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**Datasheet for the decision  
of 18 January 2019**

**Case Number:** T 0792/14 - 3.3.02

**Application Number:** 07748933.4

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**IPC:** B05D3/02, B32B19/00, C07F7/18,  
C09D5/00, C09D183/14

**Language of the proceedings:** EN

**Title of invention:**  
WATER DISPERSIBLE SILANES AS CORROSION-PROTECTION COATINGS AND  
PAINT PRIMERS FOR METAL PRETREATMENT

**Applicant:**  
Nalco Company

**Headword:**

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

**Keyword:**  
Inventive step

**Decisions cited:**

**Catchword:**



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Case Number: T 0792/14 - 3.3.02

**D E C I S I O N**  
**of Technical Board of Appeal 3.3.02**  
**of 18 January 2019**

**Appellant:** Nalco Company  
(Applicant) 1601 W. Diehl Road  
Naperville, IL 60563-1198 (US)

**Representative:** Godemeyer Blum Lenze Patentanwälte  
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**Decision under appeal:** **Decision of the Examining Division of the  
European Patent Office posted on 5 November 2013  
refusing European patent application No.  
07748933.4 pursuant to Article 97(2) EPC.**

**Composition of the Board:**

**Chairman** M. O. Müller  
**Members:** A. Lenzen  
P. de Heij

## **Summary of Facts and Submissions**

I. The appeal by the applicant (hereinafter "appellant") lies from the decision of the examining division to refuse European patent application No. 07 748 933.4.

II. The decision of the examining division was based on a main request filed with a letter dated 19 September 2013 and first and second auxiliary requests filed during the oral proceedings on 24 October 2013.

The decision can be summarised as follows: Claim 6 of the main request was not novel over document D4. Both claims 1 and 6 of the first auxiliary request were found to lack novelty over document D1. The second auxiliary request lacked inventive step in view of a combination of documents D1 and D5.

III. Among the documents cited during the examination procedure, the following ones are relevant to the present decision:

D1 WO 2006/004839 A2,

D5 "The Jeffamine polyoxyalkyleneamines", Technical Bulletin of the Huntsman Corporation, 2002, and

D6 "Epoxy formulations using Jeffamine polyetheramines", B. Burton et al., 2005.

IV. In preparation for the oral proceedings, the board issued a communication drawing the attention of the appellant to salient issues that may be addressed at the oral proceedings.

- V. Oral proceedings were held on 18 January 2019 in the absence of the appellant.
- VI. The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the main request or, in the alternative, the first auxiliary request, both as filed with the statement of grounds of appeal dated 13 March 2014.
- VII. Both the main and the first auxiliary requests filed with the statement of grounds of appeal comprise the same independent process claim 1. It reads as follows:

*"A method of improving corrosion resistance to a metal surface comprising the steps of:*

*reacting*

*(1) an alkylene ether diamine containing a pair of primary amine groups separated from each other by at least four intermediate atoms in a chain, with*

*(2) a silane comprising a silicon atom bonded to a plurality of hydrolyzable groups and to at least one organic epoxy radical, said silane comprising hydrolyzable silane groups,*

*with stoichiometry and reaction conditions where all of the epoxy is reacted with amine groups, to obtain a composition with molecules containing both silicon and amine groups and at least 2.5 of said hydrolyzable silane groups per molecule;*

*and thereafter applying a dispersion of said composition in one or more solvents to a metal surface,*

*and drying the composition on said surface for crosslinking."*

VIII. The appellant's arguments, in so far as they are relevant to the present decision, can be summarised as follows:

D1 is the closest prior art. The skilled person would not substitute the alkylene ether triamine of D1 for an alkylene ether diamine, but would rather substitute the former for an alkylene polyamine. The claimed subject-matter is thus inventive.

### **Reasons for the Decision**

The appeal is admissible.

In accordance with Article 15(3) RPBA the appellant is treated as relying on its written case.

### **Main and auxiliary request**

1. Inventive step - Article 56 EPC

1.1 The board concurs with the appellant in D1 being the closest prior art.

D1 (page 2, lines 4 to 6) discloses the use of novel multifunctional organosilane structures as corrosion-inhibiting metal finishing treatments.

On page 15, lines 20 to 23 the reaction product of 3-glycidoxypropyltrimethoxysilane, i.e. a silane according to (2) in claim 1, with "Jemfamine" T-403 is given as an example of such a novel organosilane. As noted by the board in its communication, and as not objected to by the appellant, "Jemfamine" T-403

comprises a spelling error and actually refers to Jeffamine T-403. As is evident from D5 (page 2, paragraph entitled "JEFFAMINE T Series"), Jeffamine T-403 is a polypropylene ether **triamine**, i.e. an alkylene ether **triamine**, wherein the amine groups are separated from each other by at least four intermediate atoms in a chain.

In the subsequent example in D1, the application of this organosilane onto an aluminium substrate and the subsequent drying thereof are described (see penultimate entry in the table on page 17). It is found that this coating provides the aluminium substrate with corrosion resistance.

1.2 The board considers the distinguishing feature as being the nature of the amine compound (1): whereas alkylene ether **diamines** are used in claim 1, D1 employs the alkylene ether **triamine** Jeffamine T-403. In fact, this was the feature that the appellant had identified in its statement of grounds of appeal as the distinguishing feature. Also in its communication, the board had identified this feature of claim 1 as the only distinguishing feature vis-à-vis D1, and this was not contested by the appellant.

1.3 The appellant did not show that the distinguishing feature identified above goes along with a surprising technical effect. In the statement of grounds of appeal, the appellant did not rely on such an effect either.

Thus, as already set out in the board's communication, the objective technical problem has to be formulated as the provision of an alternative method of improving corrosion resistance to a metal surface.

1.4 The board does not consider the solution to this objective technical problem in the form of the subject-matter of claim 1 to involve an inventive step:

Both alkylene ether **triamines** (as disclosed in D1) and alkylene ether **diamines** (as referred to in claim 1) were well-known before the priority date for undergoing ring opening reactions with epoxides. Reference can be made e.g. to

(a) D5, disclosing Jeffamine alkylene ether **di-** and **triamines** starting on page 1 as well as their use in epoxide opening reactions on page 4, and, in the alternative,

(b) D6, disclosing both Jeffamine D-230 (an alkylene ether **diamine**) and Jeffamine T-403 (the alkylene ether **triamine** of D1) as epoxy curing agents (top of pages 7 and 11).

From these documents both the **di-** and **triamines** described therein appear to be equally suitable to be used in the reaction described in D1. Therefore, the skilled person would find it obvious to substitute the alkylene ether **triamine** of D1 for one of the alkylene ether **diamines** of D5 or D6.

1.5 In summary, the subject-matter of claim 1 of both the main request and auxiliary request 1 (VII *supra*) does not involve an inventive step in view of a combination of D1 with D5 or D6.

## **Order**

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



The appeal is dismissed.

The Registrar:

The Chairman:



N. Maslin

M. O. Müller

Decision electronically authenticated