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Datasheet for the decision of 25 February 2026

Case Number: T 0574/24 - 3.3.03

Application Number: 15865838.5

Publication Number: 3228660

IPC: C08L23/04, C08K5/13, C08K5/14, C08K5/17, C08K5/372, C08L101/02, H01B3/44, H01B7/02, C08K5/134, C08K5/3435

Language of the proceedings: EN

Title of invention:
CROSSLINKABLE RESIN COMPOSITION, AND ELECTRIC WIRE OR CABLE

Patent Proprietor:
Eneos Nuc Corporation

Opponent:
The Dow Chemical Company

Relevant legal provisions:
EPC Art. 56, 83, 123(3)

Keyword:
Extension of the protection conferred (no) - argument based on an unreasonable construction of the claim wording
Sufficiency of disclosure (yes)
Inventive step (yes) - objection starting from a document whose selection is based on an ex post facto analysis

Decisions cited:
G 0003/14, G 0001/24

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Case Number: T 0574/24 - 3.3.03

D E C I S I O N
of Technical Board of Appeal 3.3.03
of 25 February 2026

Appellant: (Patent Proprietor)	Eneos Nuc Corporation 8-1 Ukishima-cho Kawasaki-ku Kawasaki-shi Kanagawa 2100862 (JP)
Representative:	Grünecker Patent- und Rechtsanwälte PartG mbB Leopoldstraße 4 80802 München (DE)
Respondent: (Opponent)	The Dow Chemical Company 2211 H.H. Dow Way Midland MI 48674 (US)
Representative:	V.O. P.O. Box 87930 2508 DH Den Haag (NL)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 22 February 2024 concerning maintenance of the European Patent No. 3228660 in amended form.**

Composition of the Board:

Chairman	O. Dury
Members:	F. Rousseau
	A. Bacchin

Summary of Facts and Submissions

I. The appeal lies from the interlocutory decision of the opposition division according to which European patent No. 3 228 660 as amended according to the claims of the 10th Auxiliary Request submitted during the oral proceedings on 25 January 2024 and a description adapted thereto met the requirements of the EPC. The decision was also based, *inter alia*, on the patent as granted as a Main Request, as well as on a 2nd Auxiliary Request submitted with letter of 9 January 2023.

II. The following items of evidence were among others submitted during the opposition proceedings:

D1: WO 2015/038467 A1
D2: WO 2014/011854 A1
D6: US 6,187,858 B1
D8: DIN EN ISO 1628-1 (1998)

III. According to the conclusions for the contested decision which are pertinent for the appeal proceedings:

(a) The disclaimer in granted claim 1 removed more than what was necessary to restore novelty over the inventive examples shown in Table 4 of D1, which was prior art pursuant to Article 54(3) EPC. The Main Request whose claim 1 therefore extended beyond the content of the application as filed was for this reason not allowable.

(b) The amendment comprised in claim 1 of the 2nd Auxiliary Request was in violation of Article 123(3) EPC.

(c) Claim 1 of the 10th Auxiliary Request complied with the requirements of Articles 123(2), 123(3), 83, 84 and 54 EPC. Its subject-matter was inventive within the meaning of Article 56 EPC starting from each of documents D2 and D6 as the closest prior art.

(d) Taking into consideration the amendments comprised in the claims of the 10th Auxiliary Request and the adapted description, the present patent could be maintained.

IV. An appeal against that decision was lodged by the patent proprietor (appellant). With the statement setting out the grounds of appeal, the appellant submitted thirteen sets of claim requests labelled as 1st to 13th Auxiliary Requests. With letter of 12 March 2025, the appellant filed a 14th Auxiliary Request and submissions concerning the substance of the case, which were supplemented by written submissions filed with a letter of 9 October 2025.

V. In addition to a rejoinder, the opponent (respondent) filed with letters of 16 May 2025 and 21 November 2025 additional written submissions concerning the substance of the case.

VI. In preparation of the oral proceedings, a communication pursuant to Article 15(1) RPBA conveying the Board's provisional opinion was issued. During the oral proceedings held on 25 February 2026 the appellant withdrew its Main Request (patent as granted) and the

1st to 5th Auxiliary Requests, making the 6th Auxiliary Request as the Main Request.

VII. The final requests of the parties were as follows:

The appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of the Main Request filed as 6th Auxiliary Request with the statement of grounds of appeal or on the basis of the 7th to the 13th Auxiliary Requests as filed with the statement of grounds of appeal, or the 14th Auxiliary Request filed with letter of 12 March 2025.

The respondent requested that the appeal be dismissed, i.e. that the decision to maintain the patent in amended form on the basis of the claims of the 10th Auxiliary Request filed during the oral proceedings on 25 January 2024 be upheld.

VIII. Claims 1 and 3 of the Main Request (6th Auxiliary Request submitted with the statement of grounds of appeal) read as follows (additions as compared to claim 1 of the granted patent are indicated in **bold**, deletions in ~~strikethrough~~):

"1. A crosslinkable resin composition comprising:

100 parts by mass of an ethylene-based resin (A);

a stabilizer (B) containing 0.001 to 0.5 parts by mass of a hindered amine light stabilizer (B3) having a melting point or glass transition point of 100°C or less; and

0.5 to 3.0 parts by mass of an organic peroxide (C),

wherein all compounds contained in the stabilizer (B) have a molecular weight of 1,500 or less;

wherein the stabilizer (B) further contains a hindered phenol stabilizer (B1) and a dialkyl thiodipropionate stabilizer (B2) in addition to the hindered amine light stabilizer (B3);

~~with the proviso that the crosslinkable resin composition does not comprise LDPE, 0.20 wt% of distearylthiodipropionate, 0.12 wt% 1,3,5-tris(4-t-butyl-3-hydroxy-2,6-dimethylbenzyl)isocyanuric acid, 0.005 wt% of a compound selected from the group consisting of a mixture of bis(1,2,2,6,6-pentamethyl-4-piperidyl)sebacate and methyl 1,2,2,6,6-pentamethyl-4-piperidyl sebacate; (bis-(1-octyloxy-2,2,6,6-tetramethyl-4-piperidinyl) sebacate); (2,2,6,6-tetramethyl-4-piperidine)stearate and bis(2,2,6,6,-tetramethyl-4-piperidyl)sebaceate, and 1.8 wt% dicumyl peroxide~~

wherein the stabilizer (B1) is selected from the group consisting of 4,4'-thiobis-(3-methyl-6-t-butylphenol), 4,4'-thiobis-(6-t-butyl-o-cresol), tetrakis[methylene-3-(3',5'-di-t-butyl-4'-hydroxyphenyl)propionate]-methane, N,N'-bis[3-(3,5-di-t-butyl-4-hydroxyphenyl)-propionyl]hydrazine, 1,3,5-trimethyl-2,4-6-tris(3,5-di-t-butyl-4-hydroxybenzyl)benzene, triethylene glycol-bis[3-(3-t-butyl-5-methyl-4-hydroxyphenyl)propionate], 1,6-hexanediol-bis[3-(3,5-di-t-butyl-4-hydroxyphenyl)-propionate], octadecyl-3-(3,5-di-t-butyl-4-hydroxy-phenyl)propionate, N,N'-hexamethylenebis(3,5-di-t-butyl-4-hydroxy-hydrocinnamamide), 1,3,5-trimethyl-2,4,6-tris(3,5-di-t-butyl-4-hydroxybenzyl)benzene,

tris-(3,5-di-t-butyl-4-hydroxybenzyl)-isocyanurate, isooctyl-3-(3,5-di-t-butyl-4-hydroxyphenyl)propionate, 1,1,3-tris(2-methyl-4-hydroxy-5-t-butylphenyl)butane, 4,4'-butylidenebis-(3-methyl-6-t-butylphenol), 2,2'-thiobis-(4-methyl-6-t-butylphenol), and combinations thereof, and

wherein the stabilizer (B3) is selected from the group consisting of tetrakis(1,2,2,6,6-pentamethyl-4-piperidyl)butane-1,2,3,4-tetracalboxylate, 2,2,6,6-tetramethyl-4-piperidylmethacrylate, bis(2,2,6,6-tetramethyl-4-piperidyl)sebacate, and combinations thereof.

3. The crosslinkable resin composition according to claim 1 or 2, wherein all the compounds contained in the stabilizer (B) have a reduced viscosity of 0.5 to 3.0 cm^3/g at 110°C and a reduced viscosity of 1.0 to 4.0 cm^3/g at 40°C, the viscosities being measured in accordance with ISO 1628-1."

The wording of the 7th to the 14th Auxiliary Requests is not relevant for the present decision.

IX. The parties' submissions, in so far as they are pertinent to the present decision, may be derived from the reasons for the decision below. They relate to the Main Request and essentially concerned whether the amendment made in claim 1 extended the protection conferred by the patent (Article 123(3) EPC), the crosslinkable resin composition of claim 3 lacked sufficiency of disclosure (Article 83 EPC) and that of claim 1 involved an inventive step (Article 56 EPC).

Reasons for the Decision

Main Request (6th Auxiliary Request submitted with the statement of grounds of appeal)

Article 123(3) EPC

1. Apart from the deletion of the disclaimer, claim 1 of the Main Request differs from claim 1 of the patent as granted in that the definition of the phenol stabilizer (B1) and the hindered amine light stabilizer (B3) has been amended by defining that each of these types of stabilizer is selected from a list of specific compounds. The list of compounds defined for (B1) does not include 1,3,5-tris(4-t-butyl-3-hydroxy-2,6-dimethylbenzyl)isocyanuric acid whose use described with the second to fifth inventive examples disclosed in Table 4 of D1 was excluded by the disclaimer of granted claim 1 (see section VIII above).

The respondent submits that the term "comprising" in operative claim 1 would still allow for the presence of 1,3,5-tris(4-t-butyl-3-hydroxy-2,6-dimethylbenzyl)-isocyanuric acid, meaning that the subject-matter of claim 1 of the Main Request would cover compositions which were excluded by the disclaimer of claim 1 as granted. For this reason, claim 1 of the Main Request would be in contravention of Article 123(3) EPC.

This is not convincing.

1.1 While the term "comprising" in the first line of claim 1 would allow in principle that compounds in addition to those listed after that term, i.e. the

hindered phenol stabilizer (B1), the dialkyl thiodipropionate stabilizer (B2) and the hindered amine light stabilizer (B3), can be contained in the composition, the subsequent definition near the end of the claim wording according to which the hindered phenol stabilizer (B1) is selected from a specific group of compound consisting of compounds which does not include 1,3,5-tris(4-t-butyl-3-hydroxy-2,6-dimethylbenzyl)isocyanuric acid constitutes an additional requirement taking precedence on the term "comprising" as far as hindered phenol stabilizers (B1) are concerned. This means that any hindered phenol stabilizer (B1) present in the composition of operative claim 1 must be selected from the list of specific hindered phenol stabilizers defined therein. This represents the natural reading to be made of claim 1 when the order of the definitions of a feature in the claim proceeds from general to specific.

Accordingly, contrary to the respondent's reading of operative claim 1, its wording does not allow for the presence of any hindered phenol stabilizer, as long as it comprises at least another hindered phenol stabilizer selected from the list of specific compounds (B1) set out in claim 1.

For the sake of completeness, it is also pointed out that in view of the Board's understanding of the type of hindered phenol stabilizers (B1) which could be comprised in the composition of operative claim 1, the respondent stated at the oral proceedings that they had no clarity objection against the Main Request. In other terms, it was accepted that the amended definition of the type of hindered phenol stabilizers (B1) comprised in the claimed composition did not introduce non-

compliance with Article 84 EPC which could have been examined according to G 3/14.

1.2 The respondent also submitted that applying the rationale of G 1/24 one should construe claim 1 as allowing the presence of further hindered phenol stabilizers (B1) in addition to the specific compounds listed in claim 1. This is not convincing. The need to consult the description concerns here the meaning to be attributed to the the successive use of the wordings "comprising", "wherein the stabilizer (B) further contains a hindered phenol stabilizer (B1)", followed by a definition that the stabilizer (B1) is selected from a group of specific compounds.

According to G 1/24 the description and drawings shall always be consulted to interpret the claims as granted, in particular the meaning of certain terms used therein. However, consulting the patent as granted to understand the meaning to be attributed to the order of the above mentioned terms, i.e which hindered phenol stabilizers (B1) can be comprised in the composition of operative claim 1, is neither legitimate nor helpful in the present case, as the new language in operative claim 1 defining which hindered phenol stabilizers (B1) can be comprised in the composition is not used in the patent specification.

1.3 For this reason, the respondent's objection that the amendments comprised in claim 1 of the Main Request extends the protection conferred by the patent in infringement of Article 123(3) EPC is not successful.

Sufficiency of disclosure

2. Claim 3 of the Main Request defines a crosslinkable resin composition according to claim 1 or 2, wherein all the compounds contained in the stabilizer (B) have a reduced viscosity of 0.5 to 3.0 cm^3/g at 110°C and a reduced viscosity of 1.0 to 4.0 cm^3/g at 40°C, the viscosities being measured in accordance with ISO 1628-1. This standard is described in document D8.

The respondent argues that, as shown in section 10 of D8, the reduced viscosity depends on the solvent and the concentration of the material in the solution, while the the dissolution procedure would require to be exactly defined, as it depends on many factors, reference being made to section 6.1 of that document.

According to the respondent, nothing would be said in the patent in suit about the specific concentrations of the solutions, apart from the information that the solutions had "different concentrations" and that the solution is prepared "by diluting the stabilizer with xylene". Moreover, the stabilisers being present in polyethylene rather than in xylene, it would not have been established whether the reduced viscosity in xylene correlates in any way with the reduced viscosity in polyethylene, being a different solvent. For these reasons, the reduced viscosity as defined in claim 3 would be insufficiently disclosed over the full scope of the claim and it would not be possible for the person skilled in the art to obtain any composition as defined in claim 3.

2.1 Firstly, whether the reduced viscosity in xylene correlates with the reduced viscosity in polyethylene is irrelevant, as the patent in suit teaches in

paragraph [0067] that the viscosity values set out in the operative claims are measured in xylene. Although ISO 1628-1 is about testing of polymer, as shown in D8 (see Title, scope in section 1 and section 6.1 and 10.1), it is unambiguous from paragraph [0067] of the patent in suit that the same technique is used for measuring the viscosity of stabilizers.

2.2 Secondly, according to the same paragraph, the reduced viscosity is measured for each of the stabilizers by diluting the stabilizer in order to prepare diluted solutions in xylene having different concentrations, measuring dynamic viscosities at 40°C and 110°C with a capillary viscometer, and then converting the dynamic viscosities to reduced viscosities.

As indicated in D8 (section 10), the reduced viscosity should be defined giving a concentration for the material tested. This concentration is not defined in the patent specification. However, the fact that the concentration is not specified in claim 3 is a clarity issue, rather than an issue relating to the difficulty to obtain those stabilizers. This is because the viscosity value targetted can be in any event obtained by an appropriate selection of the concentration of the stabilizer.

Moreover, numerous examples of stabilizers which fulfil the parametric conditions set out in claim 3 are given in paragraphs [0069] to [0075] of the specification, whereby their specific nature and their reduced viscosity are indicated in these paragraphs.

Based on that information, the Board is convinced that the skilled person would be in the position to

determine at which concentration the reduced viscosity should be tested.

2.3 Accordingly, the reasons invoked by the respondent as to why the subject-matter of operative claim 3 would lack sufficiency of disclosure fail to convince.

Inventive step (Article 56 EPC)

3. The respondent also objects that the subject-matter of claim 1 lacks an inventive step starting from the insulation compositions TT6BL and TMC2 of D2 (rejoinder, pages 40 and 41, section IX.2).

The appellant refutes the respondent's argumentation submitting that it is not apparent why a person skilled in art would select within D2 compositions TT6BL or TMC2 as the most promising starting points for the present invention. Rather, if at all, a person skilled in the art would select another example of D2, such as TT6BK, JT165AA or JT16AB, as the most promising starting point since those would exhibit better breakdown properties. Moreover, a person skilled in the art would consider the whole disclosure of D2, but not a specific example of that document.

3.1 It is recalled that the purpose of applying the problem solution approach is to assess in an objective manner whether the invention for which protection is sought can be seen as a contribution to the art which could justify the extent of the monopoly conferred by the patent. This assessment is therefore to be made from the perspective of the skilled person and for this reason should start from a situation as close as possible in reality to that encountered by that notional skilled person.

An inventor seeking to achieve a given goal set out in the patent specification under examination would choose among the available prior art one or several possible promising and realistic starting points in the sense that the uses, effects and properties described in relation to those points would be relevant for the goals set out in the patent under examination. While similarities between the structural features of the starting point and that of the claimed subject-matter are to be taken into account for the selection of that starting point, the underlying idea of this approach is that the skilled person would consider that an object which is structurally sufficiently close to said product of the prior art, i.e. after an appropriate modification thereof, could be expected in view of the uses, effects and properties reported for said product of the prior art to achieve the goals set out in the patent.

This is why according to established case law ideally the closest prior art should be a document that mentions the purpose or objective indicated in the patent in suit as a goal worth achieving and having the most relevant technical features in common, i.e. requiring the minimum of structural modifications (Case Law of the Boards of Appeal, 11th edition 2025, in the following "Case Law", I.D.3.1).

However, for the same reasons, the formulation of the original problem, the intended use and the effects to be obtained should generally be given more weight than the maximum number of identical technical features (Case Law, I.D.3.1).

3.2 According to paragraph [0008] of the patent in suit, "*it is not easy to realize an increase in the production unit of an electric wire/ cable, in other words, to continuously form an insulating coating layer by extrusion molding for a long time*". According to the next paragraph [0009] "*Specifically, in an extruder charged with a crosslinkable resin composition for the purpose of forming an insulating coating layer of a cable, a screen mesh is clogged and blocked by a scorched (partially crosslinked) resin component and a stabilizer having a relatively high viscosity. Consequently, the pressure in the extruder increases, and stable extrusion processing cannot be performed*".

Additional explanations in this respect are provided in paragraph [0010] which reads "*furthermore, in general, an extruder for forming an insulating coating layer of a cable is configured so that, when the pressure in the extruder reaches a certain value or more, a limit switch operates to stop the extrusion operation in order to prevent a screen mesh from breaking and to prevent a motor from being overloaded. When the extrusion operation stops, a desired length of the production unit cannot be obtained*".

It is added in paragraph [0011] that "*for the reasons of, for example, the realization of high-voltage electric power cables in recent years and the prevention of a dielectric breakdown accident during transmission of electricity, it has been required to prevent foreign matter from being mixed in an insulating coating layer as much as possible. Accordingly, a screen mesh having a smaller mesh size has also been often used in an extruder. As a result, clogging of the screen mesh is accelerated and blocking easily occurs. Thus, the pressure in the extruder*

increases within a relatively short time, and the extrusion operation stops. Consequently, it is very difficult to continuously form an insulating coating layer by extrusion molding for a long time (to realize an increase in the production unit of an electric wire/ cable)".

In line with the description of the background art in the aforementioned paragraphs [0008] to [0011], paragraphs [0013] and [0014] under the heading "Technical Problem" describe that "*an object of the present invention is to provide a crosslinkable resin composition which does not easily cause an increase in the pressure in an extruder charged with the crosslinkable resin composition, and with which an insulating coating layer can be continuously formed by extrusion molding for a long time, thereby realizing an increase in the production unit of an electric wire/ cable*".

Paragraph [0016] which addresses the solution to said problem and the discussion of the experimental results in paragraphs [0092] to [0096] also confirm that a significant suppression of a pressure increase in an extruder charged with a crosslinkable resin composition for the production of electric wire/cable, i.e. extrusion stability for such production, is the purpose of the present invention.

While additional properties of interest addressed in the specification are those of the extruded crosslinked composition, namely the amount of water produced during storage, water-tree resistance, heat ageing resistance and thermal deformation property (see paragraphs [0086] to [0091] and Table 1 on pages 12 and 13 of the specification), these are clearly secondary goals given

the consistent focus on the extrusion stability throughout the specification.

Although it has no impact on the issue as to which properties of interests are addressed in the patent in suit, it is noted for the sake of completeness that the corrected version of the specification B9 does not incorporate the corrected version of Table 1, i.e. that shown in Table 1 on page 32 of the text intended for grant ("Druckexemplar"), corresponding to Table 1 on page 32 of the application as filed.

3.3 The only inventive step attacks submitted by the respondent for the 6th Auxiliary Request start from the exemplified compositions TT6BL and TMC2 of D2 (Table 1, page 18). D2 undisputedly concerns an insulation crosslinkable composition extruded onto an electrical conductor (claims 1, 19 and 20; paragraphs [0039] to [0041]; Examples 1 to 3). However, the entire disclosure of D2 is silent not only on the process stability during extrusion, which is the primary goal addressed in the patent in suit, but also on the three additional secondary goals described in the patent under dispute, namely the amount of water produced during storage, heat ageing resistance, and thermal deformation property. In fact, water-tree resistance is the only goal common to the inventions described in the patent in suit and D2.

The Board is therefore not persuaded that the mere mention in D2 of only one of the secondary goals addressed in the patent in suit would prompt a person skilled in the art to begin their research with the two compositions exemplified in D2 which have been cited by the opponent.

This is all the more the case, since another document cited in the appeal procedure by the opponent, namely D6, in particular its Example 1, considered by both parties as a suitable starting point for assessing inventive step of the subject-matter of claim 1 of the former Main Request (patent as granted), describes crosslinkable compositions to be extruded onto an electrical conductor which pass the tests for process stability, heat ageing resistance, thermal distortion resistance, and water tree retardancy (column 1, lines 18-41; column 8, lines 40-46; column 9, Table 1). For these reasons, a skilled person would consider the disclosure of D6, but not that of D2, as a starting point for their research in order to achieve the goals set out in the patent in suit.

There is, however, no need for the Board to address inventive step starting from the disclosure of D6, as the opponent stated at the oral proceedings before the Board that they had for the new Main Request (6th Auxiliary Request submitted with the statement of grounds of appeal) no objection of lack of inventive step starting from that document (minutes: page 4, second paragraph of the section on Inventive step).

In these circumstances, compositions TT6BL and TMC2 of D2 do not constitute a realistic starting point for the present invention. Their choice by the opponent as closest prior art, which relies essentially on the similarity of structural features of these examples with operative claim 1, i.e. essentially on the knowledge of the claimed invention, is therefore based on inadmissible *ex post facto* considerations. In view of this, the reasoning on inventive step starting from TT6BL and TMC2 of D2 as the closest prior art is not convincing as it lacks the required objectivity.

4. In the absence of further objections the Main Request is considered to be allowable.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the opposition division with the order to maintain the patent in amended form on the basis of the claims of the Main Request, filed as 6th Auxiliary Request with the statement of grounds of appeal and a description to be adapted thereto if necessary.

The Registrar: The Chairman:

D. Hampe O. Dury

Decision electronically authenticated