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**Datasheet for the decision
of 7 June 2011**

Case Number: T 2106/08 - 3.3.09

Application Number: 01907891.4

Publication Number: 1261660

IPC: C08J 3/20

Language of the proceedings: EN

Title of invention:

Process for addition of additives to polymer particles

Patentee:

Borealis Technology Oy

Opponent:

TOTAL PETROCHEMICALS RESEARCH FELUY S.A.

Headword:

-

Relevant legal provisions:

EPC Art. 52, 54, 56, 83, 100, 123(2)(3)

EPC R. 80, 139

RPBA Art. 13(3)

Relevant legal provisions (EPC 1973):

-

Keyword:

"Amendments - claim 10 (allowable)"

"Correction of error - claim 10 (allowable)"

"Sufficiency of disclosure (yes)"

"Patentable invention - claim 11 (yes)"

"Entitlement to priority (yes)"

"Novelty (yes)"

"Inventive step (yes)"

Decisions cited:

G 0011/91, T 0925/98

Catchword:

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Case Number: T 2106/08 - 3.3.09

D E C I S I O N
of the Technical Board of Appeal 3.3.09
of 7 June 2011

Appellant: TOTAL PETROCHEMICALS RESEARCH FELUY S.A.
(Opponent) Industrial Property
Patents
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Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office posted
6 August 2008 concerning maintenance of the
European patent No. 1261660 in amended form.

Composition of the Board:

Chairman: W. Sieber
Members: N. Perakis
R. Menapace

Summary of Facts and Submissions

I. Mention of the grant of European patent No. 1 261 660 in respect of European patent application No. 01907891.4, which had been filed as international application No. PCT/GB2001/000721 on 21 February 2001 in the name of Borealis Technology Oy, was published on 22 December 2004 (Bulletin 2004/52). The patent claimed a GB priority of 21 February 2000 (GB 0004043.6). The patent was granted with 18 claims, Claims 1, 10, 11, 14 and 15 reading as follows:

"1. A process for the preparation of a polymer moulding powder for rotational moulding, said process comprising:

(i) obtaining a plurality of polyolefin polymer particles having a mean particle size of 1 to 2000 μm ;

(ii) heating a mixture of:

A) at least one phenolic antioxidant;

B) at least one organic phosphite or phosphonite antioxidant;

C) at least one UV-stabiliser selected from [1,6-Hexanediamine, N,N'bis-(2,2,6,6-tetramethyl-4-piperidinyl)-, polymer with 2,4,6-trichloro-1,3,5-triazine, reaction products with, N-butyl-1-butanamine and N-butyl-2,2,6,6-tetramethyl-4-piperidinamine]*, [Poly((6-morpholino-s-triazine-2,4-diyl)(2,2,6,6-tetramethyl-4 piperidyl)imino) hexamethylene (2,2,6,6-tetramethyl-4-piperidyl) imino)]**, and [Poly((6-((1,1,3,3-tetramethylbutyl)amino)-1,3,5-

triazine-2,4-diyl) (2,2,6,6-tetramethyl-4-piperidyl)imino)-1,6-hexanediyyl((2,2,6,6-tetramethyl-4-piperidyl)imino))]***;

- D) a diluent; and optionally
- E) a metal stearate;

to a temperature of between 20 and 200°C;

- (iii) depositing the mixture onto said polyolefin polymer particles; and optionally
- (iv) blending a metal stearate to the resulting polyolefin polymer particles if component E was not present in said mixture."

* *hereinafter referred to as "Chimassorb 2020TM"*

** *hereinafter referred to as "Cyasorb UV 3346TM"*

*** *hereinafter referred to as "Chimassorb 944TM"*

"10. A process as claimed in any one of claims 1 to 9 wherein said mixture comprises 0.01 to 0.5 wt% organic phosphite or phosphonite antioxidant, 0.01 to 0.5 wt%, phenolic antioxidant, 0.01 to 2 wt% UV stabiliser, 0.01 to 0.05 wt%, metal stearate and 0.02 to 3 wt%, diluent."

"11. A process as claimed in any one of claims 1 to 10 wherein all the components of said mixture are approved for contact with food."

"14. A polymer moulding powder for rotational moulding obtainable by a process as claimed in any one of claims 1 to 13."

"15. A process for the preparation of a moulded polymer item, said process comprising:

(i) obtaining a plurality of polyolefin polymer particles having a mean particle size of 1 to 2000 μm ;

(ii) heating a mixture of:

- A) at least one phenolic antioxidant;
- B) at least one organic phosphite or phosphonite antioxidant;
- C) at least one UV-stabiliser;
- D) a diluent; and optionally
- E) a metal stearate;

to a temperature of between 20 and 200°C;

(iii) depositing the mixture onto said polyolefin polymer particles; optionally

(iv) blending a metal stearate to the resulting polyolefin polymer particles if component E was not present in said mixture; and

(v) rotomoulding said particles."

II. On 22 September 2005 TOTAL Petrochemicals Research Feluy S.A. filed an opposition against the patent and requested its revocation, relying on Articles 100(a) and 100 (b) EPC.

The following documents were cited in the opposition proceedings:

F1: WO 00/11065 A1 (published 2 March 2000);

F2: GB 2 293 827 A;

- F3: EP 0 590 647 A1;
- F4: "Stabilizer combinations for improving cycle times in the rotational molding process", *Research Disclosure*, April 2000, 727-733;
- F5: EP 0 411 628 A2;
- F6: US 5 998 558 A;
- F7: US 5 883 165 A; and
- F8: Experimental Report submitted on 6 June 2006 by the patent proprietor.

III. By its interlocutory decision announced orally on 1 July 2008 and issued in writing on 6 August 2008 the opposition division maintained the European patent in amended form with Claims 1-14 according to auxiliary request II filed during the oral proceedings.

Claims 1-14 corresponded to granted Claims 1-13 and 15 with the following amendments:

- In the list of the alternative UV-stabilisers in Claim 1 (ie feature C)) the word "and" was replaced by the word "or".
- Claim 10 was amended with regard to the content of the organic phosphite or phosphonite antioxidant to "0.01 to 0.2 wt%" (granted Claim 10 referred to a range of "0.01 to 0.5 wt%") and corrected with regard to the content of the metal stearate to "0.01 to 0.5 wt%" (granted Claim 10 referred to a range of "0.01 to 0.05 wt%").
- Claim 14 (corresponding to granted Claim 15) was amended in order to define the UV-stabiliser in the same manner as in Claim 1.

The opposition division considered that:

- The teaching of the description in combination with the examples was clear enough for the skilled person to carry out at least one embodiment of the invention and thus the requirements of Article 83 EPC were satisfied;
- The invention of Claim 11 was a patentable invention under Article 52 EPC. The disputed term "approved for contact with food" was, in fact, unclear; nevertheless clarity was not an issue for a granted claim;
- Dependent Claims 6, 8, 10, 12 and 13 were entitled to the priority date since they corresponded to preferred embodiments of the priority document;
- Claim 10 satisfied the requirements of Articles 123(2) and (3) EPC because the amendment was disclosed in the description as originally filed and in the patent specification, and because the correction corresponded to the sole reasonable correction under Rule 139 EPC;
- Claim 14 fulfilled the requirements of Articles 123(2) and (3) EPC since the features inserted into that claim could be found in Claim 1 as originally filed and as granted;
- The claimed process was novel in view of F1, F2, F3 or F7.

- Furthermore, the claimed process involved an inventive step. A skilled person starting from F7 and aiming at the provision of a process for the production of stabilised polymer particles useful to be applied in rotomoulding processes where they did not leave any deposits on the mould would not find any hint in the state of the art towards depositing a stabiliser mixture onto the polymer particles as set out in Claim 1.

- IV. Both the opponent (29 September 2008) and the patent proprietor (10 October 2008) filed an appeal against the interlocutory decision of the opposition division and paid the appeal fee on the respective same day.

- V. The opponent filed the statement setting out the grounds of appeal on 1 December 2008. It reiterated the issues raised before the opposition division and requested the revocation of the patent in its entirety.

- VI. The patent proprietor filed the statement setting out the grounds of appeal on 12 December 2008 including a new main request and auxiliary requests I to VII.

- VII. By a letter dated 24 April 2009 the opponent replied to the appeal filed by the patent proprietor and raised objections against all requests.

- VIII. By a letter dated 28 April 2009 the patent proprietor replied to the appeal filed by the opponent and submitted auxiliary request VIII.

- IX. Oral proceedings before the board were held on 7 June 2011. During these proceedings the patent proprietor

withdrew all previously filed requests except auxiliary request V, which became its sole request.

Claims 1-13 and 15 of auxiliary request V corresponded to Claims 1 to 14 of auxiliary request II found allowable by the opposition division (see point III above). Claim 14 of auxiliary request V corresponded to Claim 14 as granted (see point I above).

The patent proprietor filed also a description adapted to the claims of the final request.

X. The relevant arguments put forward by the opponent in its written submissions and at the oral proceedings may be summarised as follows:

- The amendment in Claim 10 regarding the content of metal stearate from 0.01-0.05 wt% into 0.01-0.5 wt% was not allowable. This amended could not be considered as the correction of a clerical error under Rule 139 EPC. The error was not obvious and other corrections were possible beside the one proposed.
- The amendment in Claim 10 regarding the content of organic phosphite or phosphonite was not allowable under Rule 80 EPC. This amendment was not occasioned by a ground of opposition under Article 100 EPC.
- Claim 11 was not patentable under Article 52 EPC. It required that components A to E of the claimed mixture be approved for contact with food. This approval was, however, not a technical feature but the result of a regulatory process, which might

differ from one State to another. Furthermore, as no date was mentioned it might differ with time.

- According to Claim 1, three UV-stabilisers could be used and only one of them was exemplified in the opposed patent. Thus the skilled person would not know whether the other two also had the alleged surprising effect, namely that no deposits of such a UV-stabiliser were formed on the walls of the mould. Therefore the claimed invention did not fulfil the requirements of Article 83 EPC.

- The opposed patent, granted to Borealis Technology Oy, was not entitled to the priority date because the priority document had been filed in the name of Borealis Polymers Oy and the file did not contain any evidence that the priority had been assigned to the patent proprietor.

- The process of independent Claim 1 concerning the preparation of a polymer moulding powder lacked novelty in view of the disclosure of F1, F2, F3 and F5. F1 and F5 disclosed all the features of this claim. Regarding F2, it did not specifically disclose the temperature of the mixture; this process step was, however, typically carried out indoors with the consequence that the mixture had a temperature of at least 20°C. Regarding F3, it did not explicitly mention the mean particle size of the particles. However, a mean particle size of 1 to 2000 µm was an inevitable feature of polymer particles coming out of a reactor.

- The process of Claim 1 also lacked an inventive step. F5 was the closest prior art document from which the claimed process differed in the choice of the UV-stabiliser. The claimed UV-stabilisers belonged to the category of hindered amines, this category being disclosed in F5 (see Claim 1, D). Thus the skilled person seeking to select a suitable UV-stabiliser would find all the information needed in F5. Alternatively, he could consult F7 (Example 1), which disclosed a package of additives including ChimassorbTM 944, a UV-stabiliser of the claimed process, to be used in rotomoulding applications.

- The additional features of dependent process Claims 2 to 13 were also disclosed in F1, F2 and F3 and thus these claims also lacked novelty.

- Claims 2-13 did not contain any feature that would have any effect on the process of deposition of additives onto polyolefin particles. Thus these claims also did not involve an inventive step.

- The product-by-process of Claim 14 lacked novelty in view of the disclosure of F1 (Examples 10A and 10C). Even if the process was different, the product was the same. Claim 14 lacked novelty also in view of F7 (column 39, lines 10-15), which disclosed spraying the additives onto the polyolefin particles.

- The process of independent Claim 15 concerning the preparation of a moulded polymer item lacked novelty in view of F1, which disclosed rotomoulding the treated particles.

- This process lacked also an inventive step in view of the obvious combination of F5, considered to represent the closest state of the art, with F7. The difference between F5 and the claimed process was the choice of the UV-stabiliser and the rotomoulding step. The technical problem to be solved was the provision of an alternative method for preparing rotomoulding articles with stabilised polymer. The skilled person would thus be motivated to look at F7, which discloses a rotomoulding process, and would find therein that Chimassorb 944TM was an efficient UV-stabiliser to be used in rotomoulding.

XI. The relevant arguments put forward by the patent proprietor in its written submissions and at the oral proceedings may be summarised as follows:

- The amendments of Claim 10 were allowable. With regard to the content 0.01-0.2 wt% of organic phosphite or phosphonite antioxidant replacing the granted content 0.01-0.5 wt%: (i) it was disclosed in the originally filed description (page 18, line 20) and therefore fulfilled the requirements of Article 123(2) EPC; (ii) it did not go beyond the scope of the claim as granted and did not contravene Article 123(3) EPC; (iii) it avoided any prior art effect of F1 (a prior art under Article 54(3) EPC) and was allowable under Rule 80 EPC; and (iv) it was disclosed in the priority document (page 16, lines 17-19). This content was therefore entitled to the priority date, with the consequence that F1 was state of the art under Article 54(3) EPC. With regard to the content 0.01-0.5 wt% of metal stearate replacing the granted content 0.01-0.05 wt%:

it was a correction occasioned by a clerical error, which would be immediately obvious to the skilled person, for whom the proposed correction was the only reasonable one.

- The invention of Claim 11 was patentable under Article 52 EPC. Firstly the opponent did not specify under which part of this article it objected to Claim 11 and secondly the approval for contact with food was a technical feature. Furthermore, the opponent did not submit any evidence that food standards varied from country to country or over time. In reality this was a clarity objection, which was not a valid ground for opposition.

- The claimed invention fulfilled the requirements of Article 83 EPC. The opponent's objection was that the aim of the invention, i.e., the elimination of deposits on moulds was not achieved. This was argued with reference to F1. This allegation was, however, an issue of inventiveness not sufficiency. F1, a co-pending application owned by the patent proprietor, disclosed an alternative way to avoid deposits on moulds by using masterbatch technology. The patent in suit identified three UV-stabilisers that avoided the problem. The opponent had not carried out any experiments to prove that the results in the patent were not obtained. On the contrary the patent exemplified the claimed process and that was enough to satisfy the requirements of sufficiency.

- The right to priority was validly claimed. Raising the issue of a missing assignment for the first time at the oral proceedings before the board had taken

the patent proprietor by surprise, and it was unable to check this assignment on the spot and required postponement of the oral proceedings.

- All claims were entitled to priority, with the result that F1 was state of the art under Article 54(3) EPC and F4 did not belong to the state of the art under Articles 54(2) or 54(3) EPC.
- None of the opposed documents, namely F1 to F3, F5 and F7, anticipated the claimed subject-matter, be it a process or a product-by-process.
- F1 (Example 10C) disclosed all the components of the mixture of Claims 1 and 14 but did not disclose the mixing order required by the claims. This order was critical to the nature of the polymer powder formed because it imparted some structural features to the polymer powder. This was shown in the examples of the patent in suit, in which no deposits of the UV-stabiliser were detected after rotomoulding the claimed powder. On the contrary in F1 (Example 10C), deposits were detected after rotomoulding. Additionally F1 (Example 5) used a quite different process - masterbatch technology - whereby a UV-stabiliser loaded powder component was mixed with the various other components and a non stabilised polyethylene powder component. Thus two different polymer powders were used, one carrying a UV-stabiliser and the other not carrying a stabiliser.
- F2 did not disclose particles having the particle size claimed and no evidence was submitted that this

was inherent or inevitable. Furthermore, with the exception of the phosphite/phosphonite antioxidant, the person skilled in the art had to make many selections from the disclosure of F2 to arrive at each and every feature of the process claimed. Therefore the claimed combination of features could not be considered to emerge from the state of the art.

- F3 also did not disclose the claimed particle size and, as argued for F2, it was not inevitable that the correct particle sizes were present. Even if these could be deemed to be inherent, there was no disclosure whatsoever of the specific combination of the features required by Claim 1.
- F5 (Example 9) disclosed a different UV-stabiliser, namely TinuvinTM 770.
- F7 (Examples 1a and 1c) did not disclose the use of a diluent, which was a compulsory component of the mixture of the claimed process. Furthermore, the opponent had not substantiated by evidence the assertion that the diluent would evaporate at some point during the powder manufacturing process.
- The subject-matter of all claims involved an inventive step.
- Claim 1, relating to a process for the preparation of a polymer moulding powder for rotational moulding, also not obvious in view of F5 or F7. F5 did not describe the specific UV-stabilisers employed in Claim 1. It suggested a variety of UV-stabilisers

including various TinuvinTM. The stabilisers of Claim 1 did not leave unacceptable levels of deposits on the moulds contrary to the tested TinuvinTM (see F8). It was surprising that the UV-stabilisers claimed did not. F5, which did not relate to rotomoulding, did not give any hint to carry out a process as claimed in Claim 1 to form a polymer moulding powder suitable for use in rotomoulding which prevented the formation of unacceptable levels of deposits on the rotational mould. F7 described a rotomoulding process and a stabiliser mixture for use in stabilising the polyolefins used in the process. Example 1a of F7 (a comparative example) was the closest disclosure of that document which, however, did not mention the use of a diluent. Furthermore the comparative examples did not belong to the invention of this document and inherently taught away from it. Finally F7 did not consider the problem of mould deposits and provided no motivation towards the solution of such a problem.

- The subject-matter of Claim 15, relating to a process for the preparation of a moulded polymer item, involved an inventive step over F5 and F7 for the reasons as given for the process of Claim 1.

- The subject-matter of Claim 14, relating to a polymer moulding powder for rotational moulding, which concerned the product obtained by the process of Claim 1, involved an inventive step over F5 and F7 for the same reasons given for the process of Claim 1.

XII. The appellant (opponent) requested that the decision be set aside and that the European patent No. 1 261 660 be revoked.

XIII. The appellant (patent proprietor) requested that the decision under appeal be set aside and that the patent be maintained with Claims 1 to 15 as filed as auxiliary request V with letter dated 12 December 2008, and the description pages 2-12, filed during the oral proceedings before the board.

Reasons for the Decision

1. The appeals are admissible.
2. Amendments (Article 123 EPC)
 - 2.1 Auxiliary request V, i.e. the proprietor's sole request, differs from the request found allowable by the opposition division (point III above) only in that granted Claim 14 has been reintroduced. Thus, Claims 1-15 of auxiliary request V correspond to granted Claims 1-15 with the following amendments:
 - In the list of the alternative UV-stabilisers in Claim 1 (i.e., feature (C)) the word "and" was replaced by the word "or".
 - Claim 10 was
 - (a) amended with regard to the content of the organic phosphite or phosphonite antioxidant to "0.01 to 0.2 wt%" (granted Claim 10

referred to a range of "0.01 to 0.5 wt%"),
and

- (b) corrected with regard to the content of the metal stearate to "0.01 to 0.5 wt%" (granted Claim 10 referred to a range of "0.01 to 0.05 wt%").

- Claim 15 was amended in order to define the UV-stabiliser in the same manner as in Claim 1.

2.2 The opponent objected only to amendments (a) and (b) of Claim 10.

2.2.1 Regarding amendment (a) in Claim 10 the opponent objected to its admissibility under Rule 80 EPC arguing that it was not occasioned by a ground for opposition.

The board, concurring with the proprietor, considers that this amendment allows also Claim 10 to enjoy the priority date of 21 February 2000 (see point 5.2 below), so that F1 is removed from the state of the art relevant for the issue of inventive step. Thus this amendment is considered to be occasioned by a ground for opposition under Article 100 EPC and consequently is allowable under Rule 80 EPC.

2.2.2 As regards the basis for amendment (a), page 18, lines 17-19 of the application as filed discloses that "(t)he polymer moulding powder should preferably comprise **0.01** to 0.5 wt%, e.g. 0.1 to **0.2** wt% organic phosphite or phosphonite antioxidant". The combination of the lower value of a broader range with the higher value of a narrower range is considered allowable under Article 123(2) EPC (see e.g. T 925/98). Furthermore

since the amended range is narrower than the granted range of 0.01 to 0.5 wt%, this amendment fulfils also the requirements of Article 123(3) EPC.

- 2.2.3 Regarding amendment (b) in Claim 10, the opponent argued that the amendment of the upper limit for the amount of metal stearate from 0.05 wt% to 0.5 wt% is not an allowable correction under Rule 139 EPC.

Pursuant to said provision (formerly Rule 88 EPC 1973) if a request for correction concerns the claims, the correction must be obvious in the sense that it is immediately evident that nothing else would have been intended than what is offered as the correction.

In the present case, the board acknowledges that the incorrect information concerning the value of the upper range 0.05 wt% would be objectively and unambiguously recognisable by the skilled person using common general knowledge and seen objectively as at the date of filing, having regard to the whole of the document as filed (see G 11/91; OJ EPO 1993, 125, point 2 of the reasons). Indeed the originally filed application (page 18, lines 17-23) discloses:

"The polymer moulding powder should preferably comprise ... 0.01 to 0.05 wt%, e.g. 0.1 to 0.3 wt% metal stearate and ..."

Thus, two ranges are linked by the term "e.g.". Usually the skilled person would expect in such a situation that a first broader range is followed by a narrower range, since the conventional function of the term "e.g." is to provide a specific range as an example of

the broader one. In other words, the first cited range should correspond to the broader definition which is followed by the second range which should correspond to a preferred embodiment selected from and falling within the broader one. Following this reasoning it becomes apparent that the upper limit of the first ("broader") range is incompatible with the second ("narrower") range. The experimental part of the patent application corroborates this conclusion. Actually the examples of the patent application disclose polymer moulding powders with a zinc stearate content of either 0.09 wt% (examples 6-8) or 0.18 wt% (examples 2, 4, 5), i.e. a content which is always above the upper limit of the first cited range. Thus, it would be clear to the skilled person that the information presented in the application as filed and relating to a range of 0.01 to 0.05 wt% of metal stearate is incorrect.

With regard to the correction offered by the proprietor, namely to amend the upper limit of the first range 0.5 wt%, the board considers that this correction is the only plausible solution which the skilled person would objectively have derived from the originally filed patent application as at the date of filing. The offered correction reflects the usual presentation of ranges linked by the term "e.g." in patent documents and is also the only correction requiring only one change in the originally disclosed values, namely the deletion of the second "0" in "0.05". This is normally the case in the correction of a mere typing error.

On this basis the board considered the correction to be allowable under Rule 139 EPC, second sentence, EPC.

3. Sufficiency of disclosure (Article 83 EPC)

3.1 The objection raised by the opponent in relation to sufficiency of disclosure is that the aim of the invention, i.e. the elimination/prevention of deposits of the UV-stabilisers on moulds, is not achieved. This is argued with reference to F1.

3.2 F1 is a co-pending application owned by the patent proprietor disclosing an alternative way to avoid deposits on moulds. In the patent in suit, a mixture containing at least one of three specifically identified UV stabilizers is deposited onto polyolefin polymer particles. In F1, the problem is solved using masterbatch technology.

3.3 In order to support its argument that the patent in suit does not achieve the aim of the invention, i.e., the elimination/prevention of deposits of the UV-stabilisers on moulds, the opponent referred to the passage in F1 starting on line 34 of page 1, which reads as follows:

"An alternative way of producing the stabilized moulding powder might thus have seemed to be to simply blend the stabilizers with an olefin polymer particulate which already has the appropriate particle size for rotational moulding, e.g. by spraying of liquid stabilizers or stabilizer solutions onto the polymer particulate and/or by simply mixing particulate stabilizers into the polymer particulate. This however results in unacceptable deposits of the UV-stabilizer on the surface of the mould used in rotational moulding."

This is a general statement which is actually repeated *verbatim* in the patent in suit in paragraph [0004]. The opposed patent identifies exceptions to that general observation, namely the application of a mixture containing at least one of three specific UV-stabilisers as set out in Claim 1. Thus, this general statement in F1 cannot provide any support for the opponent's argument that the claimed subject-matter would not achieve the aim of the invention.

The opponent referred also to Comparative Examples 10A and 10C of F1 in order to substantiate the argument of unacceptable deposit formation. In these comparative examples stabiliser mixtures comprising Chimisorb 944TM are either blended with (Comparative Example 10A) or sprayed onto (Comparative Example 10C) a polyethylene powder. Deposits of Chimisorb 944TM were observed (visually and FT-IR analysis). However, a more detailed analysis of these examples shows that they do not apply to a process as set out in Claim 1. Thus, in Comparative Example 10A no diluent is used, and in Comparative Example 10C two different mixtures of stabilisers and diluents are sequentially sprayed onto the polymer particles. In contrast, Claim 1 requires the application of a mixture comprising all stabilisers. Hence, these examples are not suitable to show that a different process, namely the process of Claim 1, does not achieve the aim of the invention.

3.4 A further argument of the opponent was that, even if it was admitted on the basis of the experimental part of the opposed patent that the use of Chimassorb 2020TM solved the problem of elimination/prevention of

unacceptable deposits on the surface of the mould, there was no technical evidence that this was also the case for the other two UV-stabilisers referred to in Claim 1. It therefore considered that the skilled person in the art would not necessarily arrive at the desired result within the entire scope of Claim 1.

The board does not concur with the opponent who, under the present circumstances, carries the burden of proof. The board stresses that the opponent did not carry out any experiment to prove that the results in the patent cannot be obtained in respect of the other non exemplified UV-stabilisers. Neither did it provide plausible grounds in support of its assumption that the non exemplified UV-stabilisers would behave differently from the exemplified Chimassorb 2020TM. Rather, on the basis of the resemblance of their chemical nature (they all are sterically hindered amines) and in the absence of any technical evidence indicating the contrary, the available technical evidence of the opposed patent is sufficient to demonstrate the sought-for technical effect. It follows that the claimed invention is disclosed in a manner sufficiently clear and complete for it to be carried out by the person skilled in the art.

4. Non-patentable invention (Article 52 EPC)

- 4.1 The opponent argued with reference to Claim 11 that the invention is non-patentable under Article 52 EPC.

Dependent Claim 11 is identical to granted Claim 11 (point I above) and requires that all components of the

mixture of Claims 1-10 be approved for contact with food.

4.2 First of all, the opponent did not specify which of the exclusions of Article 52(2) EPC apply to the invention as set out in Claim 11. Furthermore, it is pointed out that the process for the preparation of a polymer moulding powder according to Claim 11, which comprises all the technical features of the hierarchically higher claims on which it depends, is a combination of concrete process steps which are carried out using concrete starting products, has a technical character and does not fall under the exclusions of Article 52(2) EPC.

4.3 In fact the patent proprietor's objection is that approval for contact with food is not a technical feature and in view of different regulatory processes across Europe the scope of the claim may vary from country to country.

However, there can be no doubt that this requirement represents a further limitation on the components of the mixture. To the extent that food standards may vary from country to country or over time due to differing food contact standards, the clarity of the claims may be affected. However, this is not a matter of Article 52 EPC, but of Article 84 EPC, which is not a ground for opposition.

5. Priority

5.1 The opponent argued for the first time during the oral proceedings before the board that the claims were not entitled to the priority date of 21 February 2000, because the patent proprietor and former applicant is Borealis Technology Oy, whereas the GB priority document No. 0004043.6 was filed in the name of Borealis Polymers Oy. The opponent argued that Borealis Technology Oy and Borealis Polymers Oy were different companies and that there was no assignment of the priority between the two companies on file.

However the mere observation that the priority document was filed in the name of Borealis Polymers Oy whereas the originally filed patent application was filed in the name of Borealis Technology Oy does not necessarily mean that the priority is not validly claimed. The fact that no assignment document, or a similar document, is on file does not mean that such a transfer had not taken place (or was even not necessary in view of the relationship between the two companies).

In any event this objection could have been raised earlier in order to allow the board to investigate this issue and the patent proprietor to submit appropriate evidence. Admitting this objection at such a late stage of the proceedings would have required the adjournment of the oral proceedings. Hence, the board exercising its discretion under Article 13(3) Rules of the Procedure of the Boards of Appeal (OJ EPO 2007, 536) decided not to admit this objection into the proceedings.

5.2 The opponent also argued that Claim 10 was not entitled to the priority date and argued that the amended/corrected ranges of:

(a) 0.01 to 0.2 wt% for the organic phosphite or phosphonite antioxidant, and

(b) 0.01 to 0.5 wt% for the metal stearate

were not disclosed in the priority document.

However, the priority document discloses on page 16, lines 17-23, that the polymer moulding powder should preferably comprise 0.01 to 0.3 wt%, e.g. 0.1 to 0.2 wt% organic phosphite or phosphonite antioxidant, and 0.01 to 0.5 wt% metal stearate. The range of 0.01 to 0.2 wt% for the organic phosphite or phosphonite antioxidant results from the combination of the lower value of the broader range with the higher value of the narrower range, which, following the case law of the Boards of Appeal, is considered to be disclosed in the priority document and does not justify an objection to the entitlement to the priority (see also point 2.2.2 above).

5.3 No further objections with regard to entitlement to priority were raised against the claims of the proprietor's sole request. The board sees no reason to raise an objection of its own and therefore considers that all these claims are entitled to the priority date of 21 February 2000.

5.4 Consequently, F1 (published on 2 March 2000) is state of the art under Article 54(3) EPC, whereas F4 (article

published in April 2000) does not form part of the state of the art under Article 54 EPC at all.

6. Interpretation of the claimed subject-matter

6.1 The sole request of the patent proprietor comprises three independent claims:

- Claim 1 relating to the preparation of a polymer moulding powder for rotational moulding;
- Claim 14 relating to a polymer moulding powder for rotational moulding obtainable by a process as claimed in any one of Claims 1 to 13; and
- Claim 15 relating to a process for the preparation of a moulded polymer item.

All these claims comprise explicitly or implicitly the following three process steps:

(i) obtaining a plurality of polyolefin polymer particles having a mean particle size of 1 to 2000 μm ;

(ii) heating a mixture of ingredients (A) to (D) to a temperature of between 20°C and 200°C; and

(iii) depositing the mixture onto the said polyolefin polymer particles.

6.2 The board remarks that ingredient (D), the diluent, is not specifically defined and that in view of the upper limit of the temperature range to which the mixture can be heated, namely 200°C, many compounds suitable as a

diluent will evaporate during the process according to Claims 1-13, so that the diluent will not necessarily be present in the finished polymer moulding powder of Claim 14. However, a diluent (D) is a mandatory ingredient of the mixture to be heated according to step (ii) of the claimed process.

6.3 According to the wording of independent Claims 1 and 15, both the ingredient (E) as such and step (iv), blending a metal stearate to the polymer particles, are optional. Thus, contrary to the proprietor's view, the use of ingredient (E), the metal stearate, is not mandatory for the process for the preparation of a polymer moulding powder and not necessarily present in the latter.

7. Novelty (Article 54 EPC)

7.1 Claim 1

Documents F1, F2, F3 and F7 were cited against the novelty of Claim 1.

7.1.1 As already pointed out in point 3.2 above, F1 (abstract; Claims 10 and 11; Examples 1, 4, 5, 7 and 8) relates to the preparation of a polymer moulding powder for rotational moulding using masterbatch technology which is different from the technology used in the opposed patent. More specifically, F1 discloses a process for the preparation of a moulded polymer item using a moulding powder having a mean particle size of 1 to 2000 µm and comprising an admixture of UV-stabiliser-loaded polymer particles and non-UV-stabiliser-loaded polyolefin polymer particles.

In contrast to the disclosure of F1 the process of Claim 1 of the patent in suit does not use the masterbatch technology but proceeds in such a manner that all the polymer particles are loaded with a stabilisers mixture containing a UV-stabiliser. By doing so homogeneously coated polymer particles are obtained. Therefore the process of Claim 1 is novel over the disclosure of F1.

As regards Comparative Examples 10A and 10C of F1 (during the oral proceedings the opponent referred in particular to Comparative Example 10C), the procedure used in these examples differs from the process of Claim 1. In Comparative Example 10A no diluent is used. The process according to Comparative Example 10C involves the preparation of two mixtures each containing different stabilisers and different diluents, which mixtures are sequentially deposited on the polyethylene particles; in a first step the polymer particles are sprayed with a diluent containing the UV-stabiliser, then the coated particles obtained are sprayed with a diluent containing the other stabilisers, namely the phenolic antioxidant and the organic phosphite antioxidant.

As regards the opponent's further argument that F1 discloses all the features of Claim 1, including spraying a mixture of stabilizer and additives (page 22, lines 22-24), the board agrees with the opposition division and the proprietor that in order to arrive at the subject-matter of Claim 1, several selections would have to be made from various passages of F1. The use of the three specified UV-stabilisers with the other

features of Claim 1 is not clearly and unambiguously disclosed in F1. For example, F1 discloses quite a number of UV-stabilisers. The passage highlighted by the opponent on page 22 as an alleged use of a diluent is not related to a specific mixture of stabilisers. Moreover, on line 27 of page 22, the use of powdered additives or stabilisers is described.

For a lack of novelty to be present there must be a clear and unambiguous disclosure of the claimed subject-matter. No such disclosure having been found in F1 the process of Claim 1 is novel over F1.

- 7.1.2 F2 (page 3, line 13 to page 5, line 11) discloses a process for stabilising polymeric materials by the addition of a stabilising composition. F2 does not disclose that the polymer particles should have a mean size of 1 to 2000 μm as required by Claim 1 of the opposed patent. The opponent did not file any evidence in support of its allegation that this size is inherent or inevitable.

The mixture of stabilisers as claimed in the opposed patent could be derived from the disclosure of F2 only by making numerous selections. The skilled person would have to choose the phenolic antioxidant which is an optional feature in F2. He would have to select also the appropriate UV-stabiliser from a very large number of such stabilisers (page 10, line 12 to page 19, line 14).

As to the diluent, F2 (page 20, third paragraph) mentions a solvent but only as one of a number of options for formulating the stabilising composition;

other options include a solid composition without mentioning a diluent. Thus, with the exception of the phosphite/phosphonite antioxidant, the person skilled in the art would be constrained to make selections from the disclosure of F2 to arrive at every feature of steps (i) and (ii) of Claim 1. Consequently the claimed combination of features cannot be said to emerge from F2.

7.1.3 F3 does not disclose the specific combination of features required by Claim 1. Firstly, it does not describe the required particle size and it is not at all implicit that the particles disclosed in F3 have such a particle size. Secondly, whilst phenolic and phosphite antioxidants are disclosed on page 3, lines 41-47, there is no disclosure whatsoever of the combination of phenolic and phosphite antioxidants as required by Claim 1. Thirdly, Cyasorb 3346TM, one of the UV-stabilisers identified in the process of Claim 1, is merely disclosed in a list of potential UV-stabilisers amongst many other alternatives (page 3, lines 53-58). Again multiple selections would have to be made from the teaching of F3 in order to arrive at the claimed subject-matter. Since these selections are not hinted at in F3, novelty over F3 is acknowledged.

7.1.4 Also F7 does not disclose the specific combination of features required by Claim 1. Comparative Examples 1a and 1c (columns 39 and 40; Tables 1 and 2), referred to by the opponent, disclose hot melting of the particles with a stabiliser mixture in an extruder followed by grinding, thus forming a homogeneous melt of the components (column 39, lines 34-42). This corresponds to the state of the art mentioned in the opposed patent

(paragraph [0003], page 2, lines 16-19) and is different from depositing a stabiliser mixture onto the polyolefin polymer particles as required by Claim 1, which leads to polymer particles with a stabiliser-mixture coating. Moreover, even if the skilled reader considered the passage referred to by the opponent in column 39, lines 10-15, which discloses depositing a stabiliser mixture onto polyolefin polymer particles by spraying, this specific disclosure relates to a mixture of a different composition. It does not include the phenolic antioxidant, which is compulsory according to contested Claim 1, but a compound selected from the group of the 3-arylbenzofuranones which group does not form part of the stabiliser mixture according to Claim 1. Thus there is no lack of novelty over F7.

7.1.5 In view of the above considerations the board comes to the conclusion that the subject-matter of Claim 1 is novel over the cited prior art.

7.2 Dependent Claims 2-13 are novel for the same reasons.

7.3 Claim 14

7.3.1 Claim 14 relates to a polymer moulding powder for rotational moulding obtainable by a process as claimed in Claim 1. The board concurs with the patent proprietor that none of the cited prior art discloses the polymer moulding powder of Claim 14.

7.3.2 F1 (Examples 1, 4, 5, 7 and 8) discloses polymer moulding powders for rotational moulding obtained applying masterbatch technology as already explained in point 7.1.1 above. The moulding powder has a mean

particle size of 1 to 2000 μm and comprises an admixture of UV-stabiliser loaded polymer particles and non UV-stabiliser loaded polyolefin polymer particles. There are therefore two different polymer powders used, one carrying a UV-stabiliser and the other not carrying a UV-stabiliser.

In Example 5, specifically referred to by the opponent, the non UV-stabiliser loaded particles are heated to 70°C and antioxidants and mineral oil sprayed onto those particles. Thus the antioxidant mix and mineral oil are located on the non UV-stabilised particles. Next, the stearate and masterbatch powder (i.e., UV-stabiliser loaded particles) are added. The result of this process is necessarily a polymer powder where some particles are free of UV-stabiliser but carry the antioxidant mix and diluent and some other particles (the masterbatch powder) carry UV-stabilisers and are essentially free of the antioxidant mix and diluent. There is no evidence that the UV-stabiliser from the masterbatch particles transfers onto the non-masterbatch particles so that what is formed is a completely homogeneous mixture of particles indistinguishable from each other. This would have been needed for a successful novelty attack against the process according to Claim 1 of the opposed patent. The same argument applies to the antioxidant mix and diluent. There is no reason to assume that it transfers from the particles on which it is sprayed onto the masterbatch particles. The process of the opposed patent requires that every particle contains a stabiliser, an antioxidant and a diluent, because all the additives are added together. Consequently, the moulding powder obtained according to the process of

Claim 1 differs from the polymer powder obtained by the masterbatch technology disclosed in F1.

Concerning the polymer moulding powders produced in Comparative Examples 10A and 10C, it has already been explained in point 7.1.1 above, that these moulding powders are produced by a process which differs from the process of Claim 1. It is evident from F1 that these powders when rotomoulded leave deposits of the UV-stabiliser on the mould which are identified visually and confirmed by FT-IR analysis (page 31, lines 7-9 and page 32, lines 10-11). Contrary to these powders the powders of Claim 14 allow their direct rotomoulding without deposit formation (patent in suit: paragraphs [0005], [0058] and [0061]). Consequently, the powders obtained in Comparative Examples 10A and 10C of F1 must be different from the powders of Claim 14.

7.3.3 F2 and F3 each discloses moulding powders different from those according to Claim 14 (see points 7.1.2 and 7.1.3 above).

7.3.4 F7 discloses moulding powders using the melt process of the prior art cited in the patent in suit (see paragraph [0003]). The claimed powders are produced by depositing the stabilisers onto the polyolefin polymer particles. On the basis of this different preparation process the claimed powder can be distinguished from that of F7.

The powders of Comparative Examples 1a and 1c (columns 39 and 40, Tables 1 and 2) may contain the ingredients of the claimed powder, but they are

disclosed as being prepared by the melt process (see column 39, lines 34-42) and are therefore different. Contrary to the allegation of the opponent, there is no disclosure in F7 that these comparative powders could be prepared by spraying the stabilisers onto the polyolefin particles. The step of spraying the stabilisers onto the polyolefin particles disclosed on column 39, lines 10-15, cannot be considered as inherently combinable with any exemplified process, in particular with the process of a comparative example such as 1a and 1c.

7.3.5 Therefore the product of Claim 14 is novel over the cited state of the art.

7.4 Claim 15

7.4.1 Claim 15 relates to a process for the preparation of a moulded polymer item. It contains all steps of Claim 1, namely (i) to (iv) and the additional step (v) of rotomoulding the polymer moulding powder particles obtained from the previous steps.

7.4.2 From the cited documents only F1 and F7 disclose rotomoulding. However, for the reasons set out in the context of the process of Claim 1, F1 and F7 disclose processes which are different from that of Claim 1. Consequently, the process of Claim 15 must be different, too.

8. Inventive step (Article 56 EPC)

8.1 Claim 1

8.1.1 The board considers that F7 represents the closest state of the art. This document discloses the production of polyolefin hollow articles by a rotomoulding process. In the process of F7 (e.g. Example 1), stabilisers and polymer powder are mixed, melt-extruded and ground, and the ground extrudate is subsequently rotationally moulded. The mixture used in F7 provides excellent stabilisation in the rotomoulding process. Thus, F7 not only belongs to the same technical field as the claimed process but also has the most features in common compared to the other cited documents. Therefore F7 is for the skilled person the most promising springboard towards the claimed process. In fact, F7 is representative of the prior art technique referred to in paragraph [0003] of the patent specification.

The board does not agree with the opponent that F5 should be considered to represent the closest state of the art. The opponent based its contention on the argument that the process claimed had not been shown to have any technical effect. This argument is, however, not convincing, as explained under point 3 above. Furthermore, F5 does not suggest that the disclosed stabilised polyolefin powder can be used for rotomoulding and is therefore more remote from the claimed process than F7.

8.1.2 As set out in paragraph [0005] of the patent specification, the problem underlying the patent in suit in the light of the closest prior art F7 is to avoid the formation of unacceptable deposits of the UV-stabiliser on the surface of the mould used in rotational moulding.

- 8.1.3 As a solution to this problem the patent in suit proposes a different stabiliser composition (F7 does not require a phenolic antioxidant or a diluent, instead it requires a 3-arylbenzofuranone), and a specific depositing-method of the stabiliser mixture onto the polymer particles (basically a coating process).
- 8.1.4 The patent contains experimental evidence (Examples 2 and 3) which shows that the technical problem has effectively been solved. Paragraph [0058] recites:
"There was no deposits of UV-stabilizer on the mould (visual inspection of the mould and FT-IR analysis)..."
- 8.1.5 The skilled person starting from the disclosure of F7 and aiming at a process for the preparation of a polymer moulding powder for rotational moulding without deposit formation finds no hint in F7, the rest of the cited state of the art or in a combination of them towards depositing a stabiliser composition constituted of components (A) to (D) as claimed onto the polyolefin polymer particles. Nor can this be considered to belong to the general background knowledge of the skilled person. Therefore the process of Claim 1 not being obvious it involves an inventive step.
- 8.1.6 The board takes note of the argument of the opponent that Examples 1a and 1c of F7 should be considered as the most relevant disclosure of this document for the assessment of inventive step because in these examples components (A), (B), (C) and (E) of Claim 1 are used. The board, however, disagrees with the opponent for the simple reason that Examples 1a and 1c are comparative

examples (Table 40, line 49, footnote b)) and thus do not illustrate the invention of F7. But even if, *arguendo*, these examples were considered as closest state of the art, the board remarks that the process for the preparation of the polymer moulding powder is still that of Example 1 (column 39, lines 34-42), which, as explained in point 7.3.4 above, does not involve depositing the stabiliser composition including a diluent onto the polyolefin polymer particles. Furthermore, the explicit qualification of these examples as comparative would deprive the skilled person from any motivation towards modifying the process such that the stabiliser composition is deposited onto the polymer particles. Thus, even if F7 (column 39, lines 10-21) discloses spraying the stabiliser composition on the polymer particles - spraying being a form of depositing - only based on hindsight would one derive that "spraying", disclosed as an alternative in the general disclosure of F7, should replace "mixing/extruding/grinding" in a comparative example. Thus this argument of the opponent is rejected.

- 8.1.7 For the sake of completeness the board has also assessed inventive step taking F5 as starting point. F5 discloses a process for the stabilisation of olefin polymers comprising the deposition of a stabiliser mixture onto the surface of the polymer particles. As already pointed out F5 does not actually suggest the possibility of rotomoulding. In the absence of any suggestion of rotomoulding, the problem which the process of Claim 1 sets out to solve and the solution which is offered do not even come into play. Whilst F5 describes a mixture of antioxidants and UV-stabilisers

in general, there is however no disclosure anywhere in F5 of the specific UV-stabilisers employed in the process of Claim 1. F5 suggests a variety of UV-stabilisers including various TinuvinTM (page 7, Examples 8 and 9). The proprietor submitted evidence (F8) that TinuvinTM 622 gives rise to unacceptable levels of deposits on moulds. Thus, when TinuvinTM 622 is used as a stabiliser, unacceptable amounts of deposits are visible on the mould. It is clear, therefore, that F5 does not consider the problem of the invention or how to solve it. There is quite simply no motivation whatsoever to carry out a process as claimed in Claim 1. Consequently the subject-matter of Claim 1 is clearly inventive over F5.

Also a combination of F5 (Example 9) with F7 does not lead to the claimed invention since F7 discloses a stabiliser composition comprising as essential ingredients an organic phosphite/phosphonite and a 3-arylbenzofuranone. Thus, quite apart from the question as to whether or not the skilled person would even combine the F5 with the teaching of F7, such a combination would not result in the claimed process. A combination of F5 with a UV-stabiliser used in F7 in a comparative example, not representing the invention of F7, would be based on hindsight.

- 8.2 For the same reasons Claims 2-13, dependent on Claim 1 and representing preferred modes of carrying out that process, involve an inventive step.

8.3 Claim 14 (Product-by-process)

The polymer moulding powder for rotational moulding obtainable from the process of Claims 1-13 involves also an inventive step in view of its property of preventing formation of unacceptable deposits on the mould, this property being non obvious in view of either the state of the art or the general technical knowledge of the person skilled in this art.

8.4 Claim 15 (Process)

The same considerations apply to the process of Claim 15 for the preparation of a moulded polymer. The avoidance of unacceptable deposit formation is still the crucial element which attributes inventive step to the claimed process.

9. Amended description

During the oral proceedings the patent proprietor filed a description (pages 2 to 12) adapted to the claims considered to be patentable by the board. The opponent did not raise objections against the amended description and the board is satisfied that it fulfils the requirements set by the EPC.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the opposition division with the order to maintain the patent in the following version:
 - Claims 1-15 filed as auxiliary request V with letter dated 12 December 2008;

 - description pages 2-12 as filed during the oral proceedings before the board.

The Registrar:

The Chairman:

G. Röhn

W. Sieber