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Bezeichnung der Erfindung: Liquid polyisocyanate compositions
Title of invention:
Titre de l'invention :

Klassifikation / Classification / Classement : C08G 18/76

ENTSCHEIDUNG / DECISION

vom / of / du 25 January 1989

Anmelder / Applicant / Demandeur :

Patentinhaber / Proprietor of the patent /
Titulaire du brevet : Imperial Chemical Industries PLC

Einsprechender / Opponent / Opposant : OI BASF AG
OII Bayer AG

Stichwort / Headword / Référence : Polyisocyanates/ICI

EPÜ / EPC / CBE Article 56

Schlagwort / Keyword / Mot clé : "Inventive step (confirmed) - suitability of comparative tests - closest prior art"

Leitsatz / Headnote / Sommaire

Case Number : T 403/86 - 3.3.1

DECISION
of the Technical Board of Appeal 3.3.1
of 25 January 1989

Appellant :
(Opponent OI)

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Appellant :
(Opponent OII)

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Respondent :
(Proprietor of the patent)

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Decision under appeal :

Decision of the Opposition Division of the European Patent Office of 7 November 1985, posted on 16 September 1986, rejecting the oppositions filed against European patent No. 0 010 850 pursuant to Article 102(2) EPC

Composition of the Board :

Chairman : K.J.A. Jahn
Members : R.W. Andrews
C.V. Payraudeau

Summary of Facts and Submissions

I. The mention of the grant of European patent No. 0 010 850 in respect of patent application No. 79 301 911.8, filed on 17 September 1979 and claiming priority of 3 October 1978 from a prior application in the United Kingdom, was announced on 22 June 1983 (cf. Bulletin 83/25) on the basis of five claims. The independent claims read as follows:

"1. A liquid polyisocyanate composition comprising:-

(A) from 90 to 50% by weight of a reaction product of diphenylmethane diisocyanate and a polyoxyalkylene polyol having an average functionality of 2-3 comprising from 50-100% by weight of a polyoxypropylene diol or triol having a hydroxyl equivalent weight of from 750 to 3000 and from 0-50% by weight of a polyoxyethylene diol or triol having a hydroxyl equivalent weight of from 750 to 3000, said reaction product having an NCO content of from 8 to 26% by weight, and

(B) from 10 to 50% by weight of a diphenylmethane diisocyanate composition containing from 30 to 65% by weight of diphenylmethane diisocyanate, the remainder being polymethylene polyphenyl polyisocyanates of functionality greater than two together with by-products formed in the manufacture of such polyisocyanates by phosgenation.

4. A process for the manufacture of polyurethanes which comprises reacting a liquid polyisocyanate composition as claimed in any one of Claims 1 to 3 with an organic polyol.

5. Polyurethanes whenever manufactured by the process claimed in Claim 4."

II. Notices of opposition requesting the revocation of the patent were filed on 15 February 1984 and 24 February 1984. The oppositions were supported, inter alia, by the following documents:

(1) DE-A-2 513 796
(2) GB-A-1 369 334
(3) DE-A-2 804 375
(4) DE-A-2 425 657 and
(5) DE-A-2 418 075.

A further document, GB-A-874 430 (9) was cited after expiry of the time allowed for filing notice of opposition. However, since it was not submitted in due time it was disregarded by the Opposition Division (Article 114(2) EPC). In response to the experimental evidence filed by Opponent OI on 20 September 1985, i.e. shortly before the date of the oral proceedings, the Patentee submitted the results of his own experiments at the oral proceedings.

III. By a decision of 7 November 1985, posted on 16 September 1986, the Opposition Division rejected the opposition on the basis that the subject-matter of the patent in suit involved an inventive step. The Opposition Division considered that the technical problem underlying the disputed patent lay in providing a storage stable liquid polyisocyanate composition which may be used in the production of cold cure flexible foams having low compression set.

According to the Opposition Division none of the documents cited by the Opponents related to cold cure flexible foams with low compression set. However, if the skilled person were to select document (1) as a starting point he would realise that, although this document refers in general to the use of polyethylene glycols and polypropylene glycols similar to the present ones, the clear emphasis of this document was on diols with relatively low hydroxyl equivalent weights. In the Opposition Division's opinion it could not be considered to be obvious, in the light of the combined teaching of the cited prior art, to replace the diols disclosed in document (1) with diols having higher hydroxy equivalent weights in order to solve the problem underlying the patent in suit. Since technical advantage per se is not a requirement for patentability under the EPC, the experimental results filed by Opponent OI on 20 September 1985 (incorrectly stated to have been filed on 27 July 1985 in the decision) had no influence on the Opposition Division's decision.

IV. Notices of appeal were lodged on 5 November 1986 and 12 November 1986 with payment of the prescribed fee. Statements of grounds of appeal were filed on 9 January 1987.

In his statement of grounds of appeal and at the oral proceedings held on 25 January 1989 Appellant OI (BASF AG) argued that document (1) discloses liquid isocyanate mixtures in which the ratios of the amounts of starting materials are the same as the presently claimed ones. Moreover, one of the components, i.e. the crude diphenylmethane diisocyanate (MDI) of both compositions is the same. Furthermore, component A of the present compositions is identical with the storage stable, urethane modified MDI mixtures disclosed in documents (2) and (3). Therefore, it cannot be inventive in the light of the teaching of document (1) to dilute these known storage stable MDI mixtures with crude MDI, which is in itself storage stable. In the light of documents (1), (2), (3), (9) and/or DE-A-2 513 793 (10) the use of urethane modified polyisocyanate mixtures based on MDI or crude MDI for the preparation of polyurethanes is trivial and the preparation of cold cure foams from crude MDI mixtures with a high content of MDI by known methods is disclosed in document (4). In particular, the use of semi-prepolymers (quasi-prepolymers) for the preparation of cold cure flexible polyurethane foams is described in DE-B-1 931 284 (13).

Appellant OII (Bayer AG) contended that the problem underlying the disputed patent has to be seen in providing liquid polyisocyanate compositions and that it was obvious to replace the diols of the compositions known from document (1) with a polypropylene glycols having molecular weights of 2000 (hydroxyl equivalent weight 1000), since the excellent suitability of polypropylene glycols for liquifying polyisocyanate mixtures of the diphenylmethane type is known from document (3) and the suitability of polypropylene glycols of this molecular weight range as starting materials for the preparation of polyurethane resins is known from document (5). Furthermore, it is clear from document (9) and Kunststoff-Handbuch, Band VII, "Polyurethane", Carl Hanser Verlag, München (1966), page 445 (11) that the polypropylene glycols or triols in accordance with the disputed patents are known starting materials for the preparation of polyurethane foams.

Appellant OII also pointed out that obviously the properties of polyurethane foams in the first place depend upon the nature of the individual components, such as, polyisocyanates, high molecular weight polyols and chain extenders, incorporated into the foams. In view of the fact that it is generally known that the polypropylene diols and triols in question are good starting materials for the preparation of polyurethane foams, it was obvious to build these starting materials into the polyurethane structure by means of semi-prepolymers prepared according to the principal put forward in document (1). Finally, the experimental results submitted by the patentee at the oral proceedings held during the opposition proceedings merely confirmed that the expected effect was obtained.

V. The Respondent contended that to arrive at the presently claimed compositions following the argumentation of the Appellants it would be necessary to consult a document concerned with the problems associated with crude MDI in the production of integral skin foams. However, even if the skilled person were to start from document (1) it would be still necessary to alter the crude MDI to prepolymer ratio of the exemplified compositions and, in the preparation of the prepolymer, to replace the exemplified diols having hydroxyl equivalent weights in the range 38 to 53 by diols with hydroxyl equivalent weights of 750 to 3000. Furthermore, in the Respondent's opinion the skilled person had no reason to combine the teaching of any of the documents (2) to (5) with that of document (1).

The Respondent also emphasised that the problem underlying the patent in suit is to provide a liquid polyisocyanate composition presenting an optimum balance of properties for use in the cold cure moulding of flexible high resiliance foams. However, when considering the distinct problem of providing further liquid polyisocyanates having low functionalities the proper question to be asked is whether the skilled person would come to proposed solution, and not whether he could come to that solution. Thus, the teaching of document (1) would not lead the skilled person to use polyoxyalkylene diols of molecular weights above 1000. Nor would the teaching of documents (2), (3) and (5), relating to the use of compositions based on pure MDI and polyols with molecular weights up to 2000, provide the skilled person with any reason for combining such prior art compositions with crude MDI.

VI. The Appellants requested that the decision under appeal be set aside and the patent in suit revoked. The Respondent requested that the appeal be dismissed and the patent maintained on the basis of set of claims A, B, C or D submitted at the oral proceedings and the description as granted.

VII. At the conclusion of oral proceedings, the decision was announced that the decision under appeal is set aside and the patent maintained on the basis of set of claims A submitted at the oral proceedings and the description of the patent as granted.

Reasons for the Decision

1. The appeal is admissible.

2. There are no formal objections under Article 123 EPC to the set of claims A in accordance with the main request since it is supported by the original disclosure and does not extend the protection conferred. This set of claims is identical with the statement of claim as granted apart from the deletion of the granted Claim 5.

3. The patent in suit relates to liquid polyisocyanate compositions and their use in the manufacture of polyurethanes, particularly for use in the cold cure moulding of flexible high resilience foams. Document (1)

discloses liquid polyisocyanate compositions comprising (A) from 30 to 85% by weight of crude MDI containing from 30 to 65% by weight of MDI, the remainder being methylene bridged polyphenyl polyisocyanates of higher functionality together with by-products formed in the manufacture of such polyisocyanates by phosgenation, (B) from 5 to 70% by weight of a reaction product of 1 molar proportion of MDI with from 0.005 to 0.6 molar proportions of an alkylene or polyoxyalkylene diol and (C) from 0 to 50% by weight of MDI, the proportions of (A), (B) and (C) being such that the total amount of MDI present in the compositions, including that prereacted with the diol, comprises from 55 to 90% by weight of the compositions (cf. Claim 1). The alkylene or polyoxyalkylene diol may be a simple diol, such as, for example, ethylene glycol, propylene-1,3-glycol, butylene-1,3-glycol, 1,4-butanediol or hexylene glycol, or it may be a polyethylene glycol or polypropylene glycol having, for example, a molecular weight of from 100 to 1000, corresponding to a hydroxyl equivalent weight of from 50 to 500 (cf. second complete paragraph on page 7). The compositions are useful in the manufacture of polyurethanes, in particular integral skin rigid and semi-rigid foams and microcellular polyurethanes (cf. first paragraph on page 1).

3.1 In the absence of any reference in document (1) to the use of the compositions in cold cure moulding of flexible high resilience foams, a use for which the presently claimed compositions are particularly suitable, the Board has doubts whether this document can be considered to represent the closest prior art. However, since not only the Opposition Division but also both the Appellants considered that this document was the prior art closest to the disputed patent and in view of the fact that the Respondent carried out comparative tests using polyisocyanate compositions very similar to those disclosed in the document, the Board has also decided to consider document (1) as the closest prior art in the light of which the technical problem underlying the patent in suit is to be determined.

Although the compression set of a polyurethane foam obtained by reacting a semi- or quasi-prepolymer very similar in composition to those disclosed in document (1) and a polyol masterbatch comprising polyoxypropylene or poly(oxypropyleneoxyethylene) diol or triol having a hydroxyl equivalent weight in the range 700 to 2000, water, conventional catalysts and surfactants is comparable with that obtained using a polyisocyanate composition in accordance with the present invention as the semi-prepolymer, it was considered that the processability of the foam obtained using the known composition was unsatisfactory, particularly insofar as its flowability and markability was concerned. Since the flowability of the foam determines whether the foam will quickly and completely fill even complicated moulds, it is an important property of the polyurethane foam. Good resistance to surface marking is also important since, if the surface of the foam is easily marked, it will be impossible to remove the foam from the mould without marking its surface. This will lead to the rejection of the moulding.

Although it was argued that flowability and markability are subjective rather than objective criteria, the Board is completely satisfied that skilled men are able to evaluate foams with regard to their flowability and arrive at consistent rankings. Similarly, it is considered that skilled men are also able to judge the markability of foams, particularly as to whether the foam is marked to such an extent that the moulding must be rejected.

.../...

3.2 Therefore, in the light of document (1) the technical problem underlying the patent in suit may be seen in providing a liquid polyisocyanate composition (semi-prepolymer) the use of which in cold cure moulding of flexible high resiliance foams leads to an improvement in foam processability with respect to flowability and markability without any deterioration in the compression set of the foams.

3.3 According to the patent in suit, this technical problem is solved by providing a liquid polyisocyanate composition comprising from 90 to 50% by weight of a reaction product of MDI and a polyoxyalkylene polyol having an average functionality of 2 to 3 comprising 50 to 100% by weight of a polyoxypropylene diol or triol having a hydroxyl equivalent weight of 750 to 3000 and from 0 to 50% by weight of a polyoxyethylene diol or triol having a hydroxyl equivalent weight of 750 to 3000, said reaction product having an isocyanate content of from 8 to 26% by weight and 10 to 50% by weight of crude MDI containing 30 to 65% by weight of diphenylmethane diisocyanate semi-prepolymer (Claim 1) and using this composition in the cold cure moulding of flexible high resilience polyurethane foams (Claim 4).

3.4 In the light of the results obtained in Examples 3, 4 and 7 and in the comparison between polyisocyanate compositions based on crude MDI and the reaction products of MDI and polyoxypropylene glycols having molecular weight of 1000 and 2000 submitted at the oral proceedings held during the opposition proceedings (refiled at the Board's request on 20 June 1988 as Enclosure 1), the Board is satisfied that the technical problem as defined above is plausibly solved.

Although the polyisocyanate compositions used in these comparative examples are not strictly in accordance with the teaching of document (1) insofar as the amount of crude MDI (25.8 and 27% by weight) is slightly below the minimum amount of 30% by weight specified in document (1), the Board is satisfied that the Respondent, in comparing compositions in which the only difference lies in the hydroxyl equivalent weight of the polyoxypropylene glycol reacted with the MDI, has made a genuine attempt to render the comparative tests as significant as possible. However, even if the results of the comparison examples submitted by Appellant OI on 20 September 1985 appear to confirm that there is no deterioration in the compression set of the foam obtained in accordance with the disputed patent, it considered that less weight should be attached to these results and to those reported in the disputed patent (cf. page 4, lines 4 to 15), since the semi-prepolymer used in the preparation of the foams only contained 16% by weight of crude MDI.

4. After examination of the cited prior art the Board is satisfied that the claimed subject-matter is novel. Since novelty is not disputed it is not necessary to consider this matter in detail.

5. It still remains to be examined whether the requirement of inventive step is met by the claimed subject-matter.

5.1 As previously mentioned, document (1) is concerned with liquid polyisocyanate compositions comprising crude MDI, MDI modified by reacting it with an alkylene or polyoxyalkylene diol and, optionally, pure MDI. Although polyethylene glycols and polypropylene glycols having molecular weights of 100 to 1000 (hydroxyl equivalent weights 50 to 500) are referred to as being suitable for modifying the MDI (cf. second complete paragraph on page 7), in the Examples an equimolar mixture of propylene glycol, diethylene glycol and 1,3-butylene glycol is used in the reaction with MDI. From the teaching of this document there would be no reason for the skilled person to use polyols with high molecular weights for the preparation of the semi-prepolymer in an attempt to improve the processability of the resulting foams in the cold cure moulding of high resilience flexible foams.

5.2 Document (2) discloses a process for the preparation of liquid isocyanate compositions, which are, in view of their viscosity and content of polyoxypropylene diol, particularly suitable for the manufacture of microcellular polyurethanes, comprising reacting 1 molar proportion of a solid MDI with 0.33 to 0.50 molar proportions of a polyoxypropylene diol and then adding to the product thus obtained a solid MDI in sufficient amount to adjust the isocyanate content of the composition to from 18% to 26% by weight (cf. Claim 1 and page 1, lines 65 to 90). Preferably dipropylene ether glycol or higher polyoxypropylene diols having a molecular weight below 2000 (hydroxyl equivalent weight <1000) are used (cf. page 2, lines 4 to 12). Thus, this document describes the formation of a semi-prepolymer by reacting pure MDI with a polyoxypropylene diol having a hydroxyl equivalent weight falling within the presently specified range. However, since pure MDI is then added to this semi-prepolymer and the resulting compositions are intended for a different use, the teaching of this document, even with the knowledge of document (1), would not have provided the skilled person with any indication which would have led him to the presently claimed solution to the problem underlying the disputed patent.

5.3 Document (3) relates to low temperature storage stable liquid MDI consisting of the reaction product of MDI containing 20 to 65% by weight of the 2,4'-isomer and 80 to 30% by weight of the 4,4'-isomer and from 0 to 5% by weight of the 2,2'-isomer and 1,2-propylene glycol and/or poly-1,2-propylene ether glycol having a molecular weight of from 134 to 2000 (hydroxyl equivalent weight 67 to 1000) in a molar NCO/OH ratio of about 3:1 to about 15:1 (cf. Claim 1 and Examples 24, 26 and 27). The skilled person would realise that this document is only concerned with the provision of pure MDI compositions which are both liquid and stable to storage and would have no reason to combine those compositions prepared from polyoxypropylene diols having hydroxyl equivalents of 750 or over with crude MDI with the expectation of solving the technical problem as defined above.

5.4 Example 4 of document (5) describes the preparation of a prepolymer of reacting 4,4'-MDI with a polyoxypropylene diol having a molecular weight of 2000 (hydroxyl equivalent weight of 1000). Therefore, from the disclosure in documents (1), (3) and (5) the skilled person would be aware of the possibility of preparing prepolymers or semi-prepolymers not only be reacting MDI with polyoxypropylene diols with hydroxyl equivalent weights of up to 500 but also with diols with hydroxyl equivalent weights in the range of 500 to 1000. In the light of this, the skilled person could have considered replacing component B of the compositions disclosed in document (1) by the prepolymers known from documents (3) and (5). However, the Board is of the opinion that the question to be asked is not whether the skilled person could have made this substitution but whether he would have done so in the expectation of improving the processability of the foam obtained by the further reaction of the prepolymer (cf. Simethicone Tablet/Rider T 2/83, EPO OJ 1984, 265, particular point 7 or page 270). This question must be answered in the negative since these documents are silent on the problem of processability.

5.5 Document (10) discloses a process for the preparation of a polyisocyanate composition by reacting a crude MDI containing 55 to 85% MDI with 0.005 to 0.35 equivalents of an alkylene diol or polyoxyalkylene diol per equivalent of isocyanate group in the mixture (cf. Claim 1). Suitable diols are, for example, ethylene glycol, 1,3-propylene glycol, 1,3-butylene glycol, 1,4-butanediol, hexyleneglycol or a polypropylene glycol of molecular weight 425, i.e. a hydroxyl equivalent weight of 212.5 (cf. third paragraph on page 6 and Example 1). The compositions thus obtained are stable liquids useful in the manufacture of polyurethanes, in particular, integral skin rigid, semi-rigid and flexible polyurethane foams, polyurethane car bumpers, crash padding and microcellular shoe soles (cf. second complete paragraph on page 10). In view of the fact that this document teaches the preparation of a semi-prepolymer using crude MDI and exemplified diols with hydroxyl equivalent weights below the presently claimed range, it would not provide the skilled person with any incentive to modify the teaching of document (1) in the direction necessary to solve the technical problem underlying the disputed patent.

Similarly, Example 1 of document (9) describes the preparation of an elastomeric foam from a prepolymer obtained by reacting crude MDI containing about 85% of MDI with a linear polypropylene glycol of molecular weight 2000 (hydroxyl equivalent weight 1000). In contrast to the disputed patent the prepolymer is prepared directly from a mixture of monomeric and polymeric MDI rather than by diluting a prepolymer made from pure MDI with crude MDI. Even if the skilled person were to use a semi-prepolymer obtained from MDI containing polymeric MDI in the cold cure moulding of flexible foams, he would find that the processability of the foam produced was unsatisfactory (cf. Examples 1 and 2 filed by the Patentee at the oral proceedings before the Opposition Division). However, the teaching in this document, either taken alone or combined with that of the other cited prior art, would not have suggested to the skilled person that the foam processability could be improved by first preparing the semi-prepolymer from pure MDI and diluting the thus obtained semi-prepolymer with crude MDI.

5.6 Document (4) discloses a process for the manufacture of flexible polyurethane foams by reacting in the presence of a blowing agent, such as for example, water, a polyether having at least two hydroxyl end groups and a MDI composition having an average isocyanate functionality of less than 2.4 containing not more than 60% by weight of the 4,4'-isomer and wherein at least 15% by weight of the MDI isomers consist of the 2,4'-isomer (cf. Claims 1 and 12). The polyether used in the process include polyoxyalkylene polyols, preferably with molecular weights in the range 2000 to 10000, and, more preferably, the polyoxyalkylene polyols are random or block co-polymers of oxyethylene and oxypropylene units, especially those tipped with ethylene oxide chains (cf. fourth and fifth paragraphs on page 4). The MDI composition may be a mixture of pure and crude MDI provided it fulfils the requirements set out in Claim 1 (cf. Example 2). Although it is mentioned in the last paragraph on page 6 of this document that the polyurethane foams may be prepared by any of the techniques used in the art, for example, a one-shot, prepolymer or semi-prepolymer process, all the Examples employ the one-shot technique.

Since this document does not even hint at the presently envisaged problem, the invention could not only have been discovered by experimentation on the basis of trial and error. Having regard to the large number of parameters that may be varied the invention must be considered to be a proper selection.

5.7 Document (11) discloses two compositions (Rezeptur IV and V) suitable for the preparation of soft foams by the one-shot process based on toluene diisocyanate (TDI 80; i.e. an 82:20 mixture of the 2,4- and 2,6-isomers) and either a 50:50 mixture of a polyoxypropylene diol of molecular weight 2000 (hydroxyl equivalent weight 1000) and a polyoxypropylene triol of molecular weight 3000 (hydroxyl equivalent weight 1000) or a polyoxypropylene triol of molecular weight 4000 (hydroxyl equivalent weight 1333). Although the skilled person might consider that such compositions could be used in a prepolymer or semi-prepolymer process by reacting the whole amount of TDI 80 with part of the diol/triol or triol, such consideration would not lead the skilled person to the solution to the above-defined technical problem since the teaching of this document is restricted to an isocyanate with an isocyanate functionality of exactly two, i.e. to a structurally different isocyanate, and would be of no assistance to the skilled person wishing to improve the processability of the foam obtained from semi-prepolymers resulting from using isocyanate compositions having an average isocyanate functionality greater than two such as those containing monomeric and polymeric MDI.

5.8 Document (13) describes a process for the production of polyurethane foams by reacting a 10 to 70% by weight solution of a product obtained by reacting a (monomeric) polyisocyanate with a compound containing two or more hydroxy groups in a (monomeric) polyisocyanate with a polyether containing at least two active hydrogen atoms with a molecular weight of 1500 to 10 000 in which at least 10% of the hydroxy groups present are primary hydroxy groups, water and/or other blowing agents, catalysts and, optionally, other additives (cf. Claim). The monomeric polyisocyanate used to prepare the prepolymer may be the same as or different from that used as the solvent for the prepolymer (column 6, lines 48 to 68). Suitable monomeric polyisocyanates include aliphatic, cycloaliphatic, araliphatic and aromatic isocyanates (cf. column 6, lines 37 to 41 and column 7, lines 5 to 9). Particularly suitable are toluene diisocyanate or its isomeric mixtures or mixtures of these with pure or crude MDI (cf. column 7, lines 9 to 12). Thus, the use of pure or crude MDI or mixture thereof in the absence of toluene diisocyanate is not specifically disclosed in this document.

Column 5, line 18 to column 6, line 36 of this document discloses suitable linear and/or branched hydroxy-containing compounds for use in the preparation of the prepolymer. Included within the very extensive list of compounds are the reaction products of diols or hydroxy compounds of higher functionalities with at least one mole of an alkylene oxide, such as ethylene oxide, propylene oxide, butylene oxide, styrene oxide, glycidol or mixtures of such epoxides to product hydroxy-containing polyethers having hydroxyl numbers of 28 to 1500 (cf. column 5, lines 39 to 44). These hydroxy numbers for polyoxypropylene diols and triols correspond to hydroxyl equivalent weights of 2000 to 37.

However, a careful study of the general and detailed disclosure of this document would not have provided the skilled person with any incentive to use polyoxypropylene diols or triols having hydroxyl equivalent weights in the range 750 to 3000 (corresponding to hydroxyl numbers of 78 to 19) for the preparation of semi-prepolymers, based on MDI. Furthermore, there is no indication in this document that the semi-prepolymer so obtained should then be diluted with crude MDI in order to solve the technical problem underlying the disputed patent.

6. Therefore, in the Board's judgement, the subject-matter of Claims 1 and 4 in accordance with set of Claims A involves an inventive step. Dependent Claims 2 and 3, which relate to preferred embodiments of Claim 1, derive their patentability from Claim 1.

7. In view of the above it is not necessary to consider the Respondent's auxiliary requests.

Order

For these reasons, it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the first instance with the order to maintain the patent on the basis of set of claims A filed at the oral proceedings and the description of the patent as granted.

The Registrar: The Chairman:

Jahn

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RWA-