Unified Patent Court
Einheitliches Patentgericht
Juridiction unifiée du brevet

Paris Central Chamber

Judgment
of the Court of First Instance of the Unified Patent Court
UPC_CFI_461/2025
concerning: European Patent 1 516 720
delivered on 22 April 2026

HEADNOTES:

1. The interest in bringing proceedings must be examined of the Court's own motion.

2. A complaint for revocation of the patent is not necessarily inadmissible in the event of the patent lapsing due to the expiry of the term. This applies in particular where, following the expiry of the term of protection of a patent, claims for patent infringement are asserted for the period during which the patent was still in force.

3. The court is not bound by the objective task stated in the patent, but may determine this itself on the basis of the description and drawings taken as a whole, in the context of the general technical teaching of the patent.

4. When examining the alternative claims, the court is bound by the arguments put forward by the claimant regarding their patentability and takes only these into account. The grounds set out in the main claim in relation to the granted version are therefore only taken into account when examining the alternative claims if the claimant relies on them.

PLITTS:

1) Huntsman (EUROPE) BV, Grijpenlaan 18, 3300 Tienen, Belgium, represented by its Managing Directors [redacted] [redacted] , and [redacted] [redacted]

2) Huntsman Holland BV, Merseyweg 10, 3197 KG Botlek Rotterdam, Netherlands, represented by its Managing Director [redacted] [redacted]

represented by **Dr Claus Becker** (515/2023), Bird & Bird LLP, Maximiliansplatz 22, 80333 Munich, Germany,
Domien Op de Beeck (4274/2023) and **Jean-Christophe Troussel** (23763/2025), Bird & Bird (Belgium) LLP, Avenue Louise 235 box 1, 1050 Brussels, Belgium, and **Dr Matthias Meyer** (44939/2023), Bird & Bird LLP, Carl-Theodor-Straße 6, 40213 Düsseldorf, Germany

DEFENDANT:

BASF SE, Carl-Bosch-Str. 38, 67063 Ludwigshafen, Germany
represented by **Dr André Sabellek**, **B.Sc., Dr Simon Klopschinski, Dr Melanie Strobel**
rospatt Attorneys PartGmbB, Emanuel-Leutze-Str. 11, 40547

Düsseldorf

Dr Tobias Hoheisel, Dr Natalie Kirchhofer
COHAUSZ & FLORACK Patent and Attorneys PartGmbB, Bleichstraße 14,
40211 Düsseldorf

PATENT IN DISPUTE:

European Patent **1 516 720** entitled 'Composite element containing a polyurethane coupling agent'

SUBJECT: Complaint for revocation

JUDGES: COOPERATION

This decision was issued by the presiding judge Prof. Dr Maximilian Haedicke, the legally qualified judge and rapporteur Dr Tatyana Zhilova, and the technically qualified judge Dr Nicolai Geier.

SUMMARY OF THE FACTS

I. The patent-in-suit

1. The patent-in-suit (EP '720) is based on European patent application EP 04 018 805.4, which was filed on 7 August 2004 claiming priority of 19 September 2003 (DE 103 43 902). The publication of the grant of the patent is dated 9 August 2006.

2. The defendant is the registered proprietor of the patent-in-suit.

3. The patent relates to the manufacture and use of a polyurethane adhesion promoter, as well as the composite element as such, and comprises 9 patent claims, 3 of which are independent:

   - Independent claim 1 relates to a method for manufacturing the composite element and reads as follows:

     1. A method for the manufacture of a composite element comprising the layers
     i) a first cover layer,
     ii) a reactive adhesion promoter layer containing polyurethane with a density of 400 to 1200 g/l,
     iii) a foam layer containing polyisocyanurate with a density of 30 to 100 g/l,
     iv) optionally a second reactive bonding agent layer containing polyurethane with a density of 400 to 1200 g/l, and
     v) a second top layer,
     comprising the steps of:
     A) providing a first top coat,
     B) applying of reactive polyurethane bonding agents, as liquid reaction mixture, onto the first top coat,
     C) application of polyisocyanurate reaction mixture onto the adhesion promoter layer still capable of reacting and allowing the polyisocyanurate reaction mixture to foam,
     D) if necessary, applying a second bonding agent layer to the second top coat and

E) Application of the second top coat, which is coated with a reactive polyurethane bonding agent, to the polyisocyanurate layer.

- According to dependent claim 2, the method claimed is carried out using a twin-belt system.

- According to dependent claim 3, heating to 30 to 60°C takes place before or after the application of the adhesion promoter layer.

- Independent claim 4 relates to the product obtainable by a process according to any of claims 1 to 3 (product-by-process) and reads as follows:

4. A composite element obtainable by a process according to any of claims 1 to 3.

- Dependent claims 5 to 8 relate to preferred embodiments of the composite element according to claim 4.

- Independent claim 9 relates to the use. The following obvious errors were made in the granted claim: 'polyuretthian coupling agent' instead of 'polyurethane coupling agent' and "Pvlyisocyanate reaction mixture" instead of "polyisocyanurate reaction mixture". Taking these errors into account, the claim reads as follows:

9. Use of a reactive polyurethane adhesion promoter, which is still reactive when the polyisocyanurate reaction mixture is applied to the adhesion promoter layer, for improving the adhesion between the layers of a composite element comprising a polyisocyanurate foam and cover layers.

4. The maximum term of protection of 20 years pursuant to Article 63(1) of the European Patent Convention (EPC) expired on 7 August 2024.

II. The parties

5. The plaintiffs are active in the development, manufacture and sale of composite elements and adhesion promoters.

6. According to the plaintiffs' submissions, which are not disputed by the defendant, on 16 July 2024 the defendant requested an order to preserve evidence of an infringement of the patent-in-suit from the presiding judge of the Dutch-speaking Commercial Court in Brussels, Belgium (case number EV/24/0043), on an ex parte basis. In this application for preservation of evidence, the defendant asserted the patent-in-suit against the first plaintiff on the basis of an alleged indirect infringement of the patent-in-suit by the second plaintiff. The plaintiffs allegedly offer or supply raw materials to manufacturers of composite elements which are suitable and intended for the manufacture of composite elements in accordance with the patent-in-suit and which relate to an essential element of the invention. The defendant has announced its intention to claim damages for previous alleged infringements of the patent-in-suit.

III. The parties' claims

7. The complaint for revocation was filed on 6 June 2025.

8. The plaintiffs request that

    1) to declare the EP '720 invalid in its entirety for the territory of all EPG Member States in which the patents-in-suit were in force until their expiry by limitation, i.e. in Austria, Belgium, Bulgaria, Germany, France, Italy, Portugal, Romania, Sweden and Slovenia, pursuant to Article 65(1)(2) UPCA in conjunction with Article 138(1)(a) EPC, to be declared invalid *ex tunc*, as the subject-matter of the patent is not new (Article 54 EPC) and does not involve an inventive step (Article 56 EPC).

    2) that the defendant bear the costs of the litigation.

9. The defendant requests that

    1) that the complaint for revocation be dismissed;

    2) in the alternative, that the patent be maintained with amended claims in accordance with one of the alternative claims 1 to 11.

10. In its rejoinder of 8 December 2026, the defendant submitted new, corrected versions of the alternative claims. The defendant contested their admissibility.

GROUNDS FOR THE DECISION

A. Procedural issues

I. The plaintiffs' legal interest and the admissibility of the complaint for annulment

11. The defendant did not contest the plaintiffs' need for legal protection. However, the interest in legal protection, as part of the admissibility of the complaint, is a point of law which the court must examine of its own motion. In the present case, this is necessary because the term of protection of the patent had already expired at the time the complaint was brought.

12. Neither the UPCA nor the VerfO contains provisions that would deem a complaint for revocation on the grounds that the patent has lapsed to be inadmissible.

13. Even after the expiry of a patent's term of protection, it may still be possible to assert claims for damages for patent infringement for the period during which the patent was still in force. Consequently, there may be a legal interest in the invalidation of a patent whose term of protection has expired.

14. Furthermore, it must not be overlooked that, in the present case, the plaintiffs are directly and immediately affected by the patent in view of the proceedings for the preservation of evidence relating to the claim for damages before the Belgian national court.

15. The complaint for revocation is therefore admissible.

II. Admissibility of the new amended versions of the auxiliary claims

16. In auxiliary claims 1 to 11, which were filed with the request for amendment of the patent on 10 September 2025, the numbering of the layers in the composite element in claim 1 does not correspond to the small Roman numerals ‘i)’ to “v)” as in the granted version of the patent-in-suit, but with the lowercase letters “a)” to “e)”. In the corrected versions of auxiliary claims 1 to 11, which were filed with the brief of 8 December 2025, the numbering again corresponds to that of the granted version of the patent-in-suit, using lowercase Roman numerals “i)” to “v)”.

17. The Court considers the editorial corrections in the new auxiliary claims, which do not introduce any changes to the substance, to be admissible (Paris CFI, decision of 18 March 2026, UPC_CFI_417/2025).

B. Substantive issues

I. Legal framework

18. Pursuant to Article 65(1) and (2) of the UPCA, the Court shall rule on the validity of a patent in the context of a nullity complaint on the basis of the grounds set out in Articles 138(1) and 139(2) of the EPC.

19. The Court of Appeal has established the following legal framework for the interpretation of patent claims (Order of 26 February 2024, UPC_CoA_335/2023, Order of 13 May 2024, UPC_CoA_1/2024, Decision of 25 November 2025, UPC_CoA_464/2024).

20. Pursuant to Article 69 EPC and the Protocol on its interpretation, a patent claim is not merely the starting point but the decisive basis for determining the scope of protection of a European patent. The interpretation of a patent claim is not solely dependent on the strict, literal meaning of the wording used. Rather, the description and the drawings must always be consulted as aids to the interpretation of the patent claim, and not merely to resolve any ambiguities in the patent claim. This does not, however, mean that the patent claim serves merely as a guideline and that its subject-matter also extends to what, after examination of the description and the drawings, appears to be the subject-matter for which the patent proprietor seeks protection. (see Court of Appeal, Order of 26 February 2024, UPC_CoA_335/2023).

21. A feature in a patent claim must always be interpreted in the light of the patent as a whole (see Court of Appeal, Order of 13 May 2024, UPC_CoA_1/2024). The technical function that these features actually perform, both individually and as a whole, must be deduced from the function of the individual features within the context of the patent claim as a whole. The description and the drawings may show that the patent specification defines terms independently and, in this respect, constitutes a patent-specific lexicon. Even if the terms used in the patent deviate from general linguistic usage, it may therefore be the case that, ultimately, the meaning of the terms as derived from the patent specification is decisive. By

the application of these principles, the aim is to combine adequate protection for the patent proprietor with sufficient legal certainty for third parties.

22. The relevant date for the interpretation of a patent claim for the purpose of assessing validity is the filing date (or priority date) of the application that led to the patent.

23. The patent claim must be interpreted and all alleged grounds for invalidity must be assessed from the perspective of a person skilled in the art with their common general knowledge as at the filing date or priority date of the patent.

24. The approach of the Unified Patent Court to determining the inventive step, which is already apparent from the order of the Court of Appeal in the case of Nanostring v 10X Genomics (UPC_CoA_335/2023, Order of 26 February 2024) and in the case of Meril v Edwards (Decision of 25 November 2025, UPC_CoA_464/2024), is as follows.

25. Firstly, the objective technical problem, i.e. the subject-matter of the invention, must be identified. This must be done by comparing the claim as a whole in the context of the description and the drawings. In doing so, account must also be taken of the inventive concept underlying the invention (the technical teaching), which must be based on the technical effect(s) which the person skilled in the art understands to be achieved by the claimed invention on the basis of the application.

26. The objective problem should not contain any references to the claimed solution, in order to avoid a retrospective assessment.

27. The claimed solution is obvious if, at the relevant time, the person skilled in the art, starting from a realistic point of departure in the prior art of the relevant technical field and with the aim of solving the objective problem, would have arrived at the claimed solution (and not merely ‘could have arrived at’).

28. A starting point is realistic if its teaching would have been of interest to a person skilled in the art seeking to solve the objective problem as at the filing date. This may be the case, for example, where the relevant prior art already discloses several features similar to those of the claimed invention and/or addresses the same or a similar underlying problem as the claimed invention.

29. There may be more than one realistic starting point, and the claimed invention must be inventive in relation to each of these points.

30. The burden of proof regarding the facts giving rise to the invalidity of the patent, as well as regarding other circumstances pointing to invalidity or revocation, lies with the claimant.

31. Pursuant to Article 76(2) of the UPCA, the court shall base its decision in the matter of the merits of the case solely on grounds, facts and evidence submitted by the parties and on which the opposing party has had an opportunity to comment.

II. Person skilled in the art and common general knowledge

32. The person skilled in the art relevant here is a chemist with a university degree or a PhD who has several years' experience in the manufacture and practical application of foam composite elements and knowledge of the necessary properties associated therewith. The parties are also in agreement on this point.

III. Technical field and prior art

33. The patents-in-suit relate to a composite element and, according to paragraph [0001] of the patent specification, concern the use of a polyurethane bonding agent to improve the adhesion between the layers of a composite element comprising a polyisocyanurate foam and facing layers, as well as the composite elements themselves and a method for manufacturing the composite elements.

34. Due to the ban on chlorofluorocarbons as blowing agents in polyurethane systems, flammable blowing agents, such as pentanes, are currently used in the manufacture of composite elements for thermal insulation. Under these circumstances, compliance with fire safety requirements using polyurethane systems containing a high proportion of flame retardants is therefore only possible to a limited extent. However, for technical reasons, a lower flame retardant content is often desirable. Consequently, polyisocyanurate foams (PIR foams) are used as an alternative for insulation elements, as these possess good flame retardant properties even with a reduced flame retardant content. However, PIR systems have lower adhesion to most known surfaces compared to PUR systems (polyurethane foams) (see paragraphs [0002] and [0003] of the specification of the patent-in-suit).

35. In the construction industry, for example, polyurethane composite elements are manufactured in accordance with paragraph [0004] of the specification of the patent-in-suit, which must fulfil structural functions, e.g. in their use as wall and roof elements. In such structural elements with metallic cover layers, adhesion plays a particularly important role, with PUR systems exhibiting better adhesion values on metallic cover layers than PIR systems.

IV. The objective technical problem

36. According to paragraph [0005] of the specification of the patent-in-suit, the task of the invention is to provide a composite element, in particular for thermal insulation, which, essentially with a reduced content of flame retardants, satisfies both the requirements for adhesion and for flame retardancy.

37. The court is not bound by the task stated in the patent, but may determine this itself on the basis of the description and the drawings taken as a whole, in the context of the general technical teaching of the patent.

38. The patent-in-suit in the present case, viewed as a whole in the context of the

description and the drawings, focuses less on the flame retardancy mentioned in its stated objective and rather primarily on the adhesion between a foam layer containing polyisocyanurate, which is included in the composite element, and the cover layer. Adhesion is improved by the use of a coupling agent (see paragraphs [0004] and [0030] of the specification of the patent-in-suit). A further essential aspect also concerns a method for manufacturing such a composite element.

39. The objective of the patent-in-suit is therefore to provide a composite element and a method for its manufacture, wherein the adhesion between a top layer and a foam layer containing a polyisocyanurate is improved. This is achieved by using an adhesion promoter. The selection of appropriate materials to ensure improved flame retardancy should be taken for granted in this context.

V. The invention

40. The invention is defined by independent claims 1, 4 and 9.

41. Claim 1 relates to a method for manufacturing a composite element and has the following features:

1	**Method for producing a composite element**
2	**comprising the layers:**
2.1	i) a first cover layer,
2.2	ii) an adhesion promoter layer
2.2.1	the bonding agent layer is reactive
2.2.2	containing polyurethane
2.2.3	with a density of 400 to 1200 g/l,
2.3	iii) a foam layer,
2.3.1	containing polyisocyanurate
2.3.2	with a density of 30 to 100 g/l,
2.4	(iv) where applicable, a second reactive coupling agent layer comprising polyurethane with a density of 400 to 1200 g/l, and
2.5	v) a second top coat
3.	**comprising the steps:**
3.1	A) providing a first top coat,
3.2	B) Applying a reactive polyurethane bonding agent, as a liquid reaction mixture, to the first top coat,
3.3	C) Applying a polyisocyanurate reaction mixture to the still reactive bonding agent layer and allowing the polyisocyanurate reaction mixture to foam
3.4	D) if necessary, applying a second bonding agent layer to the second top coat and
3.5	E) Applying the second top coat, provided with a fully reacted polyurethane bonding agent, to the polyisocyanurate layer.

VI. Interpretation of independent patent claim 1

42. The following features require further explanation.

43. In the first process step A), according to feature 3.1, a first top layer is provided which, in the finished end product, forms the first top layer claimed in feature 2.1. According to the description of the specification of the patent-in-suit, any flexible or rigid materials commonly used may in principle be employed as the top layer, preferably metals, in particular aluminium or steel (see paragraph [0010] of the specification of the patent-in-suit). Patent claim 1 itself, however, contains no further specifications in this regard.

44. In the second process step B), a reactive polyurethane bonding agent is applied to the first top coat in accordance with feature 3.2; in the finished end product, this forms a bonding agent layer in accordance with feature 2.2, which is further characterised by features 2.2.1, 2.2.2 and 2.2.3, according to which it contains polyurethane, has a density of 400 to 1200 g/l and is still reactive.

45. In accordance with feature 3.3, in the third claimed process step C), a polyisocyanurate reaction mixture is then applied to the still-reactive adhesion promoter layer, followed by foaming of this polyisocyanurate reaction mixture. In this process, the polyisocyanurate reaction mixture is selected such that it forms the foam layer contained in the end product according to feature 2.3, which, according to feature 2.3.1, contains polyisocyanate and, according to feature 2.3.2, has a density of 30 to 100 g/l. To this end, the formation of such a foam requires, for example, a mixture of at least two substances, the reaction of which in the reaction mixture forms the foam layer of polyisocyanurate. According to the description, suitable starting materials include polyisocyanates and polyols (see paragraph [0019] of the specification of the patent-in-suit), provided that, for example, a catalyst is additionally used which leads to the formation of isocyanurate groups (see paragraph [0018] of the specification of the patent-in-suit).

46. The further process steps D) and E) according to features 3.4 and 3.5 are to be regarded as optional due to the term ‘optionally’ in feature 3.4. In this respect, a second adhesion promoter layer may, if desired, be applied to a second top coat, and subsequently the second top coat, which is provided with the reacting polyurethane adhesion promoter, may be applied to the polyisocyanurate layer. By means of these two process steps, the two layers according to features 2.4 and 2.5, which are therefore also to be regarded as optional, can then be formed.

47. For a proper understanding of the claimed process, certain terms require further explanation.

"liquid reaction mixture"

48. According to the description of the patent-in-suit, polyurethane-based adhesion promoters known from the prior art may be used as adhesion promoters; these are obtainable by reacting polyisocyanates with compounds containing two hydrogen atoms reactive with isocyanates. The ratio between the polyisocyanate component and the compound containing reactive hydrogen atoms in the reaction mixture is stated in the description as 0.8 to 1.8 to 1 and preferably as 1 to 1.6 to 1 (see paragraphs [0011] and [0017] of the specification of the patent-in-suit).

49. The parties agree that the term ‘liquid reaction mixture’ refers to a mixture of at least two liquid components.

"Reactive bonding layer" and "still reactive"

50. The parties are in dispute as to whether the required reactivity of the bonding agent layer is to be understood ‘only’ as reactivity towards the foam layer for the purpose of bonding, or ‘in addition’ also as reactivity within the bonding agent layer. The plaintiffs are of the view that the term “still reactive” refers to the chemical reactions between the bonding agent layer and the foam layer. The defendant, on the other hand, is of the view that the term “still reactive” refers to chemical reactions within the bonding agent layer, as well as to the reactivity between the layers.

51. The court agrees with the defendant’s interpretation.

52. As reactive compounds with two hydrogen atoms reactive towards isocyanates, which are suitable for the production of a bonding agent within the meaning of feature 2.2.2, the specification of the patent-in-suit lists, amongst others, those with two or more OH groups (polyols) which, upon reaction with a polyisocyanate, lead to the formation of polyurethanes in the narrower sense (see Figure 1).

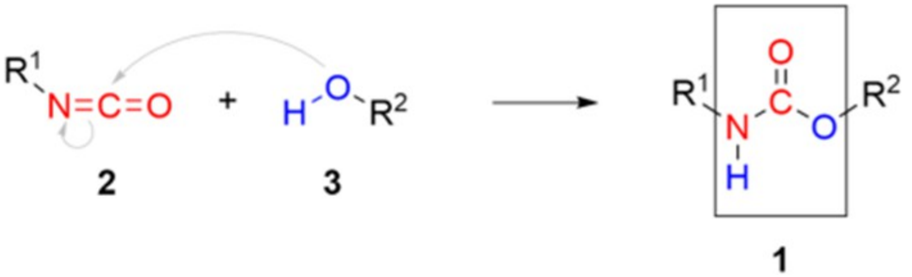


Fig. 1 Polyurethane reaction in the narrower sense: 1 – polyurethane, 2 – polyisocyanate, 3 – compound with a reactive OH group. (Figure from the statement of defense, page 11)

53. In accordance with process step 3.2, in the worked example of the patent-in-suit, the polyurethane adhesion promoter is applied to the first top coat in liquid form as a mixture that is still reacting, known as a reaction mixture. This means that the polyaddition reaction continues to take place in the applied adhesion promoter layer both during and after application. As the reaction time increases, the molecules in the reaction mixture combine to form ever larger molecules, known as macromolecules. Consequently, the viscosity of the adhesion promoter increases. Furthermore, the macromolecules also cross-link with one another until a continuous network is eventually formed. As the reaction time progresses, the number of remaining reactive groups that have not yet found a reaction partner continues to decrease. At the same time, the mobility of the remaining reactive molecules also continues to decrease as the viscosity of the reaction mixture rises. The reaction rate therefore decreases continuously, and the degree of conversion asymptotically approaches a maximum.

54. In the absence of any other indications, the terms ‘reactive’ and ‘still reactive’ in the patent-in-suit are to be interpreted in the sense of this worked example. The adhesion promoter must therefore be applied to the top coat as a ‘reaction mixture’ comprising at least two components. These react with one another during

application and for a certain period thereafter, thereby forming the polyurethane-containing adhesion promoter layer present in the final product, which is thus still ‘reactive’ in accordance with feature 2.2.1. Suitable starting materials include the polyisocyanates and polyols mentioned by way of example in the description, the reaction of which produces polyurethane. The term ‘polyurethane’ may be interpreted quite broadly and also encompasses, for example, polyurea, which is formed by the reaction of a polyisocyanate with the hydrogen atoms of NH_2 groups (see paragraph [0014] of the specification of the patent-in-suit).

55. This interpretation is also supported by optional feature 3.5. This refers to a polyurethane adhesion promoter that is still undergoing reaction, as is also used in feature 3.2, and which is still reacting when the top coat is applied.

56. Furthermore, feature 3.3 stipulates that the bonding agent layer must still be ‘reactive’ at the time the polyisocyanurate reaction mixture is applied. According to the description of the patent-in-suit, the adhesion promoter layer is reactive if the polyurethane reaction of the adhesion promoter has not yet been completed (see paragraph [0029] of the specification of the patent-in-suit). When the foam layer and the top layer are brought together, the PUR bonding agent layer is still reactive, i.e. the polyurethane reaction of the bonding agent has not yet been completed (see paragraph [0029] of the specification of the patent-in-suit).

57. The same follows from paragraph [0023] of the specification of the patent-in-suit, according to which the bonding agent layer is not yet fully cured at this stage. The procedure, which in the description is still merely described as preferred or particularly preferred, is now mandatorily prescribed in claim 1 and ensures that the bonding agent layer still reacts with the polyisocyanurate reaction mixture, whereby the reactivity within the bonding agent layer does not preclude reactivity towards the outside.

58. Such a reaction – in the sense of ‘still reactive’ – is in any case still possible if, upon application of the polyisocyanurate reaction mixture, the bonding agent layer still contains components which can then also react with components of the polyisocyanurate reaction mixture, i.e. the bonding agent layer has not yet reacted fully. Furthermore, it follows from the explanations regarding the function of feature 3.3 and from the objective pursued by the patent-in-suit – namely, to improve the adhesion between the foam layer and the cover layer – that this reactivity must not only still be theoretically possible, but must also be present to an extent that still enables the desired level of adhesion.

59. The plaintiffs’ view that, in accordance with the patent-in-suit, adhesion is already achieved simply by the use of a PUR adhesion-promoting layer as such (Statement of Claim, para. 76) is not convincing. Nor can this be inferred from paragraph [0028] of the specification of the patent-in-suit. Even if one were to follow the interpretation of the last sentence of paragraph [0028] of the specification of the patent-in-suit, according to which the improvement in adhesion could already be achieved solely by the use of a polyurethane adhesion promoter layer
– i.e. even if this is no longer reactive – this sentence refers to an embodiment that is not covered by the technical teaching of the patent, as the patent explicitly aims at a composite element with a reactive adhesion promoter.

"Density of 400 to 1200 g/l"

60. A person skilled in the art, based on their common general knowledge, will understand the specified "density of 400 to 1200 g/l" (feature 2.2.3) as the density of the entire bonding agent layer and not merely of its polyurethane component. This conclusion is undisputed between the parties.

VII. Interpretation of independent claims 4 and 9

61. Patent claim 4 of the contested patent-in-suit can be broken down into the following features:

Vel1	Composite element
Vel2	available according to a process according to a claims 1 to 3.

62. The composite element protected by patent claim 4 is characterised by the manufacturing method described in patent claim 1 and is therefore not subject to any different assessment compared to patent claim 1. It should be noted that, in the claimed composite element too, the bonding agent layer is still reactive within the meaning of the above interpretation.

63. The granted patent claim 9 can be broken down into the following features:

Vw1	Use of a reactive polyurethane adhesion promoter,
Vw2	which is still reactive when the polyisocyanurate reaction mixture is applied to the adhesion promoter layer,
Vw2.1	to improve the adhesion between the layers of a composite element,
Vw2.1.1	containing a polyisocyanurate foam and cover layers.

64. Claim 9 does not contain a reference back to the method claimed in claim 1 or the composite element claimed in claim 4, insofar as the use is not limited thereto.

65. For the interpretation of the feature whereby the bonding agent is still capable of reacting or is still reactive, reference is made to the above interpretation, which also applies here.

VIII. Novelty

66. The complaint for revocation is based on a lack of novelty in relation to the content of two documents representing the prior art: WO 99/00559 A1 (D11) and GB 1 356 564 (D14)

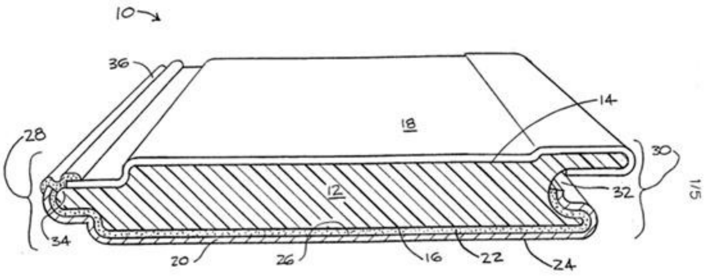
In relation to WO 99/00559 A1 (D11)

67. An embodiment of document D11 teaches, according to page 2, lines 8 to 14, to provide an on-site foamed composite element comprising a planar, rigid and cellular polyisocyanurate or polyurethane foam core, wherein a primer layer is applied between the foam core and a cover layer to improve adhesion ("metal skin 20 is positioned adjacent the second side 16 of the

foam core 12 after the application of a primer layer 22 on the inner surface 26 of metal skin 20 to improve adhesion of the metal skin 20 to the foam core 12"; page 4, lines 11 to 14).

68. A worked example of a composite element 10 (panel), particularly suitable for use as a wall element, as disclosed in document D11, is shown in Figure 1 reproduced below.

FIG. 1



69. The composite element 10 comprises two facing layers, formed by an interior facer 18 and a metal skin 20, and a foam core 12 consisting of a polyisocyanurate with a cellular structure (see page 4, lines 3 to 16). In a particular embodiment, the core has a density of 1.9 to 2.1 lbs/ft3 (see page 5, lines 16 to 20), which corresponds to a density of 30.4 to 33.6 g/l in the unit of measurement used in the patent-in-suit.

70. The foam core 12 is directly connected on its first side 14 to the inner cover layer 18, which may consist of various materials such as metal, polymer materials or cellulose materials (see page 12, lines 33 to page 13, line 9). On its second side 16, the foam core 12 is covered by the outer metal layer 20 (see page 11, lines 8 to 11). A primer layer 22 is applied to the inner surface 26 of the metal layer 20 to improve adhesion to the foam core 12 (see page 4, lines 10 to 16). This may, for example, consist of polyepoxide, polyurethane, polyacrylic or polyurea systems (see page 11, lines 25 to 29).

71. The composite element of document D11 is manufactured in a continuous process, with several alternative manufacturing variants disclosed for this purpose (see from page 14, line 32). In one of these processes for manufacturing the composite element (see page 15, lines 15 to 30), the metal layer 20 and the inner cover layer 18 are supplied from coils on a continuous production line. The metal layer 20 is first unwound, levelled and smoothed. Subsequently, the edges of the metal layer 20 can be further contoured and shaped before the primer layer 22 is continuously applied to the inner surface 26 of the metal layer 20. According to page 11, lines 25 to 27 to improve the adhesion between the foam core 12, which is to be formed subsequently, foam core 12 and the metal layer 20, and thus the primer may be said to function as an adhesion promoter. The primer layer may be selected from a variety of materials; page 11, line 29 explicitly mentions polyurethane or polyurea systems. The curing rate of the polymer used in the primer layer 22 is dependent on the operation of the continuous production line. A delay in the operation of the continuous production line may be necessary before the next step is carried out. In addition, partial or complete curing of the primer layer 22 may take place in an oven or heating channel. Likewise

The coating methods proposed in document D11 for applying the primer are also varied. Page 12, lines 24 to
26, for example, mention roller application, electrostatic dip coating or dip coating, whereby, at least in the latter-mentioned processes, the primer is in a liquid state.

72. In the subsequent stage of the process, as described from page 15, line 36 to page 16, line 10, at a specific point in the continuous process, the formed and/or primed webs – that is, the metal layer 20 and the inner cover layer 18 – are joined together, and the reaction mixture used to produce the planar, rigid, cellular polyisocyanurate foam core 12 is injected between the metal layer 20 and the inner cover layer 18, preferably via an oscillating mixing nozzle from several feed lines. As the polyisocyanurate foam core 12 expands, it subsequently fills the cavity of the composite element. In an alternative embodiment, the polyisocyanurate foam-forming mixture is applied to the primer layer 22 of the metal layer 20 before the respective opposing inner cover layer 18 is brought into close contact with the polyisocyanurate foam-forming mixture (see page 15, lines 9 to 15).

73. Thus, document D11 discloses a composite element having features 2, 2.1, 2.2 and 2.2.2 as well as features 2.3, 2.3.1 and 2.3.2, since the metal layer 20 forms the first cover layer according to the invention, the primer 22 – the bonding agent layer according to the invention – and the foam core 12 – the foam layer according to the invention – in accordance with these features. The method for manufacturing this composite element comprises process steps as also specified by features 3 and 3.1.

74. Since features 2.4 and 2.5 as well as 3.4 and 3.5 are irrelevant – these are optional (see interpretation) – this leaves features 2.2.1, 2.2.3, 3.2 and 3.3, the disclosure/anticipation of which by document D11 is to be examined below.

75. Feature 2.2.3 (the density of the primer) is – undisputedly – not expressly stated in document D11. For this reason alone, the method claimed in granted claim 1 is therefore novel in relation to the disclosure of document D11.

76. Features 2.2.1, 3.2 and 3.3 are also not fully known in the art in document D11.

77. When the polyisocyanurate reaction mixture is applied to the bonding agent layer, i.e. to the primer 22, to form the foam core 12, the polyisocyanurate reaction mixture foams, as required by part of feature 3.3. Likewise, the primer, i.e. the adhesion promoter, may still be liquid during application in accordance with feature 3.2 – as already explained above, pages 12, lines 24 to 26 of document D11 mention dip coating as a possible coating method for the primer. However, it cannot be inferred from document D11 that the primer 22 is still ‘reactive’ when applied to the top coat in accordance with feature 3.2 or in the final product in accordance with feature 2.2.1, nor that the primer is still ‘reactive’ when the polyisocyanurate reaction mixture is applied.

78. According to page 12, lines 27 to 30, the metal layer is usually supplied with a kind of primer coat, so it can be assumed that such a primer is no longer reactive in itself. The coating processes described on page 12, lines 24 to 26 of document D11 (see grounds of opposition, page 20 et seq.) also support this view, as these methods are, as the defendant correctly points out, rather unsuitable for a two-component process.

79. Alternatively, document D11 suggests that the primer is applied during the production process and that the curing rate of the polymer used for the primer layer is dependent on the curing rate of the polymer used for the primer layer. The polyisocyanurate foam-forming mixture is then applied after a delay (see page 15, lines 27 and 28). However, it cannot be clearly determined from these passages to what extent the primer is still reactive when the polyisocyanurate foam-forming mixture is applied, or whether there is in fact a mixture of at least two components capable of reacting with one another in the primer. The explanation in the following sentence (see page 15, lines 29 and 30), which alternatively points out that, in this case, the primer 22 can even be partially or completely cured in an oven or heating duct before the polyisocyanurate foam-forming mixture is applied, tends to contradict this.

80. In the section from page 11, line 36 to page 12, line 7, it is explained, using the example of a primer consisting of polyurea, that the terminal hydrogen atoms in the polyurea layer enable a chemical reaction with the reactive groups of the components of the polyisocyanurate foam-forming mixture. Although the polyureas used may still fulfil feature 2.2.2, as feature 2.2 does not exclude them (see interpretation) and the possibility of a reaction between the adhesion promoter and the foam is thereby demonstrated, however, this description does not directly imply that the adhesion promoter consists of a mixture of at least two components which, upon application of the adhesion promoter to the top coat as well as upon application of the foam reaction mixture to the adhesion promoter, are still reactive within the meaning of the above interpretation.

81. In summary, although document D11 discloses a bonding agent containing polyurea, it does not provide any teaching on whether this is still present as a reactive mixture when the foam layer is applied.

In comparison with GB 1 356 564 (D14)

82. Document D14 discloses a method for manufacturing a composite element in the form of a composite tube. This is constructed from several layers and consists of an inner layer (rigid core tube), a flexible outer band (flexible ribbon) and a foam layer inserted between these two layers. Between the foam layer, which may optionally contain polyisocyanurate (see page 2, lines 11 to 13), and the cover layer, document D13 discloses the use of an adhesive (see page 4, lines 9 to 11). Document D14 proposes an isocyanate-based adhesive as a suitable adhesive for a polyisocyanurate foam layer. However, this does not directly disclose that the adhesion promoter contains polyurethane, nor is any such disclosure made.

density is specified in this regard.

83. It is therefore known in the art from document D14 that there is a method intended, in accordance with feature 1, for the production of a composite element consisting of layers in accordance with features 2, 2.1, 2.2 and 2.3 (and, where applicable, also 2.4 and 2.5). The method itself initially comprises process steps as also specified by features 3 and 3.1.

84. However, features 2.2.1, 3.2 and 3.3 (reactivity) are not known in the art in document D14. According to page 3, lines 3 to 26 of document D14, an isocyanate-based adhesive, as proposed, generally consists of an isocyanate prepolymer, whereby these compounds are applied to one or both joining parts either in solvents or in a solvent-free system and are subsequently 'dried', which, in a known manner, involves partial curing. Activation takes place essentially by heating, but may be further aided by the application of a chemical activator (see also page 2, lines 96 to 98). The adhesive is therefore not a mixture of at least two components which are still reactive with one another at the time of application, but rather comprises only a single component containing a polyurethane, which may, for example, be dissolved in a solvent to facilitate application.

85. Consequently, the subject-matter of independent claims 1, 4 and 9 is novel in relation to the disclosure of documents D11 and D14.

IX. Inventive step

86. The complaint for revocation is based on the lack of patentability of claim 1 due to a lack of inventive step, based on three starting points: WO 99/00559 A1 (D11), WO 98/01279 A1 (D19) and WO 92/16365 A1 (D22), alone and/or in combination with common general knowledge and other documents.

Based on WO 99/00559 A1 (D11)

87. Document D11 has the same objective task as the patent-in-suit – to provide a composite element with an intermediary to improve adhesion. It therefore represents a realistic starting point for the person skilled in the art.

88. According to the plaintiffs, document D11 must be considered in the light of the common general knowledge and the content of documents D14, D19, JP S53 – 16783 (D20 with German translation D20a) or WO 94/23937 A1 (D21).

89. The density specified in feature 2.2.3 of the patent-in-suit corresponds to the values customary for a person skilled in the art (see paragraphs 113 and 114 below). Consequently, this feature cannot establish an inventive step.

90. The remaining features 2.2.1, 3.2 and 3.3, however, do not follow for the person skilled in the art from document D11 alone. For even under this premise, arriving at the subject-matter of the patent-in-suit requires the additional insight that suitable reaction partners in a

polyurethane coupling agent layer applied as a liquid reaction mixture, provided that these are present in a reaction mixture consisting of at least two components in which the curing process has not yet been completed. In this regard, however, document D11 does not provide sufficient guidance, as application in liquid form is mentioned only in passing as one of several possible methods. The method claimed in the current Patent Claim 1 therefore involves an inventive step based on the content of document D11.

91. The documents cited by the plaintiffs: Szycher: Szycher's Handbook of Polyurethanes, Chapter 13 (D9), Werkstoff-Führer Kunststoffe, 4th edition, page 103, 1986 (D12), Kunststoff Handbuch, 7, Chapter 11.8.2, Polyurethane, 1993 (D17) and Information Series of the Chemical Industry Fund, 27, Adhesion/Adhesives (D18), substantiate the common general knowledge of the person skilled in the art. In summary, it follows from their disclosure that it was generally known to persons skilled in the art that the particular suitability of polyurethanes as adhesion promoters is based, in particular, on the chemical reaction of reactive isocyanate groups in the adhesion promoter with active hydrogen atoms of the substrate, resulting in the formation of covalent bonds.

92. However, based on the teaching of document D11, this knowledge cannot lead the person skilled in the art in an obvious manner to the subject-matter of independent claims 1, 4 or 9. This is because this particular suitability is already mentioned in D11, where the example of a polyurea primer is described in the section from page 11, line 36, to page 12, line 7. It is described there that the terminal hydrogen atoms in the polyurea layer enable a chemical reaction with the reactive groups of the components of the polyisocyanurate foam-forming mixture. However, this cannot lead to the additional realisation that suitable reaction partners are available to a greater extent in an adhesion promoter layer applied as a liquid reaction mixture, provided that these are present in a reaction mixture consisting of at least two components in which the curing process has not yet been completed. Even if this insight were to be attributed to the prior art, there is no proven motivation for the person skilled in the art to apply this knowledge of the person skilled in the art to the disclosure of document D11.

93. Document D14 likewise cannot provide any motivation for the use of an alternative adhesion promoter which is reactive within the meaning of the above interpretation. For although document D14 may also disclose a composite element with an adhesion promoter layer, this is – like that of document D11 – not reactive within the meaning of features 2.2.1, 3.2 and 3.3.

94. The teaching of document D19 already suggests the claimed method or the claimed composite element in itself, or even anticipates the use claimed in patent claim 9 – as will be explained below. The question of an obvious combination of the teachings of documents D11 and D19 can therefore be left open here.

95. According to patent claim 1 of document D20/D20a, this is disclosed as a panel with polyurethane foam or the like as core material, characterised in that an adhesive layer is provided between a rigid substrate and a polyurethane foam or the like, which adheres well to the rigid substrate and the polyurethane foam. A

Figure 2 shows a worked example of a design comprising substrate 1, core material 3 and the adhesive layer 2 situated between them. Document D20, on page 4, lines 13 to 20, suggests various adhesives for the adhesive layer. According to page 6, lines 3 to 5, this can initially be applied in liquid form, with the foam layer being applied whilst the adhesive is still setting. In a first worked example, polyurethane foam raw material is used as the core material and MDI as the adhesive; in a second example, PIR foam raw material and epoxy-amine adhesive are used (see page 6, line 25 to page 7, line 6). However, this alone is unlikely to provide any suggestion to combine a polyisocyanurate core with a reaction mixture for polyurethane. Although document D20/D20a lists isocyanates as particularly suitable adhesives, this is only one of at least two components required for a reaction mixture to produce polyurethane. However, such a reaction mixture is mentioned in document D20/D20a only in connection with the core material, and not as a potential adhesive.

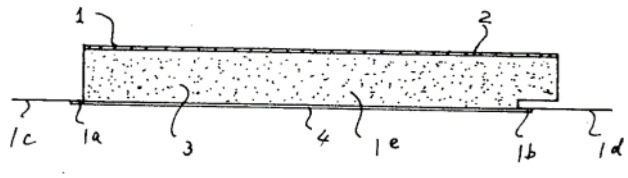


Figure 2 of document D20

96. Even if the person skilled in the art were to draw upon the content of document D11 in combination with the teaching of document D20, they would not be able to arrive at a process in which the adhesion promoter is present as a reaction mixture and would still be reactive within the meaning of the patent-in-suit.

97. Document D21 relates to a method for producing an in-situ moulded part with an elastomer coating (see title). According to claim 1, in a first step, a polymer coating is applied to one side of a material; this coating is produced by the reaction of a polyisocyanate with an isocyanate-reactive material at an isocyanate index in the range of 30 to 1500. Subsequently, a liquid, foamable composition is poured onto the coated side of the material, whereupon it foams. According to claims 3 and 4, the polymer coating is a polyurethane coating, and the foamable composition is, inter alia, a polyisocyanurate. According to page 12, line 21 to page 13, line , the polyisocyanate and the isocyanate-reactive material, as well as any catalysts, are usually mixed shortly before the coating is applied to one side of the material. The isocyanate-reactive material and the polyisocyanate can be mixed using any suitable means and applied to the material. Document D21 specifically mentions here the application of the isocyanate-reactive material and the polyisocyanate by spraying, but alternatively also mixing by means of a stirrer or application by hand, for example with a spatula or knife. This thus corresponds to the application of a reactive polyurethane bonding agent, as a liquid reactant, to the inner surface of the material, as required by feature 3.2.

98. According to page 13, line 29 to page 14, line 2, the coating is usually applied to the material in a thickness of approximately 0.05 millimetres to approximately five millimetres and is then left to cure for a few seconds

to a few minutes, with the curing time varying depending on the coating formulation used. The liquid, foamable composition is then poured onto the coated side of the material and foamed (see page 14, lines 15 to 16). When the liquid, foamable composition is applied, the polyurethane coating is therefore already cured and no longer reactive within the meaning of the above interpretation.

99. The plaintiffs' argument (see brief of 7 November 2025, page 70) that curing has not yet been completed due to the short curing time is not convincing, in so far as document D21 specifically states that the curing time must be adjusted depending on the coating formulation used. This is also consistent with the statements on page 13, lines 24 to 28, according to which, equivalently, the reaction of the isocyanate with the isocyanate reactant may take place even before the coating is applied, provided that the resulting prepolymer can still be applied effectively to the material to be coated. The application of the polymer coating as a reaction mixture (corresponding to feature 3.2) is therefore – as submitted – not superfluous either, since, depending on the coating formulation, there are variants which are difficult to apply in the cured and thus fully reacted state. Nor does the variant described on page 16, lines 5 to 12, give rise to a different interpretation. This is because, due to the mixing ratio – which is not optimal for complete reaction – there are still unreacted areas in the applied reaction mixture even after curing. However, this does not mean that the reaction mixture is still reacting. Rather, the reaction is already complete here as well.

100. Document D21 therefore does not disclose a method according to the features 2.2.1 and 3.3, so that even a combination of the contents of documents D11 and D21, which is assumed to be subject to obviousness, cannot lead to the subject-matter claimed in patent claim 1 as granted. The same applies to the claimed composite element as well as to the claimed use.

101. Thus, based on the content of D11, there is an inventive step.

Based on WO 98/01279 A1 (D19)

102. Document D19 discloses a method for manufacturing a multi-layered linear composite component (see 'technical field'; page 1, lines 4 to 9), wherein the use of a curable resin is provided for to form a strong bond between a foam core and a cover layer of the composite component (see 'summary of invention'; page 2, lines 14 to 29). The foam core may contain polyisocyanurate (claim 8). Therefore, given the objective task of the patent-in-suit as set out above, document D19 represents a realistic starting point for a person skilled in the art.

103. The defendant's view (see, inter alia, the brief of 10 September 2025, page 62), according to which document D19 does not constitute a suitable starting point because the patent-in-suit deals with the manufacture of sandwich panels using a double-belt line, whereas document D19, on the other hand, describes an injection moulding process, cannot be accepted. This is justified by the mere fact that the independent patent claims neither

nor do they specify a form of the composite element that could justify this reasoning.

104. The argument put forward on page 41 of the brief of 8 December 2025, to the effect that document D19 does not relate to composite elements for thermal insulation, is also unfounded. For one thing, this subject is very much addressed in document D19 – for instance, on page 8, lines 2 and 3, it is stated that the foam cores may have a low density so that they act as insulation (low-density insulation-type foam) – and, for another, the subject-matter of the current patent claims is not limited to thermal insulation elements.

105. According to claim 1 of document D19, the method for manufacturing the composite component comprises the following steps: (see page 2, lines 21 to 31; claim 1).

a) Providing a hollow carrier with a cavity and an inner surface;
b) applying a curable liquid or gelled resin to the inner surface;
c) introducing a curable foam into the cavity so that the foam comes into contact with the resin when the resin is at most partially cured;
d) and curing the foam and the resin together to produce a linear composite component with a foam core and an integral hard resin layer.

106. The hollow carrier with its cavity corresponds here to the cover layer according to the invention, which is provided in accordance with feature M3.1 and, in the finished product, forms the cover layer of the composite component or composite element according to feature 2.1. According to the teaching of document D19, the hollow carrier may be a prefabricated hollow body 12 (hollow carrier) having a cavity 13 (cavity) with an inner surface 14 (inner surface) (see page 5, lines 1 to 3; Figure 1). Alternatively, however, the hollow body may also be formed by several webs of carrier and reinforcement material 24, 29, which are unwound from carrier rolls 25, 30 and guided at a distance over a mandrel 27 (see page 9, line 11 to page 10, line 2; Figure 2).

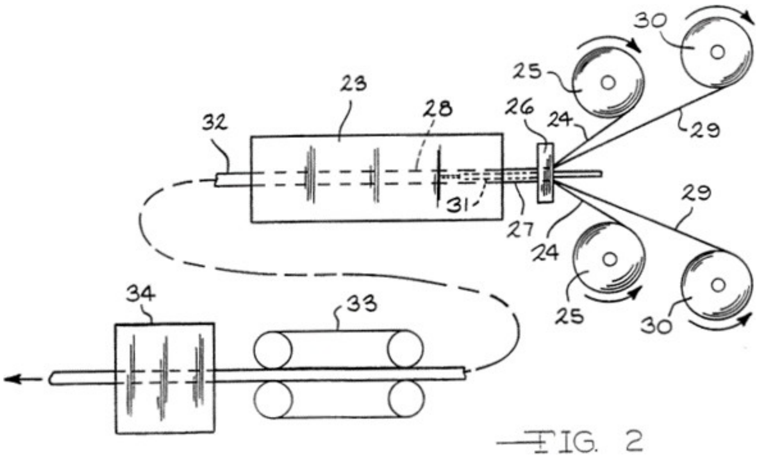


FIG. 2

Figure 2 of document D19

107. Following step (b) of claim 1 of document D19,

a curable liquid or a gelled resin is applied to the inner surface of the cover layer. In the worked example shown in Figure 2, this is done by means of an injection apparatus 31. Whilst the cover layers are being drawn through the mould cavity, the injection apparatus 31 sprays the liquid resin onto the inner surface of the cover layers (see page 9, lines 23 to 26). The process is designed such that the resin used only cures when it comes into contact with the foam in the subsequent step c).

108. According to step (c) of claim 1 of document D19, a curable foam 21 is then introduced into the cavity between the cover layers, so that the foam comes into contact with the resin that has not yet cured. The document lists a wide range of alternatives for the materials used in the foam and the resin. However, a polyisocyanurate foam (see page 8, line 6 and claim 8) is preferred for the foam and a polyurethane (see page 3, lines 8 to 11) for the resin. Thus, document D19 discloses, first of all, a method for producing a composite element referred to as a composite component, which has features 1, 2, 2.1, 2.2 and 2.2.2 as well as features 2.3 and 2.3.1. This is because the carrier webs form the first cover layer according to the invention, the resin forms the bonding agent layer according to the invention, and the curable foam forms the foam layer according to the invention. The method itself initially comprises process steps such as those also specified by features 3 and 3.1.

109. The defendant's view that the resin does not form an adhesion-promoting layer is not convincing. It is true that, due to its thickness, the cured resin may also perform a structural function, which is not the case with the adhesion-promoting layer in the worked example of the patent-in-suit. However, the current claim 1 does not contain any limitation to the effect that this should not be the case. The positive adhesion properties of the resin relative to the substrate – and this is the only point at issue here – are addressed on page 7, lines 23 to 26, whereas the foam layer is discussed in the lines preceding them.

110. Since the optional features 2.4 and 2.5 as well as 3.4 and 3.5 are not
, the features 2.2.1, 2.2.3, 2.3.2, 3.2 and
3.3.

111. Features 2.2.1, 3.2 and 3.3 (reactivity) are also set out in document D19. It is apparent from page 5, line 29 to page 6, line 1 that the resin may be a two-component material, for example a polyurethane resin. The two components are stored in separate tanks and mixed immediately prior to application to the substrate. The resin is thus applied to the inner surface of the substrate webs in the form of a liquid reaction mixture. Document D19 specifies spraying or wiping (cf. page 5, lines 22 to 24). Since the curable foam is subsequently applied whilst the resin has not yet cured, the resin, as a reaction mixture, is still reactive or capable of reacting within the meaning of the above interpretation, both at the time of application to the top layer and at the time of application of the foam to the resin. The catalysed reaction of methylenediphenyl diisocyanate (MDI) with glycerol is specified as the preferred components for the two-component mixture on page 6, lines 31 to page 7, line 2, and on page 10, lines 25 to 30.

112. Features 2.2.3 and 2.3.2 (densities), however, cannot be directly inferred from document D19. However, the person skilled in the art can already conclude from the description on page 8, lines 2 and 3, that the permissible density range for the foam material can be selected from a very wide density range. This is because document D19 teaches that both structural foams with a high density and thermal insulation foams with a low density can be used as foam materials.

113. Since the method claimed here differs from the disclosure in document D19 solely by these two features, it must be considered whether features 2.2.3 and 2.3.2 are capable of establishing an inventive step. This must be answered in the negative, as the density ranges specified by features 2.2.3 and 2.3.2 fall within the range of densities for the two named layers that is customary in the art. From this range, the person skilled in the art will select a suitable density depending on the needs or requirements of the composite element.

114. The following considerations may be invoked as evidence of the requisite knowledge of the person skilled in the art:

a) Regarding feature 2.2.3 (density of the bonding agent): The document 'Werkstoff-Führer Kunststoffe', 4th edition (D12), which demonstrates the knowledge of persons skilled in the art, states on page 103 that the density of pure polyurethane elastomers – i.e. unfoamed and without further additives – is between 1.14 and 1.26 g/cm³. In the unit of measurement used in the patent-in-suit, this corresponds to a value of 1140 to 1260 g/l. However, the residual water usually present in the polyol, which acts as a blowing agent (see also paragraph [0016] of the specification of the patent-in-suit), may reduce the density. The density of a conventional bonding agent layer made of a polyurethane material, which – as proposed in document D19 – is obtained by reacting MDI with glycerol, therefore lies within the claimed range. The glycerol proposed in document D19, being a triol, belongs to the group of polyols as it contains three hydroxyl groups.

b) Regarding feature 2.3.2 (density of the foam layer): Document D11 discloses composite element 10 (panel), which can be used as a wall element in a building. It comprises a thermally insulating core surrounded by an inner facing layer on one side and a metal sheet on the other (see page 1, lines 4 to 7, 'field of the invention'). The thermally insulating core may be formed by a foam layer containing a polyisocyanate (cellular polyisocyanurate foam core) and having a density of 1.6 to approximately 2.4 lbs/ft³ (see page 5, lines 5 to 20). This corresponds to a density of 30.4 to 33.6 g/l according to the dimensional specification of the patent-in-suit and thus to a range of values which also satisfies the requirements of feature 2.3.2.

115. The method claimed in patent claim 1 in the granted version therefore does not involve an inventive step in relation to the content of document D19.

116. The foregoing applies equally to the composite element claimed by patent claim 4 in the granted version, so that the subject-matter of patent claim 4 also does not involve an inventive step.

117. The use claimed in patent claim 9 does not contain any features relating to a specific density. It is therefore not novel in relation to the disclosure of document D19.

Based on WO 92/16365 A1 (D22)

118. The content of document D22 is no closer to the claimed subject-matter than that of the documents already considered.

119. Document D22 discloses an insulating sheathing panel 10 comprising an insulating foam core 20 sandwiched between two fibrous sheets 12 (see page 5, lines 6 to 8; Figure 2). Optionally, vapour-impermeable sheets 16, preferably metal sheets, may be provided between the foam core 20 and the fibrous sheets 12 (see page 5, lines 6 to 10). The fibrous sheets 12 are laminated to the vapour-impermeable sheets 16 using an adhesive 14, and the vapour-impermeable sheets 16 are bonded to the core 20 using a further adhesive 18 (see page 5, lines 12 to 17). On page 10, lines 30 to 33, document D22 identifies as a possible adhesive a single-component adhesive consisting of 100% solids and a solvent, whereby, according to page 5, lines 17 to 21, these may be urethane-based adhesives. Consequently, the bonding agent layer is not a reaction mixture that is still reactive or capable of reacting within the meaning of the above interpretation of the patent-in-suit.

120. Consequently, at least features 2.2.1, 3.2 and 3.3 cannot be fully derived from document D22

121. To arrive at the solution claimed in the patent-in-suit on this basis alone, the person skilled in the art would therefore have to make modifications that go far beyond their usual knowledge of the person skilled in the art and are thus only possible in hindsight.

122. Even an assumed obvious combination of the content of document D22 with the content of one of the documents D14, D20 or D21 cannot alter this, since at least features 2.2.1 and 3.3 cannot be derived from these documents either.

123. The subject-matter of patent claims 1 and 4, based on the content of document D19, does not involve an inventive step, the underlying knowledge of the person skilled in the art being evidenced by documents D12 and D11. The subject-matter of patent claim 9 is not even novel in relation to the disclosure of document D19. Therefore, the contested patent-in-suit in the granted version must be declared invalid.

X. The auxiliary claims

124. The defendant defends its patent, in the alternative, to the extent of auxiliary claims 1 to 10, which are to be considered in ascending order of numbering. In assessing the patentability of the invention, the court is bound by the grounds put forward by the Plaintiffs in relation to the auxiliary claims and will take only these into account. The grounds relating to the granted version of the patent are not automatically relevant and will not be taken into account by the court unless the plaintiffs

explicitly rely on them.

Auxiliary claim 1

125. The plaintiffs allege a lack of enablement and an inadmissible extension of the amended claims, as well as a lack of novelty relative to the content of documents D11 or D14 and a lack of inventive step in view of documents D9 and D10, which demonstrate the knowledge of the person skilled in the art.

126. In patent claim 1 in the version according to auxiliary claim 1 (filed with the brief of 8 December 2026), the following two features 3.2.1 and 3.2.2 have been additionally inserted compared to the granted version under feature 3.2:

3.2.1 wherein the adhesion promoter is obtainable by reacting
a) polyisocyanates and b) polyetherols and/or polyesterols,

3.2.2 wherein the reaction ratio is selected such that, in the reaction mixture, the ratio of the number of isocyanate groups to the number of groups reactive with isocyanates is 0.8 to 1.8:1,

127. The same applies in substance to patent claim 9 in the version according to auxiliary request 1. There, compared to the granted version according to feature Vw2, the following two features Vw2.2.1 and Vw2.2.2 have been additionally inserted:

Vw2.2.1 wherein the adhesion promoter is applied as a liquid reaction mixture to a first top coat and is obtainable by reacting
a) polyisocyanates and b) polyetherols and/or polyesterols,

Vw2.2.2 wherein the stoichiometric ratio is selected such that, in the reaction mixture, the ratio of the number of isocyanate groups to the number of groups reactive with isocyanates is 0.8 to 1.8:1,

128. The wording of patent claim 4, as well as the other dependent patent claims, remains unchanged.

129. Whilst the granted claims 1 and 9 leave the composition of the reaction mixture of the bonding agent used open, provided that it ultimately contains only polyurethane, the features newly inserted by auxiliary request 1 now further specify this reaction mixture as defined by the added features. The amendments stipulate that the adhesion promoter is applied to the top coat as a reactive mixture, which is now necessarily obtained by the reaction of polyisocyanates on the one hand and polyetherols and/or polyesterols on the other. The polyetherols and/or polyesterols now named have at least one hydroxyl group as a group reactive with the polyisocyanates. Furthermore, a range of values is specified for the ratio of the number of isocyanate groups to the number of groups reactive with the isocyanates, which lies between 0.8:1 and 1.8:1. This range of values refers to a state in the reaction mixture of the adhesion promoter which, at the start of the reaction – i.e. when the reactants are combined – exists between the groups, because during the

The ratio may change as a result of the following reaction.

130. The plaintiffs argue that the amended patent claims 1 and 9 are unclear. One reason for this is that features 3.2.1 and Vw2.2.1, respectively, implicitly presuppose that the conversion has already been completed.

131. However, this argument cannot be accepted, as it contradicts other features of the claims. This may be true if the features are interpreted strictly literally. However, this approach must be rejected; see the interpretation above.

132. Furthermore, the plaintiffs also allege an inadmissible extension of the amended claims.

133. For the examination of the original disclosure of the subject-matter of the newly filed patent claims, reference is made to the publication EP 1 516 720 A1, the content of which corresponds to the application documents (documents D28).

134. The newly inserted features are derived primarily from paragraph [0011] of the publication (identical to the specification of the patent-in-suit), whereby the classification of the polyetherols and/or polyesterols explicitly named in features 3.2.1 and Vw2.2.1 to the group of polyetherols and/or polyesterols explicitly named in group b) is derived from paragraph [0014] of the publication (identical to the specification of the patent-in-suit).

135. The plaintiffs seek to identify an inadmissible extension in the sense that the newly inserted features merely concern the application of the adhesion promoter in relation to the application claimed by feature 3.2, but not the optional application of the adhesion promoter according to feature 3.4. This is because the bonding agent applied there in accordance with feature 3.4 is not subject to these restrictions, as is also 'mandatorily' disclosed in the description for this case. Consequently, an impermissible intermediate generalisation is present.

136. This view cannot be accepted. This is because it is for the defendant to decide to what extent it wishes to limit its patent. This is particularly so as even claim 1 in the granted version does not require that the adhesion promoter according to feature 3.2 be identical to that according to feature 3.5.

137. Furthermore, the plaintiffs challenge the subject-matter of the amended claims 1 and 9 as lacking novelty (Art. 54 EPC) in relation to the content of documents D11 or D14. At the very least, however, in the light of these documents, they do not involve an inventive step. In this regard, the plaintiffs refer to documents D9 and D10, which demonstrate the knowledge of the person skilled in the art.

138. As set out above, the explicitly cited documents D9, D10, D11 and D14 cannot, in themselves, call into question the patentability of the subject-matter of the independent claims of the patent-in-suit as granted. This therefore also applies to the limited version set out in auxiliary request 1.

139. The grounds put forward by the plaintiffs against the patentability of the amended claims are not convincing. Auxiliary request 1 meets the requirements of Article 123(2) EPC. Consequently, the further auxiliary requests are irrelevant.

XI. Patentability of the remaining claims

140. The validity of independent claim 1 in the amended version according to auxiliary request 1 establishes the validity of dependent claims 2 and 3.

141. The foregoing applies equally to the composite element claimed in patent claim 4 as granted and the dependent claims 5 to 8, as well as the use claimed in patent claim 9.

XII. Conclusions

142. The nullity complaint is to be upheld in the main claim against the granted version.

143. The patent is to be maintained in the amended version (auxiliary request 1), which reads as follows:

1. A method for manufacturing a composite element comprising the layers
i) a first cover layer,
ii) a reactive bonding agent layer containing polyurethane with a density of 400 to 1200 g/l,
iii) a foam layer containing polyisocyanurate with a density of 30 to 100 g/l,
iv) optionally a second reactive bonding agent layer containing polyurethane with a density of 400 to 1200 g/l, and
v) a second top layer,
comprising the steps:
A) providing a first top coat,
B) applying a reactive polyurethane adhesion promoter, as a liquid reaction mixture, to the first top coat, wherein the adhesion promoter is obtainable by reacting a) polyisocyanates and b) polyetherols and/or polyesterols, wherein the reaction ratio is selected such that, in the reaction mixture, the ratio of the number of isocyanate groups to the number of groups reactive with isocyanates is 0.8 to 1.8 : 1,
C) applying the polyisocyanurate reaction mixture to the still-reactive adhesion promoter layer and allowing the polyisocyanurate reaction mixture to foam,
D) if necessary, applying a second adhesion promoter layer to the second top coat and
E) applying the second top coat, provided with a fully reacted polyurethane bonding agent, to the polyisocyanurate layer.

2. A method according to claim 1, characterised in that it is carried out using a double-belt system.

3. A method according to claim 1 or 2, characterised in that, before or after the application of the bonding agent layer, heating to 30 to 60°C takes place.

4. A composite element obtainable by a method according to any one of claims 1 to 3.

5. A composite element according to claim 4, characterised in that
layer (i) has a thickness of 200 µm to 5 mm,

layer (ii) has a thickness of 50 µm to 500 µm, layer
(iii) has a thickness of 2 cm to 25 cm, and
layer (v) has a thickness of 200 µm to 5 mm.

6. A composite element according to claim 4 or 5, characterised in that the adhesion between the top layer (i) and the foam layer (iii) is at least greater than 0.12 N/mm², measured in accordance with DIN 53292.

7. A composite element according to any one of claims 4 to 6, characterised in that layer (iii) is obtainable by reacting
i) polyisocyanates with
ii) compounds having two hydrogen atoms reactive with isocyanates, in the presence of
iii) isocyanurate catalysts,
wherein the stoichiometric ratio is selected such that, in the reaction mixture, the ratio of the number of isocyanate groups to the number of groups reactive towards isocyanates is 1.8 to 8:1, preferably 1.9 to 4:1.

8. A composite element according to any one of claims 4 to 7, characterised in that the top layers (i) and (v) are metal layers.

9. Use of a reactive polyurethane coupling agent which is still reactive when the polyisocyanurate reaction mixture is applied to the coupling agent layer, wherein the coupling agent is applied as a liquid reaction mixture to a first top layer and is obtainable by reacting a) polyisocyanates and b) polyetherols and/or polyesterols, wherein the molar ratio is selected such that in the reaction mixture the ratio of the number of isocyanate groups to the number of groups reactive with isocyanates is 0.8 to 1.8 : 1, for improving the adhesion between the layers of a composite element comprising a polyisocyanurate foam and cover layers.

C. Costs

144. The value in dispute was set at EUR 1,500,000.00 for the purposes of applying the upper limits for recoverable costs.

145. Pursuant to Article 69(1) UPCA, the costs of the litigation and other costs of the successful party, insofar as they are reasonable and appropriate, shall be borne by the unsuccessful party up to a ceiling determined in accordance with the Rules of Procedure, provided that there are no grounds of equity precluding this.

146. With regard to the outcome of the litigation, both parties have been partially successful. Since the nullity complaint is dismissed not only because the defendant submitted a limitation of the patent in the course of the proceedings, but also because the remaining grounds for revocation have not been proven, the Court considers it appropriate that the costs of the Court and the parties be borne jointly by the plaintiffs to the extent of 70% and by the defendant to the extent of 30%. However, as the defendant has not submitted a claim for costs, the Court rules on the costs of the plaintiffs only, pursuant to Article 76 of the UPCA.

DECISION

In view of the foregoing, the Paris Central Chamber of the Unified Patent Court rules as follows:

1. The nullity complaint brought by Huntsman (EUROPE) BV and Huntsman Holland BV against European patent EP 1 516 720 is dismissed.
2. EP 1 516 729 is upheld in the version amended by auxiliary claim 1.
3. The defendant shall bear 30% of the costs of the proceedings.
4. The Registry shall, upon expiry of the time limit for appeal, forward a copy of this decision to the European Patent Office and to the national patent offices of all Contracting States concerned.

INFORMATION ON APPEALS

Any party whose claims have been rejected in whole or in part may appeal against this decision to the Court of Appeal within two months of the decision being served (Art. 73(1) UPCA,
R. 220.1(a), 224.1(a) of the Rules of Procedure).

Issued in Paris, on 22 April 2026 NAMES

AND SIGNATURES:

Prof. Dr Maximilian Haedicke Presiding Judge	Maximilian Wilhelm Haedicke Digitally signed by Maximilian Wilhelm Haedicke DN: cn=Maximilian Wilhelm Haedicke, c=DE Date: 21 April 2026 18:57:33 +02:00
Dr Tatyana Zhilova legally qualified judge and rapporteur	Tatyana Borisova Zhilova Digital digital signature of Tatyana Borisova Zhilova Date: 21 April 2026 13:36:47 +02:00
Dr Nicolai Geier technically qualified judge	Nicolai GEIER Digitally signed by Nicolai GEIER Date: 21 April 2026 18:44:54 +02:00
Margaux Grondein for the Deputy Registrar	Unified Patent Court Einheitliches Patentgericht Juridiction unifiée du brevet Digital signature of MARGAUX MARIE- ANGE GRONDEIN