt processible copolymer of tetrafluoroethylene with at least one copolymerizable perfluoro(n-alkyl vinyl) ether wherein the alkyl group has 1 to 5 carbon atoms, wherein the said at least one copolymerizable perfluoro(n-alkyl vinyl) ether is contained in an amount less than 11.5% by weight based on the weight of the copolymer and the amount of comonomer is sufficiently low that the melting point of the copolymer is at least 250°C, said process comprising fluorinating the copolymer at above room temperature until said copolymer has less than 50 end groups other than $-CF_3$ per million carbon atoms."

Dependent Claims 2 to 8 remained as granted.

(5) Auxiliary Request III contained the following Claim 1:

"Use of a process for improving the dissipation factor of a melt processible copolymer of tetrafluoroethylene with perfluoro(propyl vinylether) (PPVE), wherein the PPVE is contained in an amount less than 5.0% by weight based on the weight of the copolymer and the amount of comonomer is sufficiently low that the melting point of the copolymer is at least 250°C, said process comprising fluorinating the copolymer at above room temperature until said copolymer has less than 50 end groups other than $-CF_3$ per million carbon atoms.".

Dependent Claims 2 and 3 remained as granted, Claim 4 was deleted, granted Claims 5 to 8 were renumbered as Claims 4 to 7 and adapted accordingly.

(6) In the above oral proceedings, the Patent Proprietor filed a version of the description adapted to the wording of the claims of Auxiliary Request III, wherein all references to the presence of further comonomers other then PPVE had been removed from page 2 of the description and the example hitherto named "Example 2" had become "Comparative Example 8".

IV. In an interlocutory decision of the Opposition Division, the patent in suit was found able to be maintained on the basis of the amended documents according to Auxiliary Request III (sections III(5) and (6), above), because the patent as amended and the invention to which it related were found to meet the requirements of the EPC. With regard to the interpretation of the term "copolymer" in this request, it was stated in the decision (No. II.5.1): "As accepted by the Patentee, the copolymer referred to in claim 1 represents a binary copolymer, which exclusively contains TFE and PPVE ('copolymer of …' is interpreted as 'copolymer consisting of')".

(7) In particular, novelty of the subject-matter claimed in Auxiliary Request III was acknowledged, because neither from D1 which related to a reduction of corrosiveness of such copolymers towards metals by fluorination of the end groups of the copolymers, nor from D2, wherein the copolymers were fluorinated in order to reduce the number of voids and bubbles which could be detrimental to the physical or electrical properties of the articles made from the polymers, could an unambiguous, or even implicit, disclosure of an improvement of the dissipation factor be derived as

a functional technical feature in the sense of G 2/88 and G 6/88 (OJ EPO 1990, 93 and 114, respectively).

(8) Moreover, the subject-matter claimed in Auxiliary Request III (section III(5), above) was considered to be based on an inventive step, because it could not be derived from the cited prior art that the elimination of unstable terminal groups of the melt-processible copolymers by fluorination would reduce their dissipation factor (DF). Nor was the effective loss of the final fluorinated polymers by dissipation predictable on a theoretical basis from scientific publications dealing with dielectric relaxation in •-irradiated TFE/HFP-copolymers at low temperatures and the influence of the end groups in polyvinylidene fluoride, respectively.

(9) By contrast, the higher ranking requests, ie the Main Request and Auxiliary Requests I and II (sections I, III(3) and III(4), above), were found to violate Article 123(2) EPC. In particular, it was held with regard to the two auxiliary requests that subject-matter completely deleted during the examination procedure could not be reintroduced, as it did not form part of the patent as granted (T 1149/97; OJ EPO 2000, 259; decision: Nos. II.3 and 4).

V. On 21 June 2002, Notices of Appeal were filed by both the Patent Proprietor/Appellant 1 and the Opponent/ Appellant 2 against this decision. The prescribed appeal fees were paid by both Appellants on the same date. The Statement of Grounds of Appeal ("SGA") of Appellant 2 was received on 23 August 2002 (SGA-2), that of Appellant 1 on 26 August 2002 (SGA-1).

(10) Appellant 1 made previous Auxiliary Request I (section III(3), above) its new Main Request, on the basis of which the patent in suit should be maintained. In the alternative, previous Auxiliary Request II (section III(4), above) as new Auxiliary Request I should form the basis for maintenance of the patent.

(11) By letter dated 5 March 2003, Appellant 1 refiled copies of these two requests with their respective new headings of "Main Request" and of "Auxiliary Request I" and submitted additional Auxiliary Requests II to VII.

(12) In a still further letter dated 5 July 2005, Appellant 1 requested that the claims of former "Auxiliary Request III" (section III(5), above), which had been maintained in the decision under appeal, should be considered with two versions of the description as further auxiliary requests ranking between Auxiliary Requests I and II, as mentioned in section V(2), above (therefore they were referred to later as Auxiliary Requests IA and IB, respectively, cf. sections VII and XV, below).

More particularly, Appellant 1 pleaded that, in a first step, the Board should consider whether the Opposition Division had been correct in interpreting, within the former Auxiliary Request III, the term "copolymer" to mean "binary copolymer" and, thereafter, whether, within that request, the amendments in the description required by the Opposition Division (cf. section III(6), above and section XV, below) could be reversed or not. Likewise, each of Auxiliary Requests IV and VII (section V(2), above) should be considered in two

versions differing only in the wording of the description in order to cope with the above problem of the meaning of the term "copolymer".

In other words, in the first version of each of these auxiliary requests, mentioned in the previous paragraph, the claims should be considered with the description "in the absence of certain amendments effected to the description during proceedings before the Opposition Division" in order to avoid a narrow interpretation of the subject-matter claimed, ie as relating only to binary copolymers, as suggested by the amendments mentioned in section III(6), above (page 2 of the letter). Rather, Appellant 1 argued that there had been no justification for the narrow interpretation of the term "copolymer" (section IV, above), which argument it had already presented in its SGA-1 (Nos. 9 to 11.2, 24 and, in particular, 25): "During prosecution the claim was restricted to require the presence of PAVE. It is submitted that the amendment ... during prosecution excluded only the possibility that a perfluoroalkene could be the only comonomer present; it did not exclude the possibility that a perfluoroalkene might optionally be present provided that the copolymer also contained a PAVE.".

Consequently, Appellant 1 disputed in its SGA-1 and in its further letters dated 5 March 2003 and 5 July 2005, mentioned above, the findings in the decision under appeal concerning the requirements of Articles 123(2) and 123(3) EPC with regard to the higher ranking requests then on file.

(13) Moreover, Appellant 1 put emphasis on the argument that the claimed subject-matter was directed to the improvement of the DF of copolymers as described in Claim 1 for use as insulators in high frequency electrical transmission cables. This use had allegedly not been made available by any one of the cited documents. In order to support its point of view that the claimed subject-matter was new, Appellant 1 relied in particular on Decision G 2/88 (above) and argued: "Claim 1 of the opposed patent emphasises the process of fluorination and states: 'Use of a process .... comprising fluorinating the copolymer...' However, the invention might just as easily have been claimed as: 'The use of fluorinated TFE copolymers...' The point is that the common technical feature is fluorination, and it is this which determines the purpose of the new use." (letter of 5 March 2003, item 26.2).

VI. By contrast, Appellant 2 disputed in its SGA-2 the findings in the decision under appeal as regards novelty and inventive step of the request maintained by the Opposition Division. With regard to novelty, it argued that neither Decision G 2/88, nor G 6/88 (above) was applicable to a claim, which was not related to the use of a known substance for a new purpose, but to the "use of a process", and it additionally referred to further jurisprudence, to support this view (SGA-2: Nos. 3.1.2 and 3.1.3).

In further letters dated 7 March 2003 and 14 June 2005, Appellant 2 disputed all the arguments provided by Appellant 1 and reiterated its objections of lack of novelty and lack of inventive step. Furthermore, it suggested two questions to be referred to the Enlarged

Board of Appeal, if the Board were not inclined to follow either the "legal principles set forth in Decisions T 1149/97 and T 37/99" (item 9 of the earlier letter) or the "reasoning of T 210/93" (item 1.9 of the later letter; T 1149/97, above; T 37/99 of 9 November 2000 and T 210/93 of 12 July 1994, neither published in OJ EPO). Both questions were, however, withdrawn later (section XIV(1), below).

VII. Oral proceedings were held on 8 July 2005 before the Board in the presence of both parties. At the beginning, Appellant 1 filed the complete documents of Auxiliary Request IA, ie amended description and claims, and, moreover, a further set of claims identified as Auxiliary Request IC differing from the claims of Auxiliary Request IA/IB and former Auxiliary Request III (cf. sections III(5) and V(3), above), respectively, only by the wording of Claim 1, and identified the ranking of its requests. Moreover, a still further Auxiliary Request VIII was filed later in the course of the hearing.

(14) Whilst the claims according to the Main Request and to Auxiliary Requests I, IA and IB, respectively, have been referred to (under their previous headings as Auxiliary Requests II and III) in sections III(3) to (5), above, the additional versions of the claims were worded as follows:

(15) *Auxiliary Request IC*:

"1. Use of a process for improving the dissipation factor of a melt processible copolymer consisting of tetrafluoroethylene with perfluoro(propyl vinylether)

(PPVE), wherein the PPVE is contained in an amount less than 5.0% by weight based on the weight of the copolymer and optionally also HFP wherein the total amount of the two comonomers is less than 8% by weight and the amount of the HFP is less than 6% by weight and the amount of comonomer is sufficiently low that the melting point of the copolymer is at least 250°C, said process comprising fluorinating the copolymer at above room temperature until said copolymer has less than 50 end groups other than $-CF_3$ per million carbon atoms.".

Dependent Claims 2 to 7 were the same as in former Auxiliary Request III (see section III(5), above).

(16) In *Auxiliary Requests II to VII* (section V(2), above), the claims differed from those of the higher ranking requests (sections III(3) to (5), above) only by either one of the following additional features added at the end of the respective Claim 1:

(a) "in the manufacture by melt-extrusion of electrical insulation comprising said melt-processible copolymer around an electrical conductor.", or

(b) "in the manufacture by melt-extrusion of electrical insulation comprising said melt-processible copolymer around an electrical conductor in a cable suitable for electrical signal transmission at 100 MHz to 10 GHz.".

The particulars are given in the following table:

Auxiliary Request	additional clause	added to Claim 1 of the following *higher ranking requests*
II	(a)	*Main*
III	(a)	*I*
IV	(a)	*IB*
V	(b)	*Main*
VI	(b)	*I*
VII	(b)	*IB*

(17) *Auxiliary Request VIII*:

"1. Use of a process for improving the dissipation factor of a melt processible copolymer of tetrafluoro-ethylene with perfluoro(propyl vinylether) (PPVE), wherein the PPVE is contained in an amount less than 5.0% by weight based on the weight of the copolymer and the amount of comonomer is sufficiently low that the melting point of the copolymer is at least 250°C, said process comprising fluorinating the copolymer at above room temperature until said copolymer has less than 50 end groups other than $-CF_3$ per million carbon atoms, wherein the process includes the additional step of melt extruding the fluorinated copolymer around an electrical conductor to provide electrical insulation therefor.".

Dependent Claims 2 and 3 remained as granted, Claims [4] and [5] were deleted, Claims [6] to [8] were renumbered Claims 4 to 6 and adapted accordingly.

VIII. The additional relevant arguments provided by the parties in the oral proceedings on 8 July 2005 can be summarised as follows:

(18) Whilst, in support of the amendment of Claim 1 of the Main Request, Appellant 1 relied on the Summary of the Invention as initially disclosed (*page 2, lines 15 to 19*/page 2, lines 31 to 33): "… melt processible copolymer of tetrafluoroethylene with at least one copolymerizable perfluorinated comonomer other than tetrafluoroethylene in an amount less than about 11.5% …", Appellant 2 supported the finding in the decision under appeal that the above feature, which had been deleted before grant, could not be reinstated in the claims (section IV(3), above).

Moreover, Appellant 2 pointed out in these oral proceedings that neither the wording of Claim 1 according to the Main Request, nor that of Auxiliary Request I contained the limitation of the amount of PPVE to less than 5.0 % by weight as contained in Claim [1], so that each of these claims as comprised in the two requests contravened Article 123(3) EPC.

By contrast, Appellant 1 argued with regard to this latter objection, that the limitation of less than 5.0% of PPVE in Claim [1] concerned only the optionally present PPVE ("... such as e.g. ..."), which would, however, mean that the granted version of this claim did not contain any limitation to the amount of the at least one comonomer contained in the used copolymer in addition to TFE, in general. Moreover, it had not, according to Appellant 1, been mandatory, but only preferred to limit the amount of PPVE to less than 5% (*page 3, lines 31 to 33*/page 3, lines 12/13). Consequently, the amendment of Claim 1 narrowed the scope of the claim which would, therefore, comply with Article 123(3) EPC. Moreover, Appellant 1 referred to

the further functional limitation in Claim 1 requiring a minimum melting point of the copolymer of at least 250°C. This limitation would implicitly confine the maximum content of the comonomers, and the requirement that the amount of PPVE be less than 5 % by weight would in any case be met.

Appellant 2, however, referred in particular to page 3, lines 25 to 26 of EP-A-0 423 995 (*page 4, lines 21 to 24*) in order to show that PPVE, if present, was to be present in amounts of less than 5% only. Furthermore, whilst the above passage referring to the limitation of the PPVE content as being preferred did not appear in the [patent specification], reference was repeatedly made therein to a limitation of < 5% not only with regard to PPVE, but also in respect of the comonomers, in general [page 2, lines 38 to 40 and 50 to 53].

Hence, when interpreting the scope of the claim with regard to the Protocol concerning Article 69 EPC, the skilled reader derived, in the opinion of Appellant 2, from the [patent specification] that the limit of < 5% was not only preferred for PPVE but rather mandatory for all comonomers, so that the amended claim of the Main Request did not comply with Article 123(3) EPC.

(19) This latter argument was, according to Appellant 2, also valid for Auxiliary Request I, because the new wording of its Claim 1 included any perfluorinated comonomers other than TFE, whereas Claim [1] could only be interpreted in view of the [patent specification] to include only TFE/PAVE-copolymers, namely TFE/PPVE-copolymers or a TFE/PPVE/HFP-terpolymer [page 2, lines 40 to 42, 57 and 58].

In Auxiliary Request I, Appellant 2 additionally saw a violation of Article 123(2) EPC, because the basic *application* had not provided a direct link between the limit of < 11.5% by weight and PAVE. Originally, this limit had been disclosed with respect to any perfluorinated comonomer other than TFE, in general. However, the wording in Claim 1 of this request would not exclude additional comonomers of this kind in any amounts. In summary, Auxiliary Request I would, therefore, contravene Article 123(2) and (3) EPC.

(20) With regard to the interpretation of the term "copolymer" by the Opposition Division (section IV, above), Appellant 1 repeated its previous argument (section V(3), above), that the amendment of the wording of the claims had served the sole purpose to exclude binary TFE/HFP-copolymers. Nor had it ever been the intention of the Patent Proprietor to restrict the claims to binary copolymers of TFE and PAVE, let alone those of TFE and PPVE (cf. the initial passage dealing with comonomer mixtures: *page 3, line 11*/page 3, lines 1 and 2). Therefore, it had filed the above requests IA, IB and IC and pursued the two versions of Auxiliary Requests IV and VII (sections V(3), above, and XV, below). For further support of this argument, Appellant 1 referred to the Protocol on the Interpretation of Article 69 EPC.

(21) Auxiliary Requests IA and IC were, according to Appellant 2, late-filed and should, therefore, not be admitted into the proceedings.

With respect to Auxiliary Request IA, it additionally raised an objection under Article 123(3) EPC because of the broadening of the description, which would leave room for the presence of combinations of PPVE and HFP, in general. To further elucidate this objection, Appellant 2 referred to *page 3, lines 27 to 29*/page 3, lines 10/11 where a copolymer of TFE and 12.3% of HFP having a melting point of about 260 to 270°C had been described. The addition of very small amounts of PPVE (ie within the scope of Claim 1) as a third comonomer to a copolymer of this HFP-content would not significantly change the melting point, ie it would not reduce the melting point from 260 to 270°C in the above binary copolymer to a value below the required limit of at least 250°C. Such a terpolymer would, however, clearly be outside the initial disclosure. It followed that there would be no clear limitation in Claim 1 of Auxiliary Request 1A to the limit of < 11.5% by weight of the comonomers other than TFE as required in the *application*. Appellant 1 neither commented on nor disputed these arguments.

Moreover, Appellant 2 argued with regard to Auxiliary Request IC, that Appellant 1 had had ample time to consider and to meet the objections raised and to react on the decision under appeal, as could be seen from the numerous other requests which were broader than those patent documents accepted in the decision under appeal.

(22) With regard to Auxiliary Request IB, Appellant 1 argued that the improvement of the DF was not a mere discovery, but a new, tangible and measurable functional technical feature for a genuine new purpose in the sense of G 2/88 (above) and, consequently, the

claims related to an invention. Although the Enlarged Board of Appeal had considered use claims to a product for a purpose, the findings in G 2/88 would also be valid for the present claims relating to the use of a process, because by this process products would be obtained which showed the improved feature. Irrespective of the different wording of the claims, the contribution to the state of the art would, therefore, be the same, and it would be arbitrary to acknowledge novelty of the use of a known product, but not the use of a process resulting in this known product for a given new purpose. The new purpose, for which the process was used, would be the reduction of the DF of the polymer obtained so that it better suited the use as an insulation for high frequency cables. The fact that the improved DF may have inevitably been inherent to the resulting polymer would not mean that the claimed subject-matter related to a mere discovery.

Furthermore, Appellant 1 argued that neither D1 nor D2 contained any hint to the DF, nor did they provide an incentive to measure this factor. D1 would rather refer to the reduction of unstable end groups of TFE/PAVE-copolymers in order to overcome their corrosion potential towards metal caused by fluoride compounds extractible from the polymers (D1: column 2, line 14 *et seq.*). D2 would relate to the replacement of unstable end groups of TFE-copolymers by stable end groups by means of fluorination in order to obtain higher thermal stability and a reduction of bubbling during the further end-use processing (D2: page 3, lines 12 to 14, 30 and 31; page 4, lines 24 to 27). Although, according to page 11, lines 31 to 35 of D2, the formation of voids caused by bubbling upon melt fabrication could be

detrimental to the physical or electrical properties of the resulting product, D2 would not be relevant for dissipation. Nor would the coating of wires, as described on page 24, lines 23 to 27 (Example 2) of D2, have anything to do with the DF. The fact, that electrical flaws had not been detected there, resulting in good insulation, would relate to a different property. Hence, D2 would not be relevant for novelty.

The situation in the case in suit corresponded, in the opinion of Appellant 1, directly to the case underlying Decision G 2/88, above, which dealt with the question of whether the use of a compound as a friction reducing agent in a lubricant composition was anticipated by its previously known use as a rust inhibiting agent. Furthermore, Appellant 1 referred to No. 9.1, first paragraph, 2nd sentence of the reasons for Decision G 2/88, where reference had been made to case T 231/85 containing claims defining "'Use of (certain compounds) ... for controlling fungi or for preventive fungus control' - and the application contained teaching as to how to carry this out so as to achieve this effect. Prior published document (1) described the use of the same compound for influencing plant growth. In both the application in suit and document (1), the respective treatments were carried out in the same way (so the means of realisation was the same).".

By contrast, Appellant 2 reiterated its previous arguments with regard the wording of the claims (use of a process), that neither G 2/88 nor G 6/88 (above) would be applicable to the assessment of novelty of the claimed subject-matter. In particular, Appellant 2 referred to the Order in G 6/88 and argued that Claim 1

of Auxiliary Request IB did not fulfil two criteria of this Order: Thus, it would neither refer to the "use of a compound" nor provide the "particular purpose". Instead, the claim would relate to the use of a known process for treating a known compound, and it would refer to an improvement of the DF of the polymer, which factor was a well known physical parameter of the polymer as could be seen from

D9: "Tetrafluoroethylene Copolymers with Perfluoro-alkoxy Pendant Groups", Encyclopaedia of Polymer Science and Technology, John Wiley & Sons, Inc., New York, 1976, pages 260 to 267 and

D10: DuPont Product Information Leaflet "Teflon® PFA, May 1986, both of which had been filed by Appellant 1 (letter dated 5 March 2003, item 5.4).

In support of its arguments, Appellant 2 furthermore cited Catchword II of Decision T 958/90 of 4 December 1992 (not published in OJ EPO), stating that "the use of a known physical entity for a known purpose does not represent a new technical teaching in the sense addressed in G 2/88 and G 6/88, if a hitherto unknown increase in activity occurs (point 6 of the reasons)".

Moreover, Appellant 2 pointed out that, with respect to a claim to the use of a compound for a particular purpose as dealt with in G 2/88 and G 6/88, the skilled person would know the extent of protection by such a claim and where he would have to stop his activities in order to avoid an infringement. With regard to a claim to the use of a process comprising a previously known fluorination of the polymer, as in this case, the

skilled reader would, however, be left in complete confusion, because each such fluorination, although already known, would nevertheless infringe such a claim.

As to the interpretation of the claim and the questions related thereto, namely those concerning potential infringement and its avoidance, Appellant 1 argued that the claim implicitly instructed the reader to coat a wire with the polymer produced to find out whether it complied with the requirements of the claim, whereas Appellant 2 pointed out that the claim neither required the preparation of such a cable nor referred to a use exploiting the dissipation.

As to the question of what had been available to the public, Appellant 2 argued that D1 disclosed the fluorination of TFE/PAVE-copolymers to replace unstable end groups and the use of the product thereby obtained as insulation material for cables.

Since no further comments were intended by the parties, the debate about Auxiliary Request IB was closed.

(23) When informed by the Board that the situation in Auxiliary Requests II and III was considered to be the same as in the Main Request and Auxiliary Request I, both parties agreed to continue directly with Auxiliary Request IV.

(24) In Auxiliary Request IV, the additional feature, as added to the end of Claim 1 of Auxiliary Request IB, would, according to Appellant 1, provide the means of realisation, ie the step of putting the polymer around the wire to be insulated (section VII(3), above).

Appellant 1 did not dispute that wire extrusion coating had been disclosed in D2.

Appellant 2, by contrast, argued that Claim 1 of this request referred to two different processes in one claim, firstly, the fluorination of the polymer and, secondly, the melt-extrusion of the insulation around an electrical conductor. Furthermore, the second extrusion process by means of conventional melt-processing equipment would have been known from D1, anyway (D1: column 2, line 41 *et seq.*). The use would be shifted from the fluorination step to the other different process step, the melt-extrusion.

(25) It was agreed by both parties that the situation in each of Auxiliary Requests V to VII corresponded to the situation in each of Auxiliary Requests II to IV.

(26) The argument mentioned in the penultimate paragraph, above, was raised by Appellant 2 also with regard to Auxiliary Request VIII of Appellant 1. Moreover, Appellant 2 requested that this request not be admitted to the proceedings because of its lateness and that costs should be awarded in its favour.

Appellant 1 justified the filing of this additional request with the fact that Article 123(2) EPC had not been considered with regard to the higher ranking requests (in particular those referred to in section VII(3), above) before the oral proceedings.

IX. After deliberation, the Board gave an intermediate decision with respect to the requests on file then, ie

the Main Request and Auxiliary Requests I to VIII, as listed in section XV, below:

- "Requests IA and IC are not admitted."
- "The Main Request, and the Auxiliary Requests I, IB to VII are refused."
- "Auxiliary Request VIII is admitted."
- "The procedure is continued in writing on the basis of Auxiliary Request VIII."

X. On 21 July 2005, a communication including the minutes of the oral proceedings, copies of Auxiliary Requests IA, IC and VIII, was issued by the Board giving the opportunity to the parties to file observations on Auxiliary Request VIII as submitted during the oral proceedings.

XI. In a letter dated 21 September 2005, Appellant 1 submitted its comments to Auxiliary Request VIII and filed two further Auxiliary Requests IX and X.

(27) Auxiliary Request IX differed from Auxiliary Request VIII by the following passage in its Claim 1, replacing the last four lines of Claim 1 of Auxiliary Request VIII as quoted in section VII(4), above:

"wherein the process includes the additional step of melt extruding the fluorinated copolymer around an electrical conductor in a cable suitable for electrical signal transmission at 100 MHz to 10 GHz to provide electrical insulation therefor."

In Auxiliary Request X, the same passage in Claim 1 read as follows:

"wherein the process includes the additional step of melt extruding the fluorinated copolymer around a central electrical conductor in a cable suitable for electrical signal transmission at 100 MHz to 10 GHz to provide electrical insulation therefor, wherein said cable is selected from coaxial cable and twisted pairs cable."

In addition, this latter request comprised only dependent Claims 2 to 5, corresponding to Claims [2], [3], [7] and [8].

(28) As to novelty of Auxiliary Request VIII, Appellant 1 reiterated its previous arguments that D1 was concerned solely with reducing the corrosivity of the fluoropolymers to metals by fluorinating the copolymer to reduce the number of unstable end groups. However, there would be no disclosure nor suggestion to use the that process or its products to reduce the DF.

Document D2 would teach a new product form for the copolymer disclosed therein. Whilst the manufacture of that copolymer involved a fluorination step to convert unstable to stable end groups, the only results of this conversion addressed in the document were an improvement of thermal stability and, related thereto, the reduction of bubbling in downstream processing. As in D1, there was no disclosure that the fluorination could bring about a reduction in DF. The voids caused by unstable groups were not relevant to the improvement of the DF. These voids referred to holes in the insulation, so that the reference to electrical

properties in D2 was therefore to the integrity of the wire insulation.

(29) Furthermore, concerning inventive step, Appellant 1 argued that in D1 the wire coating would have been referred to as one example in a list of applications to explain the meaning of the term "melt-fabricable". The conversion of the end groups of the copolymer was to serve the reduction of corrosivity and of extractable HF, so that the polymer could be used in wet processing environment in semi-conductor manufacture. There would be no suggestion at all in D1 that the fluorinated copolymer should be used as any type of wire insulation, let alone any hint to the reduction of the DF.

The invention of D2 would be directed to the provision of a new product form in order to promote bubble-free processing. In its Example 2 the preparation of defect-free wire insulation using a fluorine-treated TFE/HFP copolymer. Such defect-free insulation had already been achieved by means of non-fluorine-treated TFE/PPVE copolymers for years prior to D2, as shown *inter alia* in D9 and D10 with regard to "Teflon® PFA fluorocarbon resin ('PFA' is explained on page 2 of the publication as meaning perfluoroalkoxy side chain; PPVE was the perfluoroalkoxy side chain; all such resins were non-fluorine-treated)". Because wire coatings of the non-fluorine-treated TFE/PPVE copolymers had already been bubble-free, the skilled person would not have been motivated to consider the fluorination process of D2 as a way in which the existing commercial product could be improved. Thus, D10 had described TEFLON® PFA 340 for cable use and had stated that the product coupled superior electrical properties with low DF for rapid

signal transmission with minimum distortion, even at high frequency levels.

Hence, neither D1 nor D2 would provide an incentive to fluorinate the known products for the purpose underlying the patent in suit. Nor would they provide a basis for an expectation of benefit.

Finally, Appellant 1 disputed the reasons brought forward by Appellant 2 concerning the request for apportionment of costs, because the further request had been the reaction on the new objections raised for the first time by the Board at the hearing of 5 July 2005.

XII. Apart from the request that the costs arising for Appellant 2 in the continuation of the appeal proceedings after the first hearing on 8 July 2005 be awarded against Appellant 1, due to the late filing of Auxiliary Request VIII, Appellant 2 disputed, in its letter dated 25 November 2005, novelty and inventive step of the subject-matter of Auxiliary Request VIII again and referred to its previous arguments in this respect. Moreover, it requested that neither of Auxiliary Requests IX and X, nor any further auxiliary requests be admitted. In particular, Appellant 2 argued in this respect that the claims of these additional auxiliary requests "are not *prima facie* suited to overcome the objections raised ..." and "Rather, Auxiliary Request IX would give rise to new objections regarding the clarity ...".

(30) More particularly, Appellant 2 argued that the improved DF did not represent a technical feature of the concerned claims in the sense of G 2/88 (above) and

could not be taken into account for the assessment of novelty. The claims of Auxiliary Request VIII related to the fluorination of a copolymer followed by the melt extrusion of the obtained polymer around an electrical conductor. The DF of the copolymer would, however, be "neither an issue during its fluorination, nor during its melt extrusion around an (arbitrary) electrical conductor. Therefore, claim 1 of Auxiliary Request VIII still fails to specify a purpose which is based on a new technical effect, as it is required for a second non-medical use claim in accordance with G2/88". The claims should be treated as process claims containing the process steps of fluorinating a specific copolymer and melt extruding the resulting product around an electrical conductor. However, none of these features would provide a delimitation of the claimed subject-matter from either D1 or D2 (items 1.2.2 to 1.2.4).

Appellant 2 then pointed out that D1 specifically put emphasis on fluorinated copolymer to be melt-fabricable, so that it could be processed eg into wire coatings by conventional melt-processing equipment. This use of this type of polymer as disclosed in D1 was conventional, as illustrated by standard textbooks (eg D9) with regard to the use of Teflon® PFA for primary insulation and jacketing of wire and cable and its drawing onto wire via tubing dies (item 1.2.5).

With regard to D2, Appellant 2 referred (i) to the general disclosure, that the fluorinated copolymers, such as TFE/PPVE copolymers, could be extruded onto wire, (ii) to Example 2 of D2 and (iii) to T 12/81 (OJ EPO 1982, 296) in order to demonstrate that the claimed

subject-matter had directly and unambiguously been made available to the skilled reader (item 1.2.6).

(31) If inventive step was to be discussed on the basis of Auxiliary Request VIII, Appellant 2 requested that the case be remitted to the Opposition Division.

Nevertheless, Appellant 2 added further observations to this item. Thus, the asserted effect of "improved dissipation factor" should not be taken into account with regard to Decision T 939/92 (OJ EPO 1996, 309), because, on the one hand, the patent in suit confirmed that an improved DF became apparent only at frequencies of 100 MHz and above, mainly in high frequency cables such as coaxial or twisted pairs cables, and, on the other hand, Claim 1 of the request referred to a process for providing insulated electrical conductors in general.

Furthermore, Appellant 2 argued that there had been a clear incentive for the skilled person starting from either D9 or D10 to apply an additional fluorination step as disclosed in D1 or D2 in the production of cable insulation, especially in view of the fact that the advantages disclosed for post-fluorinated copolymers in D1 and D2 were clearly relevant for providing cable insulations as disclosed in D9 and D10 (item 1.3.6).

XIII. In a further letter dated 10 October 2007, Appellant 2 submitted the text of a question, which, as an auxiliary measure, should be referred the Enlarged Board of Appeal (see, however, section XIV(1), below).

XIV. Since both parties had requested to hold oral proceedings again, a summons was issued on 11 April 2007. Due to reasoned grounds for non-availability of the Representatives of both parties, these second oral proceedings were postponed twice and finally held on 12 October 2007 in the presence of both parties.

(1) At the oral proceedings, Appellant 2 withdrew its requests that the questions mentioned in sections VI and XIII, above, be referred to the Enlarged Board of Appeal and that the case be remitted to the Opposition Division if inventive step were to be discussed (section XII(2), above). It maintained, however, its request for apportionment of costs, because of the late filing of Auxiliary Requests VIII, IX and X.

(2) Then both Appellants presented their arguments concerning the question of whether Auxiliary Request VIII, the only request which had been admitted by the Board to these appeal proceedings for the time being, complied with Article 123(2) EPC.

Thus, Appellant 1 argued that Claim 1 of the request was a combination of Claims [1], [4] and [5] and that, although admittedly there was no *expressis verbis* basis for the claim in the *application*, the different elements of the claim could be found in the following passages on page 3, lines 12, 13, 25, 26, 33 to 39 (in particular, 34 and 35), 40, 44 and 45 and on page 4, lines 8, 9, 24 to 26 and 34 to 39 and in Claims 20 and 22. In particular, the formulation on page 3, lines 34 and 35 would show that the reduction of the DF (which could be achieved by fluorination) was most, but not only noticeable "at higher frequencies". Rather, the

equation on page 4 would provide a basis that the effect would be found at any frequency.

This was disputed by Appellant 2, who interpreted the wording of the *application* so as to indicate that fluorination would reduce the DF at higher frequencies only (page 3, lines 34 and 35), rather than that fluorination would have an effect on DF, in general. Nor could it be established as to how far the addition of the comonomer and how far the fluorination contributed to the claimed effect. Therefore, Appellant 2 concluded that Claim 1 was based on an intermediate generalisation.

With regard to the additional melt-extrusion feature in Claim 1 of Auxiliary Request VIII, the positions taken by the two Appellants were also contrary to one another.

According to the opinion of Appellant 1, the term "central" in Claims 20 and 22 (section II, above) meant nothing more than that the insulator had been extruded around the electrical conductor, ie the conductor was inside the insulation, but it did not mean in a strict sense, that the conductor had had to be symmetrically surrounded by the insulating layer. Appellant 1 furthermore argued that the application as a whole was to provide a basis for amendments and, as evidence to this end, referred to the twisted-pair cables (page 4, lines 24 to 26).

Appellant 2, on the other hand, pointed out that Claim 1 referred to an electrical conductor only, not to a central one. Furthermore, the Appellant pointed

out that the physical arrangement of the specimen used in the DF measurement was essential for the result.

(3) Thereafter, the next issue dealt with in the oral proceedings was question of novelty of Claim 1 of Auxiliary Request VIII.

Since there was agreement between the parties that the same means of realisation were used in the patent in suit and in the cited prior art, the discussion about novelty of Claim 1 essentially focussed on the same issues as discussed in relation to Auxiliary Request IB in the previous hearing, ie the question of whether the rationale of Decision G 2/88 dealing with claims to the use of a product for a particular purpose could be applied to the present claims to the use of a process for a particular purpose or not. In this discussion, both Appellants maintained their previous opposite positions and argued again along the same lines as in the first oral proceedings (section VIII(5), above).

In particular, Appellant 1 argued that the claim under consideration was directed to the "use for producing a technical effect", but not to the use for producing a product (having its inherent properties as in T 210/93, above) and relied to this end in particular on the last paragraph of No. 5.1 of the reasons in G 2/88:

> Thus, provided that a use claim in reality defines the use of a particular physical entity to achieve an "effect", and does not define such a use to produce a "product", the use claim is not a process claim within the meaning of Article 64(2) EPC.

Furthermore, it also referred again to No. 9.1 of those reasons, wherein reference was additionally made to the Protocol to Article 69 EPC, and put emphasis on the G28

argument that the patent in suit "opens up new ways how the products can be exploited". Moreover, it argued that the claim "... should be interpreted (in appropriate cases) as also including as a technical feature the function of achieving purpose B, (because this is the technical result)." and that in the present case, even if the physical steps had been the same, the intent of the manufacturer, when carrying out the process, had been different.

By contrast, Appellant 2 argued with reference to No. 9 of the reasons in G 2/88:

> 9. In relation to a claim whose wording clearly defines a new use of a known compound, depending upon its particular wording in the context of the remainder of the patent, the proper interpretation of the claim will normally be such that the attaining of a new technical effect which underlies the new use is a technical feature of the claimed invention.

(i) that the proper interpretation of a claim, being in the form of a claim to the "use of a product", was a prerequisite in the assessment of novelty and (ii) that it was, therefore, clear from the wording of Claim 1 that the rationale of G 2/88 could not be applied in the present case. Thus, it interpreted No. 5.1, part of which has been quoted above, in a completely different way by putting emphasis on the fact that Claim [1] had been worded in a way making it clear that the fluorination process had to be used to prepare a certain product, which was, indeed, obtained as a result of the fluorination. Neither at this process step, nor when carrying out the further process step of melt-extrusion could a DF improvement be observed. Such an improvement could only be observed when the cable, the manufacture of which had been based on the above polymeric product, was actually used thereafter. In

other words, contrary to the use claim as considered by the Enlarged Board of Appeal (wherein the claim was infringed when the friction reducing agent was put into the motor to obtain the effect), Claim 1 did not define the product actually used to achieve the desired effect, but it defined only the starting material which had then to be processed (ie by fluorination and further steps including melt-extrusion) before it could be used to obtain the effect. Moreover, Appellant 2 argued that subjecting a given material again to given reaction conditions would result in one and the same product, and that, in the present case, the starting material and both process steps as defined in the claim had, however, already been known. This situation was, however, completely different from the use of a material in a specific application. In other words, in the present case, the question would be of whether a person, when treating a particular starting material in a certain process for preparing product A', had had the intention of later using this product A' in a specific application for achieving an effect B. This would, however, reflect a completely abstract situation, as opposed to the concrete situation underlying G 2/88, wherein the intention of the user of the well defined compound/composition A had been decisive for answering the question of whether the application of this compound/composition A for achieving purpose B had already or had not yet been known.

When it was indicated that no further comments were intended by the parties, the debate about this request was closed.

(4) Then questions were considered which concerned Auxiliary Requests IX and X, in fact, their admissibility, which was in dispute between the parties.

Appellant 1 argued that these additional requests had been filed in view of the objections raised against the previous Auxiliary Requests IV and VII under Article 123(2) EPC, in particular, in order to counter the rejection of Auxiliary Request VII. They would contain only slight rearrangements of the wording of these previous requests, so that Appellant 2 could not be taken by surprise.

Appellant 2, however, contested that there had been any logical consequence from the admittance of Auxiliary Request VIII for the filing of these additional requests. Furthermore, it raised an objection concerning the clarity of Claim 1 of Auxiliary Request IX as to the meaning of electrical conductor in a cable suitable for transmission in a particular frequency range in comparison with the wording in Claim 1 of Auxiliary Request VIII.

With regard to Auxiliary Request X, Appellant 2 remarked that the specific kind of cables had not been an issue hitherto in the proceedings. Consequently, it requested that neither request be admitted.

(5) Appellant 1 requested that it be given the opportunity to amend its present requests to meet any objections under Article 123(2) EPC before an adverse decision would be made on the basis of this Article.

(6) Finally, Appellant 2 was invited to present its arguments for the request that its costs for the second oral proceedings be refunded by Appellant 1.

Appellant 2 regarded the filing of Auxiliary Requests VIII to IX as being late. In its opinion, they could and should have been filed earlier and that this late-filing amounted to an abuse of the proceedings.

By contrast, Appellant 1 pointed out that the additional requests had been filed in due time in reply to objections raised by the Board in the first oral proceedings. Therefore, this request should be rejected.

XV. In summary, the different requests as submitted by Appellant 1 (Patent Proprietor) in the course of these appeal proceedings were to have the following ranking:

Requests filed before or at the first oral proceedings:

- *Main Request* (Claims 1 to 8), ie former Auxiliary Request I (sections III(3) and V(2), above);

- *Auxiliary Request I* (Claims 1 to 8), ie former Auxiliary Request II (sections III(4) and V(2), above);

- *Auxiliary Request IA* (Claims 1 to 7 of former Auxiliary Request III, and new pages 2 to 5 of the description, submitted at the first hearing before the Board, cf. sections III(5), V(3) and VII, above);

- *Auxiliary Request IB*, as maintained in the decision under appeal, ie Claims 1 to 7 of former Auxiliary

Request III and the description as amended in the oral proceedings before the Opposition Division (sections III(5), III(6) and V(3), above);

– *Auxiliary Request IC* (Claims 1 to 7, submitted at this first hearing, sections VII and VII(2), above);

– *Auxiliary Request II* (Claims 1 to 8, filed with the letter of 5 March 2003, section VII(3), above);

– *Auxiliary Request III* (Claims 1 to 8, filed with the same letter, section VII(3), above);

– *Auxiliary Request IV* (Claims 1 to 7), submitted with the same letter and to be combined with two different versions of the description, neither of which was filed; sections V(2), V(3) and VII(3), above);

– *Auxiliary Request V* (Claims 1 to 8), filed with the letter dated 5 March 2003 (section VII(3), above);

– *Auxiliary Request VI* (Claims 1 to 8), submitted with the same letter (section VII(3), above);

– *Auxiliary Request VII* (Claims 1 to 7), submitted with the letter dated 5 March 2003 and to be combined, with two different versions of the description, neither of which was filed; sections V(2), V(3) and VII(3), above); and

– *Auxiliary Request VIII* (Claims 1 to 6 and pages 2 to 5 of the description), submitted at the hearing on 8 July 2005 (section VII and VII(4), above).

Requests filed after the first oral proceedings:

– *Auxiliary Request IX* (Claims 1 to 6 and pages 2 to 5 of the description), submitted with the letter of 21 September 2005 (section XI(1) and XIV(4), above).

– *Auxiliary Request X* (Claims 1 to 6 and pages 2 to 5 of the description), submitted with the letter of 21 September 2005 (section XI(1) and XIV(4), above).

Appellant 2 (Opponent) requested that the decision under appeal be set aside and the patent be revoked, and that costs be awarded against Appellant 1.

Reasons for the Decision

1. The appeal is admissible.

Main Request of Appellant 1

2. The Main Request is identical to the previous Auxiliary Request I (sections III(3) and XV, above).

2.1 In view of the situation of the file, the Board deems it helpful initially to recall the course of the examination proceedings before the EPO.

2.1.1 In the *application as filed* (see section II, above), the subject-matter claimed was directed, on the one

hand, to an elongate article comprising at least one elongate metallic conductive element and an elongate insulator "and consisting essentially of" at least one melt processible TFE-copolymer (independent *Claims 1 and 2*) and, on the other hand, to two embodiments of a process for preparing a cable comprising a central conductor and a polymeric dielectric layer, including the melt extrusion of the polymeric layer around the conductor (independent *Claims 20 and 22*).

In *Claims 1 and 20*, the melt processible TFE-copolymer was further explained as having been fluorinated after polymerisation, in *Claims 2 and 22*, it was defined instead in terms of "having substantially exclusively $-CF_3$ end groups" and in *Claim 22* a further conductive layer had been placed around the insulating layer.

Before the start of the examination, the insulator in each of Claims 1 and 2 had been limited to being foamed.

2.1.2 After a first communication containing objections of lack of inventive step, the claims then on file were replaced by new claims to a process for improving the DF of a melt processible TFE/PAVE-copolymer by "fluorinating the copolymer at above room temperature until said copolymer has less than 50 end groups other than $-CF_3$ per million carbon atoms.". Furthermore, an amended version of the description was also filed. In Claim 1 of the new request, the amount of the PAVE was limited to less than 5% by weight, whilst the reference to a foamed insulator was no longer contained in the claims (letter of 14 July 1994).

2.1.3 Against the above new Claim 1 (section 2.1.2, above), an objection of lack of novelty was raised in a

consultation by telephone on 2 May 1995 (communication dated 12 May 1995) on the basis of the document referred to later in the opposition as D1 (section III, above). Based on the argument that a technical effect could not be interpreted as a limiting functional technical feature in claims directed to categories other than a "use", it was furthermore suggested in that consultation with reference to G 6/88 (above, "second non-medical indication") to direct the claims "to a 'use' (e.g. 'use of a process for ... said process comprises fluorinating ...')".

2.1.4 After that, in a new set of claims filed with a letter of 5 July 1995, the claims were reworded as and limited to "use" claims which, after amendment of the feature concerning the amount of the comonomers, were accepted by the Examining Division for grant (section I, above). Moreover, it was stated in the letter that "The Applicants have disclaimed those copolymers wherein the amount of ether comonomer is greater than 5%. This disclaimer is based on ..." and "Moreover, Decision T 201/83 independently provides authority for this disclaimer" (T 201/83, OJ EPO 1984, 481).

2.2 In view of the arguments of both parties in the appeal proceedings, as addressed in sections VIII(1) and VIII(3), above, the scope of the *application*, the scope and meaning of Claim [1] and the extent of protection conferred by this claim (Article 69(1) EPC) are also noteworthy before coming to a decision on the different requests with regard to Article 123 EPC.

2.2.1 Thus, whilst Articles 69(1) and 123(2) EPC refer to both a European patent application and a European

patent, Article 123(3) EPC and the Protocol on the Interpretation of Article 69 EPC refer only to the European patent. Thus, the "Protocol" reads as follows:

> "Article 69 should not be interpreted in the sense that the extent of the protection conferred by a European patent is to be understood as that defined by the strict, literal meaning of the wording used in the claims, the description and drawings being employed only for the purpose of resolving an ambiguity found in the claims. Neither should it be interpreted in the sense that the claims serve only as a guideline and that the actual protection conferred may extend to what, from a consideration of the description and drawings by a person skilled in the art, the patentee has contemplated. On the contrary, it is to be interpreted as defining a position between these extremes which combines a fair protection for the patentee with a reasonable degree of certainty for third parties."
> (The Protocol shall be an integral part of the Convention pursuant to Article 164, paragraph 1.)

Consequently, it is the **description of the patent specification**, on which, in this respect, the interpretation of the claims after grant is to be based.

2.2.2 Whilst in the *Summary of the Invention* and in all *independent claims* of the *application as filed*, the qualitative composition of the copolymer had been referred to as "… one melt processible copolymer of tetrafluoroethylene with at least one copolymerizable perfluorinated comonomer other than tetrafluoro-ethylene …" (section II, above), the definition was limited in Claim [1] to "... a melt processible copolymer of tetrafluoroethylene with at least one copolymerizable perfluoro(n-alkyl vinyl) ether …" (section I, above).

In particular, two different types of comonomers other than TFE had been described in the *application* text (*Claim 5*, section II, above, and *page 2, line 29 to page 3, line 11*/page 2, line 51 to page 3, line 2) as being suitable for use in the melt-processible fluoropolymers, ie (i) "perfluoroalkenes of the formula $R_FCF=F_2$ where R_F is a perfluoroalkyl group having 1-5

carbon atoms" and (ii) PAVE, ie "perfluoro(n-alkyl vinyl) ethers wherein the alkyl group has 1 to 5 carbon atoms". However, with the exception of HFP in a combination of TFE, PPVE and HFP, monomer type (i) had then been deleted from the patent specification before grant ([page 2, lines 57/58] and Example [2]).

2.2.3 On the basis of the above specific combination of TFE, PPVE and HFP, Appellant 1 argued repeatedly and with reference to the above "Protocol" as quoted in the above section 2.2.1 (sections V(3) and VIII(3), above), that the Opposition Division had erred in the decision under appeal when interpreting the wording of "a melt processible copolymer of tetrafluoroethylene with perfluoro(propyl vinyl ether) ..." in Claim 1 as maintained (sections III(5) and IV, above) as being directed only to a *binary* TFE/PPVE-copolymer.

2.2.4 Furthermore, Appellant 1 argued that the *application* had clearly encompassed TFE-copolymers which were both binary and ternary copolymers (SGA-1: No. 11.2), that, in the [patent], the reference to the comonomers and the limitation to 5% by weight illustrated only the amount of one example of PAVE (ie PPVE), but was not limitative to the scope of Claim [1] with regard to the amount of comonomers, in general (No. 12), and that Claim [1] did not exclude the optional presence of comonomers other than PAVE, eg HFP (Nos. 24 and 25). Nor had there been acceptance from the side of Appellant 1 that the term "copolymer of" had to be interpreted as "a copolymer consisting of" in former Auxiliary Request III as maintained in the decision under appeal. Its Representative had felt, however, obliged to accept the Opposition Division's decision on

this point (No. 28). In other words, according to Appellant 1, the copolymer in previous Auxiliary Request III as maintained in the decision under appeal should be understood optionally to comprise additional, however not further defined comonomers.

2.2.5 However, as pointed out by Appellant 2, the application documents had clearly and explicitly been restricted **prior to grant** (see sections 2.1.2 and 2.1.4, above: the description, the "disclaimer" and the claims). These documents as limited then formed, with the consent of the Applicant (cf. Article 113(2) EPC), the basis for the [patent]. They could only be understood to have been restricted to those elaborations disclosed on [page 2, lines 35 to 58], which referred only to combinations of TFE and at least one PAVE or those of TFE, PPVE and HFP to be used in the preparation of the copolymers encompassed by Claim [1]. The restrictions in the description had apparently been carried out in order to remove any inconsistencies between the claims as amended and the description (Article 84 EPC).

2.3 As already mentioned in sections 2.1.2 and 2.1.4, above, the quantitative composition of the copolymer according to the claims had also been modified during the examination proceedings.

2.3.1 Whilst all the *independent claims* and the *Summary of the Invention* (sections II and VIII(1), above) had required that the amount of the at least one copolymerisable perfluorinated comonomer other than TFE was less than about 11.5%, based on the weight of the melt-processible copolymer, and sufficiently low that the melting point of the copolymer was at least about

250°C, the only percentage contained in Claim [1] referred to "less than 5% by weight" of PPVE.

The above limit of less than 11.5% had been referred to elsewhere in the *application* with regard to an improvement of the DF on *page 4, lines 2 to 7*/page 3, lines 15 to 17 and in relation to a TFE/HFP-copolymer and a certain ratio of the intensities two distinct infrared absorption bands (*page 4, lines 12 to 15*/ page 3, lines 20/21).

As regards the melting point of at least 250°C, the *application* had been inconsistent in itself, since, besides 250°C in the claims and on *page 2, line 22*/ page 2, line 48, it also mentioned a lower limit of about 240°C (*page 3, lines 24 to 26*/page 3, lines 9/10). This inconsistency was, however, removed during the examination proceedings (see [page 2, lines 47/48]).

2.3.2 In the [patent], the above limit of 11.5% was no longer present, instead a limit of the amount of PPVE of less than 5.0% had been inserted in the Claim 1 (sections I, 2.1.4 and 2.3.1, paragraph 1, all above).

In the context of these modifications and the scope of Claim [1], Appellant 1 had argued that the limitation of the melting point to at least 250°C could serve as an implicit limitation of the maximum comonomer content, as defined in the *independent claims*, and of the PPVE in Claim [1], respectively (section VIII(1), above, paragraph 3). This argument was, however, disputed by Appellant 2 with regard to the arguments of Appellant 1 concerning the interpretation of the claims under Article 69 EPC (cf. section 2.2.2 to 2.2.4, above),

according to which the definitions of the copolymer in the claims were not to be construed as being definitive in the sense of excluding further (fluorinated) comonomers. It is not, however, evident to the Board or derivable from the *application* that further conceivable comonomers would never have an influence on the melting point. Nor is it derivable from any passage of the *application* that the melting point of at least 250°C would be strictly equivalent to a particular percentage of the comonomer(s), so that one of these features could replace the other.

2.3.3 Rather, the deletions from *page 3, lines 27 to 29*/ page 3, lines 10 to 12 and *page 4, lines 8 to 20*/page 3, lines 18 to 24 (cf. section 2.2.5, above) indicate, in the Board's view, clearly the opposite, presumably except for very small to vanishing amounts of further comonomers (cf. section VIII(4), above). Therefore, it cannot be concluded from the wording of any one of the *original claims*, nor from the *Summary of the Invention*, nor from the above considerations that either of the limitation of the comonomer content in terms of a percentage and the lower limit of the melting point had not been essential to define the claimed subject-matter of the *application*. Rather, both had obviously been mandatory features of the subject-matter according to the *application* and, consequently, they must have also been mandatory for the claimed subject-matter of the [patent] derived therefrom.

2.3.4 In line with this finding, Claim [1] contained both of these features, ie the maximum content of PPVE and the melting point of at least 250°C (section I, above).

However, Appellant 1 argued in this respect that the limit of 5.0% by weight referred only to an optional exemplary component of Claim [1] and, therefore, did not restrict the claim to a specific maximum amount of the comonomers contained therein, so that the deletion of the limit would not extend the scope of the claim beyond the scope of Claim [1]. Moreover, the required melting point of at least 250°C, in its opinion, rendered this limit redundant, anyway.

2.3.5 Besides the fact that the latter argument has already been dealt with in sections 2.3.2 and 2.3.3, above, the other aspect of the argument of Appellant 1 is not supported by the [patent specification] as a whole either, since any reference to any comonomer content beyond the limit of 5% by weight had been deleted not only from the amended description (section 2.2.5, above) but also, as a consequence thereof and in accordance with Article 113(2) EPC, from all parts of the [patent specification]. Moreover, the Applicant had clearly disclaimed all copolymer "wherein the amount of ether comonomer is greater than 5%.". The statements on this matter (see section 2.1.4, above) can, however, only be understood as the clear, unambiguous and unconditional abandonment of the subject-matter "disclaimed".

2.4 In view of these facts and findings, the Board holds that both (i) the amount of the comonomer(s) in the copolymer and (ii) the melting point of the copolymer had been disclosed as mandatory features of the claimed subject-matter as defined in the *independent claims* and in Claim [1], respectively.

2.5 With regard to the proposed reinstatement of the limitation of the comonomer content to less than 11.5% in some requests, reference had been made in the decision under appeal (No. II.3) to Decision T 1149/97, above (section IV(3), above).

2.5.1 In particular, the decision under appeal held that subject-matter deleted during the examination procedure could not be reintroduced, as it did not form part of the [patent], and that, therefore, neither of Auxiliary Requests I and II, which are now the Main Request and Auxiliary Request I, had complied with Article 123(2) EPC (Nos. II.3 and 4 of the reasons).

2.5.2 In T 1149/97 (Nos. 6 to 6.1.16 of the reasons), the Board had investigated, on the basis of previous decisions, the legal and factual effects caused by the various steps of an Applicant and of the Examining Division until grant of a patent. This included the question of when a substantive cut-off point, binding the Applicant and the Office (apart from corrections under Rule 89 EPC), was thereby reached. Moreover, it examined whether, in subsequent opposition proceedings, features, which had been deleted during the examination procedure, could be reinstated or whether any such reinstatement would be barred by the EPC.

Whilst that Board accepted that the grant of a patent, under these circumstances, does not constitute a general cut-off point in that the patent must be defended in unamended form, it held that only amendments in compliance with Rules 57a and 87 EPC would be allowable with regard to possible substantive cut-off effects, which could only be based on

Article 123(3) EPC (Nos. (No. 6.1.9 and 6.1.10 of the reasons).

Then the Board dealt in that case with the question of legal certainty for the activity of third parties trusting that protection conferred by a patent can only be restricted, but not extended, and of the danger that amendments might involve an extension of the protection conferred, when this protection is determined after amendment of the patent by the terms of the claims with due consideration to the description and the drawings pursuant to Article 69(1) EPC, and it concluded:
"The guiding principle under Article 123(3) EPC may therefore be summarised by the finding that 'once a European patent has been granted, an act by a third party which would not infringe the patent as granted should not be able to become an infringing act as a result of amendment after grant' (see ...).".

Therefore, adaptation of the description and the drawings to the wording of the amended claims intended for grant was deemed fundamental under Articles 84 and 69 EPC in order to establish consistency between the claimed invention and its description having regard to support and extent of protection. This adaptation is mainly carried out by means of deletions before grant or by indication which parts of the specification are not related to the invention (reasons: No. 6.1.11).

The Board continued: "6.1.12 In consequence, it must be concluded that by reinstating features, which in order to avoid inconsistencies in the patent specification have either been deleted from the pre-grant documents or have clearly been indicated as no longer relating to

the claimed invention, as a rule the extent of protection of the patent will be affected, whether such features be introduced into the claims or reinstated into the patent specification. This must necessarily be the case under the above guiding principle since a third party relying on the inconsistent subject-matter not falling under the extent of protection conferred by the granted patent would be confronted with an extension of protection conferred after reinstatement of said inconsistent subject-matter, thus opening a possibility of a hitherto excluded infringement of the patent.

Therefore, such reinstatement of subject-matter which in view of Articles 84 and 69 EPC has been deleted or indicated as no longer relating to the invention before grant in order to avoid inconsistencies in the patent specification, should as a rule not be admissible under Article 123(3) EPC after grant. In consequence, the Board comes to the conclusion that for such pre-grant deletions and indications a cut-off effect should be expected in that they become substantive under Article 123(3) EPC after grant.".

In Decision T 37/99 (above), another Board referred to the above decision and came to the same conclusion (No. 4.1.7 of the reasons).

It is, however, evident that the above decisions dealt only with the question of whether features deleted prior to grant could be reinstated in opposition proceedings in view of Article 123(3) EPC.

2.6 It follows from the above reasons and considerations, that those particulars deleted from the patent application before grant and considered above, cannot, for the above reasons, be reinstated with regard to Article 123(3) EPC.

2.7 In the further discussion, in particular, at the second hearing, Appellant 2 further raised the question of whether the *application* would provide a basis (Article 123(2) EPC) for a claim to the use of a process for improving the DF of the copolymer as discussed above, by fluorination, in general, or by fluorination followed by an additional melt-extrusion step (Auxiliary Requests IV and VIII, respectively; cf. sections VIII(7) and XIV(2), above).

2.7.1 The *application* related, on the one hand, to an elongated metallic conductive element comprising an electrical conductor and an insulator, such as a cable (*page 2, lines 12 to 23 "Summary of the Invention" and 29 to 32 "Detailed Description ..."* /page 2, lines 30 to 35 and 48 to 49), wherein the insulator consisted essentially of a copolymer as discussed above, and on the other hand, to a process for making a cable by melt extrusion of the fluorinated polymeric isolator around the conductor (*Claim 20*). Furthermore, the *description* additionally referred to the improvement in DF by limiting the amount of comonomer of the copolymer (cf. *page 4, lines 2 to 7 and 21 to 24*/page 3, lines 14 to 16 and 25 to 26) and by treatment thereof in a fluorination reaction (*page 4, line 32 to page 5, line 25*/page 3, lines 31 to 45). Starting on *page 6, line 31*/page 4, line 8, the *application* mentioned furthermore, that "Resins such as these ...", ie those

essentially free of unstable end groups, irrespective of whether they had been fluorinated or prepared by another process as listed on *page 6, lines 6 to 30/* page 3, lines 20 to 30 (cf. *Claim 22*), were suitable as wire and cable coating compositions and, in particular, useful as insulation.

2.7.2 In view of the arguments presented by both parties (section XIV(2), above) and the above findings, the Board has come to the conclusion that the *application* clearly disclosed that, by fluorination, the amount of unstable end groups of melt-processible TFE copolymers could be reduced or essentially removed, and that the modification of such polymers containing a limited amount of distinct comonomers by fluorination, furthermore, resulted in an improvement in DF, so that the fluorinated copolymer could be used as an insulation for electric conductors eg in cables.

2.8 Article 123(2) EPC

In view of these findings, the Board is satisfied that the Main Request complies with Article 123(2) EPC.

2.9 Article 123(3) EPC

As indicated in section VIII(1), above, it was in dispute between the parties whether the limitation of 5% of PPVE in Claim [1], which is no longer contained in Claim 1 of the Main Request, had been a mandatory feature, and whether its deletion would, therefore, constitute a violation of Article 123(3) EPC. In view of the facts and findings in sections 2.3.4 to 2.4, above, the Board cannot concur with the position of

Appellant 1 that the deletion of the 5% limitation from Claim [1] would clearly have no influence on the extent of the protection conferred by the patent in suit.

Moreover, as addressed in sections 2.2.5, 2.3.2 to 2.3.5, above, the application documents, ie the claims and the description, were consistently restricted prior to grant not only in respect of the monomers, that could be used, but also in respect of their amounts.

Therefore and in view of the "Protocol" (section 2.2.1, above) and for the reasons given in Decision T 1149/97, as referred to in section 2.5.2, above, the Board takes the view, that the reinstatement of the original limit of 11.5% by weight into Claim 1 particularly in combination with the deletion of the limit of less than 5% by weight for PPVE (see sections III(3) and XV, above) contravenes Article 123(3) EPC.

2.10 Since a decision can only be made on a request as a whole, the Main Request must, consequently, be refused.

Auxiliary Request I of Appellant 1

3. Auxiliary Request I is identical to previous Auxiliary Request II (sections III(4) and XV, above).

3.1 Article 123(2) EPC

As shown in section 2.3.1, above, the amount of 11.5% was originally disclosed in the context "at least one copolymerizable perfluorinated comonomer other than tetrafluoroethylene". This definition of the comonomers included not only PAVE, but also perfluoroalkenes of

the formula $R_fCF=CF_2$, wherein R_f was a perfluoroalkyl group having 1 to 5 carbon atoms (*Claim 5; page 3, lines 7 to 11*/page 2, line 54 to page 3, line 2). In other words, the above limitation to less than 11.5% by weight in the *application* related to a group of comonomers, the scope of which extended beyond PAVE, which is now, in this request, the sole type of comonomer limited to less than 11.5% of the total weight of the copolymer. The *application text* did not, however and as admitted by Appellant 1, refer to such a limitation of the amount of PAVE comonomers. Nor is, in view of the [description], the additional presence of HFP excluded by the wording of Claim 1, in particular in view of the fact that the amounts disclosed in that passage, ie [page 2, lines 57 and 58] were not definite, but preferred (cf. section 3.2, below).

Claim 1 of Auxiliary Request I, hence, provides information which has not been clearly, directly and unambiguously derivable from that previously presented by the application as filed.

This means that Claim 1 of this request contravenes Article 123(2) EPC.

3.2 Article 123(3) EPC

Appellant 1 has repeatedly argued that it had never intended to limit the scope of the claims to a binary TFE/PAVE-copolymer (SGA-1: Nos. 11 to 11.2, and 24 to 26). Nor had the Opposition Division been correct, according to Appellant 1, in interpreting the formulation in such a way (sections VIII(3), 2.2.3 and 2.2.4, above). This means, however, in the Board's view,

that in the absence of any limitation of the maximum content of any further perfluorinated comonomer in Claim 1, the copolymer may comprise significant amounts of such further comonomers (eg 12.3% of HFP) in addition to PAVE in amounts of less than 11.5% (but more than 0% of PPVE) (cf. the undisputed arguments of Appellant 2 to Auxiliary Request IA in section VIII(4), above, paragraph 2).

Apart from the above scenario, any TFE-copolymer containing PPVE in amounts of 5% by weight or more and having a melting point of • 250°C would also be within the scope of Claim 1 of this request. The *application* (*page 3, lines 29 to 33*/page 3, lines 11 to 13) stated only that "a copolymer of TFE and 3.9% ... (PPVE) has a melting point of about 308°C. When the comonomer is PPVE, therefore, it is preferable that the amount of PPVE be less than about 5%". However, this neither amounts to an exclusion of a PPVE amount exceeding this limit, nor does it demonstrate that a TFE-copolymer having a PPVE content of 5% or more would automatically have a melting point of < 250°C. Hence, according to both scenarios, Claim 1 violates Article 123(3) EPC.

3.3 Since Claim 1, thus, contravenes Article 123(2) and (3) EPC, Auxiliary Request 1 must also be refused.

Auxiliary Request IA of Appellant 1

4. The claims of Auxiliary Request IA were those of previous Auxiliary Request III (sections III(5) and XV, above) as maintained by the Opposition Division. Contrary to that maintained version, this request included, however, a description according to which

PPVE could be used in combination with other comonomers, which have been defined neither in respect of their nature nor in respect of their quantity (ie contrary to [page 2, lines 35 to 56]).

As requested by Appellant 2 and in view of these deficiencies and the previous discussion about the higher ranking requests (see the above considerations and findings in this decision, cf. section 2.6, above), this late-filed request, which had only been filed at the hearing on 8 July 2005, was not admitted by the Board to the proceedings (cf. T 153/85, OJ EPO 1988, 001, No. 2.1; T 570/96 of 20 August 1998, not published in OJ EPO, No. 3; Article 114(2) EPC).

Auxiliary Request IB of Appellant 1

5. This requests corresponds to the version of the patent in suit as maintained in the decision under appeal (section III(5) and XV, above).

5.1 Article 123(2) and (3) EPC

Claim 1 has been amended in accordance with Claim [4] by deletion of "at least one copolymerizable perfluoro-(n-alkyl vinyl)ether wherein the alkyl group has 1 to 5 carbon atoms such as e.g.". This deletion results in a limitation of the melt processible polymer to a TFE/ PPVE-copolymer, wherein the PPVE is present in an amount of less than 5.0% by weight. These limitations have their basis in *Claims 5, 10 and 11* (Claims 5, 10 and 11). Additionally, the description has been brought into line with this wording of the claims.

Therefore and in view of the findings in sections 2.7 to 2.7.2, above, the Board is satisfied that the requirements of Article 123(2) and (3) EPC are met by this request.

5.2 Novelty

5.2.1 The patent in suit aims at improvements of the DF of TFE/PPVE-copolymers by means of fluorination at above room temperature until the copolymer has less than 50 end groups other than $-CF_3$ groups per million carbon atoms [page 3, paragraph 1].

5.2.2 As referred to in sections 2.1.2 and 2.1.3, above, a novelty objection had been raised against claims to a process for improving the DF by fluorination of TFE/PAVE-copolymers on the basis of D1, which relates to a process for removing unstable end groups and extractable fluoride from TFE/PAVE-copolymers (D1: Claim 2) and also to improved perfluorinated resins and, in particular, to melt-fabricable TFE/PAVE-copolymers having stable polymer end groups (column 1, lines 6 to 10). One out of three specific comonomers in these copolymers is PPVE (D1: column 2, line 67 to column 3, line 1). The known fluorinated polymers of this kind are "widely employed in ... wire insulation applications" (column 1, lines 13 to 16).

As stated in the [patent], the fluorination process of D1 was also used in the single remaining Example 1 and Comparative Examples 2 to 8 of the patent in suit (see [page 4, lines 31, 50 and 56]). According to [page 3, lines 12 and 13], "The fluorination process is normally conducted at elevated temperature, in order to permit

complete reaction of end groups.", and, according to D1 (column 3, lines 37 to 39), "The unstable end groups ... may be virtually eliminated by treatment of the polymer with fluorine.", the fluorination time may be between 4 and 16 hours, and the reaction temperatures between 150 and 250°C (D1: column 3, lines 52 and 55).

5.2.3 Thus, in Example 3 of D1, a TFE/PPVE-copolymer having a PPVE content of 3.4% by weight (which has a melting point of more than 250°C; cf. section 5.2.4, below, and also *page 3, lines 24 to 33*, in particular *lines 29 to 33*/page 3, lines 9 to 13 and 11 to 13, respectively) had been charged to a fluorinator, heated to 210°C and brought into contact with a fluorine/nitrogen mixture for six hours. The resulting polymer was analysed thereafter to have five acid fluoride end groups per million carbon atoms and no detectable $-CONH_2$ or CF_2CH_2OH groups and 3 ppm extractible fluoride. Moreover, it is stated in D1 that, of all the different unstable end groups, those of the formula -COF are "the most resistant to conversion to stable $-CF_3$ groups", and "if they are converted, it is certain that the others have been also." (D1: column 4, lines 22 to 32).

5.2.4 The fluorination of such TFE-copolymers had also been known from D2 (and used in order to reduce or eliminate the unstable end groups; page 12, lines 1 to 3). Thus, in its Example 3, a copolymer of TFE and 1.3 mol-% (= 3.4 wt.-%) PPVE, ie as in Example 3 of D1 (section 5.2.3, above), having a melting endotherm peak temperature of 311°C and a melt onset temperature of 287°C was fluorinated at 190°C with a F_2/N_2 mixture for about 5h (D2, page 26, lines 15 to 17: total processing time being "just over 5 hours"). "The infrared analysis

showed that fewer than 50 unstable end groups per 10^6 carbon atoms were present after fluorination.". In Example 4, the product of a similar fluorination of a TFE/PPVE-copolymer (1.2 mol % of PPVE) for 4h at 185°C showed, according to infrared analysis, no detectable unstable end groups. According to page 12, penultimate paragraph, most of the unstable end groups of the starting polymers are converted to perfluoromethyl ($-CF_3$) end groups by the fluorine. In its Example 2, which, however, described the treatment of a TFE/HFP-copolymer (now excluded from the claims) had been used to insulate a stranded copper conductor, whilst in the other examples of D2, mentioned above, no reference was made to such a use of the polymers. Example 4 refers to rotolining in a pipe tee mould.

5.2.5 In view of Example 3 of D1 and Example 3 of D2, respectively, the present situation of the subject-matter of Claim 1 corresponds clearly to that addressed in T 12/81 (above, No. 13 of the reasons): "However, the disclosure by description in a cited document of the starting substance as well as the reaction process is always prejudicial to novelty because those data unalterably establish the end product."

5.2.6 This finding is additionally confirmed by the descriptions of both documents, wherein reference is additionally made to the melt processibility of the TFE/PPVE-copolymers concerned and their use eg in wire insulation applications and wire coating, respectively (D1: column 1, lines 13 to 16; D2: page 1, lines 8 to 12 and page 7, first paragraph, cf. section VIII(7), above, end of paragraph 1). This had been common general knowledge (as argued by Appellant 2;

section XII(1), above, penultimate paragraph) even before, in 1976, as admitted by Appellant 1 in its letter dated 5 March 2003 (item 5.4), wherein it was stated, that "The TFE/PPVE copolymer was the only perfluoroalkoxyvinylether copolymer available commercially at that time. By 1976, the use of TFE/PPVE copolymer for wire coating was well established as indicated by its mention in the Encyclopaedia of Polymer Science and Technology in an article entitled 'TETRAFLUOROETHYLENE COPOLYMERS With PERFLUOROALKOXY PENDANT GROUPS', (... (1976) ... hereinafter referred to as document D9).". In this document, particular reference can be found to the "conventional melt-processing techniques" suitable for "Teflon PFA fluorocarbon resin" and to its use for "primary insulation and jacketing for wire and cable" (page 266, paragraph 2 under the heading "Processing"). This latter processing is further explained in the first part of sentence 2 of the following paragraph under the heading: "Extrusion and Injection molding": "In general, PFA can be melt extruded into rods, film, tubing, drawn down onto wire as an insulation via tubing dies, or injection molded into complex shapes ...".

5.2.7 In view of these facts and findings and No. 7 of the reasons in G 2/88 (above: "A claimed invention lacks novelty unless it includes at least one essential technical feature which distinguishes it from the state of the art." and "When deciding upon the novelty of a claim, a basic initial consideration is therefore to construe the claim in order to determine its technical features."; cf. No.6 of the reasons in G 6/88), the Board agrees to the position of the Examining Division (section 2.1.3, above) that the process of the previous

Claim 1 had lacked novelty with regard to D1. Moreover, this assessment would also have been valid for D2.

5.3 In order to overcome the above objection of lack of novelty, the claims were then reworded as claims to the "use of a process for improving the dissipation factor" of the TFE/PAVE-copolymers (section 2.1.4, above). In the context of the issue of novelty of the subject-matter of this new version of the claims, reference was repeatedly made by both parties to Decisions G 2/88 and G 6/88, above (Patent Proprietor's letter dated 22 July 1999: item 2.2; SGA-2, No. 3.1.2). However, they took opposite views as to whether the findings in these decisions could be applied to the present case or not.

5.3.1 In the decision under appeal, reference had also been made to G 2/88 and G 6/88 (section IV(1), above) to support the finding that the use claims would be novel, and Appellant 1 concurred therewith.

Appellant 2, however, argued that they could not be applied to the present case and it referred to T 210/93 (section VI, above). In this decision, "the Board has serious doubts whether the above-referred Enlarged Board decisions can at all be applied to the present situation. Those decisions related to claims to the use of a known **compound** for a particular purpose; in contrast thereto, the claim under discussion herein is directed to the use of a known **process** for a particular purpose, the purpose being the preparation of the particular product (mixture) naturally resulting from such process. The use of a process for the purpose of preparing its product(s) could be said to be nothing but that very same process, and the scope of protection

would appear to be the same for a claim to the process as such and a claim to such use." (No. 3.2.3 of the reasons).

5.3.2 Before turning to the particulars of the present case, those considerations in Decisions G 2/88 and G 6/88 (above), which are deemed by this Board to be important for the present case, will be recalled herein below:

Starting from the patent systems in the Contracting States of the EPC and their respective traditions, and the different types of claims which had been developed in those States, each of the two Decisions, above, established in Number 2.2, that "There are basically two different types of claim, namely a claim to a physical entity (e.g. product, apparatus) and a claim to a physical activity (e.g. method, process, use).".

Both Decisions then turned to sub-classes of these basic types using similar wordings. In G 2/88, the relevant passage read as follows: "Within the above two basic types of claim various sub-classes are possible (e.g. a compound, a composition, a machine; or a manufacturing method, a process of producing a compound, a method of testing, etc.). Furthermore, claims including both features relating to physical activities and features relating to physical entities are also possible. There are no rigid lines of demarcation between the various possible forms of claim.".

Furthermore, in Numbers 2.5 of both Decisions, the basic types of claim were additionally explained in the following way: "When considering the two basic types of claim referred to in paragraph 2.2 above the technical

features of a claim to a physical entity are the physical parameters of the entity, and the technical features of a claim to an activity are the physical steps which define such activity. A number of decisions of the Boards of Appeal have held that in appropriate cases technical features may be defined functionally (see e.g. T 68/85, OJ EPO, 1987, 228; T 139/85, EPOR 1987, 229)".

5.3.3 In T 68/85, above, a product claim to an agent for selective weed control was allowed, wherein two active ingredients were to be combined with each other "in a quantity producing a synergistic herbicidal effect", which effect was not produced by combining the components at random (No. 8.3 of the reasons). The form of words, as quoted above, was then accepted as a "technical feature" in the sense of Rule 29(1) and (3) EPC (No. 8.4) and the Board established that "A technical feature is one that can be read by a skilled person as an instruction as to the technical procedure to be followed to achieve a given result.". In that case, the Board had been satisfied that the necessary instructions had implicitly been given in a sufficiently clear and precise manner. (Nos. 8.4.1 to 8.4.4).

This finding was confirmed by the Board in Decision T 139/85 (No. 4.1 to 4.2.2 of the reasons), which primarily dealt with the question of clarity concerning a formulation relating to two specific carboxylic acids or "a physiologically functional salt, ester or other derivative thereof" which were to be comprised in a pharmaceutical composition. In summary, the term of

"physiologically functional" was found to meet the clarity requirements of Article 84 EPC.

In neither decision had novelty been a question at issue.

5.3.4 In the Board's view, it is necessary for the further discussion about the issues referred to in section 5.3, above, to turn back to the two above Decisions G 2/88 and G 6/88 and the questions considered therein with respect to the different types of claim and the technical features contained in those claims. These decisions dealt, in general, with claims directed to the **use of a known compound for a specific purpose** or, to recall general types of claim mentioned therein (section 5.3.2, above), with claims directed to the use of a **physical entity** for a specific purpose.

Thus, in G 2/88, above, the Enlarged Board of Appeal stated in No. 7.1 of the reasons: "In relation to a claim to a **use of a known entity for a new purpose**, the initial question is again: what are the technical features of the claimed invention? If the new purpose is achieved by a 'means of realisation' which is already within the state of the art in association with the **known entity**, and if the only technical features in the claim are **the (known) entity** in association with the (old) means of realisation, then the claim includes no novel technical feature. In such a case, the only 'novelty' in the claimed invention lies in the mind of the person carrying out the claimed invention, and is therefore subjective rather than objective, and not relevant to the considerations that are required when

determining novelty under Article 54(1) and (2) EPC." (emphasis added by this Board).

All the further considerations of the Enlarged Board of Appeal in both cases G 2/88 and G 6/88, mentioned above, exclusively dealt with this type of claim, wherein a given (and known) **physical entity** (compound or composition) was **subjected to a physical activity** for a specific purpose.

Thus in G 6/88, No. 7 of the reasons contains the following statement: "In relation to a claim whose wording clearly defines a **new use of a known compound** ...". In No. 7.1, the Decision continues: "In the view of the Enlarged Board, with reference to the discussion concerning the interpretation of claims in paragraph 7, the claim in question should properly be construed, having regard to the Protocol to Article 69 EPC, as implicitly including the following functional technical feature: that **the named compounds**, when used in accordance with the described means of realisation, in fact achieve the effect .... Such a functional effect is a technical feature which qualifies the invention: the use claim is properly to be considered as a claim containing technical features both to the **physical entity (the compound and its nature)**, and to a physical activity (the means of realisation). In other words, when following the method of interpretation of claims set out in the Protocol, what is required in the context of a claim to the **'use of a compound A for purpose B'** is that such a claim should not be interpreted literally, as only including by way of technical features 'the compound' and 'the means of realisation of purpose B'; it should be interpreted (in

appropriate cases) as also including as a technical feature the function of achieving purpose B (because this is the technical result)." (emphasis added by this Board; "the Protocol" see section 2.2.1, above).

Finally, the Enlarged Board of Appeal limited its Orders in G 2/88 (part (iii)) and in G 6/88 explicitly to "**a claim to the use of a known compound**" in which a technical effect should be interpreted as a functional technical feature.

5.3.5 In the Board's view, this leaves no room for further expansion of this ruling to claims worded otherwise.

5.4 The present claims are not, however, directed to the use of a chemical compound or chemical composition for a particular purpose, as considered by the Enlarged Board of Appeal in its above decisions. Instead, they are directed to the **use of a process**, a wording chosen by the Applicant during the examination procedure. This fact cannot be disregarded or ignored. Therefore, the Board cannot accept the opinion of Appellant 1, that the considerations in G 2/88 and G 6/88 would also be valid for the present claims to the use of a process, because by this process (comprising a fluorination step) products would be obtained which showed the improved feature (cf. section V(4) and VIII(5), above).

5.5 Rather, this opinion of Appellant 1 supports the soundness of the view taken by the Board in the case of T 210/93 (section 5.3.1, above), that claims to the use of a process are, in fact, directed to the preparation of the product, ie, in the present case, to the polymer as defined in the last feature of Claim 1 of Auxiliary

Request IB, which polymer is the natural result of the fluorination process. This view is further supported by the statement of Appellant 1: "... these copolymers are useful as insulation in high frequency cables", ie the polymers being the natural result of the fluorination reaction, but not the reaction itself (letter dated 5 March 2003, item 26.2).

5.5.1 In other words, Claim 1 is directed to the use of the fluorination reaction process in order to remove the unstable end groups from the starting polymer. The effect of this process manifests itself in *its* result, ie in the product together with all its internal characteristics and the consequences of its particular history of origin (the TFE/PPVE copolymer essentially free of unstable end groups) (cf. T 119/82; OJ EPO 1984, 217, in particular No. 11 of the reasons), but not in an effect observed in a particular use of the product.

5.5.2 In a second separate step, such products ("Resins such as these ...", [page 3, line 31]) may then be used for a particular purpose, ie with the aim of attaining a specific advantage (reduced electrical signal losses und improved transmission properties of a cable) in specific conditions (ie during the application of electrical signals at high frequencies, [page 3, first paragraph] in conjunction with [page 2, lines 6 to 12]; see also D9, Table 2, and D10, Table III).

5.5.3 The independence of the two physical activities from each other (ie the fluorination process as opposed to the use of a product) is, furthermore, demonstrated by the passage on [page 3, lines 20 to 32] referring to alternative routes to the same or similar products

suitable for the same use, irrespective of the process actually used for their preparation (cf. section 2.7.1, above).

5.5.4 Moreover, in the Board's view, a claim to the use of a process or to the process itself addresses the producer of a product, irrespective of any conceivable later applications, methods of further processing or uses of the product, whilst a claim to the use of a product clearly addresses the customer/user of that product (cf. the fourth and third paragraphs from the end of section VIII(5), above).

5.6 In other words, the asserted advantage or purpose cannot be taken into account as a functional technical feature in Claim 1 because of the jurisprudence considered above (sections 5.3.1 to 5.5.1, above) and also for technical reasons, because the asserted advantage or purpose is related only to the product (manufactured in some process or other) when used in certain circumstances and marginal conditions.

More particularly, the two different physical activities (the manufacture of the polymer as opposed to its use) must be considered completely separately, and, therefore, this Board shares the view expressed in No. 3.2.3 of the reasons in T 210/93 (section 5.3.1, above) that the use of a process for a particular purpose is "nothing but that very same process". In the present case, this is a process for the purpose of obtaining a TFE/PPVE copolymer essentially free of unstable end groups (as clearly expressed in Claim 1: "fluorinating the copolymer ... until said copolymer ..." (emphasis added by the Board).

5.7 Consistent therewith, the Board has come to the same result, with regard to the present Claim 1 directed to the use of the fluorination process, as already expressed with regard to the previous process claims in section 5.2.7, above, ie to the finding that the subject-matter of Claim 1 of this request does not fulfil the requirements of Articles 52(1) and 54 EPC, and the request as a whole must, therefore, fail. In other words, it is refused.

Auxiliary Request IC

6. Like Auxiliary Request IA, this request was not admitted to the discussion at the oral proceedings (section IX, above), because (i) it had also been filed only at the hearing and (ii) it related to a situation corresponding to the one in Auxiliary Request IB, above.

Auxiliary Requests II and V of Appellant 1

7. Claim 1 of each of these requests differs from that of the Main Request only by an additional feature at the end of the claim, ie features (a) and (b), respectively (see section VII(3), above). This means that it suffers from the same deficiencies set forth for Claim 1 of the Main Request in sections 2 to 2.9, above.

Consequently, either request shares the same fate, ie both requests are refused under Article 123(3) EPC.

Auxiliary Requests III and VI of Appellant 1

8. This finding is also valid for Auxiliary Requests III and VI, respectively. Their Claims 1, also containing features (a) and (b), respectively (see section VII(3), above), show the same deficiencies as Auxiliary Request I (sections 3.1 to 3.3, above).

Therefore, both of these requests are refused under Article 123(2) and (3) EPC.

Auxiliary Request IV of Appellant 1

9. Claim 1 of this request differs from the corresponding claim in Auxiliary Request IB, by the additional feature (a) at the end of the claim (see section VII(3), above, in particular the table). This additional feature requires the use of the process "in the manufacture by melt-extrusion of electrical insulation ... around an electrical conductor".

Nowhere in the *application*, however, had it been mentioned that the fluorination should or would be carried out in or by means of melt-extrusion. Nor is there a clear and unambiguous connection between the manufacture by fluorination of a TFE/PPVE-copolymer having only stable end groups and its melt-extrusion. Rather these steps were disclosed completely separately as two different processes (cf. sections 5.5 and 5.5.3, above). This view is confirmed, on the one hand, by *page 5, lines 23 to page 6, line 5*/page 3, line 44 to 52 and, on the other hand, by *page 7, lines 9 to 24*/ page 4, lines 15 to 22. It is evident therefrom that, whilst the fluorination belonged to the process for the manufacture of the copolymer essentially free of unstable end groups, the melt-extrusion is part of the

completely separate process for the manufacture of cables.

In view of these findings, the Board takes the view that this request contravenes Article 123(2) EPC. It is, therefore, refused.

Auxiliary Request VII of Appellant 1

10. Claim 1 of this request differs from Claim 1 of Auxiliary Request IV only by additional details of the product to be obtained in the manufacture by melt-extrusion (feature (b), see section VII(3), above).

Consequently, the reasons given in section 9, above, are also valid for this request, which is, therefore, also refused for non-compliance with Article 123(2) EPC.

11. To supplement the above reasons, it should be noted that the findings in section 9, above, are also valid for Auxiliary Requests II, III, V and VI (sections 7 and 8, above).

Auxiliary Request VIII of Appellant 1

12. This request differs from Auxiliary Request IB only by the additional feature in the last four lines of Claim 1. These lines refer to an "additional step of melt extruding the fluorinated copolymer around an electric conductor to provide electrical insulation therefor."

12.1 It follows that the findings concerning Claim 1 of Auxiliary Request IB in sections 5 to 5.6, above,

(including those in sections 2.7 to 2.7.2, above) are also valid for this request.

12.2 Hence, the Board is satisfied that the requirements of Article 123 EPC are met by this request.

12.3 Novelty

12.3.1 It follows, however, furthermore from the reasons given for Auxiliary Request IB (sections 5.2 to 5.6, above) that the only feature which might perhaps distinguish the claimed subject-matter from the prior art as known from either D1 or D2 might reside in the last additional melt extrusion feature, which, if carried out in accordance with the normal skills of the person skilled in this art, only shapes the polymer without chemical modification.

As pointed out with respect to the fluorination step of the claim, ie as already shown with regard to the question of novelty of Auxiliary Request IB, the copolymers *per se* and the way they were prepared in the examples of either D1 or D2 anticipate the features of the first part of claim 1.

12.3.2 Moreover, wire extrusion coating was, undisputedly, one field of application of the type of polymer as disclosed in D2 (sections VIII(7), XII(1) and 5.2.6, above).

Thus, D2 specifically refers to the melt-extrusion of the melt-processible TFE-copolymers (D2: page 1, "FIELD OF THE INVENTION") to wire coatings by means of

conventional melt-processing equipment (D2: page 7, first paragraph).

12.3.3 That this use has already been conventional for a long time, can be seen from the Encyclopaedia of Polymer Science and Technology, ie D9, cited by Appellant 1 (cf. section 5.2.6, above). It refers to TFE-copolymers with perfluoroalkoxy pendant groups (PFA) and describes the use of such copolymers *inter alia* for "primary insulation and jacketing for wire and cable" (D9, page 266, lines 4 to 11). "In general, PFA can be melt extruded into rods, film, tubing, drawn down onto wire as insulation via tubing dies, or ..." (*ibid.*, third last paragraph "Extrusion and Injection Molding").

12.3.4 In view of this disclosure which is considered by the Board as common general knowledge, the Board takes the view that the skilled person clearly und without any doubt learnt from D2 that one of the common uses of its fluorinated polymers (post-fluorinated PFAs in the sense of D9) had been directed to the insulation of wires and cables, which were normally prepared by means of a well-known melt-extrusion step as described eg in D9, quoted above. In fact, Appellant 1 had not disputed in the first hearing that wire extrusion coating had been disclosed in D2 (section VIII(7), above).

12.3.5 It follows that the subject-matter of Claim 1 is anticipated by D2.

12.4 Consequently, Auxiliary Request VIII does not meet the requirements of Article 52(1) and 54 EPC. It is, therefore, refused.

Auxiliary Requests IX and X of Appellant 2

13. In view of (i) the fact that, at the end of the first oral proceedings, it had been decided to admit Auxiliary Request VIII and to continue the proceedings on the basis of this request (section IX, above), (ii) the arguments and objections, respectively, presented by the parties with regard to these additional Auxiliary Requests IX and X in writing and at the second oral proceedings (sections XI, XI(1), XII, XII(1) and XIV(4), above), in particular, the objections of Appellant 2, and (iii) the late stage of the case, the Board has decided not to admit these requests (cf. T 153/85, above; Article 114(2) EPC).

Request for apportionment of costs of Appellant 2

14. As a rule, Article 104(1) EPC provides that each party to the proceedings shall bear its own costs. An order deviating from this principle for reasons of equity requires special circumstances such as improper behaviour which make it equitable to award costs against one of the parties (T 170/83, OJ EPO 1984, 605).

As pointed out above, the Board had decided at the end of the first hearing (sections VIII(9) and IX, above) to admit Auxiliary Request VIII. Due to this decision and in view of the requests of both parties to hold further oral proceedings (section XIV, above; Article 116(1) EPC), it was, in any case, necessary to arrange the second hearing.

In these circumstances, the Board sees no reason which would justify an apportionment of costs. This request is therefore refused.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The Appeal of Appellant 1/Patent Proprietor is dismissed.

3. The patent is revoked.

4. The request for apportionment of costs of Appellant 2/Opponent is refused.

The Registrar: The Chairman:

E. Görgmaier R. Young