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**Datasheet for the decision  
of 10 July 2009**

**Case Number:** T 0398/07 - 3.2.07

**Application Number:** 95925566.2

**Publication Number:** 0782492

**IPC:** B24D 3/28

**Language of the proceedings:** EN

**Title of invention:**  
Composite abrasive products

**Patentee:**  
NORTON COMPANY

**Opponent:**  
3M Innovative Properties Company

**Headword:**  
-

**Relevant legal provisions:**  
EPC Art. 56

**Relevant legal provisions (EPC 1973):**  
-

**Keyword:**  
"Inventive step - (no)"

**Decisions cited:**  
-

**Catchword:**  
-



Case Number: T 0398/07 - 3.2.07

**D E C I S I O N**  
of the Technical Board of Appeal 3.2.07  
of 10 July 2009

**Appellant:** 3M Innovative Properties Company  
(Opponent) 3M Center  
2501 Hudson Road  
St. Paul MN 55144-1000 (US)

**Representative:** Vossius & Partner  
Siebertstraße 4  
D-81675 München (DE)

**Respondent:** NORTON COMPANY  
(Patent Proprietor) 1 NEW BOND STREET  
BOX No. 15138  
WORCESTER  
MASSACHUSETTS  
01615-0139

**Representative:** Leidescher, Thomas  
Zimmermann & Partner  
Postfach 330 920  
D-80069 München (DE)

**Decision under appeal:** Decision of the Opposition Division of the  
European Patent Office posted 29 December 2006  
rejecting the opposition filed against European  
patent No. 0782492 pursuant to Article 102(2)  
EPC.

**Composition of the Board:**

**Chairman:** I. Beckedorf  
**Members:** P. O'Reilly  
H.-P. Felgenhauer

## Summary of Facts and Submissions

- I. Opposition was filed against European patent No. 0 782 492 as a whole based on Article 100(a) EPC (lack of novelty and lack of inventive step).

The opposition division in its decision dated 19 October 2001 decided to revoke the patent. It held that the subject-matter of claim 1 was not novel.

The proprietor filed an appeal against that decision.

The Board, in a different composition, in its decision T 1252/01 decided that the subject-matter of claim 1 was novel and remitted the case back to the opposition division for further prosecution

The opposition division in its decision dated 29 December 2006 decided to reject the opposition. It held that the subject-matter of claim 1, as well as being novel, involved an inventive step.

- II. The appellant (opponent) filed an appeal against the decision dated 29 December 2006.

- III. The appellant requested that the decision under appeal be set aside and the patent be revoked.

The respondent (proprietor) requested that the appeal be dismissed, alternatively, that in setting aside the decision under appeal the patent be maintained in amended form on the basis of the set of claims filed as auxiliary request with letter of 8 June 2009.

IV. Claim 1 of the patent as granted (main request) reads as follows:

"A composite abrasive product comprising a random nonwoven fibrous web with abrasive particles adhered thereto by means of an organic polymer characterized in that the abrasive particles are shaped particles of an abrasive material having a consistent cross-sectional shape along a longitudinal axis and an aspect ratio of at least 1.5:1."

Claim 1 of the first auxiliary request reads as follows (amendments when compared to claim 1 of the main request are depicted in bold):

"1. A composite abrasive product comprising a random nonwoven fibrous web with abrasive particles adhered thereto by means of an organic polymer, characterized in that the abrasive particles are shaped particles of an abrasive material having a **generally circular**, consistent cross-sectional shape along a longitudinal axis and an aspect ratio of at least 1.5:1."

V. The documents cited in the present decision are the following:

D4: EP-A-0 395 088

D9: US-A-2 958 593

Declaration of Mr. Hsu dated 2 April 2001 filed with letter of the respondent dated 27 April 2001.

VI. The relevant arguments of the appellant may be summarised as follows:

- (i) The subject-matter of claim 1 of the main request lacks an inventive step.

D9 discloses the features of the preamble of claim 1 in particular in Example III. The problem to be solved is to improve the abrasive particles used in the abrasive product. The skilled person knows from several documents, amongst them D4, that the use of abrasive particles having the properties set out in the characterizing portion of claim 1 results in an improvement in the abrading performance. The skilled person would therefore apply this teaching to the product of D9 in order to improve it and would thus arrive at a composite abrasive product in accordance with claim 1. The declaration of Mr. Hsu concentrates on economic prejudices which do not, however, constitute technical prejudices and hence cannot be taken into consideration.

Also, with respect to other combinations of the documents cited in the proceedings the subject-matter of claim 1 would lack an inventive step.

- (ii) The subject-matter of claim 1 of the auxiliary request lacks an inventive step.

The extra feature of claim 1 of this request is also known from D4 so that the skilled person when applying the teaching of this document to the product of D9 would also provide the product with this feature and hence arrive at a product in accordance with claim 1.

VII. The relevant arguments of the respondent may be summarised as follows:

- (i) The subject-matter of claim 1 of the main request involves an inventive step.

D9 discloses the preamble of claim 1. D9 is an old-fashioned product for which there would be no motivation for the skilled person to effect any changes. D4 is concerned with coated products which are not composite products as claimed in the patent in suit. The coated product of D4 has the filamentary abrasive products applied by electrostatic means with the result that they have a perpendicular orientation relative to the backing sheet so that they can function correctly. However, the nonwoven web of the abrasive product disclosed in D9 is unsuitable for this manner of application since the abrasive particles are held directly on the nonwoven fibre which is randomly orientated, which is why in the patent in suit a gravity application of the abrasive particles is disclosed. The skilled person would therefore be prejudiced against applying the teaching of D4 to the product of D9.

- (ii) The extra feature of claim 1 of the auxiliary request is intended to distinguish the claim over prior art referring to abrasive particles having a rectangular cross-section which was mentioned in the communication of the Board accompanying the summons to oral proceedings.

## Reasons for the Decision

### *Main request*

#### 1. *Novelty*

It was already established in preceding decision T 1252/01 of the Board that the subject-matter of claim 1 is novel in the sense of Article 54 EPC.

#### 2. *Inventive step*

2.1 The appellant attacked claim 1 in the written and oral proceedings on the basis of a number of combinations of the prior art documents. For the purposes of the present decision it is only necessary to discuss one of those attacks that was found to be decisive for the decision taken by the Board.

2.2 One of the attacks of the appellant started from D9. This document discloses the features of the preamble of claim 1. In Example III of this document there is described the construction of a grinding wheel from a nonwoven web in the same manner as is described on page 1, lines 5 to 8 of the patent in suit, so that D9 discloses a composite product in the sense of claim 1 of the patent. The respondent did not dispute that D9 disclosed the features of the preamble of claim 1.

2.3 The abrasive particles of Example III of D9 are applied as a slurry with no information being given as to the form of particles contained therein (see column 10, lines 68 to 74.

Therefore, the subject-matter of claim 1 is distinguished over the disclosure of Example III of D9 by the characterizing feature of the claim, i.e. the abrasive particles are shaped particles of an abrasive material having a consistent cross-sectional shape along a longitudinal axis and an aspect ratio of at least 1.5:1. This aspect ratio results in a filamentary shape having the effect of improving the abrading effect of the abrasive product.

2.4 The problem to be solved by claim 1 comprising the characterizing feature mentioned above is to improve the abrading effect of the abrasive product known from D9.

2.5 A number of documents disclose filamentary abrasive particles having the characterising feature of claim 1 in the context of abrasive products, though none of these products are either composite or have a nonwoven web. In particular, D4 discloses abrasive particles shaped as defined in the characterising feature of claim 1 and the respondent has not disputed this. Abrasive particles according to the characterising feature are found for example on page 2, lines 50 to 53 of the document.

On page 3, lines 18 to 21, of D4 advantages of the use of filamentary particles are set out which result in an improved abrading effect. The particles are stated to be particularly useful for low pressure grinding operations. According to the declaration of Mr. Hsu (see page 2, lines 5 to 16) low pressure grinding is the type of operation in which a composite abrasive product according to claim 1 is used. The skilled person would therefore expect the same advantages to accrue when the



filamentary abrasive particles are used in a composite product as when they are used in the coated product of D4. In this respect according to the declaration of Mr. Hsu (see page 1, paragraph 3) the rigidity of abrasive products increases from composite products to coated products to bonded products so that coated products stand next to composite products in this order. This means that abrasive particles which produce good results when used with a coated product can also be reasonably be expected to produce good results when used in a composite product, so that the skilled person would indeed employ them in such a composite product.

In this respect it may be noted that in D4 there is a backing sheet with a make coat and the abrasive particles are deposited upon this by electrostatic means which means that they are perpendicular relative to the backing sheet (see page 2, lines 27 to 34 and page 6, lines 22 to 23). There is then applied one or more size coats which help to maintain the orientation of the abrasive particles so that they can perform in the expected manner. In the case of the nonwoven abrasive product of D9 there is also applied a bonding material for the abrasive which is of the same type as used in coated products (see column 10, line 68 to column 11, line 3). This means that the abrasive particles cannot be described as adhered directly to the nonwoven web as suggested by the respondent but rather are attached in exactly the same manner as with a coated product. The skilled person would not therefore be prejudiced against the use of the abrasive particles disclosed for a coated abrasive product for an abrasive product based on a nonwoven web. This applies also in view of the fact that the nonwoven web according claim 1 leads to a random

shaped surface. The skilled person would realise that an electrostatic deposition make no sense on such a random web and would use some other deposition method, e.g. one based on gravity.

2.6 Hence the Board concludes that the skilled person would use the filamentary abrasive particles known from D4 for the composite abrasive product known from D9 and thus arrive in an obvious manner at a product having the features of claim 1.

2.7 Therefore, the subject-matter of claim 1 of the main request does not involve an inventive step in the sense of Article 56 EPC.

#### *Auxiliary request*

### 3. *Inventive step*

3.1 The extra feature of claim 1 of this request compared to claim 1 of the main request is that the abrasive particles have a generally circular cross-section which according to the description of the patent on page 2, line 35 is a right cylinder as the preferred form.

3.2 In D4 the preferred form of the elongate abrasive particles is a regular cylindrical shape, i.e. one with a circular cross-section, which provides various advantages as set out on page 8, lines 1 to 7. The skilled person when applying the teaching of D4 with respect to the abrasive particles to the product known from D9 would also apply it with the preferred shape of abrasive particles as indicated in D4. The skilled person thus would therefore also provide abrasive

particles having the extra feature of claim 1 of the auxiliary request.

- 3.3 Therefore, the subject-matter of claim 1 of the auxiliary request does not involve an inventive step in the sense of Article 56 EPC.

## **Order**

### **For these reasons it is decided that:**

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:

The Chairman:

G. Nachtigall

I. Beckedorf