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Datasheet for the decision of 12 July 2007

T 0989/04 - 3.3.09 Case Number:

Application Number: 99202482.8

Publication Number: 0992195

IPC: A23G 1/22

Language of the proceedings: EN

Title of invention:

Use of silicone for manufacturing confectionery moulds and baking receptacles in general

Patentee:

Lekue, S.L.

Opponents:

Tupperware General Services NV MARTELLATO s.n.c. di MARTELLATO ALESSANDRO ET MÄRTENS Transportbänder GmbH L. Böwing GmbH WACKER-CHEMIE GMBH TEFAL S.A. Pavoni Italia S.p.a. HP Haushaltsprodukte GmbH

Headword:

Relevant legal provisions:

EPC Art. 54, 56, 84, 123(2) RPBA Art. 10b(1)

Keyword:

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"Main request - novelty (no)"

"Auxiliary requests I to III - novelty (no)"

"Auxiliary request IV - inventive step (no)"

"Auxiliary request filed at the oral proceedings - admissibility (no)"
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Decisions cited:

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Catchword:

Reasons 3.3, 3.4



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Beschwerdekammern

Boards of Appeal

Chambres de recours

Case Number: T 0989/04 - 3.3.09

DECISION
of the Technical Board of Appeal 3.3.09
of 12 July 2007

Appellant: Lekue, S.L.

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Decision under appeal: Decision of the Opposition Division of the

European Patent Office posted 19 July 2004 revoking European patent No. 0992195 pursuant

to Article 102(1) EPC.

Composition of the Board:

Chairman: P. Kitzmantel Members: N. Perakis

W. Sekretaruk

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Summary of Facts and Submissions

- I. Mention of the grant of European patent No. 0 992 195 in respect of European patent application

 No. 99202482.8 in the name of LEKUE, S.L., which had been filed on 28 July 1999 claiming a US priority of 23 April 1999 (US 298133), was announced on 10 October 2001 (Bulletin 2001/41). The patent, entitled "Use of silicone for manufacturing confectionery moulds and baking receptacles in general", was granted with one claim. It reads as follows:
 - "1. Use of silicone obtained by a process of crosslinking with platinum for the manufacturing of confectionery moulds and baking receptacles in general."
- II. Eight Notices of Opposition were filed against the patent by:

Opponent 1: Tupperware General Services N.V

Opponent 2: Martellato S.n.c. di

Martellato Alessandro e Dario

Opponent 3: Märtens Transportbänder GmbH

Opponent 4: Böwing GmbH

Opponent 5: Wacker-Chemie GmbH

Opponent 6: TEFAL S.A.

Opponent 7: Pavoni S.p.a. (this opposition

was withdrawn with a letter dated 22 May

2003)

Opponent 8: HP Haushaltprodukte GmbH

The Opponents requested the revocation of the patent in its full scope, relying on Articles 100(a) EPC (lack of

novelty and inventive step) and 100(b) EPC (insufficiency of disclosure).

- III. The Oppositions were inter alia supported by the following documents (those enumerated with an R were submitted by Opponent 1, those with an M by Opponent 2, those with an A by Opponent 3, those with an E by Opponent 4, that with a D by Opponent 5, those with a P by Opponent 6 and that with an L by Opponent 8):
 - R1: "ELASTOSIL® M The flexible mould-making material for perfect copies A Mould Maker's Guide",

 Wacker Chemie GmbH, published in 1992
 - R2: Declaration of Dr Jürgen Weidinger dated
 10 October 2001
 - R14: Exhibit DB-8 of the declaration of
 Dimitri Backaert containing a Letter from J E
 David of Rhodia to Dimitri Backaert of Tupperware
 General Service dated 4 March 1999 and a
 Brochure entitled "Rhodorsil® EVC de Polyaddition
 FIM (Fast Cure Injection Moulding) pour le moulage
 de pièces techniques", Rhône-Poulenc
 - R19: Declaration of Dr Christian Freyer dated
 11 October 2001 and Exhibit CF-3 (Brochure
 entitled ELASTOSIL® LR3003/10 A, B LR3003/80 A,
 B, Wacker-Chemie GmbH, May 1998)
 - R24: "Indirect Food Additives: Adhesives and Components of Coatings", Food and Drugs Administration (FDA), Federal Register, vol. 63, No 246, 23 December 1998

R25: FR-A-2 747 886

R26: FR-A-2 747 885

M2: Technical report "QUIMICA-2" dated 6 April 1999

M3: "SILICONES, Chemistry and Technology", Symposium, 18 April 1989

M4: Kirk-Othmer Encyclopedia of Chemical
Technology, vol 20, 3rd edition, 1982, pp. 944-951

M8: Brochure "SILBIONE® RTV 71557 A&B (PEX)

Contact Alimentaire", Rhône-Poulenc, September

1994

M9: Product Information "SILASTIC® 9280-70",
Dow Corning, 6 October 1998

M11: "Indirect Food Additives: Adhesives and Components of Coatings", Food and Drugs Administration (FDA), Federal Register, vol. 63, No 246, 23 December 1998, pp. 71016-71018

Al: Technical information "Wacker RTV-2 Siliconkautschuk Verarbeitung", Wacker-Chemie GmbH, June 1998

A8: "Polymers for encapsulation: Materials

Processes and Reliability"

(www.chipscalereview.com/9803/wong1.htm)

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E1: Technical Data Sheet "SILBIONE® RTV 71557 A and B" Food Contact, Rhodia, Silicones Europe, February 1999

E2: Sicherheitsdatenblatt "SILBIONE RTV 71557 B PEX", Version 2, Rhodia, 6 June 1997

D11: US-A-5 203 491

P2: Extract from the Brochure "Les silicones, Propriétés & Applications", RHÔNE-POULENC SILICONES Europe, 1995

P4: FR-A-1 360 908

P5: EP-A-0 234 168

- L6: "Gesundheitliche Beurteilung von Kunststoffen
 im Rahmen des Lebensmittelgesetzes",
 Bundesgesundheitsblatt, No 1, 11 January 1974,
 pp 13-16
- IV. By its decision issued on 19 July 2004 the Opposition Division revoked the patent. It held that the subject-matter of granted Claim 1 lacked novelty over R1 and over D11. On the one hand Document R1 was considered to disclose confectionery moulds manufactured from platinum catalysed ELASTOSIL M and on the other hand D11 was considered to disclose baking moulds having a laminated coating of platinum catalysed silicone.
- V. On 3 August 2004 the Patent Proprietor (Appellant) lodged an appeal against the decision of the Opposition Division and paid the appeal fee on the same day.

In the Statement setting out the Grounds of Appeal filed on 24 November 2004, in replacement of the Statement filed on 18 November 2004, the Appellant argued that R1 and D11 were not relevant for the novelty issue since R1 did not disclose a platinum catalysed silicone and D11 only referred to rigid baking moulds.

The Appellant also filed four auxiliary requests.

VI. With the letter dated 12 April 2005 Respondent 1 (Opponent 1) contested the novelty of the claimed subject-matter in view of M8 and E1 (the Rhône-Poulenc/Rhodia brochures of Silbione RTV 71557 A and B), of Exhibit CF-3 of R19 (the Wacker Elastosil LR brochure), of R1 (the Wacker Elastosil M brochure) and of M9 (the Dow Corning Silastic 9280-70 product information sheet).

Additionally it contested the inventive step of the claimed subject-matter in view of documents R25 and R26, which disclosed peroxide catalysed HTV silicone baking moulds and argued that the replacement of the peroxide catalyst by a platinum catalyst was an obvious alternative for the skilled person.

Furthermore, it raised issues of prior public use.

It also raised objections as to insufficiency of disclosure and inadmissible amendments in the auxiliary requests.

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Finally it requested acceleration of the procedure in view of infringement proceedings brought by the Appellant in France and Italy.

VII. With the letter dated 12 April 2005 Respondent 2 (Opponent 2) raised essentially the same objections as Respondent 1.

It also raised further issues of prior public use.

Respondent 2 requested that the Board expedite the proceedings in view of a patent litigation with the Appellant in Italy.

VIII. With the letter dated 11 April 2005 Respondent 6
(Opponent 6) addressed in particular the issues of obviousness of the subject-matter of all requests and the admissibility of amendments in the fourth auxiliary request. It considered that R26 was the closest state of the art and argued that it was obvious to replace the peroxide-containing curing system of that document by a platinum-containing curing system, which was known in the art for its suitability for food applications.

Respondent 6 filed the following additional documents

P12: US-A-5 548 006

P13: US-A-5 000 029

P14: Arrêté interministériel du 25 novembre
1992 (relatif aux matériaux et objets en
élastomères de silicone mis ou destinés à être mis
en contact des denrées, produits et boissons

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alimentaires), Journal officiel du 17 décembre 1992

- P15: "Les élastomères silicones: mise en œuvre, propriétés et applications..." published in "Plastiques modernes et élastomères", September 1996, pp. 38, 40, 41
- IX. Respondents 3, 4, 5 and 8 (Opponents 3, 4, 5 and 8) declared, with letters dated 3 May 2005, 7 April 2005, 15 April 2005 and 6 April 2005, respectively, that they did not intend to file written observations.
- X. With the letter dated 28 October 2005, the Appellant submitted arguments in reply to the objections raised by Respondents 1, 2 and 6 and filed *inter alia* the following document:
 - B7: Declaration of David Brassard dated 22 September 2005 accompanied by Exhibit 1
- XI. Respondents 1 and 6, with letters dated 11 May 2007 and 25 April 2006, respectively, submitted additional counter-arguments with regard to the issues of amendments under Article 123(2) EPC, novelty and inventive step.

Respondent 1 filed inter alia the following document:

R38: Declaration of Dr Ian Moss dated 11 May 2007

XII. The Board issued a first communication dated 18 April 2007 in which it asked for further clarification on the

hearing of a witness which had been requested by Respondent 1 in relation to an alleged public prior use.

- XIII. With the letter dated 24 May 2007 the Appellant informed the Board of a change of representative and submitted a new main request replacing all previously filed requests.
- XIV. Respondents 1 and 2 contested the patentability of the new request with the letters dated 11 and 12 June 2007, respectively. Respondent 2 also raised an objection under Article 123(2) EPC.

Respondent 1 additionally raised the issue of admissibility of the late filed request and asked for apportionment of costs in case the Board admitted it into the proceedings.

XV. With the letter dated 12 June 2007 the Appellant withdrew that request and filed a new main and four auxiliary requests which form the basis of this decision. Claim 1, the sole claim, of these requests reads as follows:

Main Request

"1. Use of silicone obtained by a process of crosslinking with platinum for the manufacturing of baking receptacles,

characterized in that the operation of removing product from the receptacle is very simple owing to the elasticity that the silicone confers upon the baking receptacle and that users can effectively handle said baking receptacle in order to remove food product from - 9 - T 0989/04

the receptacle in secure knowledge that the receptacle will recover its initial shape."

First Auxiliary Request

"1. Use of silicone obtained by a process of crosslinking with platinum for the manufacturing of baking receptacles,

characterized in that the silicone is heat-curable, that the operation of removing product from the receptacle is very simple owing to the elasticity that the silicone confers upon the baking receptacle and wherein users can effectively handle said baking receptacle in order to remove food product from the receptacle in secure knowledge that the receptacle will recover its initial shape."

Second Auxiliary Request

"1. Use of silicone obtained by a process of crosslinking with platinum for the manufacturing of baking receptacles,

characterized in that the operation of removing product from the receptacle is very simple owing to the elasticity that the silicone confers upon the baking receptacle

and wherein users can effectively handle said baking receptacle in order to remove food product from the receptacle in secure knowledge that the receptacle will recover its initial shape,

that the silicone is heat-curable and that the use of platinum as a catalyst of the polymerization process does not generate decomposition by-products and does not produce toxic peroxide residues or odours in the cross-linked products."

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Third Auxiliary Request

"1. Use of silicone obtained by a process of crosslinking with platinum for the manufacturing of baking receptacles,

characterized in that the operation of removing product from the receptacle is very simple owing to the elasticity that the silicone confers upon the baking receptacle

and wherein users can effectively handle said baking receptacle in order to remove food product from the receptacle in secure knowledge that the receptacle will recover its initial shape,

wherein the silicone is heat-curable and wherein the use of platinum as a catalyst of the polymerization process does not generate decomposition by-products and does not produce toxic peroxide residues or odours in the cross-linked products, and wherein the silicone is of the methyl-vinyl-polysiloxane type."

Fourth Auxiliary Request

"1. Use of silicone obtained by a process of crosslinking with platinum for the manufacturing of baking receptacles,

characterized in that the operation of removing product from the receptacle is very simple owing to the elasticity that the silicone confers upon the baking receptacle

and wherein users can effectively handle said baking receptacle in order to remove food product from the receptacle in secure knowledge that the receptacle will recover its initial shape,

wherein the silicone is of the methyl-vinyl polysiloxane type is heat-curable

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wherein the use of platinum as a catalyst of the polymerization process does not generate decomposition by-products and does not produce toxic peroxide residues or odours in the cross-linked products, and wherein the cross-linking reaction of the methyl-vinyl-polysiloxane is performed at a temperature T and in the presence of platinum and an inhibitor."

The Appellant contested the availability of the Silbione brochures M8 and E1 before the priority date of the patent in suit. It also argued that the various alleged prior uses did not meet the standard of proof required by the EPO.

With regard to the inventive step it argued that there was a technical prejudice at the priority date of the patent in suit with regard to the replacement of solid baking moulds by soft/elastic ones such as those disclosed by R25 and R26, and concluded that these documents should not be considered as the closest state of the art, and that even if they were, the skilled person had no reason to replace the peroxide catalyst by a platinum catalyst.

- XVI. The Board issued a second communication dated 4 July 2007 in which attention was drawn *inter alia* to the relevance of documents M8 and E1 (the Silbione RTV 71557 A and B silicone elastomer). A preliminary opinion was also given on the admissibility of the last requests and on the support of the claimed subjectmatter in the originally filed application.
- XVII. During the oral proceedings held on 12 July 2007 before the Board, the Appellant submitted a new second

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auxiliary request which was not admitted in the proceedings (see below point 2.2). Claim 1 of that request reads as follows:

"1. Use of silicone obtained by a process of crosslinking with platinum for the manufacturing of baking receptacles,

characterized in that the silicone is heat-cured, that the operation of removing product from the receptacle is very simple owing to the elasticity that the silicone confers upon the baking receptacle and wherein users can effectively handle said baking receptacle in order to remove food product from the receptacle in secure knowledge that the receptacle will recover its initial shape."

The Appellant acknowledged the public availability of M8 and E1 before the priority date of the patent in suit.

Respondent 1 withdrew its request for apportionment of costs.

XVIII. The oral and written submissions made by the Appellant, insofar as they are relevant to the present decision, can be summarized as follows:

The admissibility issue

The requests filed with the letter dated 12 June 2007 should be considered admissible since they were made as a reaction to previously raised objections, did not contain any new subject-matter, and the claimed subject-matter could be easily assessed by the Respondents. - 13 - T 0989/04

The new second auxiliary request filed at the oral proceedings should also be admitted into the proceedings since its subject-matter corresponded to a selection from the subject-matter of the first auxiliary request.

The Main Request

- The subject-matter of Claim 1 of the main request was novel over both M8/E1 since these documents did not disclose that the cross-linking process was catalysed by platinum. Other metals such as iridium or rhodium could have been used as catalysts.
- It was not permissible to combine E2 with M8/E1 for the assessment of novelty.
- E2 could not be related to M8/E1 since it was a document drafted in German whereas M8 was drafted in French and E1 in English. Additionally they all bore dates which differed by some years.
- M8/E1 not only did not disclose the use of the moulds for baking, ie the use at temperatures ranging between 175 and 230°C, but on the contrary they taught that the duration of contact between the mould and the melted fatty product should not exceed 2 hours and that the mould temperature should not exceed 40°C.
- The reference in M8/E1 to bakery products and biscuits could be interpreted to mean that these products were first moulded and solidified using the silicone moulds and then baked at a higher temperature outside the baking receptacle.
- M8 should not be considered as a relevant disclosure since it corresponded to an experimental version of

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- the silicone, as could be deduced from the abbreviation (PEX).
- M8/E1 disclosed mechanical properties for the silicones different from those of the silicones involved in the claimed subject-matter.

The First Auxiliary Request

- The first auxiliary request was novel over M8/E1 because it related to heat-curable silicones.
- With regard to the term "heat-curable, the skilled person would find no technical difference between the terms "heat-curable" and "heat-cured", which were interchangeably used in the art (M2, A8, P2).
- The skilled person reading M8/E1 would understand that RTV silicones were cross-linked at room temperature in contrast to heat-curable silicones which were designed to be heat-cured.
- The claimed heat-curable silicones were HTV (High Temperature Vulcanizable) silicones.
- Exhibit 1 of B7 disclosed a cure temperature for RTV silicones varying between room temperature and 90°C whereas that for HTV silicones varied between 120 and 160°C.
- The statement in M8/E1 at section "3.1 Mechanical properties" relating to measurements carried out "after 1 hour of cross-linking at 150°C" referred to a standardized pre-testing step used to determine the physical properties of RTV and HTV silicone elastomers and did not mean that the RTV elastomer was heat-cured.
- M8/E1 disclosed RTV silicones which were not suitable to be used for the manufacture of baking receptacles in view of their content of volatile

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- organic compounds, being remnants of the silicone polymerisation reaction, as compared to the HTV silicones, which did not contain such remnants.
- The HTV silicones fulfilled the safety requirements for their use in contact with food products and had thus removed all problems of RTV silicones.
- The silicones of the claimed subject-matter were different from the RTV silicones of M8/E1 also because they were post-cured (cf patent in suit, paragraph [0028]) contrary to RTV silicones, which were not post-cured.
- Post-curing could not have been envisaged for the RTV silicones since it would have taken the silicone to its upper temperature stability limit (M8: page 2, section "3.2. Propriétés physiques", last line; E1: page 2, section "3.2. Physical properties", last line).
- The cross-linking step of the HTV silicone required an inhibitor (cf the patent in suit, figure on page 4) contrary to the RTV silicone, which did not require any inhibitor.

The Second Auxiliary Request

- The subject-matter of the second auxiliary request was novel over M8/E1 because it contained additional functional technical features corresponding to the advantages of the claimed invention.

The Third Auxiliary Request

- The subject-matter of the third auxiliary request was novel over M8/E1 because the latter did not disclose that the silicone was of the methyl-vinyl-polysiloxane type.

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The Fourth Auxiliary Request

- The additional feature of the subject-matter of this request found support in the reaction scheme of the originally filed application (cf page 4).
- The subject-matter of the fourth auxiliary request was novel over M8/E1, which did not disclose the use of an inhibitor at the stage of the cross-linking reaction in combination with a platinum catalyst.
- M8/E1 did not represent the closest state of the art because the skilled person at the priority date of the patent would have considered the known rigid baking receptacles as the closest prior art.
- Had the skilled person considered M8/E1 as the closest state of the art, he would not have found any hint in that document suggesting the use of an inhibitor nor would he have any other reason to use one.
- The addition of an inhibitor in the cross-linking process of the RTV silicone of M8/E1 was not obvious to the skilled person because the state of the art, such as A1 and M4, taught that the use of inhibitors should be avoided as they prevented the silicones from cross-linking.
- The commercial success of the Appellant's products should be regarded as indicative of inventive step.
- The mechanical properties of the silicone of the claimed subject-matter, including the Shore A hardness, were unexpectedly improved in comparison to that of the silicone disclosed in M8/E1 (55 points versus 28 points).
- The combinations of documents alleged by the Respondents were arbitrary.

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XIX. The oral and written submissions made by the Respondents, insofar as they are relevant to the present decision, can be summarized as follows:

The admissibility issue

- The requests filed with the letter dated 12 June 2007, just one month before the oral proceedings, should not be admitted in the procedure since they were late filed and since the objections the Appellant claimed to have overcome by means of those requests had been made known some time previously and could have been overcome at a much earlier stage.
- The auxiliary request filed at the oral proceedings should also not be admitted, being late filed.

The Main Request

- The subject-matter of the main request lacked novelty over the disclosure of both M8 and E1, which disclosed baking moulds made of the silicone Silbione RTV 71557 A and B.
- The skilled reader of those documents would have understood that the polyaddition reaction had taken place using platinum as cross-linking catalyst (cf declarations Moss (R38) and Weidinger (R2)).
- That this should be the understanding of those documents was confirmed by E2, the safety data sheet of the Silbione RTV 717557 B PEX.
- This was further confirmed by M3, M4, P4 and L6.
- The use of platinum as catalyst was implicit in documents M8/E1, which disclosed that the crosslinking could be inhibited by contact with substances containing sulphur, amines and tin salts, which were known poisons of a platinum catalyst.

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- Iridium or rhodium, in addition to their higher price, were not used commercially for the crosslinking of silicones and the skilled person would not have read into M8/E1 anything else than platinum as catalyst.
- Platinum was the only metal legally approved for use in silicones which came into contact with foodstuffs (L6).
- M8/E1 should be read in the light of E2, the safety data sheet of Silbione RTV 71557 B PEX, disregarding any differences in the language of the different versions, since it was reasonable to expect that the safety data sheet of this product would be the same in all language versions.
- Moreover, the difference in the publication year of E2 and M8/E1 was not an obstacle to the interpretation of the latter in the light of the former because there was no plausible reason which would justify the assumption that products with the same name would have changed in the short lapse of time separating the respective publications with regard to the catalyst used for the cross-linking.
- M8/E1 disclosed the use of the moulds for baking since they disclosed that they could be used for producing bakery and biscuits.
- The warning in M8/E1 with regard to the maximum duration and temperature of contact between the mould and a melted fatty product such as chocolate did not concern all mouldable products but only the very fatty ones which were liquid at a temperature higher than 40°C.
- One of the most common products falling under the term bakery products as used in M8/E1 was bread,

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which was not a fatty product. While traditional bread loafs were not moulded, moulding of bread was also conventional in the art.

- It was not reasonable to interpret M8/E1 such that the skilled person would understand it to mean baking the moulded product outside the mould, ie baking it after it had been taken out of the mould in which it had been shaped.
- Flexibility and elasticity were inherent properties of silicones.

The First Auxiliary Request

- The subject-matter of the first auxiliary request lacked novelty over M8/E1, which disclosed that cross-linking of the RTV silicone might also be accelerated by heat and the silicone of M8/E1 was thus heat-curable.
- Moreover, section "3.1. Mechanical properties" of those documents disclosed the cross-linking of the elastomer at 150°C for 1 hour, which was a heatcuring step.
- Though an RTV silicone such as that of M8/E1 was in general cured at room temperature it could also be heat-cured, as was confirmed by the Weidinger declaration R2 and the technical expert Ian Moss.
- Even B7 (Exhibit 1), submitted by the Appellant, disclosed that the RTV could also be heat-cured up to 90°C.
- Furthermore M4 disclosed that the RTV could be heatcured up to 150°C.
- The temperature of heat-curing was not mentioned in the claim or the patent specification.

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- Baking did not necessarily require temperatures above the peak heat stability of Silbione. The patent did not disclose any use of the silicone at a temperature above 200°C, especially not up to 230°C as argued by the Appellant.
- The peak heat stability did not correspond to the maximum heat resistance but to the maximum temperature of use.
- With regard to post-curing, R2 disclosed that it might be applied to all elastomers, including RTV, in order to stabilize their mechanical properties.
- The post-curing would anyway be applied to moulds which came in contact with foodstuff.
- The M8/E1 moulds had to comply with the food regulations.
- L6 indicated the maximum amount of platinum and volatile organic compounds which were approved for use in Germany and E2 disclosed the amounts of platinum in Silbione in contact with food.
- The mechanical properties of the silicones cited in the impugned patent differed from those disclosed in Exhibit 1 of B7 for HTV silicones and it could thus not be concluded on the basis of these properties that the silicones of the patent were HTV silicones.
- The mechanical properties cited in the patent could correspond to several dozens of silicones beside HTV.

The Second Auxiliary Request

- The subject-matter of the second auxiliary request lacked novelty over M8/E1.
- Since the cross-linking involved platinum as catalyst the moulds did not liberate by-products

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- during baking and satisfied the national food standard regulations for silicones.
- M8/E1 disclosed that the moulds were in conformity with national regulations related to by-products generation. They also disclosed that the moulds should be highly chemically inert.

The Third Auxiliary Request

- The subject-matter of the third auxiliary request lacked novelty over M8/E1.
- In practice all silicones cross-linked by a platinum catalyst were of the methyl-vinyl-polysiloxane type.
- E2 disclosed that that specific type of polysiloxane
 was used for the manufacture of Silbione RTV 71557 B.

The Fourth Auxiliary Request

- The subject-matter of the fourth auxiliary request lacked clarity under Article 84 EPC because of the feature "the cross-linking reaction...is performed at a temperature T" without any further clarification what the temperature was.
- The claimed subject-matter also lacked support in the originally filed application under Article 123(2)EPC. The latter (page 4, reaction scheme) disclosed the use of an inhibitor only in combination with specific silicones and thus their dissociation amounted to an arbitrary generalisation.
- Furthermore the claimed subject-matter lacked novelty in view of M8/E1. Those documents did not explicitly disclose the use of an inhibitor. Such a use was however general common knowledge with regard to the cross-linking of heat-curable silicones. RTV

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- silicones such as Silbione RTV 71557 A and B of M8/E1 were commonly used with inhibitors.
- Document M4 disclosed that heat-curing could take place up to 150°C, which meant that inhibitors were implicitly used to prevent the silicone from crosslinking at lower temperatures.
- Document R19 (CF-3) disclosed the pot life of the two-component, platinum catalysed silicones, which was at least three days at RT. This implied the use of an inhibitor.
- Finally, the claimed subject-matter lacked an inventive step over M8/E1, which was the closest state of the art.
- The technical problem was to find an alternative cross-linking method for the known RTV silicones used to manufacture baking moulds. This alternative was to cure the RTV compositions at a temperature higher than room temperature.
- The technical problem could also be seen as the enhancement of the pot life of the known twocomponent RTV compositions after their mixing.
- The use of inhibitors in order to prolong pot life or to enable heat-curing of otherwise room temperature curable compositions was known in the art.
- Document R14 (Exhibit DB-8, the Rhodorsil brochure, bottom of page 5) already disclosed the crosslinking reaction scheme incorporated into the patent specification.
- Document M4 disclosed the use of an inhibitor for the modification of RTV compositions into heat-cured systems.

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- Document M11 disclosed the safe use of an inhibitor in combination with platinum for the cross-linking of polysiloxane elastomers used to manufacture coatings which would come into contact with food. It was of no importance that it related to a coating and not a mould, since the essential feature was the tolerance towards food.
- Document P12 disclosed the use of an inhibitor to prevent gelation as a result of cross-linking of polysiloxanes, which imparted long storage stability.
- The commercial success of the moulds of the Appellant did not have any relation to the inventiveness of the claimed subject-matter.
- XX. The Appellant requested that the decision under appeal be set aside and the European patent be maintained on the basis of the main request or on the basis of one of the auxiliary requests 1 to 4 filed on 12 June 2007.

The Respondents requested that the appeal be dismissed.

Reasons for the Decision

- 1. The appeal is admissible.
- 2. **Admissibility** of the late filed requests
- 2.1 Requests filed on 12 June 2007

The Appellant submitted a new main and four auxiliary requests with the letter dated 12 June 2007, ie one month before the oral proceedings. In exercising its discretionary power under Article 10b(1) of the RPBOA

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the Board admits these requests for consideration, since (i) they were filed sufficiently in advance before the scheduled oral proceedings, (ii) the amendments are straightforward and do not involve subject-matter which could take the parties by surprise, and (iii) they have clearly been filed in an attempt to overcome previously raised objections.

2.2 Request filed at the oral proceedings of 12 July 2007.

On the contrary, the auxiliary request (amended "Second Auxiliary Request") filed during the oral proceedings was not admitted because, irrespective of the straightforwardness of the proposed amendment (change of the characteristic of the silicone from "heatcurable" to "heat-cured"), the issue concerning the critical character of the term "heat-curable" which led to this amendment had been raised by the Respondents long before the oral proceedings (cf letter of Respondent 1 dated 12 April 2005, paragraph 4.3; letter of Respondent 2 dated 12 April 2005, page 13, first paragraph) so that the Appellant had had ample time take it into account. The Appellant did not provide arguments which convinced the Board of the necessity for the late filing of this request, ie, only during the oral proceedings.

- 3. The Main Request Novelty (Article 54 EPC)
- 3.1 The subject-matter of Claim 1 of the main request lacks novelty over the disclosure of both M8 and E1 in the light of E2.

3.2 M8 and E1 (page 1, under the section "Description") disclose SILBIONE RTV 71557 A and B (PEX) and RTV 71557 A and B, respectively, which is a twocomponent silicone elastomer that cross-links by a hydrosilylation polyaddition reaction. This reaction is platinum catalysed as set out in the safety data sheet E2 (page 1, point 2, "Zusammensetzung/Angaben zu Bestandteilen"). Furthermore, both M8 (page 1, under the section "Utilisation") and E1 (page 1, under the section "Applications"), propose the use of the silicone elastomer for the manufacture of moulds intended for producing inter alia bakery products and biscuits. The Board thus considers that these documents disclose the use of the silicones for the manufacture of baking receptacles.

The additional claim feature of "elasticity" of the silicone, which makes the operation of removing the product from the receptacle simple, is an inherent property of the silicone <u>elastomers</u>. This is confirmed by the mechanical properties disclosed by M8 (page 2, point "3.1. Propriétés mécaniques") and El (page 2, point "3.1. Mechanical properties").

The same conclusion applies for the same reason to the further claim feature relating to the shape memory of the silicone, according to which the receptacle recovers its initial shape after the user has effectively handled the baking receptacle in order to remove food product from it.

The intrinsic aspect of these two properties has not been contested by the Appellant.

3.3 The Appellant has contested that M8 and E1 disclose that the polyaddition reaction, leading to the cross-linking of the two components of the silicone elastomer, is catalysed by platinum.

However, the Board remarks that in view of E2, which is the safety data sheet corresponding to the Silbione composition E1, which is identical to that of M8, the catalyst used for the cross-linking of the SILBIONE RTV 71557 A and B silicone elastomer was a platinum one.

This was confirmed by the experts of the Respondents at the oral proceedings, who stated that the only commercially available SILBIONE RTV 71557 A and B silicone elastomer at the priority date was a platinum catalysed one.

Furthermore, the evidence submitted by the Respondents also discloses that platinum catalysts were used for the hydrosilylation reaction (R14 [Exhibit DB-8:Rhodorsil® EVC]: page 5, bottom diagram; R19 [Exhibit CF-3:Elastosil® LR 3003 A,B]: page 4, second paragraph; M3: page 63, last paragraph; page 65, first paragraph; page 68, last paragraph; M4: page 947, lines 21-22; M11: page 1, right column, lines 17-24; A1: page 2, right column, last paragraph; D11: claim 18; P2: page 2, middle column, first reaction scheme and right column, under point "RTV-2"; P12: column 3, last paragraph).

The Board remarks that the fact that other metals could theoretically be used to catalyse the hydrosilylation reaction, as is disclosed in P4 (page 5, lines 26-30) and P5 (page 4, lines 30-34), does not mean that the cross-linking of the SILBIONE silicone of M8 and E1 was

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catalysed by a metal other than platinum. Document P4, while citing in general terms that other metals may catalyse the reaction, does not specify any such metals; on the contrary it exemplifies only platinum. Document P5, which cites metals of the platinum family, also exclusively exemplifies platinum as catalyst. The Board concludes that the use of other metals according to P5, while being disclosed as a theoretical alternative, is not a realistic one in terms of concrete commercial hydrosilylation products, such as the Silbione silicones of M8/E1. In the Board's judgment, in the circumstances, the use of a catalyst other than platinum would certainly have warranted a special warning in the technical information sheets distributed for commercial purposes. This all the more so as the available evidence establishes that platinum catalysts have always been the standard hydrosilylation catalysts.

This also finds support in the national regulations in force for elastomers in contact with foodstuff which refer to platinum catalysts only (R24: page 1, summary; M11: page 1, right column, lines 17-24; P14: page 235, point "III-Durcisseurs-catalyseurs"; L6: page 16, left column, lines 14-16).

3.4 The Appellant has also argued that for assessing novelty E2 could not be combined with M8/E1, which in addition was not a publicly available document. It further argued that E2 could not be used to interpret M8/E1 in view of the drafting language of this document, which was German and thus different from that of M8 which was French and that of E1 which was English, and in view of the date printed on this document, ie 6 June

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1997, which was different from the date of M8, September 1994, and of E1, February 1999.

The Board remarks that for its considerations the disclosure of E2 is not combined with that of M8/E1 but is simply used to interpret those disclosures with regard to the cross-linking of the SILBIONE RTV 71557 silicone elastomer. Under these circumstances it is irrelevant whether E2 was a publicly available document.

Furthermore the Board remarks that the difference in the language used for drafting E2 (German), M8 (French) and E1 (English) has no critical importance because it is reasonable to assume that the data safety sheet issued in 1997, the year printed on E2, for the product SILBIONE RTV 71557 should have been the same for all language versions relating to the same silicone product within this relatively narrow time span. In the absence of any contrary evidence no different conclusion can be drawn because it would be inconsistent with commercial reality to suppose that safety data sheets for the same product would vary in their essential content, including the use of the catalyst, for different countries.

3.5 The Appellant has further contested the disclosure of the use of SILBIONE RTV 71557 silicone elastomer in M8/E1 for the manufacture of baking receptacles on the basis of two arguments.

The first argument is that M8/E1 did not unambiguously disclose the carrying out of baking in the silicone moulds since it would be possible to shape the products in the SILBIONE moulds at temperatures lower than those

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necessary for baking and only afterwards to bake the de-moulded raw products without or in another mould. The Board, however, considers that this speculation, which is not supported by the text of these documents and cannot be seen to serve any reasonable purpose, is at variance with the real world of baking and in particular industrial baking, where economic efficiency is striven for and unnecessarily complicated processes avoided.

The second argument was that M8 and E1 taught the avoidance of the use of the baking receptacles at temperatures above 40°C for more than 2 hours. The Board notes that the Appellant based this argument on a misinterpretation of the disclosure of M8 and E1 (page 1, last paragraph) which recite that "(p)urely for information purposes, migration tests have been carried out ... The results obtained show that: 1-In the special case of moulding fatty based products such as chocolate, the contact time between the mould and the melted foodstuff must be minimised: eq the duration of contact between the moulds and the melted fatty product should not exceed 2 hours and the mould temperature should not exceed 40°C" (emphases added by the Board). The Board points out that the cited part of M8/E1 refers to a special case which cannot be considered to establish a technical prejudice against the use of the SILBIONE silicone for the manufacture of baking receptacles or as a contradiction to the general disclosure cited in these documents (M8: page 1, "Utilisations"; E1: page 1, "Applications") that "SILBIONE RTV 71557 A and B may be used to manufacture moulds intended for ...producing...bakery, biscuits...". This paragraph simply relates to a special utility, ie

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the use of the moulds for fat based products, such as chocolate, which are fluids at temperatures higher than 40°C. As the Respondents have convincingly argued, bakery products do not have the very high fat content typical for chocolate and this warning does not extend to them, if only for that reason.

Moreover, the non-applicability of this warning to eg bakery products is also clearly set out in the ensuing paragraph of E1:

"2-In the case of other foodstuffs, the moulds may be used without any particular precautions in terms of duration and temperature, whilst remaining within the temperature range compatible with the silicone elastomer's stability."

- The Appellant has also argued that M8 should not be considered as relevant state of the art, on the ground that it relates to an experimental product, in view of the abbreviation (PEX) which follows the product designation. The Board does not concur with the Appellant. On the one hand, whether or not M8 relates to an experimental product does not have any impact on the published character of the disclosure by this document and on the other hand E1, whose content is essentially identical with M8, does not comprise this "restriction".
- 3.7 Finally the Appellant has argued that the claimed subject-matter is novel over the disclosure of M8/E1 in view of the different mechanical properties of the claimed silicones (patent in suit, paragraph [0022]) compared with those of the silicones of the prior art (M8: page 2, point 3.1; E1: page 2, point 3.1). The Board considers that this argument is irrelevant since

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the mechanical properties to which the Appellant referred to are not features of the claimed subject-matter.

- 3.8 Since the subject-matter of Claim 1 lacks novelty, the main request is not allowable.
- 4. The First Auxiliary Request Novelty (Article 54 EPC)
- 4.1 The subject-matter of Claim 1 of the first auxiliary request lacks novelty over the disclosure of E1 or M8 in the light of E2.
- 4.2 Compared to the main request the first auxiliary request comprises the additional technical feature that the silicone is heat-curable. The Board considers that this feature is also disclosed in M8/E1 (page 1, under "Description", lines 3-4) which state that "crosslinking occurs at room temperature but it may also be accelerated by heat" (emphasis added by the Board). In the absence of any specific temperature range in the claimed subject-matter relating to the heat-curing, the disclosed possibility of heat application in order to accelerate the silicone crosslinking is considered to anticipate the additional feature of the first auxiliary request.
- 4.3 The fact that RTV silicones can be heat-cured is also set out in a number of further citations.

The standard textbook M4 (page 948, lines 9-12) discloses that many of the two-component RTV elastomers can be advantageously cured at raised temperatures up to 150°C; document A1 (page 2, right column, lines 41-

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43) discloses that the curing of the RTV-2 silicone elastomers can take place at temperatures up to 200°C; and B7 (Exhibit 1), submitted by the Appellant, discloses that the Dow Corning RTV silicones can be cured at a temperature as high as 90°C.

The documents (A8: page 6, lines 11-15; P2: pages 3 and 5) to which the Appellant has referred do not contradict the fact that RTV silicones can be heat-cured. They simply relate to the generally accepted distinction in the art between RTV silicones and heat-curable HTV silicones, the latter being specifically designed for curing at elevated temperatures.

4.4 The Board further disagrees with the Appellant who has argued that the claimed silicones are HTV silicones and by consequence different from the RTV silicones of M8/E1 because neither the Claim nor the entire patent specification allow such a conclusion.

One of the reasons on which the Appellant has based this argument is that the patent specification (paragraph [0028]) discloses that the claimed silicones may be post-cured. The Appellant took this information as an indication that the "inventive" silicones must be of the HTV type, with the consequential conclusion that the RTV materials disclosed in M8/E1 would be different because they could not be post-cured in view of their insufficient peak heat stability, varying between 150-200°C (M8: page 2, section "3.2. Propriétés physiques", last line; E1: page 2, section "3.2. Physical properties", last line). In the Appellant's opinion post-curing would require higher temperatures, thus

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distinguishing the RTV silicones of M8/E1 from the materials to be used according to the claimed invention.

In the first place, the Board considers that this argument is irrelevant because the claimed subject-matter is not restricted to the use of material obtained by a post-curing step.

Moreover, arguendo, the Board refers to the evidence in the proceedings (R2: paragraph 14) which discloses that post-curing may be applied to all silicone elastomers, including RTV, in order to stabilize the mechanical properties and to achieve food proofness by eliminating any residual by-products as imposed by national regulations (M8: page 1, "Avantages"; E1: page 1, "Advantages"; L6: last page, left column, lines 14-16 and right column, lines 6-8). In the Board's judgment, the skilled person would know, or could easily find out, the post-cure temperature conditions to apply for each material and would certainly not be dissuaded by the reference to the peak heat stability maximum of 200°C disclosed in M8/E1 to submit the crosslinked silicone to a post-curing step.

Further, the Appellant has also based its allegation that the silicones of the patent in suit are HTV silicones on the mechanical properties of the claimed silicones exhibited in the patent specification, paragraph [0022]. The Board, however, remarks that the comparison of the properties of the claimed silicones with those of ordinary RTV and HTV silicones, such as those disclosed by B7 (Exhibit 1) submitted by the Appellant, does not enable the conclusion to be drawn that the "inventive" silicones are of the HTV type

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because some of these properties have values which correspond to RTV values and some others correspond to the HTV values. In addition to this factual evidence the Board remarks that the Respondents have plausibly argued that the mechanical properties cited in the patent in suit could correspond to several dozens of silicones and not only to HTV.

- 4.5 A further argument advanced by the Appellant in order to distinguish the "inventive" silicones from the RTV silicones of M8/E1 was that, even admitting that the latter were "heat-curable", in the context of the present patent specification the term "heat-curable" should be interpreted to effectively mean "heat-cured". This interpretative attempt, even if accepted, has no bearing on the above conclusion because the crosslinked product is the same, be it obtained by crosslinking at room temperature of a "heat-curable" RTV composition or by cross-linking of the same composition at a higher temperature - curing temperatures higher then room temperature merely lead to accelerated crosslinking but leave no imprint on the polymer structure obtained.
- 4.6 It follows that the claimed subject-matter of the first auxiliary request lacks novelty over M8/E1 and that this request is also not allowable.
- 5. The Second Auxiliary Request Novelty (Article 54 EPC)
- 5.1 Also the subject-matter of Claim 1 of the second auxiliary request lacks novelty over the disclosure of M8/E1.

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Compared to the first auxiliary request the second auxiliary request comprises the additional feature that the use of platinum as a catalyst of the polymerization process, ie the cross-linking process, does not generate decomposition by-products and does not produce toxic peroxide residues or odours in the cross-linked products.

The Board notes that this feature is inherent in the disclosure of M8/E1 because the cross-linking step is a hydrosilylation reaction catalysed by platinum which, considering the underlying reaction mechanism (cf the Rhodorsil brochure R14, page 5, bottom diagram), does not leave any room for decomposition by-products, and that as a matter of principle the catalyst, which is not an organic peroxide, cannot produce toxic peroxide residues or odours in the cross-linked products.

Furthermore, arguendo, the Board remarks that M8/E1 even explicitly exclude such decomposition by-products as they state that the disclosed cured silicones conform with the positive list of products approved by the regulations in force in France, Germany and the USA and is inter alia highly chemically inert (M8: page 1, "Avantages"; E1: page 1, "Advantages"). Such regulations are disclosed in P14 (pages 232-233, Article 6 and page 235, "III.-Durcisseurs-catalyseurs") and L6 (last page, left column, lines 14-16 and right column, lines 6-8). M8/E1 also disclose that the moulds manufactured from such silicones should satisfy the EEC directive relating to migration tests (M8/E1: page 1, "Applications").

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- 5.2 It follows that the second auxiliary request is also not allowable.
- 6. The Third Auxiliary Request Novelty (Article 54 EPC)
- 6.1 Account being taken of the information in document E2, the subject-matter of Claim 1 of the third auxiliary request also lacks novelty over the disclosure of M8/E1.
- 6.2 Compared to the second auxiliary request the third auxiliary request contains the additional feature that the silicone is of the methyl-vinyl-polysiloxane type. This feature cannot contribute any distinguishing character because the safety data sheet E2 (page 1, point 2) sets out that the RTV silicones of M8/E1 are of this type as well. Moreover, this chemical structure corresponds to the technical standard at the relevant time, as convincingly argued by the technical expert Mr Ian Moos at the oral proceedings before the Board.
- 6.3 Thus, the third auxiliary request is also not allowable.
- 7. The Fourth Auxiliary Request
- 7.1 Clarity under Article 84 EPC

Though the Opponents have contested the feature of a "temperature T" as introducing lack of clarity, the Board considers that this feature is clear, concise and is supported by the description (reaction scheme on page 4). The contested feature is considered simply to indicate that the temperature is a condition that has to be controlled.

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7.2 Added subject-matter under Article 123(2) EPC

The Board considers that the subject-matter of this request satisfies the requirements of Article 123(2) EPC. The additional conditions of the cross-linking reaction step, namely the application of a temperature T and the use of an inhibitor beside the use of a platinum catalyst, find support in the originally filed application (page 4, reaction scheme).

The Board does not concur with the Respondents, who have argued that the feature of the inhibitor is arbitrarily taken out of the context of the specific reaction scheme, which is a polyaddition reaction of the specific silicone units: a methylhydrogensiloxane unit and a methylvinylsiloxane unit.

The Board considers that this reaction scheme would be interpreted by the skilled person in a broader sense than that alleged by the Respondents. This is so because the skilled person is aware that the inhibitor has an influence on the activity of the catalyst and not on the reactivity of the cross-linking moieties of the silicone units. The Board thus considers the claimed subject-matter allowable under Article 123(2) EPC.

- 7.3 Novelty (Article 54 EPC)
- 7.3.1 The Board considers that the claimed subject-matter is novel over M8/E1 because these documents do not disclose that the cross-linking reaction is performed in the presence of an inhibitor.

- 7.3.2 The Board does not concur with the Respondents, who have argued that both M8 (page 3, point 3.1) and E1 (page 3, point 3.1) disclose the use of inhibitors in view of the statement "care should be taken since cross-linking of SILBIONE RTV 715571 A and B may be inhibited by the contact of substances containing sulphur, amines and tin salts". To the Board's understanding this passage only warns the skilled person against contaminations which might have a negative impact on the material's cross-linking capability.
- 7.4 Inventive step (Article 56 EPC)
- 7.4.1 The Board, in agreement with the Respondents, considers documents M8/E1 to represent the closest state of the art because they relate to a platinum catalysed crosslinked silicone used for the manufacture of moulds for moulding *inter alia* bakery products and biscuits.

The Board disagrees with the argument of the Appellant that M8/E1 should not be considered as the closest state of the art for the reason that the technical problem in the field of baking moulds at the priority date of the patent in suit was the replacement of rigid baking moulds. The Board does not concur with this argument because the skilled person could not have ignored the disclosure of flexible baking moulds by M8/E1 at that date and should have considered these documents as the closest state of the art.

7.4.2 The technical problem to be solved by the patent in suit in view of the disclosure of M8/E1 can be

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formulated as the provision of an alternative silicone elastomer for the manufacture of baking receptacles.

The technical problem is solved by performing the cross-linking reaction of the silicone in the presence of an inhibitor, which prevents the reaction from taking place at room temperature and requires the application of heat in order to perform this reaction.

The patent in suit (paragraph [0028]) in its preferred embodiment discloses that the use of an inhibitor enables the cross-linking of the silicone at 190 to 200°C. This temperature is higher than the cross-linking temperatures disclosed for some RTV elastomers (B7 (Exhibit 1, left column) discloses 90°C; M4 (page 948, line 10) discloses 150°C) or overlaps with the higher temperature range disclosed for some other RTV elastomers (A1 (page 2, right column, lines 41-43) discloses 200°C).

7.4.3 The use, however, of an inhibitor at the cross-linking step of polyaddition-type silicones in order to tailor their curing characteristics, inter alia avoiding cross-linking at (too) low a temperature and enabling the cross-linking to occur at higher temperatures, is obvious to the skilled person as this is disclosed in the state of the art mentioned below.

Thus M3 (page 65, first paragraph; page 68, last paragraph) discloses that the speed of vulcanization of hot vulcanized silicone rubbers is adjusted by platinum and inhibitor concentrations; M4 (page 948, lines 12-13) discloses that hydrosilylation-curing RTV compositions can be modified with inhibitors to become heat-curing

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systems; P4 (page 4, right hand column, last paragraph) discloses an inhibitor which totally blocks the vulcanization at room temperature; and R14 (Exhibit DB-8, the Rhodorsil brochure, page 5, bottom diagram) discloses the cross-linking conditions of the claimed subject-matter.

The Board therefore considers that the skilled person would find in the state of the art all the information required to solve the existing technical problem of providing alternative silicone compositions to the RTV compositions of M8/E1 by simply modifying their crosslinking system by the incorporation of an inhibitor in order to prevent the vulcanization of the silicone from taking place at room temperature and allowing it to occur at higher temperatures.

The Board additionally remarks that under national regulations such elastomers are allowed to be used in contact with foodstuffs (M11: page 1, right hand column).

7.4.4 The Board does not concur with the Appellant, who has argued that the use of an inhibitor provided the silicones with unexpectedly improved mechanical properties such as the Shore hardness. The Board remarks that the patent specification does not contain any relevant technical information in this respect, since the values of the various properties given in paragraph [0022] are not unambiguously related to the subject-matter of the fourth auxiliary request.

With regard to the alleged commercial success which would speak for the non obviousness of the claimed

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subject-matter, the Board, following the constant jurisprudence of the Boards of Appeal of the EPO, does not regard it as a priori indicative of inventive step especially because it was not established that this success derived from the technical features of the claimed invention - in particular with regard to the contribution of the hydrosilylation cross-linking technique as compared with its predecessor, the peroxide cross-linking technique, allegedly exploited by the Appellant for the manufacture of silicone baking receptacles before switching to the former technique considered more adequate at the time.

- 7.5 Since the subject-matter of the fourth auxiliary request lacks an inventive step, this request is not allowable either.
- 8. In summary, none of the requests submitted by the Appellant is allowable.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

G. Röhn

P. Kitzmantel