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Datasheet for the decision of 27 April 2017

Case Number: T 0865/13 - 3.3.03

Application Number: 06724564.7

Publication Number: 1885783

IPC: C08K5/00, C08L23/06

Language of the proceedings: EN

Title of invention:
STABILIZED CROSS-LINKED POLYOLEFIN COMPOSITIONS

Patent Proprietor:
Addivant Switzerland GmbH

Opponents:
The Dow Chemical Company
BASF Schweiz AG

Headword:

Relevant legal provisions:
EPC Art. 123(2), 123(3)
RPBA Art. 13(1)

Keyword:
Amendments - broadening of claim (yes: main request and auxiliary requests III and IV) - added subject-matter (yes: auxiliary requests I and II)
Late-filed request - justification for late filing (no: auxiliary request V)

Decisions cited:
G 0001/93, G 0002/10, T 2017/07, T 0009/10

Catchword:

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Case Number: T 0865/13 - 3.3.03

D E C I S I O N
of Technical Board of Appeal 3.3.03
of 27 April 2017

Appellant: (Patent Proprietor)	Addivant Switzerland GmbH Angensteinerstrasse 6 4153 Reinach BL (CH)
Representative:	Brand, Thomas Louis TL Brand & Co 17 Hanover Square London W1S 1BN (GB)
Respondent: (Opponent 1)	The Dow Chemical Company 2030 Dow Center Midland, MI 48674 (US)
Representative:	Boult Wade Tennant Verulam Gardens 70 Gray's Inn Road London WC1X 8BT (GB)
Respondent: (Opponent 2)	BASF Schweiz AG Klybeckstrasse 141 4057 Basel (CH)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 11 February 2013 revoking European patent No. 1885783 pursuant to Article 101(3)(b) EPC.**

Composition of the Board:

Chairman	M. C. Gordon
Members:	O. Dury
	R. Cramer

Summary of Facts and Submissions

I. The appeal by the patent proprietor lies from the decision of the opposition division revoking European patent EP 1 885 783, based on application No. 06 724 564.7 and published as WO 2006/114283.

II. The claims of the application as filed which are relevant to the present decision read as follows:

"2. A composition comprising:

(a) at least one polyolefin;

(b) at least one organic peroxide; and

(c) an antioxidant mixture comprising:

(i) 100 to 5,000 ppm of at least one fast radical scavenger selected from the group consisting of α-tocopherol; β-tocopherol; γ-tocopherol; δ-tocopherol; 4,6-bis (octylthiomethyl) o-cresol and derivatives thereof; 4,4'-thiobis(2-methyl-6-t-butylphenol), 4,4'-thiobis(2-t-butyl-5-methylphenol); 2,2'-thiobis(6-t-butyl-4-methylphenol); 2,2'-thiobis 4-octyl phenol; 1,3,5-tris (4-tert-butyl-3-hydroxy-2,6-dimethylbenzyl)-l, 3,5-triazine-2,4,6-(lH,3H,5H)-trione; 2,5-di-t-amylhydroquinone; a polymeric sterically hindered phenol with CAS number 36443-68-2; oxidized bis(hydrogenated tallow alkyl) amines; bis-(l-octyloxy-2,2,6,6-tetramethyl-4-piperidinyl) sebacate; 4,4'-bis(α,α-dimethylbenzyl) diphenylamine; N-phenyl-styrenated benzenamine; diphenylamine/acetone reaction product; p-(p-

toluene-sulfonylamido)-diphenylamine; and mixtures thereof; and

(ii) 100 to 8,000 ppm of at least one long term stabilizer selected from the group consisting of 2,2'-thiodiethylene bis[3(3,5-di-t-butyl-4-hydroxyphenyl) propionate]; tetrakismethylene (3,5-di-t-butyl-4-hydroxyhydrocinnamate)methane; octadecyl 3-(3',5'-di-t-butyl-4'-hydroxy-phenyl)propionate; C_9-C_{11}, linear and branched alkyl esters of 3-(3',5'-di-t-butyl-4'-hydroxyphenyl) propionic acid; C_{13}-C_{15} linear and branched alkyl esters of 3-(3',5'-di-t-butyl-4'-hydroxyphenyl) propionic acid; 1,3,5-tris(3,5-di-t-butyl-4-hydroxybenzyl)isocyanurate; 1,3,5-trimethyl-2,4,6-tris(3,5-di-t-butyl-4-hydroxybenzyl)benzene; N,N'-hexamethylene bis[3-(3,5-di-t-butyl-4-hydroxyphenyl)propionamide]; 1,2-bis(3,5-di-t-butyl-4-hydroxyhydrocinnamoyl) hydrazine; distearyl 3,3'-thiopropionate; dilauryl 3,3'-thiopropionate; ditridecylthiodipropionate; mixed lauryl-+stearylthiopropionate [sic]; pentaerythritol tetrakis(β-laurylthiopropionate); polymerized 1,2-dihydro-2,2,4-trimethylquinoline; 2,4-bis(n-octylthio)-6-(4-hydroxy-3,5-di-t-butylanilino)-1, 3,5-triazine; 4,4'-bis(α,α-dimethylbenzyl) diphenylamine; N-phenyl-styrenated benzenamine; diphenylamine/acetone reaction product; p-(p-toluene-sulfonylamido)- diphenylamine; and mixtures thereof."

"3. The composition of claim 2 wherein the polyolefin comprises an ethylene polymer or copolymer."

"5. The composition of claim 2 wherein the fast radical scavenger comprises 4,6-bis(octylthiomethyl)o-cresol or derivatives thereof."

"7. The composition of claim 3 wherein the fast radical scavenger comprises 4,6-bis(octylthiomethyl)o-cresol and the long term stabilizer comprises 2,2'-thiodiethylene bis[3(3,5-di-t-butyl-4-hydroxyphenyl)propionate]."

"8. The composition of claim 7 wherein the long term stabilizer further comprises distearyl 3,3'-thiopropionate."

"9. The composition of claim 7 wherein the long term stabilizer further comprises ditridecyl thiodipropionate."

"10. The composition of claim 3 wherein the fast radical scavenger comprises 4,6-bis(octylthiomethyl)o-cresol and the long term stabilizer comprises at least one C_{13}-C_{15} linear or branched alkyl ester of 3-(3',5'-di-t-butyl-4'-hydroxyphenyl) propionic acid."

"11. The composition of claim 10 wherein the long term stabilizer further comprises distearyl 3,3'-thiopropionate."

"12. The composition of claim 10 wherein the long term stabilizer further comprises ditridecyl thiodipropionate."

"13. The composition of claim 3 wherein the fast radical scavenger comprises 4,6-bis(octylthiomethyl)o-cresol and the long term stabilizer comprises ADK stab AO 23."

"14. The composition of claim 13 wherein the long term stabilizer further comprises distearyl 3,3'-thiopropionate."

"15. The composition of claim 13 wherein the long term stabilizer further comprises ditridecyl thiodipropionate."

"16. The composition of claim 3 wherein the fast radical scavenger comprises 4,6-bis(octylthiomethyl)o-cresol and the long term stabilizer comprises 4,4'-bis(α,α-dimethylbenzyl) diphenylamine."

"17. The composition of claim 16 wherein the long term stabilizer further comprises distearyl 3,3'-thiopropionate."

"18. The composition of claim 16 wherein the long term stabilizer further comprises ditridecyl thiodipropionate."

III. Claim 1 of the granted patent read as follows (additions as compared to original claim 2 are indicated in **bold**, deletions in ~~strikethrough~~):

"1. A composition comprising:

(a) at least one polyolefin;

(b) at least one organic peroxide; and

(c) an antioxidant mixture comprising:

(i) 100 to 5,000 ppm of at least one fast radical scavenger selected from the group consisting of

α-tocopherol; ~~β-tocopherol; γ-tocopherol; δ-tocopherol;~~ 4,6-bis (octylthiomethyl) o-cresol and derivatives thereof; ~~4,4'-thiobis(2-methyl-6-t-butylphenol), 4,4'-thiobis(2-t-butyl-5-methylphenol); 2,2'-thiobis(6-t-butyl-4-methylphenol); 2,2'-thiobis 4-octyl phenol; 1,3,5-tris (4-tert-butyl-3-hydroxy-2,6-dimethylbenzyl)-l,3,5-triazine-2,4,6-(lH,3H,5H)-trione; 2,5-di-t-amylhydroquinone; a polymeric sterically hindered phenol with CAS number 36443-68-2; oxidized bis(hydrogenated tallow alkyl) amines; bis-(l-octyloxy-2,2,6,6-tetramethyl-4-piperidinyl) sebacate; 4,4'-bis(α,α-dimethylbenzyl) diphenylamine; N-phenyl-styrenated benzenamine; diphenylamine/acetone reaction product; p-(p-toluene-sulfonylamido)-diphenylamine;~~ and mixtures thereof; and

(ii) 100 to 8,000 ppm of at least one long term stabilizer selected from the group consisting of 2,2'-thiodiethylene bis[3(3,5-di-t-butyl-4-hydroxyphenyl) propionate]; ~~tetrakismethylene (3,5-di-t-butyl-4-hydroxyhydrocinnamate)methane; octadecyl 3-(3',5'-di-t-butyl-4'-hydroxy-phenyl)propionate; C_9-C_1, linear and branched alkyl esters of 3-(3',5'-di-t-butyl-4'-hydroxyphenyl) propionic acid;~~ C_{13}-C_{15} linear and branched alkyl esters of 3-(3',5'-di-t-butyl-4'-hydroxyphenyl) propionic acid; ~~1,3,5-tris(3,5-di-t-butyl-4-hydroxybenzyl)isocyanurate; 1,3,5-trimethyl-2,4,6-tris(3,5-di-t-butyl-4-hydroxybenzyl)benzene; N,N'-hexamethylene bis[3-(3,5-di-t-butyl-4-hydroxyphenyl)propionamide]; 1,2-bis(3,5-di-t-butyl-4-hydroxyhydrocinnamoyl) hydrazine;~~ distearyl 3,3'-thiopropionate; ~~dilauryl 3,3'-thiopropionate; ditridecylthiodipropionate; mixed lauryl-~~

~~+stearylthiopropionate [sic]; pentaerythritol tetrakis(β-laurylthiopropionate); polymerized 1,2-dihydro-2,2,4-trimethylquinoline; 2,4-bis(n-octylthio)-6-(4-hydroxy-3,5-di-t-butylanilino)-1, 3,5-triazine;~~ 4,4'-bis(α,α-dimethylbenzyl) diphenylamine; ~~N-phenyl-styrenated benzenamine; diphenylamine/acetone reaction product; p-(p-toluene-sulfonylamido)- diphenylamine; and mixtures thereof~~ **ADK stab AO 23 ™ (CAS-Number 66534-05-2, 71982-66-6); and mixtures thereof."**

IV. A notice of opposition to the patent was filed requesting revocation of the patent on the grounds of Article 100(a) EPC (both lack of novelty and lack of an inventive step) and Article 100(c) EPC.

V. A first oral proceedings before the opposition division was adjourned following the raising of an objection by the present respondent 2 pursuant to Article 123(3) EPC on the grounds that deletion of certain of the compounds which in the granted patent had been subject to a limitation of the maximum amount meant that these could now be present in a higher amount.

In the contested decision the opposition division *inter alia* held that none of the pending main request and auxiliary requests 1 and 2 fulfilled the requirements of Article 123(2) EPC. Also, the patent proprietor's request for apportionment of costs, arising from the adjournment of the first oral proceedings, was refused.

VI. The patent proprietor (appellant) lodged an appeal against the above decision and requested in its statement of grounds of appeal that the decision of the opposition division be set aside and that the patent be maintained in amended form according to either the

main request or any of auxiliary requests I-IV filed therewith. The appellant further requested to overturn the opposition division's decision not to allow an apportionment of costs.

Claim 1 of the main request corresponded to granted claim 1 whereby "α-tocopherol" was deleted from feature (c)(i).

Claim 1 of auxiliary request I corresponded to granted claim 1 whereby feature (c)(i) was amended to read as follows (additions as compared to feature (c)(i) of original claim 2 are indicated in **bold**, deletions in ~~strikethrough~~):

"(i) 100 to 5,000 ppm of at least one fast radical scavenger ~~selected from the group consisting of α-tocopherol; β-tocopherol; γ-tocopherol; δ-tocopherol; 4,6-bis (octylthiomethyl) o-cresol and derivatives thereof; 4,4'-thiobis(2-methyl-6-t-butylphenol), 4,4'-thiobis(2-t-butyl-5-methylphenol); 2,2'-thiobis(6-t-butyl-4-methylphenol); 2,2'-thiobis 4-octyl phenol; 1,3,5-tris (4-tert-butyl-3-hydroxy-2,6-dimethylbenzyl)-1,3,5-triazine-2,4,6-(1H,3H,5H)-trione; 2,5-di-t-amylhydroquinone; a polymeric sterically hindered phenol with CAS number 36443-68-2; oxidized bis(hydrogenated tallow alkyl) amines; bis-(1-octyloxy-2,2,6,6-tetramethyl-4-piperidinyl) sebacate; 4,4'-bis(α,α-dimethylbenzyl) diphenylamine; N-phenyl-styrenated benzenamine; diphenylamine/acetone reaction product; p-(p-toluene-sulfonylamido)-diphenylamine; and mixtures thereof~~;

wherein the fast radical scavenger consists of 4,6-bis (octylthiomethyl) o-cresol or derivatives thereof."

Claim 1 of auxiliary request II was identical to claim 1 of auxiliary request I.

Claim 1 of auxiliary request III read as follows (additions as compared to original claim 2 are indicated in **bold,** deletions in ~~strikethrough~~):

"1. A composition comprising:

(a) at least one polyolefin;

(b) at least one organic peroxide; and

(c) an antioxidant mixture comprising:

(i) 100 to 5,000 ppm of at least one fast radical scavenger selected from the group consisting of ~~α-tocopherol; β-tocopherol; γ-tocopherol; δ-tocopherol;~~ 4,6-bis (octylthiomethyl) o-cresol ~~and derivatives thereof; 4,4'-thiobis(2-methyl-6-t-butylphenol), 4,4'-thiobis(2-t-butyl-5-methylphenol); 2,2'-thiobis(6-t-butyl-4-methylphenol); 2,2'-thiobis 4-octyl phenol; 1,3,5-tris (4-tert-butyl-3-hydroxy-2,6-dimethylbenzyl)-1,3,5-triazine-2,4,6-(1H,3H,5H)-trione; 2,5-di-t-amylhydroquinone; a polymeric sterically hindered phenol with CAS number 36443-68-2; oxidized bis(hydrogenated tallow alkyl) amines; bis-(1-octyloxy-2,2,6,6-tetramethyl-4-piperidinyl) sebacate; 4,4'-bis(α,α-dimethylbenzyl) diphenylamine; N-phenyl-styrenated benzenamine; diphenylamine/acetone reaction product; p-(p-toluene-sulfonylamido)-diphenylamine; and mixtures thereof~~; and

(ii) 100 to 8,000 ppm of at least one long term stabilizer selected from the group consisting of 2,2'-thiodiethylene bis[3(3,5-di-t-butyl-4-hydroxyphenyl) propionate]; ~~tetrakismethylene (3,5-di-t-butyl-4-hydroxyhydrocinnamate)methane; octadecyl 3-(3',5'-di-t-butyl-4'-hydroxy-phenyl)propionate; C_9-C_1, linear and branched alkyl esters of 3-(3',5'-di-t-butyl-4'-hydroxyphenyl) propionic acid;~~ C_{13}-C_{15} linear and branched alkyl esters of 3-(3',5'-di-t-butyl-4'-hydroxyphenyl) propionic acid; ~~1,3,5-tris(3,5-di-t-butyl-4-hydroxybenzyl)isocyanurate; 1,3,5-trimethyl-2,4,6-tris(3,5-di-t-butyl-4-hydroxybenzyl)benzene; N,N'-hexamethylene bis[3-(3,5-di-t-butyl-4-hydroxyphenyl)propionamide]; 1,2-bis(3,5-di-t-butyl-4-hydroxyhydrocinnamoyl) hydrazine; distearyl 3,3'-thiopropionate; dilauryl 3,3'-thiopropionate; ditridecylthiodipropionate; mixed lauryl-+stearylthiopropionate [sic]; pentaerythritol tetrakis(β-laurylthiopropionate); polymerized 1,2-dihydro-2,2,4-trimethylquinoline; 2,4-bis(n-octylthio)-6-(4-hydroxy-3,5-di-t-butylanilino)-1,3,5-triazine;~~ 4,4'-bis(α,α-dimethylbenzyl) diphenylamine; ~~N-phenyl-styrenated benzenamine; diphenylamine/acetone reaction product; p-(p-toluene-sulfonylamido)- diphenylamine; and mixtures thereof~~ **ADK stab AO 23 ™ (CAS-Number 66534-05-2, 71982-66-6); and mixtures thereof;**

wherein the polyolefin comprises an ethylene polymer or copolymer."

Claim 1 of auxiliary request IV was identical to claim 1 of auxiliary request III.

VII. In its reply to the statement of grounds of appeal opponent 2 (respondent 2) requested that the appeal be dismissed. A request for apportionment of costs was further submitted.

VIII. With letter of 24 October 2013 the Board was informed that the appellant's representative had changed and that the representation would now be assumed by Mr. T.L. Brand of WP Thompson.

IX. In a communication issued on 12 October 2015 the parties were informed that the Board was about to start examining the appeal. It was further indicated that, should the parties wish to make further submissions, they should do so as soon as possible, so that the Board may, if appropriate, take any response into account when starting the examination of the appeal.

X. With letter of 18 November 2015 the Board was informed about a (further) change of representative for the appellant, whereby a general authorisation dated 28 May 2015 was simultaneously filed. That authorisation was in the name of the same representative as before, Mr. T.L. Brand, now working for a different firm, TL Brand & Co. Ltd.

XI. With letter of 15 December 2015 the parties were summoned to oral proceedings to be held on 15 November 2016.

XII. In a communication issued by the Board on 23 May 2016, issues to be discussed at the oral proceedings were specified.

XIII. Respondent 1, who had, *bis dato,* made no written submissions in the appeal proceedings indicated with

letter of 16 August 2016 that they would not attend the oral proceedings.

XIV. Respondent 2 submitted further arguments with letter of 19 September 2016. The request for apportionment of costs was withdrawn.

XV. With letter of 21 October 2016 the parties were informed that the oral proceedings scheduled for 15 November 2016 were cancelled.

XVI. With letter of 27 October 2016 the parties were summoned to oral proceedings to be held on 27 April 2017.

XVII. With letter of 16 January 2017 the appellant submitted auxiliary request V.

XVIII. During the oral proceedings before the Board, which was held on 27 April 2017 in the absence of respondent 1, as announced, the appellant withdrew its request for apportionment of costs. Also, after the Board had announced its decision that auxiliary request V filed with letter of 16 January 2017 was not admitted to the proceedings, said request was withdrawn and a new auxiliary request V was submitted.

The claims of said auxiliary request V which are relevant to the present decision read as follows (additions as compared to original claim 2 are indicated in **bold**, deletions in ~~strikethrough~~):

"1. A composition comprising:

(a) at least one polyolefin;

(b) at least one organic peroxide; and

(c) an antioxidant mixture comprising:

(i) 100 to 5,000 ppm of at least one fast radical scavenger consisting of ~~α-tocopherol; β-tocopherol; γ-tocopherol; δ-tocopherol;~~ 4,6-bis (octylthiomethyl) o-cresol ~~and derivatives thereof; 4,4'-thiobis(2-methyl-6-t-butylphenol), 4,4'-thiobis(2-t-butyl-5-methylphenol); 2,2'-thiobis(6-t-butyl-4-methylphenol); 2,2'-thiobis 4-octyl phenol; 1,3,5-tris (4-tert-butyl-3-hydroxy-2,6-dimethylbenzyl)-1,3,5-triazine-2,4,6-(1H,3H,5H)-trione; 2,5-di-t-amylhydroquinone; a polymeric sterically hindered phenol with CAS number 36443-68-2; oxidized bis(hydrogenated tallow alkyl) amines; bis-(1-octyloxy-2,2,6,6-tetramethyl-4-piperidinyl) sebacate; 4,4'-bis(α,α-dimethylbenzyl) diphenylamine; N-phenyl-styrenated benzenamine; diphenylamine/acetone reaction product; p-(p-toluene-sulfonylamido)-diphenylamine; and mixtures thereof~~; and

(ii) 100 to 8,000 ppm of at least one long term stabilizer selected from the group consisting of ~~2,2'-thiodiethylene bis[3(3,5-di-t-butyl-4-hydroxyphenyl) propionate]; tetrakismethylene (3,5-di-t-butyl-4-hydroxyhydrocinnamate)methane; octadecyl 3-(3',5'-di-t-butyl-4'-hydroxy-phenyl)propionate; C_9-C_1, linear and branched alkyl esters of 3-(3',5'-di-t-butyl-4'-hydroxyphenyl) propionic acid;~~ C_{13}-C_{15} linear and branched alkyl esters of 3-(3',5'-di-t-butyl-4'-hydroxyphenyl) propionic acid~~; 1,3,5-tris(3,5-di-t-butyl-4-hydroxybenzyl)isocyanurate; 1 ,3,5-trimethyl-2,4,6-tris(3,5-di-t-butyl-4-hydroxybenzyl)benzene; N,N'-~~

~~hexamethylene bis[3-(3,5-di-t-butyl-4-hydroxyphenyl)propionamide]; 1,2-bis(3,5-di-t-butyl-4-hydroxyhydrocinnamoyl) hydrazine; distearyl 3,3'-thiopropionate; dilauryl 3,3'-thiopropionate; ditridecylthiodipropionate; mixed lauryl-+stearylthiopropionate [sic]; pentaerythritol tetrakis(β-laurylthiopropionate); polymerized 1,2-dihydro-2,2,4-trimemylquinoline; 2,4-bis(n-octylthio)-6-(4-hydroxy-3,5-di-t-butylanilino)-1,3,5-triazine; 4,4'-bis(α,α-dimethylbenzyl) diphenylamine; N-phenyl-styrenated benzenamine; diphenylamine/acetone reaction product; p-(p-toluene-sulfonylamido)- diphenylamine; and mixtures thereof~~:
wherein the polyolefin comprises an ethylene polymer or copolymer."

"3. The composition of claim 1 wherein the long term stabilizer further comprises distearyl 3,3'-thiopropionate."

"4. The composition of claim 1 wherein the long term stabilizer further comprises ditridecyl thiodipropionate."

XIX. The appellant's arguments, as far as relevant to the present decision, may be summarised as follows:

Main request - Article 123(3) EPC

(a) As explained in the statement of grounds of appeal, the wording of feature (c)(i) of either operative claim 1 or granted claim 1 effectively limited the total amount of fast radical scavengers present in the whole composition to 100 to 5000 ppm and excluded the presence of any other fast radical

scavenger(s) not specified therein, whereby it was indicated in the application as filed which compounds were to be considered as fast radical scavengers. In particular, α-tocopherol could not be present in the composition according to claim 1.

(b) During the oral proceedings a different line of argumentation was additionally presented, according to which feature (c)(i) of granted claim 1 only imposed that one component out of the four alternatives "α-tocopherol", "4,6-bis (octylthiomethyl) o-cresol", "derivatives of 4,6-bis (octylthiomethyl) o-cresol" and "mixtures thereof" should be present in an amount of 100 to 5000 ppm. In particular granted claim 1 did not limit the amount of "α-tocopherol" as long as another component e.g. "4,6-bis (octylthiomethyl) o-cresol" was comprised in said amount.

(c) Decisions T 2017/07 and T 9/10 dealt with different factual situations and were not relevant.

(d) Therefore the deletion of "α-tocopherol" from granted claim 1 did not infringe the requirements of Article 123(3) EPC.

Auxiliary requests I and II - Article 123(2) EPC

(e) The amendment of feature (c)(ii) of claim 1 amounted to a single selection of five components from the longer list mentioned in feature (c)(ii) of original claim 5. In that respect, it was derivable from original claim 13 that the component ADK stab AO23™ should have been comprised in the list of feature (c)(ii) of original claim 2. Several passages on pages 17 to 19 of the

application as filed further supported the combination of additives as now specified in claim 1. The same combination of additives was further disclosed in original claims 7 to 18. Also, the examples of the application as filed pointed to the combination of additives defined according to features (c)(i) and (c)(ii) of operative claim 1. Therefore the requirements of Article 123(2) EPC were met.

Auxiliary requests III and IV - Article 123(3) EPC

(f) The same arguments were valid as for the main request.

Auxiliary request V - Admittance

(g) Auxiliary request V was filed in order to overcome the objections pursuant to Article 123(2) and (3) EPC maintained against the higher ranking requests, whereby each of features (c)(i) and (c)(ii) now limited the subject-matter of claim 1 to a single type of fast radical scavenger and long term stabiliser, respectively, as indicated on page 17, lines 8-11 and in claim 10 of the application as filed. In that respect, the explanation why the combination of additives specified in feature (c)(ii) contravened the requirements of Article 123(2) EPC was given to the appellant for the first time during the oral proceedings before the Board.Also it should be taken into account that a change in representative had taken place in the course of the appeal proceedings. Therefore auxiliary request V should be admitted to the proceedings.

XX. Respondent 2's arguments, as far as relevant to the present decision, were essentially as follows:

Main request - Article 123(3) EPC

(a) The composition according to granted claim 1 could not comprise "α-tocopherol" in an amount larger than 5000 ppm. In contrast thereto, the composition according to operative claim 1 could comprise "α-tocopherol" in any amount. In analogy to the findings of T 2017/07 and T 9/10 the deletion of "α-tocopherol" in feature (c)(i) of granted claim 1 was not allowable pursuant to Article 123(3) EPC.

(b) The wording "at least one of" mentioned in feature (c)(i) of either granted claim 1 or operative claim 1 indicated that the amount of 100 to 5000 ppm was related to any of the components specified in those claims if present in the whole composition. It could not be concluded that e.g. "α-tocopherol" could be present in any amount in the composition of operative claim 1 if e.g. "4,6-bis (octylthiomethyl) o-cresol" was further present in an amount comprised between 100 and 5000 ppm as argued by the appellant. Such a reading was further not supported by the description of the patent in suit and/or the application as filed.

Auxiliary requests I and II - Article 123(2) EPC

(c) Neither ADK stab AO23™ nor any of the two CAS numbers mentioned in feature (c)(ii) of operative claim 1 was present in the list of components indicated in feature (c)(ii) of original claim 2.

(d) Those two CAS numbers were also not indicated in original claim 13. Original claim 13 was directed to a specific polyolefin according to original claim 3, which was not the case with operative claim 1. Besides, original claim 13 only meant that the definition of the long term stabiliser (c)(ii) was enlarged compared to original claims 2 or 3 but did not constitute a pointer to the selection of five components and mixtures thereof now contained in feature (c)(ii).

(e) The additives combinations indicated on pages 17 to 19 of the application as filed or in original claims 7 to 18 were directed to compositions comprising specific antioxidants but did not provide support for all additives now specified in feature (c)(ii) nor supported the disclosure "and mixtures thereof" according to feature (c)(ii) of operative claim 1. Also, those passages were not directed to specific amounts of 100 to 8000 ppm of long term stabilisers according to operative claim 1. Original claims 7 to 18 were further directed to more specific polyolefins than operative claim 1.

(f) For those reasons the requirements of Article 123(2) EPC were not met.

Auxiliary requests III and IV - Article 123(3) EPC

(g) The same arguments were valid as for the main request.

Auxiliary request V - Admittance

(h) Auxiliary request V was late filed and should have been filed earlier, in particular because all

objections put forward by respondent 2 were on file since the opposition proceedings. The change of representative occurred long before the oral proceedings and could not justify the late filing.

(i) Auxiliary request V *prima facie* did not overcome the objections pursuant to Article 123(2) and (3) EPC raised against the higher ranking requests. It further raised a new issue in respect to the scope of the claims pursuant to Article 84 EPC because, considering claims 3 and 4, it was highly questionable if the wording of claim 1 imposed that the composition defined therein was limited so as to comprise a single fast radical scavenger and a single long term stabiliser as argued by the appellant.

XXI. The appellant requested that the decision under appeal be set aside and the case be remitted to the department of first instance for further prosecution on the basis of the main request or one of the first to fourth auxiliary requests all filed with the statement of grounds of appeal, or on the basis of the fifth auxiliary request filed during the oral proceedings.

Respondent 2 requested that the appeal be dismissed.

Respondent 1 made no request.

Reasons for the Decision

Main request

1. Hereinafter the chemical compounds will be denoted using the abbreviations given on page 9, lines 5-14 of the patent in suit as follows:

AO-1: 2,2'-thiodiethylene bis[3(3,5-di-t-butyl-4-hydroxphenyl)propionate];
AO-2: distearyl 3,3'-thiopropionate;
AO-4: 4,6-bis(octylthiomethyl)o-cresol;
AO-5: ditridecyl thiodipropionate;
AO-6: 4,4'-bis(α,α-dimethylbenzyl) diphenylamine;
AO-7: ADK stab AO-23;
AO-8: a mixture of C_{13}-C_{15} linear and branched esters of 3-3',5'-di-t-butyl-4'-hydroxyphenyl) propionic acid

2. Article 123(3) EPC

2.1 Article 123(3) EPC precludes amending the claims during opposition proceedings in such a way as to extend the protection conferred by the patent as granted, whereby said protection is, according to the established case law of the Boards of Appeal (see in particular G 1/93, point 11 of the reasons), assessed taking into account the provisions of Article 69(1) EPC and the protocol on its interpretation. Therefore, in order to decide whether or not an amendment of the patent in suit satisfies the requirements of Article 123(3) EPC it is necessary to compare the protection conferred by the granted claims with that of the operative claims after

amendment.

2.2 Scope of protection of granted claim 1

Feature (c)(i) of granted claim 1 defines that the antioxidant mixture of the claimed composition has to comprise 100 to 5000 ppm of at least one of α-tocopherol, AO4 and derivates thereof, and mixtures thereof.

In the Board's view the wording "at least one of" according to said feature (c)(i) *per se* imposes that if several of the components specified in said feature of granted claim 1 are effectively present in the composition, then the total amount (sum) of all such components must be comprised between 100 and 5000 ppm. The interpretation of feature (c)(i) contemplated by the appellant during the oral proceedings before the Board (see section XIX (b) above) is neither in line with the wording of granted claim 1 *per se* nor was it shown to be supported by any passage of the patent specification. Therefore, there is no reason to read it in a different manner than according to its literal wording, contrary to the appellant's view.

2.3 Scope of protection of operative claim 1

2.3.1 Feature (c)(i) of operative claim 1 reads "an antioxidant mixture **comprising**: (i) 100 to 5000 ppm of at least one fast radical scavenger **selected from the group consisting of** AO-4 and derivatives thereof; and mixtures thereof" (emphasis by the Board).

2.3.2 For the same reason as for granted claim 1, feature (c)(i) of operative claim 1 defines that the claimed composition comprises at least one of AO4,

derivates of AO4, and mixtures thereof, wherein the total amount of those compounds, if present, should be of at least 100 and at most 5000 ppm. However, operative claim 1 contains no explicit restriction with respect to the presence and/or to the amount of α-tocopherol. Furthermore since the wording "comprising" in feature (c)(i) of operative claim 1 is an open formulation, it allows for the presence in the so defined compositions of other components which are different from those specified in features (i) and (ii) according to claim 1.

2.4 During the proceedings the question arose whether or not the wording of feature (c)(i) allowed the presence of α-tocopherol as a further component of the composition defined in operative claim 1. In particular, the appellant argued that the wording of feature (c)(i) of operative claim 1 effectively limited the total amount of fast radical scavengers present in the whole composition to 100 to 5000 ppm and excluded the presence of any other fast radical scavenger(s) not specified therein, in particular α-tocopherol.

However, as explained in section 2.6 of T 2017/07 which was cited by the parties, in doing so the appellant gives two different meanings to the term "fast radical scavenger", namely it covers either any fast radical scavenger according to the patent in suit (when it is related to the amount) or only the specific components mentioned in feature (c)(i) (AO4 and derivatives thereof; and mixtures thereof).

It is further conspicuous that in respect of feature (c)(ii) of granted claim 1 the wording "at least one long term stabiliser selected from the group consisting of ..." allows for the presence of other

components not listed in granted claim 1 as shown by granted claim 8, the wording of which is similar to that of original claim 9 i.e. whereas AO-1, AO-2, AO-6, AO-7 and AO-8 are listed as long term stabiliser in granted claim 1, AO-5 is further mentioned as long term stabiliser according to granted claim 8. Therefore, granted claim 8 provides confirmation that the wording of operative claim 1 "comprising ... (i) 100 to 5000 ppm of at least one fast radical scavenger selected from the group consisting of ..." does not exclude the presence in the composition of operative claim 1 of α-tocopherol.

For those reasons the appellant's argument is not convincing.

2.5 In view of the above, the present case is similar to the situation considered in sections 2.2.2 and 2.2.3 of T 2017/07 since the amendment carried out in operative claim 1 (namely the deletion of the alternative "α-tocopherol") effectively corresponds to restricting the breadth of the fast radical scavenger defined in granted claim 1 by narrowing down the list of chemical compounds defining that component (see also Case Law of the Boards of Appeal of the EPO, 8th edition, 2016, II.E.2.4.13 which deals with the issue of narrowing down a list of chemical compounds in open claims "comprising"). However, in spite of the apparent limitation due to the explicit deletion of α-tocopherol, the wording of granted claim 1 and operative claim 1 is such that the deleted compound α-tocopherol, which was permitted to be present only in a specific amount according to granted claim 1, might still be present but with no limitation in quantity in operative claim 1. Therefore, the appellant's argument according to which the factual situation of the present

case is not the same as in T 2017/07 does not convince. The same is valid regarding the conclusion drawn in decision T 9/10 (see sections 1.1.7 and 1.1.8 of the reasons).

The above conclusion is in line with the decisions cited in Case Law, *supra,* II.E.2.4.13, whereby it may in particular be noted that operative claim 1 is not formulated according to the sequential drafting (formulation "en cascade") indicated therein (as for instance in claim 1 of auxiliary request I (see section VI).

2.6 In view of the above, it is concluded that in the present case compositions comprising α-tocopherol in an amount lower than 100 ppm or higher than 5000 ppm are within the scope of operative claim 1 but not within that of granted claim 1. For that reason, the requirements of Article 123(3) EPC are not fulfilled and the main request is not allowable.

Auxiliary requests I and II

3. Article 123(2) EPC

3.1 Claim 1 of auxiliary request I is identical to claim 1 of auxiliary request II. Therefore, the analysis made below is valid for both auxiliary requests I and II.

3.2 In accordance with the established case law, the relevant question to be answered in assessing whether the subject-matter of an amended claim extends beyond the content of the application as filed is whether after the amendment the skilled person is presented with new technical information (see G 2/10, OJ 2012, 376, point 4.5.1 of the Reasons and Case Law, *supra*,

II.E.1 and 1.2.1). In other words, the amendments are only allowable if the skilled person would derive the resulting claimed subject-matter directly and unambiguously, using common general knowledge, from the application as filed.

3.3 Claim 1 of auxiliary request I differs from claim 5 (dependent on claim 2) as originally filed *inter alia* in that the list of compounds used to define feature (c)(ii) was modified to read "AO1, AO8, AO2, AO6, AO7 (CAS-Number 66534-05-2, 71982-66-6); and mixtures thereof".

3.4 It was not disputed by the appellant, in particular during the oral proceedings before the Board, that the components AO7 (CAS-Number 66534-05-2, 71982-66-6) were not present in feature (c)(ii) of original claim 5 (i.e. the same list as in feature (c)(ii) according to original claim 2).

3.4.1 The appellant argued that it was derivable from original claim 13 that AO7 should have been comprised in the list of feature (c)(ii) of original claim 2 but was erroneously forgotten.

However, even if to the appellant's benefit such a reading of original claim 13 was to be made, original claim 13 was dependent on original claim 3 and was therefore limited to a polyolefin comprising an ethylene polymer or copolymer, which is not the case with the composition of operative claim 1. Therefore, original claim 13 cannot provide a basis for the amendments made in operative claim 1 at that level of generality.

3.5 The appellant argued that the list of long term stabilisers now specified in operative claim 1 resulted from the mere selection of five components within the longer list indicated in original claim 2, which was allowable pursuant to Article 123(2) EPC.

3.5.1 However, it is to be noted that it is indicated on page 4, lines 8-10, and on page 26, lines 7-8, of the application as filed, that it is impossible to predict the performance profile of stabilizer systems comprising two or more individual stabilizers. Under such circumstances, in the present case valid support for a combination of stabilisers could only be directly and unambiguously derived from the application as filed if such a combination is explicitly disclosed as such therein.

3.5.2 In that respect, no passage of the application as filed was indicated by the appellant as providing a support or a disclosure of the specific selection of long term stabilisers made, namely AO1, AO8, AO2, AO6, AO7 and mixtures thereof.

In particular even if original claim 13 were to be read as postulated by the appellant (see section 3.4.1 above), it would not provide a direct and unambiguous disclosure for the amendment "AO1, AO8, AO2, AO6, AO7 and mixtures thereof" since e.g. it does not constitute a pointer to those mixtures.

Also, the various combinations of stabilisers explicitly mentioned either on pages 17 to 19 of the application as filed or in original claims 7 to 18 are only directed to some specific mixtures of e.g. AO-4+AO-1(+optionally AO-2 or AO-5), AO-4+AO-8(+optionally AO-2 or AO-5) (page 17,

lines 1-16), AO-4+AO-7(+optionally AO-2 or AO-5), AO-4+AO-6(+optionally AO-2 or AO-5), AO-4+AO-6+AO-1 (page 18, lines 7-21), AO-4+AO-6+AO-8 (page 19, lines 1-3). Although those additive combinations fall within the permissible additive combinations now defined in feature (c)(ii) of operative claim 1, the disclosure of these does not constitute a direct and unambiguous support for all combinations effectively comprised in the group consisting of AO1, AO8, AO2, AO6, AO7 and mixtures thereof according to feature (c)(ii) of operative claim 1. Original claims 7 to 18 were further limited to compositions comprising a more specific polyolefin (ethylene (co)polymer) than operative claim 1 (polyolefin as a generic term) and, thus, also cannot provide a valid basis for the amendment made at the present level of generality.

The same conclusion is drawn with respect to the examples of the application as filed which are only directed to very specific combinations of AO-4 as fast radical scavengers and either AO-1 (examples 7-9) or AO-7 (example 10) as long term stabiliser and which in addition were all carried out with a specific polyolefin (LDPE: see page 21, line 3 of the application as filed). Therefore, also those examples cannot provide valid support for feature (c)(ii) according to operative claim 1.

The passages relied upon by the appellant thus do not constitute a direct and unambiguous disclosure of the subject-matter arising from the amendments made in feature (c)(ii) of operative claim 1.

3.6 For those reasons, auxiliary requests I and II are not allowable (Article 123(2) EPC).

Auxiliary requests III and IV

4. For the same reason as for the main request, feature (c)(i) of claim 1 of auxiliary request III does not exclude the presence of α-tocopherol in amounts outside the range defined in granted claim 1. Considering that no additional argument in respect of Article 123(3) EPC was submitted by the appellant, the same conclusion as for claim 1 of the main request is reached.

Therefore, further noting that claim 1 of auxiliary request III is identical to claim 1 of auxiliary request IV, neither of auxiliary requests III and IV is allowable pursuant to Article 123(3) EPC.

Auxiliary request V

5. Admittance

5.1 Since auxiliary request V was filed during the oral proceedings before the Board, its admittance to the proceedings underlies the stipulations of Article 13(1) and (3) RPBA.

5.2 According to the case law, it is a matter for each party himself to submit all facts, evidence, arguments and requests relevant for the enforcement or defence of his rights as early and completely as possible, in particular in *inter partes* proceedings in order to act fairly towards the other party and, more generally, to ensure due and swift conduct of the proceedings (Case Law, *supra*, 8th edition, 2016, IV.E.4.1.2 and 4.1.4).

5.3 As may be seen from the minutes of the oral proceedings before the Board, auxiliary request V was submitted by

the appellant after the Board had announced its decision not to admit into the proceedings auxiliary request V filed with letter of 16 January 2017 and as a further attempt to overcome the objections pursuant to Article 123(2) and (3) EPC retained against the higher ranking requests.

5.3.1 Independently of its success in overcoming the objections, the Board considers that a piecemeal filing of auxiliary requests in a case where the relevant objections were known from the very beginning of the appeal proceedings neither satisfies the requirements of Article 12(2) RPBA, according to which the appellant should submit a complete case in its statement of grounds of appeal, nor satisfies the requirements of due process (efficient conduct of the proceedings) and the need for economy of the proceedings. This is particularly true for operative auxiliary request V which was submitted after a further contrary conclusion against each higher pending requests had been announced.

5.3.2 The appellant argued that auxiliary request V was filed during the oral proceedings because the explanation why the combination of additives specified in feature (c)(ii) contravened the requirements of Article 123(2) EPC was given to him for the first time during the oral proceedings before the Board.

However, objections pursuant to Article 123(2) EPC against the presence in feature (c)(ii) of claim 1 of e.g. the main request of both "AO7" and the expression "mixtures thereof" were raised and substantiated in respondent 2's rejoinder to the statement of grounds of appeal (see letter of 1st October 2013: page 2, penultimate paragraph and page 3). Additionally, those

issues were identified in the Board's communication dated 23 May 2016 (see in particular second paragraph of section 6.3, sections 6.4 and 6.5 and second paragraph of section 8.1). Therefore, the appellant's argument is not persuasive.

5.3.3 In the written procedure the appellant argued that it should be taken into account that a change of representative had occurred during the appeal proceedings.

Notwithstanding the fact that a change of representative can normally not be invoked as a valid reason for the late filing of requests (Case Law, *supra*, 2016, IV.C.1.3.18), objections pursuant to Article 123(2) and (3) EPC had been already identified in respondent 2's rejoinder to the appellant's statement of grounds of appeal and in the Board's communication dated 23 May 2016. The request could therefore have been filed much earlier in the proceedings. Considering that the new representative, Mr. T.L. Brand, announced assumption of responsibility for the case by letters of 24 October 2013 and 18 November 2015 (see sections VIII and X above), the request could for instance have been submitted in direct reply to the respondent's rejoinder to the statement of grounds of appeal(dated 1st October 2013), in reply to the Board's first communication (dated 10 December 2015; in which it was explicitly indicated that the parties should file further submissions as soon as possible), in reply to the first summons to oral proceedings (dated 15 December 2015), in reply to the Board's communication dated 23 May 2016 in which relevant issues in respect of Article 123(2) and (3) EPC for each pending requests were identified, or in preparation for the oral proceedings originally

planned to be held in November 2016 but which had to be postponed by the Board. For those reasons, the appellant's argument does not convince.

5.3.4 In addition it appears questionable whether operative auxiliary request V *prima facie* successfully addresses all the issues identified in respect of the higher pending requests. Considering operative claims 3 and 4 the question may in particular be posed if features (c)(i) and (c)(ii) effectively exclude the presence in the compositions defined in claim 1 of other additives different from those mentioned therein, as argued by the appellant, which may be related to issues pursuant to Article 123(2) and (3) EPC already addressed in the present decision and/or during the proceedings.

5.3.5 Admitting operative auxiliary request V at such a late stage would not only run counter to procedural economy but would also amount to unfair treatment of the respondents. For those reasons, the Board finds it appropriate to exercise its discretion under Article 13(1) RPBA by not admitting into the proceedings auxiliary request V submitted during the oral proceedings before the Board.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

A. Wolinski M. C. Gordon

Decision electronically authenticated