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Bezeichnung der Erfindung: Cross-linked polymers

Title of invention:

Titre de l'invention :

Klassifikation / Classification / Classement : C08L 53/02

### ENTSCHEIDUNG / DECISION

vom / of / du 20 December 1988

Anmelder / Applicant / Demandeur : Shell International Research  
Maatschappij B.V. et al

Patentinhaber / Proprietor of the patent /  
Titulaire du brevet :

Einsprechender / Opponent / Opposant :

Stichwort / Headword / Référence :

Art. 17(3)(a), Rules 13.1 and 40.1

Schlagwort / Keyword / Mot clé : Unity of invention (yes) - claim covering  
alternatives

Leitsatz / Headnote / Sommaire

Europäisches  
Patentamt

European Patent  
Office

Office européen  
des brevets

Beschwerdekammern

Boards of Appeal

Chambres de recours

Case Number : W 40 /88

International Application No PCT/EP 87/00762



**D E C I S I O N**  
of the Technical Board of Appeal 3.3.2  
of 13 December 1988

**Applicant:**

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**Subject to this decision:**

Protest according to Rule 40.2(c) of the Patent Cooperation Treaty made by the applicants against the invitation (payment of additional fee) of the European Patent Office (branch at The Hague) dated 01 September 1988.

**Composition of the Board :**

**Chairman :** P. Lançon

**Members :** S. Schödel

J. Stephens-Ofner

## Summary of Facts and Submissions

- I. On 4 December 1987 the Applicants filed an international patent application PCT/EP87/00762 with the European Patent Office.
  
- II. On 1 September 1988 the European Patent Office, as competent International Searching Authority (ISA) issued, pursuant to Article 17(3)(a) and Rule 40.1 PCT on form PCT/ISA 206 an invitation to pay two additional search fees since it considered that the above-mentioned application did not comply with the requirements of unity of invention. The reasoning given for this finding was that the following three subjects constituted separate inventive concepts:
  1. Claims 1-3, 5-10 as far as they related to block copolymers of an aromatic vinyl compound and a conjugated diolefin;
  2. Claims 1-6, 9 and 10 as far as they related to ethylene-vinylacetate copolymers and
  3. Claims 1-10 as far as they related to mixtures of a block copolymer of an aromatic vinyl compound and a conjugated diolefin and an ethylene-vinylacetate copolymer.

The characterising aspect of the presumed invention could be seen only in the use of the particular copolymers forming component (A) of Claim 1, defined by their structure and their different monomers, since each of the other components (B), (C) and (D) could be absent and their use in cross-linking belonged in any case to the well-known state of the art.

The definition of component (A) comprised a block copolymer (=A1), i.e. a combination of an aromatic vinyl

monomer and a conjugated diolefin on the one hand and a normal copolymer (=A2), i.e. a combination of ethylene and vinylacetate on the other. These different aspects represented two different inventions, which were not linked so as to form a single general inventive concept (Rule 13.1 PCT).

A mixture of the block copolymer and normal copolymer (=A1/A2) also seemed to be possible according to Claim 1 and this specific combination was considered to be a third subject of invention.

III. On 13 September 1988 the Applicants paid the two additional international search fees identified in the invitation referred to above and indicated, in a letter dated 14 September 1988, that the fees had been paid under protest.

In particular they argued:

Claims 1-9 all related to the same cross-linked polymer compositions obtained by cross-linking a mixture comprising ingredients A, B, C and D. Component A, which was the most important ingredient, consisted of the block copolymer (A1) and/or the copolymer (A2) as defined before. The use of these particular copolymers was regarded as the characterising aspect of the invention.

The search, when carried out for cross-linked polymer compositions containing A1, B, C and D and cross-linked compositions containing A2, B, C and D (of which in each case B, C and D might be absent), would automatically reveal the prior art literature also for the A1/A2-containing polymer compositions.

## Reasons for the Decision

1. Pursuant to Article 154(3) EPC and Article 9 of the agreement between WIPO and the EPO the Boards of Appeal of the EPO are responsible for deciding on protests made by Applicants against additional search fees charged by the EPO under the provisions of Article 17(3)(a) PCT (OJ EPO 1985, 320, 324).
2. Since the Applicants have paid the additional fees under protest i.e. accompanied by a reasoned statement to the effect that the amount of the required additional fees was excessive, the protest complies with Rule 40.2(b) and (c) PCT. It is therefore admissible.
3. The objection raised by the ISA is based on the finding that the subject-matter of Claim 1 is a priori non unitary within the meaning of Rule 13.1 PCT.

This regulation clearly states that the international application shall relate to one invention only or to a group of inventions so linked as to form a single general inventive concept (requirement of unity of invention").

4. In assessing the question of a priori unity or lack of unity of invention, the documents of the international application as originally filed are the only source of relevant information which can be taken into account at this stage of the proceedings.
  - 4.1 The international application forming the subject of the protest relates to cross-linked polymer compositions. According to the introductory part of the present description it is known to provide cross-linked rubber products derived from natural or synthetic rubber and 1,2-polybutadiene, vulcanized with sulphur, which products show great hardness. They are prepared by a method in

which a metal mould is used to obtain the desired shape. Other known methods of preparing such rubbers are based on heat medium cross-linking without the need of such a metal mould; however they were not satisfactory as to shaping capability.

- 4.2 In the present case, therefore, the technical problem consisted in providing cross-linked polymers having not only high hardness but also excellent mouldability during cross-linking. The proposal according to Claim 1 for achieving this consists in cross-linking, in a heat medium, a mixture comprising -briefly stated -
- (A) an aromatic vinyl-conjugated diolefin block copolymer (A1) and/ or  
an ethylene-vinylacetate copolymer (A2),
  - (B) a non-cured natural or synthetic rubber,
  - (C) a rubber softener and
  - (D) a filler, whereby B, C and D are non-obligatory ingredients.
- 4.3 Accordingly A1 and A2 as well as blends of A1 and A2 basically represent the critical components of Claim 1 while B, C and D are of minor importance and need not be discussed in further detail.

Polymer mixtures comprising the said essential ingredients when processed in the manner outlined give rise to polymers with improved mouldability during cross-linking and excellent hardness at the final stage of the heat treatment (see experimental data). The block copolymers of A1 type, the copolymers of A2 type and mixtures of both, although different in chemical nature, effect the same or at least a similar result and this clearly means that they are all suitable to solve the existing technical problem.

- 4.4 From the foregoing it can be concluded that there is a common ability/function inherent to A1, A2 and also to A1/A2 from the very beginning which appears in the favourable processability and performance characteristics of the products and represents the unifying element, which links the alternative embodiments specified in Claim 1 (even those with compounds B, C and/or D) with each other to form the single general inventive concept required under Rule 13.1 PCT.

There can be no objection to subsuming these embodiments which are of equal status under a single generic claim.

- 4.5 Dependent Claims 2-9 which relate to specific forms within the framework of Claim 1 and independent Claim 10 which is directed to articles containing the said cross-linked polymers similarly contribute to the solution of the problem underlying the international application and thus reflect the same general inventive concept as Claim 1 (cf. Rule 13 PCT).

5. As far as the reasoning of the ISA is concerned the mere fact that the respective copolymers used differ from each other both in structure and in constituent monomers does not itself lead inevitably to a finding that there is no link between them and consequently that there is no single general inventive concept.

The statement that the process of cross-linking lacks any novel or inventive aspect does not clearly relate to the subject-matter of the claim under consideration and is furthermore not supported by any evidence.

6. Therefore the arguments put forward in the invitation are not conclusive and cannot support the a priori objection

of lack of unity of invention. It follows that the additional search fees cannot be retained.

Order

For these reasons, it is decided:

Refund of the two additional fees is ordered.

The Registrar:

The Chairman:

F.Klein

P.Lançon