
Date: 23 November 2023
Court: Düsseldorf Higher Regional Court
Panel: 2nd Civil Senate
Type of decision: Judgment
Reference number: 2 U 36/17
ECLI: ECLI:DE:OLGD:2023:1123.2U36.17.00

Lower court: Düsseldorf District Court, 4b O 8/16

Guiding Principles:

1. The subject matter of the proceedings at first instance is decisive for the assessment of core identity, which is why all those new embodiments that are identified as patent infringements on the basis of the decision considerations of the lower instance must also be dealt with in the appeal proceedings. A limitation of the patent claim made after the first instance judgement in the nullity proceedings must be disregarded when determining the subject matter of the dispute (of the first instance). 2. When interpreting a patent claim, the basic question to be asked is how the average person skilled in the art understood the terms contained in the patent claim on the filing date or (if seniority is claimed) the priority date of the patent in suit. A change occurring over time, for example due to the discovery of better analytical methods, must not lead to either a restriction or an extension of the scope of protection, as a scope of protection that changes over time would not be compatible with the requirement of legal certainty. If the interpretation of a term mentioned in the patent claim or the value of a quantity mentioned in the patent claim depends on the method of measurement, the principle of legal certainty accordingly requires that the term or the value be defined in such a way as was possible for the person skilled in the art on the basis of his knowledge on the date of filing or priority with the methods of measurement available at that time. 3. Section 142 Code of Civil Procedure (ZPO) does not release the party referring to a document from its burden of presentation and substantiation. Accordingly, the court may not order the submission of

documents merely for the purpose of obtaining information, but only if the party has made a conclusive, fact-based submission.

Sentence:

I. The appeal of the defendant re 1. against the judgment of the 4b. Civil Chamber of the Düsseldorf District Court announced on 18 July 2017 is dismissed with the proviso that

1. in item I.1. of the operative part, "between 25 m² /g and 51 m² /g" is inserted after the words "a specific surface area of" instead of "at least 25 m² /g",

2. in item I.1. of the operative part, the following text is inserted after e):

"... with the exception of those compositions that were supplied to companies of the B Group in the period from 1 January 2014 to 28 June 2016" and

3. in item I.1. after lit e), instead of "provided that the defendants bear the costs incurred by their involvement and authorize it" it reads: "provided that the defendant re 1. bears the costs incurred by its involvement and authorizes it";

II. the costs of the legal dispute at first instance are - in amendment of the District Court's decision on costs - allocated as follows:

The plaintiffs shall bear 55% of the court costs and out-of-court costs of the plaintiffs and the defendant re 1. shall bear 45%. The plaintiffs shall bear 10% of the out-of-court costs of defendant re 1. There will be no other reimbursement of costs.

III. The plaintiffs shall bear 10 % of the costs of the appeal proceedings and the defendant re 1. shall bear 90 %.

IV. This judgment and the judgement of the District Court, the latter to the extent of its confirmation, are provisionally enforceable.

The defendant re 1. may avert the compulsory enforcement by the plaintiffs against provision of security in the amount of EUR 200,000 unless the plaintiffs provide security in the same amount prior to enforcement.

The plaintiffs are granted leave to avert the compulsory enforcement by the defendant re 1. in respect of its costs by providing security in the amount of 120% of the amount to be enforced on the basis of this judgment, unless the defendant re 1. provides security in the amount of the respective amount to be enforced prior to enforcement.

V. The appeal is not permitted.

VI. The amount in dispute for the first instance is set at EUR 1,200,000.00, amending the District Court's ruling, of which EUR 600,000.00 is attributable to defendant re 1. and defendant re 2. and of which EUR 300,000.00 is attributable to each plaintiff.

VII. The amount in dispute for the appeal proceedings is set at EUR 600,000, of which EUR 300,000 is attributable to each of the plaintiffs.

Grounds:

A.

The plaintiff re 1. is the registered proprietor of European patent 0 863 XXA (hereinafter: patent in suit, Exhibit rop C1), which was also granted with effect for the Federal Republic of Germany and was published in French procedural language. Based on this property right, proprietor and the plaintiff re 2. are asserting claims against the defendant re 1. in the appeal proceedings for rendering of accounts, provision of information, recall of the products attacked as infringing the patent and determination of its obligation to pay damages.

The application on which the patent in suit is based was filed on 28 June 1996, claiming a French priority dated 3 July 1995. The reference to the grant of the patent was published in the Patent Gazette on 4 December 2002. The German part of the patent in suit is registered at the German Patent and Trademark Office under the registration number DE 696 25 XXB. At the end of 28 June 2016, the patent in suit expired.

In response to a nullity action brought by the defendant re 1. (3 Ni 6/15 [EP]), the Federal Patent Court upheld the German part of the patent in suit by judgment of 25 October 2016 (submitted as Exhibit rop C6; hereinafter: BPatG judgment) - in accordance with a self-restriction by the plaintiff re 1. - with a patent claim 1, the wording of which corresponds

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to the granted patent claim 2.

On appeal (X ZR 36/17), the Federal Supreme Court amended the judgement of the Federal Patent Court by judgement of 6 August 2019 (submitted as Exhibit C11; hereinafter: FEDERAL SUPREME COURT (BGH) judgement) and - following the judgement of the District Court contested in the present appeal - declared the patent in suit partially invalid. The German translation of patent claim 1 upheld by the Federal Supreme Court reads as follows (changes to the version upheld by the Federal Patent Court and on which the District Court's judgement is based are indicated by underlining):

Composition based on zirconium oxide, comprising cerium oxide and at least one doping element, characterized in that, after calcining for 6 hours at 1000°C, it has a specific surface area of at least between 25 m² /g and 51 m² /g and in that it is in the form of a pure solid solution of the cerium oxide and the dopant in the zirconium oxide.

On 2 December 2004, the plaintiff re 1. concluded a license agreement with C (hereinafter: C), submitted as Exhibit rop Z1 (in German translation Exhibit rop Z1a), by which it granted C an exclusive license to the patent in suit. Pursuant to Section 10 (1) of this agreement, the plaintiff re 1. is entitled to file a complaint against alleged patent infringers if - as here - it is requested to do so by the licensee. C was dissolved without liquidation by decision of 20 November 2009 (see the dissolution order submitted as Exhibit rop Z2a to the file). All assets, including the license granted, were transferred from C to plaintiff re 2. (cf. the extract from the commercial register submitted as Exhibit rop Z3). The plaintiff re 1. did not object to the assumption of the rights and obligations under the license agreement. In a letter dated 9 November 2015, submitted as Exhibit Z4, the plaintiffs unanimously declared that the license agreement between the first plaintiff and C would continue between them today.

Defendant re 1., which is based in Great Britain, sells chemicals of the former defendant re 2. to chemical companies and automotive suppliers in Germany, among others. The products offered by the defendants include various mixed oxides of zirconium oxide (ZrO₂) and cerium oxide (CeO₂), including product D (hereinafter: challenged embodiment I), product E (hereinafter: challenged embodiment II) and product F (hereinafter: challenged embodiment III). Due to an internal adaptation, products identical to product D were also offered and sold under the name G.

At the beginning of 2013, the plaintiff re 1. had products of the defendant seized in a warehouse in the Netherlands, which were intended for the German market and were suspected of infringing patents of the plaintiff re 1. The seized products included the product D from batches 08-24 and 08-30. Delivery documents show that 2000 kg of this product were delivered to B GmbH (formerly H GmbH) in 2005. Thereby 1000 kg came from a batch 051191 and another 1000 kg from a batch 051192. It is undisputed that the challenged embodiments II and III were also offered and distributed by the defendant re 1. in Germany.

The plaintiff re 1. and the defendants subsequently agreed to have the seized products and documents examined by an independent expert and assessed with regard to the question of patent infringement. Patent attorney Dr I was appointed as the expert.

In addition, Dr J was appointed by K as a technical expert. In his analysis report dated 26 September 2013 (Exhibit B17; German translation Exhibit B17a), the expert Dr I came to the conclusion that the examined product D fell within the scope of protection of the granted patent claims 1 and 2.

In a so-called "B Agreement", the plaintiffs authorized companies of the B Group to purchase mixed oxide products from the defendant re 1. and subsequently continue to use them in return for a compensation payment. The period of validity of the agreement relates to deliveries to B from 1 January 2014 to 31 December 2019.

At first instance, the plaintiffs filed a claim against the defendants for injunctive relief, disclosure, accounting, recall, destruction and damages due to an infringement of the patent in suit by the challenged embodiment I. After the patent in suit expired in the course of the proceedings at first instance due to the expiry of the term of protection on 20 December 2014, the plaintiffs and the defendant re 1. unanimously declared the legal dispute regarding the claim for injunctive relief to be settled in the main proceedings. The plaintiffs withdrew their complaint against the former defendant re 2. in a writ dated 14 December 2015 because the statement of claim could not be served in China.

The plaintiffs argued before the District Court:

According to both its internal investigations and the investigations of the Dutch expert, the challenged embodiment I would make use of the teaching of the patent in suit. The examination of the specific surface area after 6 hours of calcination at 1000°C revealed - undisputedly in this respect - a specific surface area of 52.3 m²/g. The patent in suit would define the term "specific surface area" in its description on the basis of the so-called BET process. This was described in the technical literature as a universal method for determining the specific surface area, irrespective of the respective isotherm of the surface. It would provide results for all types of isotherms that are reproducible and thus suitable for unambiguous characterization of the product. Moreover, the contested embodiment I had a type II isotherm anyway, with regard to which it was undisputed that the specific surface area could be determined very precisely and correctly using the BET method.

The challenged embodiment I is also present in the form of a pure solid solution of the cerium oxide and the doping agent in the zirconium oxide. This is shown by the XRD spectrum of the analyzed sample. The patent in suit explicitly (only) mentions the X-ray diffraction analysis method in its description. The presence of a solid solution and its (single-phase) crystallization in the cubic or quadratic system can therefore be determined by X-ray diffraction spectra. A pure solid solution within the meaning of the patent in suit is always given if the X-ray diffraction spectra correspond to those of the solid solution and an interfering secondary phase cannot be detected by this method. At the priority date, X-ray diffraction spectroscopy was the generally recognized method for analyzing the crystal structure. It was the most accurate method for the qualitative and quantitative determination of crystal structures. The Dutch expert had inadvertently not measured the diffraction patterns on samples that had been calcined at 1000°C for 6 hours, but on samples that had been calcined at 800°C. In the meantime, however, further samples of the samples seized in the Netherlands had been procured by the plaintiff 1. and X-ray diffraction spectra had been formed after calcining these samples at 1000°C for 6 hours. The crystal structure of

the compositions had not changed after calcination at a higher temperature; the spectra were practically identical to those determined by the Dutch expert.

The defendant re 1, which has applied for the action to be dismissed and, in the alternative, for the legal dispute to be suspended until the invalidity proceedings have been finally settled, has countered the plaintiffs' submission as follows: 17

According to the ASTM Standard referred to in the patent application, the nitrogen adsorption test (BET method) can only be applied to materials with nitrogen adsorption isotherms of types II or IV. Only with these materials could it be reliably determined on the basis of the nitrogen adsorption behavior at which volume a monolayer was formed. Other measuring methods belonging to the state of the art at that time were not mentioned in the patent description. Therefore, compositions which did not have a type II or IV isotherm could not have a specific surface area within the meaning of the patent in suit. 18

The challenged embodiment does not have a type II or IV isotherm. Adsorption takes place to a significant extent in the relative pressure range (P/P_0) below 0.05, which is characteristic of a type I isotherm. Also, the isotherm of the challenged embodiment I in the range between $P/P_0 = 0.05$ and 0.30, which is the standard range used for the calculation of the BET surface area, does not show a visible "knee" as is typical for the isotherm of type II or IV. The results of the Dutch expert could therefore not prove that the relevant claim feature was actually realized. 19

Moreover, the challenged embodiment I is not in the form of a pure solid solution of the cerium oxide and the doping agent in the zirconium oxide. The Dutch expert opinion was unsuitable for such proof. This was because the X-ray diffraction method used by the Dutch expert to determine the crystal structure had a number of disadvantages, which set clear limits to a clear statement about the crystal structure and made it necessary to verify the results. The Dutch expert had not taken this into account in his analysis. Moreover, his explanations also show that he applied the so-called "Vegard's rule", which is merely an empirical approximation and is also disputed in the scientific literature. It could in no way serve as clear evidence that there was only a single phase in the X-ray diffraction pattern found. In addition, the Dutch expert assumes that cerium oxide is present in a matrix of cubic zirconium oxide. However, there are also a number of other phases in which the zirconium oxide could be present. With the exception of one phase, all of these phases exhibited diffractograms that were very similar to cubic zirconium oxide, so that these phases could not be reliably distinguished from one another using X-ray diffraction. It could therefore not be ruled out that a mixture of several phases was present in the analyzed samples. 20

This also follows from a Rietveld refinement (Exhibit B18/18a) carried out by it - the defendant re 1 - for the challenged embodiment I. According to this, there are also crystal systems that exhibit exactly the same diffraction pattern as determined in the Dutch expert opinion, but without being present in solid solution. The Rietveld refinement shows that the interpretation of the experimentally found X-ray diffraction pattern by the Dutch expert is not compelling, but that there are other models that could describe the X-ray diffraction patterns. 21

The Dutch expert opinion therefore does not provide evidence that product D actually exists in the form of a pure solid solution of the cerium oxide and the doping agent in the zirconium oxide. 21

Faced with the task of determining whether a pure solid solution of the cerium oxide (and possibly the dopant) is present in the zirconium oxide, the skilled person would in any case have additionally used Raman spectrography against this background. This was the only way to determine the presence of only one (cubic or tetragonal) zirconium oxide phase, excluding the presence of several phases. For product D, a Raman spectrum was determined in a research laboratory on their behalf. The analyzed sample had been randomly selected from a batch of the product. The spectrum obtained (sheet 225 GA) indicated that there were two phases in the sample, namely a cubic Ce-rich phase and a tetragonal Zr-rich phase, which were superimposed on each other. 22

In its judgment of 18 July 2017, the Düsseldorf District Court affirmed patent infringement and granted the request for relief on the basis of claim 1 (= granted claim 2), which was upheld by the Federal Patent Court with restrictions, as follows: 23

I. 24

Defendant re 1 is ordered 25

1. 26

to provide the plaintiff re 2 with a full account of the extent to which, in the period from 2 December 2004 up to and including 28 June 2016, it offered, placed on the market or used 27

Compositions based on zirconium oxide comprising cerium oxide and at least one doping element, 28

in the Federal Republic of Germany, or either imported or possessed such compositions for the aforementioned purposes, 29

when the composition has a specific surface area of at least 25 m² /g after calcination for 6 hours at 1000°C and if it is in the form of a pure solid solution of the cerium oxide and the dopant in the zirconium oxide, 30

and specifically stating 31

a) the quantity of products received or ordered and the names and addresses of the manufacturers, suppliers and other previous owners as well as the purchase prices, 32

b) of the individual deliveries and orders, itemized by type designation, delivery and order quantities, times and prices, as well as the names and addresses of the customers and sales outlets for which the products were intended, 33

c) of the individual offers, itemized according to type designations, quantities, times and prices offered, as well as the names and addresses of the commercial offerees, 34

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d) The number of advertising media used, broken down by advertising media, their production and distribution volume, distribution period and distribution area,	
e) the prime costs broken down by the individual cost factors and the profit realized,	36
whereby the defendant re 1 must submit delivery documents, alternatively customs documents, further alternatively delivery notes, further alternatively invoices with regard to its statements under a) and b),	37
whereby information on purchase prices and points of sale is only to be provided for the period from 30 April 2006 to 28 June 2016,	38
whereby the defendant re 1 reserves the right to disclose the names and addresses of its non-commercial customers and the offerees instead of the plaintiff re 2 to a sworn auditor domiciled in the Federal Republic of Germany to be designated by the latter, who is bound to secrecy towards the latter, provided that the defendants assume the costs arising from the involvement of the auditor and authorize him to inform the plaintiff re 2 on request whether a specific non-commercial customer or offeree is included in the invoicing;	39
2.	40
to recall from the distribution channels the products referred to in item 1 above, which have been in the possession of third parties since 30 April 2006, by seriously requesting those commercial customers who were granted possession of the products by the defendant re 1 or with its consent by 28 June 2016.2016, with reference to the fact that the court has recognized an infringement of the patent in suit EP 0 863 XXA B1 in this judgment, are seriously requested to return the products to the defendant re 1 and, in the event that the products are returned, they are given a binding undertaking to repay any purchase price already paid and to bear the costs of the return.	41
II.	42
It is hereby established that the defendant re 1 is obliged to compensate the plaintiff re 2 for all damages that it has suffered and will suffer as a result of the acts described under I. 1. committed in the period from 2 December 2004 to 28 June 2016.	43
In its reasons, the District Court essentially stated:	44
The plaintiffs, of which plaintiff re 2 is also the exclusive licensee, are entitled to the recognized claims.	45
Whether the surface of the contested embodiment I (product D) has isotherms of type II or IV is irrelevant for the realization of the teaching of the patent in suit. The patent in suit defines the term "specific surface area" as the specific BET surface area, which is determined by adsorption of nitrogen according to the ASTM D 3663-78 Standard. The skilled person cannot infer from the patent in suit any specific information that the BET method should not be applied to all isotherms according to the explanations in the underlying standard.	46
Information on how the presence of the cerium oxide and the doping agent in the zirconium oxide in pure solid solution is to be determined cannot be found in the claim itself.	47

However, the skilled person would understand from the description of the patent in suit that this property of the composition could be determined, for example, by means of an X-ray diffraction analysis. Such a determination of the property according to the invention is thus in principle suitable and also sufficient within the meaning of the patent in suit.

On this basis, the challenged embodiment I makes use of the technical teaching of claim 1 of the patent in suit (in the version obtained by the judgment of the Federal Patent Court) in accordance with the wording. After calcination for 6 hours at 1000°C, the challenged embodiment has an average specific surface area of 52.3 m² /g and thus a surface area of more than 25 m² /g.

The challenged embodiment I is also present in the form of a pure solid solution of the cerium oxide and the dopant in the zirconium oxide. The plaintiffs had conclusively demonstrated this by submitting the results of the X-ray diffraction analysis. The defendant's reference to the Rietveld refinement carried out by it remains unsuccessful. As explained, the patent in suit considers it sufficient if the X-ray diffraction analysis does not show any interfering secondary phases. Similarly, additional verification of the results by means of Raman spectroscopy is not necessary. With regard to the Raman spectrum submitted by the first defendant, the plaintiffs had also convincingly demonstrated that no clear statement regarding the realization of the claim feature in question was possible on the basis of this spectrum. Moreover, this spectrum was not produced by the products seized in the Netherlands.

Reference is made to the District Court's judgment for further details of the reasons.

The defendant re 1 appeals against this decision and continues to pursue its request to dismiss the action.

In addition and in more detail, it argues:

As regards the determination of the specific surface area, the District Court failed to recognize that the BET method is not generally applicable, but only for mixed oxides having a certain isotherm, namely a type II or IV isotherm. The patent in suit fully adopts the ASTM Standard (submitted as Exhibit B13) and its requirements. It is thus deliberately limited to materials with type II or IV isotherms. If the BET method were applied to isotherms other than those of type II or IV, a fictitious value would result. However, a fictitious value cannot be used to determine a property essential to the invention within the meaning of the patent in suit.

In addition, the District Court erred in its assessment of the existence of a "pure solid solution". A patent-compliant pure solid solution presupposes that the zirconium forms the matrix in which the cerium oxide and the doping agent are fully incorporated. Compositions containing other secondary phases or showing a clear deviation from the ideal lattice structure of the pure zirconium oxide are not covered by the scope of protection of the patent in suit. In order to determine the pure solid solution, the skilled person chooses a measuring method which can reliably and unequivocally determine the actual and pure structure of the composition. Although the patent in suit refers in this respect to the method of X-ray diffraction, the skilled person understands this as purely exemplary and would only use this method as a basis if the skilled person could thereby clearly and actually determine the

existence of only one phase. If this is not the case, the skilled person would use a different method to ensure that the required pure phase is distinguished from secondary phases. Raman spectrography is particularly suitable here.

Against this background, there was no evidence of patent infringement. In the absence of a type II or IV isotherm, the challenged embodiment I could not have a specific surface area as understood in the patent in suit. A fortiori, the specific surface area could not be determined by means of the BET method provided for in the patent in suit. 55

Moreover, it could not be established that the challenged embodiment I existed as a pure solid solution. On the contrary, the Raman spectrum submitted by the defendant re 1, which it produced on a randomly selected batch of product D (also referred to as L or M), shows that the challenged embodiment I has at least two phases (see Exhibit B40). This is because the spectrum shows neither only a single peak at 465 cm^{-1} , as is to be expected for a purely cubic phase, nor six peaks at approx. $140, 260, 309, 454, 600$ and 630 cm^{-1} , as is usual for a tetragonal phase. From this, the private expert Prof. Dr. N, whom they consulted, came to the conclusion that there must be at least two phases (cf. Exhibit B27 p. 8). 56

Nor does the existence of dopants indicate otherwise. Insofar as these could actually influence the bands of the other elements - as claimed by the plaintiffs - this would in any case lead out of the scope of protection of the patent in suit. This is because - as explained - a pure solid solution only exists if it is not influenced in such a way that its entire lattice structure is fundamentally changed. In other words, dopants according to the claim of the patent in suit may only be present to such an extent that there is no clear deviation from the ideal lattice structure of the pure zirconium oxide (characterized by the occurrence of further peaks). 57

The Rietveld refinement presented by her showed that the interpretation of the experimental diffractogram by the Dutch expert was not compelling. Rather, there are other models - such as the existence of several phases - which could describe the X-ray diffraction patterns. The plaintiff's X-ray diffraction analysis therefore by no means produced clear results that could prove the existence of a pure solid solution. 58

Moreover, the plaintiffs had consented to the supply and use of the challenged embodiments vis-à-vis companies of the B Group, so that a patent infringement had to be ruled out for this reason alone. The consent had subsequently led to exhaustion. This did not only relate to deliveries in the period of validity granted by the plaintiff from 1 January 2014 to 31 December 2019. Rather, the plaintiffs had entered into a second agreement with B in 2022 in order not to disrupt the flow of goods from it - the defendant re 1 - to B. It can be assumed that this agreement also had retroactive effect for the period before 1 January 2014. Since the plaintiffs had initially concealed the agreements with B in various legal disputes, dishonest litigation behavior was to be assumed, which could only be countered by ordering the production of the B agreements. 59

The defendant re 1 **requested**, 60

to amend the judgment of the Düsseldorf District Court of 18 July 2017 and dismiss the complaint. 61

The plaintiffs **requested** after partially withdrawing the complaint in a writ dated 20 April 2023, 62

to dismiss the appeal of defendant re 1 with the proviso 63

1. that in item I.1. of the District Court's operative part "between 25 m²/g and 51 m²/g" be inserted after the words "a specific surface area of" instead of "at least 25 m²/g", and 64

2. that in item I.1. of the operative part the following text be inserted after e): 65

"... with the exception of those compositions that were supplied to companies of the B Group in the period from 1 January 2014 to 28 June 2016". 66

They defend the District Court's judgment - also taking into account the wording of claim 1 of the patent in suit, which has since been restricted in the nullity proceedings - as correct and assert the following: 67

Insofar as product D from batch 08-30 and from batch 08-24 seized in the Netherlands, which was the subject of the proceedings at first instance as challenged embodiment I, had a specific surface area of over 51 m² /g after calcination for 6 hours at 1000°C, the deviation was only minor and could be explained by manufacturing tolerances. For batch 06-2-21-1 of product G (internal designation of the manufacturer: M), the manufacturer states that the specific surface area after calcination for 4 hours at 1000°C is 49.10 m² /g (see Exhibit rop C14), which is within the patentable range. If the calcination time is increased from 4 to 6 hours, the specific surface area decreases only slightly, which is undisputed in this respect. Product G had exactly the same composition as product D and was therefore identical to it. If the value for batch 06-2-21-1 is compared with the measured values for batches 08-30 and 08-24, this results in a manufacturing tolerance of at least 5 m² /g with regard to the challenged embodiment I. Taking this manufacturing tolerance into account, the specific surface area of the challenged embodiment I is within the claimed range of 25 m² /g to 51 m² /g. Moreover, the defendant re 1 offered and marketed a patent-compliant product in Germany in any event with batches 051191 and 051192 of product D, which, according to the invoice of 8 February 2005 submitted as Exhibit C15, were supplied by the defendant re 1 to H GmbH (later: B GmbH) in 2005. 68

The challenged embodiments II and III were identical in essence to the challenged embodiment I, so that they could also be introduced into the proceedings at second instance without the need for a cross-appeal. This did not constitute an inadmissible extension of complaint. Applying the BET method, a specific surface area in the claimed range is obtained for both - undisputed in this respect - after calcination for 6 hours at 1000°C. 69

In all three challenged embodiments, no secondary phases are detectable within the X-ray diffraction spectrum. Since no other detection methods are mentioned in the patent in suit, X-ray diffraction analysis is in any case the preferred detection method according to the patent in suit. It is used in all embodiments of the invention to detect the presence of a pure 70

solid solution. Both at the priority date and still today, X-ray diffraction analysis is the standard method for determining whether or not several solids are present in the form of a pure solid solution. In contrast, other analytical methods, especially Raman spectroscopy, have the disadvantage that they provide ambiguous results that are difficult to interpret, especially in the presence of dopants. X-ray diffraction analysis also provided sufficiently precise measurement results from a functional point of view. This is because the teaching of the patent in suit seeks to distinguish itself in particular from the compositions known in the prior art, which segregate when the product is heated to 1000°C. In this context, segregation means that a far-reaching change in the internal structure occurs, which is shown in the X-ray diffraction spectrum by an identifiable secondary phase. Such compositions would have a noticeably negative effect on the suitability of the composition as a component of three-way catalysts.

However, this is not the case with the contested embodiments. The X-ray diffraction spectra of the challenged embodiments show clear, sharp peaks; identifiable secondary phases are not present. Insofar as the defendant disputes this with reference to the Raman spectroscopy it carried out, the Raman spectrum submitted is of very poor quality on the one hand, and on the other hand it remains completely unclear who produced it when and by what means on which batch of which product. In any case, not one of the products seized in the Netherlands had been analyzed - which is undisputed in this respect. In addition, Raman spectroscopy is considerably disturbed by doping agents; additional peaks are generated which, however, do not necessarily indicate a further identifiable secondary phase.

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Insofar as the defendant relied on an agreement between the plaintiffs and B to justify its acts of use, this related exclusively to deliveries in the period from 1 January 2014 to 31 December 2019 and there were no other agreements.

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The defendant re 1 opposed the inclusion of the challenged II and III in the present proceedings. The submission relating to these embodiments concerns a different subject matter of the dispute. This follows from the fact that the originally challenged embodiment I does not have a specific surface which falls within the scope of the patent in suit, whereas this is indisputably the case with the challenged embodiments II and III. The same applies to product G. Although it was correct that the designation of product D had changed as a result of an internal adaptation, it could not be assumed that the products were identical if one (D) had a specific surface area greater than 51 m² /g but the other (G) did not.

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Irrespective of this, neither a specific surface nor a pure solid solution within the meaning of the teaching of the patent in suit is present with regard to the challenged embodiments II and III. This is because neither would exhibit an isotherm of type II or IV and the analyses carried out would indicate the presence of interfering secondary phases.

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The Senate took evidence by obtaining an expert opinion. With regard to the results of the taking of evidence, reference is made to the expert opinion of the expert Prof. Dr rer. nat. habil. O of 18 May 2022, his supplementary report of 2 January 2023 and the minutes of the hearing of 2 November 2023.

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Reference is made to the contents of the court files and Exhibits for further details of the facts and the dispute.

B. 77

The admissible appeal of defendant re 1 (hereinafter only: defendant) remains largely unsuccessful on the merits. However, the District Court's operative part had to be adapted to the new version of claim 1 of the patent in suit, which had been made in the meantime, and due to the partial withdrawal of the action with regard to products supplied to companies of the B Group. It comprises all three challenged embodiments, but the challenged embodiment I only insofar as the respective batch of product D/E has a specific surface area of 25 m² /g to 51 m² /g after calcination for 6 hours at 1000°C (see below). 78

I. 79

Insofar as the plaintiffs base their allegation of infringement at second instance on products other than product D, which was the subject of the dispute at first instance, this does not constitute a new subject matter of the dispute; the inclusion of these other products in the legal dispute is still admissible at the appeal instance, whereby it was not necessary for the plaintiff to file a cross-appeal. 80

1. 81

The facts of the case that the court has to decide on according to the complaint cannot be decided without taking into account the legal basis on which the plaintiff bases its claims. This is because this legal basis determines which details of an (alleged) factual event are (at least potentially) relevant for the court's finding in terms of facts, space and time. Accordingly, in a patent infringement action, the factual elements from which the defendant's actions that fulfil one of the elements of Section 9 PatG are to be derived are of primary importance for the delimitation of the subject matter of the dispute that is subject to the court's decision. For the factual delimitation of these acts covered by the plaintiff's claim, it typically depends primarily on the factual embodiment of a contested product or process from which, according to the plaintiff's submission, the product or process can be subsumed under the claim asserted in the complaint. Accordingly, the subject matter of the patent infringement action is usually essentially determined by the actual embodiment of a particular product, usually referred to as the challenged embodiment, with regard to the features of the asserted patent claim (see Federal Supreme Court, GRUR 2012, 485 para. 18 - Rohrreinigungsdüse II; Federal Supreme Court, GRUR 2021, 1167 para. 44 - Ultraschallwandler). 82

2. 83

If a further embodiment introduced into the legal dispute only in the second instance is essentially identical in terms of patentability to the embodiment discussed from the outset, it concerns the same subject matter of the dispute, so that the complaint and the judgement referred to it from the outset. The subject matter of the proceedings at first instance is decisive for the assessment of core identity, which is why all those new embodiment variants that are identified as patent infringements on the basis of the decision considerations of the lower instance must also be dealt with in the appeal proceedings. This is because the 84

first-instance judgement alone is the basis for the decision of the plaintiff (who won at first instance) as to whether or not to file a cross-appeal. Such an appeal is only admissible if the request is directed towards an increase over the judgement of the first instance. In particular, the cross-appeal cannot repeat the same request that was granted in the first instance judgement (Federal Supreme Court (BGH), NJW 1991, 3029 - Anzeigenrubrik I).

It follows directly from this that a limitation of the claim made after the judgement of the court of first instance in the nullity proceedings must be disregarded when determining the subject matter of the dispute. Rather, the decisive factor is (solely) the District Court's operative part, which reflects the relevant wording of the patent claim; this must be used to examine whether various challenged embodiments are essentially similar (see Senate, BeckRS 2019, 6090 para. 57 - Vorschubeinrichtung; Senate, GRUR-RS 2019, 38883 para. 44 - Befestigungszwischenstück). 85

3. 86

Whether the subject-matter of the infringement is identical in essence is assessed, in addition to the relief sought, in particular according to the patent law issues addressed by the deciding court in its judgment. If other infringing subject-matter, which is not expressly mentioned in the grounds of the decision, raises different patent law issues in view of the wording of the claim reproduced in the District Court's operative part than those dealt with by the court of first instance in its grounds of decision, core identity must be denied. If, on the other hand, the same patent law issues arise for the further challenged forms of infringement that the District Court discussed in its decision, so that in particular any objections of the defendant have already been decided in the first instance judgment, and if the characteristic of the original embodiment is recognizably expressed in the further forms of infringement irrespective of any deviations in detail, core identity is given (see also: Kühnen, Handbuch der Patentverletzung, 15th ed. 2023, chapter H para. 183). 87

4. 88

On the basis of these principles, the legal request relating to products G, F and E is to be regarded as a mere clarifying introduction of identical or nucleus-like forms of infringement. All products are compositions based on zirconium oxide, which comprises cerium oxide and at least one doping agent. According to the wording of patent in suit claim 1 as reproduced in the District Court's operative part, it does not matter in what ratio or to what extent the individual components are present in the composition, nor does the patent in suit contain specifications regarding the choice of certain dopants. Insofar as the contested products should exhibit corresponding differences in their elemental composition, this is therefore irrelevant for the assessment of the subject matter of the dispute. According to the wording of claim 1 of the patent in suit, as assessed by the District Court, it is rather decisive that the composition after calcination for 6 hours at 1000°C is in the form of a pure solid solution of the cerium oxide and the dopant in the zirconium oxide (feature 3.2) and that the specific surface area is at least 25 m² /g (feature 3.1 in the version on which the District Court's judgment is based). Both features are in dispute between the parties, whereby the dispute essentially concerns the questions of whether patent claim 1 also covers compositions whose isotherms do not belong to type II or IV, and which method of analysis is correct to 89

determine the existence of a pure solid solution. The District Court has dealt with these issues in detail. They arise in the same way with regard to all challenged embodiments; the characteristic core of all embodiments is therefore identical.

The fact that the challenged embodiments differ with regard to the concrete value of their surface is irrelevant insofar as they all have a surface area greater than 25 m² /g and thus lie within the claimable range (still) relevant for the District Court. Whether the surface area is in a range of up to 51 m² /g, on the other hand, did not play any role for the District Court - logically against the background of the state of affairs and dispute at first instance and in particular the wording of claim 1 of the patent in suit at that time. The fact that such considerations are now required with regard to the realization of feature 3.1 is solely a consequence of the Federal Supreme Court's nullity decision issued after the first instance infringement judgment was handed down. However, this has no effect on the subject matter of the dispute to be determined on the basis of the first-instance judgment.

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II.

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The patent in suit relates to a composition based on zirconium oxide.

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According to the introductory explanations in the patent application, such compositions are primarily used as coatings in the field of so-called "multifunctional" catalysts. These are catalysts which are not only involved in the oxidation of carbon monoxides and hydrocarbons contained in the exhaust gases of internal combustion engines, but also in the reduction of nitrogen oxides also contained in the exhaust gases ("three-way catalysts"). In order to increase the catalytic effect through the contact of the exhaust gases with the coating, it is crucial that the coating used has the largest possible specific surface area, which is maintained even at elevated temperatures, i.e. when the catalytic converters are in operation. Also of decisive importance is the fact that the mixed oxides used, consisting essentially of cerium oxide and zirconium oxide, retain their structure as a pure solid solution even at elevated temperatures and, in particular, do not segregate (see Exhibit rop C1a [DE 696 25 XXB T2], p. 1, second paragraph).

93

According to the specification of the patent in suit, no zirconium oxides stabilized by cerium were known in the prior art which could fulfil these important conditions for catalysis. In particular, the known compositions led to segregation of the individual components when the product was heated to over 900-1000°C, which the patent in suit criticizes as undesirable (Exhibit rop C1a, p. 1, third and fourth paragraphs).

94

Based on this, the patent in suit has set itself the task of providing a mixed oxide based on zirconium and cerium oxide, in which the cerium oxide is present in solid solution and which remains structurally stable even at high temperatures and has a large specific surface area (Exhibit rop C1a, p. 2, second and third paragraphs; Federal Patent Court (BPatG) judgement p. 12; Federal Supreme Court (BGH) judgement para. 9).

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To solve this problem, the patent in suit proposes, in the main claim maintained by the Federal Supreme Court as claim 1, a composition whose features can be organized

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as follows:	97
• 1. Composition based on zirconium oxide.	98
• 2. The composition consisting of (in addition to the zirconium oxide)	99
2.1 Cerium oxide and	101
2.2. at least one doping element.	102
3. After calcination for 6 hours at 1000°C, the composition has	103
3.1 a specific surface area of 25 m ² /g to 51 m ² /g and	104
3.2 is present in the form of a pure solid solution of the cerium oxide and the dopant in the zirconium oxide.	105
With regard to the parties' dispute, feature group 3 requires further explanation.	106
<u>1.</u>	107
Feature 3 - which the Senate assumes in agreement with the Federal Patent Court (BPatG) and the Federal Supreme Court (BGH) (BPatG judgement p. 14-15, p. 21, (Federal Supreme Court (BGH) judgement p. 7) - does not contain any specification for the manufacturing process, but merely a requirement for the material properties. The background to this is the fact, also mentioned in the description of the patent in suit, that calcination generally leads to a reduction in the specific surface area. On this basis, feature 3 specifies that the specific surface area of the composition should still be at least 25 m ² /g even if it has been calcined at 1000°C for 6 hours. This property is an indication that the composition is suitable for the intended purpose because the operating temperature of a catalyst can reach a comparable value (see Federal Supreme Court (BGH) judgment para. 13).	108
<u>2.</u>	109
The "specific surface area" claimed in feature 3.1 is defined in the specification of the patent in suit (Exhibit rop C1a, p. 3, last paragraph) as meaning the specific BET surface area determined by adsorption of nitrogen according to the ASTM D 3663-78 Standard. The ASTM Standard referred to (Exhibit B 13; German translation Exhibit B 13a) describes a nitrogen adsorption test for determining the surface area of catalytic materials. The surface area of the catalyst is determined by measuring the volume of nitrogen gas adsorbed at various low levels through the pores of the composition. The pressure differences generated by introducing the composition surface into a certain volume of nitrogen in a test device are measured and used to calculate the BET surface area (see Exhibit B 13a, No. 3).	110
With the BET method, the patent in suit - which the District Court correctly assumed - provides the skilled person with an established method known in the art for determining the specific surface area of catalysts, which was already used as a standard method for this	111

purpose many years before the priority date of the patent in suit (BPatG judgement p. 17). Although the ASTM Standard (Exhibit B 13a, para. 1.1) states at the outset that this method is used to determine the specific surface area of catalysts with a type II or IV adsorption isotherm, this does not limit claim 1 of the patent in such a way that it only covers compositions which have type II or IV isotherms (see Federal Supreme Court (BGH) judgement para. 98 et seq.).

As illustrated in particular by Examples 1 to 6 of the patent in suit (Exhibit rop C1a, p. 13 et seq.), in which the specific surface areas of the compositions have apparently been determined without difficulty using the BET method specified in the general patent description, the patent in suit assumes that it is generally possible to determine the specific surface area of the composition using the BET method. 112

The patent specification in suit does not provide any indication of a differentiation between individual isotherm types. The patent in suit does not indicate that, before applying the BET method to determine the specific surface area of the composition, it must first be checked to which of the six possible isotherm types (see Exhibit B 3/K 2, p. 4, Fig. 1.1) the nitrogen adsorption thermal of the composition in question is to be assigned, nor does it indicate how the specific surface areas of catalysts which cannot be assigned to the isotherms of types II or IV mentioned in the ASTM standard are to be determined. The patent in suit does not deal at all with which type of isotherm the composition has. This does not surprise the skilled person, despite the introductory reference in the ASTM Standard to isotherms of types II and IV, as the BET method is known to him as an almost universally applicable method (BPatG judgment p. 18). In the art, this method is used without knowledge of the isotherm type to determine the specific surface area (BPatG judgement p. 18). 113

As the relevant prior art shows, this is not altered by the fact that other methods for determining the specific surface area were and are available in principle (see BPatG judgement p. 18; Exhibit B 28/28a, p. 44). From the fact that the patent in suit does not mention other methods for determining the specific surface area, the skilled person draws the conclusion that the BET method mentioned in the patent in suit can also be used to determine the specific surface areas of compositions which, in deviation from the nitrogen adsorption isotherms of types II or IV mentioned in the ASTM Standard, can be assigned to another type of isotherm. The defendant's objection that the BET method can only be used to calculate theoretical values for the specific surface areas of materials with isotherms other than types II or IV, but not the real values, does not change the broad application of the BET method, since it can be used to determine reproducible data on the basis of standardized theoretical values and thus create a basis on which the BET-specific surface areas of catalysts can be compared with each other (BPatG judgement p. 18). 114

Whether the composition has a specific surface area of $25 \text{ m}^2/\text{g}$ to $51 \text{ m}^2/\text{g}$ after calcination for 6 hours at 1000°C can therefore be determined using the BET method. This also applies to the specific surface areas of compositions that do not have a nitrogen adsorption isotherm of type II or IV, but an isotherm of a different type. 115

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3. According to feature 3.2, the composition according to the patent should be in the form of a pure solid solution.

a) 117

The fact that the claimed composition must have the structure claimed in feature 3.2, at least after the calcination process, is already apparent from the French wording of the granted patent claim 2, to which the maintained patent claim 1 corresponds in this respect, as the Senate assumes in agreement with the Federal Patent Court and the Federal Supreme Court (BPatG judgement p. 15-17; BGH judgement para. 18, 19). The two personal pronouns "elle" mentioned in the characterizing part of this claim can only refer to the "composition" mentioned in the generic term, since the claim serves exclusively to define it and the generic term does not contain any other feminine noun. Incidentally, the English version of this claim also conveys a corresponding meaning (BPatG judgment p. 15). 118

On the other hand, this understanding results from the function of calcination and the technical context. The 6-hour calcination serves to adjust the patented composition to real conditions. The crystalline properties of the Ce/Zr mixed oxides according to the patent at this time are therefore of decisive importance, since only they can provide information as to whether the composition is ultimately suitable for use in catalysts or not (Exhibit rop C1a, p. 2, second and third para.; BPatG judgement p. 16). Furthermore, the teaching of the patent in suit is based on the realization that it proves advantageous in catalysis if cerium oxide and zirconium oxide are not present in separate form, but in the form of a true mixed oxide (Exhibit rop C1a, p. 1, second para. in conjunction with p. 2, first para.). From a technical point of view, this leads to the conclusion that the composition according to the patent must be in the form of a pure solid solution after the calcination mentioned in claim 1, since the aim of the patent in suit is precisely to avoid segregation of the components in the composition according to the patent (Exhibit rop C1a, p. 1 penultimate para.; BPatG judgement p. 17). 119

Finally, the correctness of this understanding is confirmed by the examples of embodiments of the patent in suit. For in all six examples, reference is only made to the pure solid solution phase of the mixed oxides obtained in the last sentence of the relevant description (Exhibit rop C1a, pp. 13 to 15, Ex. 1 to 6). The placement of this statement at the end of the respective description text and the fact that only a single X-ray diffraction analysis is provided in the examples make it clear to the skilled person that the crystal structure of the compositions is determined after completion of all the process engineering measures mentioned in the examples and thus only after calcination at 1000°C for 6 hours (BPatG judgment p. 16, BGH judgment para. 20). 120

b) 121

A "solid" solution within the meaning of feature 3.2 is understood by the skilled person - a chemist with a doctorate and specialized knowledge in the field of catalysis who is involved in the development of exhaust gas catalysts (see BGH judgment p. 12) - to be a mixture of two solids in homogeneous form (BGH judgment para. 16). In the case of crystals, the atoms of at least two different chemical elements must form a uniform crystal lattice for this purpose, i.e. in the case of the composition according to the invention, the cerium oxide and the dopant must be completely incorporated into the crystal lattice of the zirconium oxide, with the foreign atoms or ions being statistically distributed (expert opinion of the SV 122

Prof. O of 18 May 2022, p. 2; minutes of the oral hearing of 2 November 2023, p. 6; see also: private expert opinion of Prof. N, Exhibit B16, p. 4 et seq.).

The term "pure" solution within the meaning of feature 3.2 refers to phase purity, i.e. that no (or only the smallest amounts) of crystallographically distinguishable phases may be present side by side (expert opinion of SV Prof. O of 18 May 2022, p. 3 above). A "phase" is defined as a spatial area in which the material properties, such as density, refractive index or chemical composition, are homogeneous. Crystallographically different phases exist if the phases either have different crystal structures or if segregation has taken place so that two or more phases of different composition but the same crystal structure are present (expert opinion of SV Prof. O of 18 May 2022, p. 3 third para.). In this context, the Federal Supreme Court speaks of a "multiphase structure" in which the atoms are arranged differently in individual areas (BGH judgment para. 17). 123

c) 124

The patent in suit claim merely presupposes the existence of a "pure solid solution" without defining a specific measurement or analysis method by means of which this feature is to be verified. However, the patent in suit assumes that the existence of a pure solid solution can be determined with a degree of certainty that is sufficiently practical for the teaching according to the invention by means of the method of X-ray diffraction analysis (so-called XRD analysis) (see also BGH judgment para. 23). This is stated on p. 4 of the patent application: 125

"It is understood that the cerium is completely present in solid solution in the zirconium. The X-ray diffraction spectra of these compositions show, in particular in the interior of the latter, the presence of a single clearly identifiable phase corresponding to that of a zirconium oxide crystallized in the cubic or square system, reflecting the incorporation of cerium into the crystal lattice of the zirconium oxide and thus the obtaining of a true solid solution." 126

"The compositions comprising a dopant are in the form of a solid solution of cerium oxide and the dopant in the zirconium oxide. The X-ray diffraction spectra of these compounds are of the same nature as those described above." 127

In the embodiments of the invention described in the patent specification, the crystal structure is also analyzed (exclusively) by means of X-ray diffraction spectra. The description of all six examples concludes in each case with the remark that the X-ray diffraction analysis shows that the oxide obtained is in the form of a pure solid solution phase (Exhibit rop C1a, pp. 13-15). In all embodiments of the patent in suit, the presence of a pure solid solution is thus proven (solely) by means of X-ray diffraction spectra. 128

In X-ray diffraction, the crystal lattice of the solid solution to be analyzed is transformed into a symmetrically similar reciprocal lattice in Fourier space. Each diffraction point corresponds to exactly one diffraction point in the reciprocal lattice. The lattice points in the reciprocal lattice in turn correspond to a plane occupied by atoms in the crystal lattice, on which the diffraction can be imagined to be "similar" to a reflection. The position of the diffraction reflections contains information about the metrics and symmetry of the crystal lattice. The intensity of the diffraction reflections allows conclusions to be drawn about the 129

position of the atoms in the unit cell (expert opinion of SV Prof. O of 18 May 2022, p. 4).

According to the convincing explanations of the court expert, the information content of a powder diffraction diagram is enormous when properly measured and analyzed (expert opinion of the court expert Prof. O of 18 May 2022, p. 5, second para.). The court expert therefore describes X-ray powder diffraction as the most suitable method for determining whether a crystalline mixture of solids is present (expert opinion of SV Prof. O of 18 May 2022, p. 6, para. 10; supplementary expert opinion of SV Prof. O of 2 January 2023, p. 4 on question 6; minutes of the oral hearing of 2 November 2023, p. 7). With the method of X-ray diffraction spectroscopy, the patent in suit thus designates a suitable - albeit not the only possible (cf. BGH judgment para. 23) - analytical method which, from the point of view of a person skilled in the art, is suitable for providing evidence of the realization of feature 3.2.

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d)

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If the skilled person chooses the method of X-ray diffraction for the detection of the "pure solid solution" according to the invention, further analyses confirming the result of the X-ray diffraction analysis are not required according to the patent in suit. In particular, the patent in suit makes no reference to the so-called Rietveld refinement or to Raman spectroscopy.

132

With the Rietveld refinement, the disadvantage of the superposition of diffraction reflections can be partially compensated by the fact that instead of the integral intensity of individual diffraction reflections, the entire powder diffraction pattern (all measuring points) is adapted to a physical-mathematical model according to the method of least squares (expert opinion of SV Prof. O of 18 May 2022, p. 6 number 8). However, the Rietveld refinement is not an independent measurement method, but merely a refined evaluation of the results obtained on the basis of the X-ray diffraction analysis (see supplementary expert opinion of SV Prof. O of 2 January 2023, p. 4 to question 7); it therefore depends on the accuracy of the XRD spectra. Certain parameters must be specified for the Rietveld refinement, particularly with regard to the crystal structure. This makes the Rietveld refinement susceptible to structural errors (supplementary expert opinion of SV Prof. O of 2 January 2023, p. 4 to question 7; see also the defendant's critical comments on the informative value of Rietveld refinements in its writ of 20 April 2023, p. 2).

133

Raman spectroscopy, on the other hand, is an independent measurement method. Raman spectroscopy is based on the interaction of (laser) light with phonons (lattice vibrations), in which the light is scattered inelastically. Raman spectroscopy is used to measure the wavelengths and intensities of the scattered light. The frequency of the Raman scattered light is shifted compared to the incident light, either to lower energies or to higher energies (expert opinion of SV Prof. O of 18 May 2022, p. 10/11). However, Raman spectroscopy cannot determine the crystal structure (long-range order), but is able to decipher the local structure of the crystallites to be analyzed. Since the patent in suit describes a "pure solid solution" in the macroscopic sense, Raman spectroscopy cannot replace X-ray diffraction analysis according to the convincing explanations of the court expert (expert opinion of Prof. O of 18 May 2022, p. 11, 13; minutes of the oral hearing of 2 November 2023, p. 20).

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Insofar as the court expert considers the purely visual inspection of powder diagrams to be outdated and describes Rietveld refinement (as a supplement to X-ray diffraction) as the

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"de facto standard" nowadays (expert opinion of Prof. O, p. 12 centre), this statement refers to the analytical methods available in science today. However, this is not the point.

This is because the interpretation of a patent claim must be based on how the average person skilled in the art understood the terms contained in the patent claim on the filing date or (if priority is claimed) the priority date of the patent in suit. Findings that only later became known to those skilled in the art must generally be disregarded (Kühnen, Handbuch der Patentverletzung, 15th edition, chapter A para. 138; see also the detailed description by Schröler, Mitt 2019, 386 et seq. with further references). A change that occurs over time, for example due to the discovery of better analytical methods, may neither lead to a restriction nor to an extension of the scope of protection; because a scope of protection that changes over time would not be compatible with the requirement of legal certainty (see also: Senate, judgement of 29 July 2010, I-2 U 139/09, para. 17 - Traction aid; Düsseldorf District Court, judgement of 22 January 2015, 4c O 16/14, para. 142 seq., cited in juris).

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If the interpretation of a term mentioned in the claim or the value of a quantity mentioned in the claim depends on the measurement method, the principle of legal certainty accordingly requires that the term or the value be defined in the way that was possible for the person skilled in the art on the basis of his knowledge on the filing or priority date with the measurement methods available at that time (Senate judgement of 07 July 2016 I-2 U 5/14 para. 50 - Particle collecting device, cited above). priority date with the measurement methods available at that time (Senate, judgment of 7 July 2016, I-2 U 5/14 para. 50 - Partikel-Auffangvorrichtung, cited in juris; Düsseldorf District Court, BeckRS 2018, 24128 para. 57 et seq. - Anti-HER2-Antikörper). In principle, this does not rule out the possibility of proving the infringement using other measurement methods that were only developed or became known after this point in time. However, the measurement methods known on the filing or priority date and used as standard by the skilled person then set the standard for the measurement accuracy to be required (see also: Federal Supreme Court BGH, BeckRS 2012, 16616 para. 16 – Verfahren zum Färben von chromosomalem Zielmaterial; Senate, BeckRS 2013, 12505).

137

According to these principles, the decisive factor in the case in dispute is how the average skilled person interpreted the term "pure solid solution" using the analytical methods available on 3 July 1995. This does not mean that the existence of a pure solid solution could not (also) be proved or disproved by more modern methods of analysis which only became known after the priority date of the patent in suit. However, these analytical methods cannot limit the scope of protection of the patent in suit by the fact that they have a higher degree of measurement accuracy and thus reveal secondary phases which were not apparent with the standard measurement methods available at the priority date of the patent in suit. Rather, the patent in suit must be interpreted to the effect that the "pure solid solution" according to the invention must (only) be determined in the course of the analysis with a degree of accuracy that could be achieved with the analytical methods known and used as standard in the industry on the priority date.

138

According to the convincing explanations of the court expert, X-ray diffraction analysis was the generally recognized standard method on the priority date of the patent in suit to determine whether or not several solids were present in the form of a pure solid solution (minutes of the oral proceedings of 2 November 2023, pp. 2, 4, 7). Although the Rietveld refinement had already been known for over 25 years on the priority date of the patent in

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suit, it was only used sporadically in industry according to the court expert's statements (supplementary opinion of Prof. O of 2 January 2023, p. 3 to question 2). In industry, compounds were considered to be "quasi phase-pure" if no additional diffraction reflections with an intensity greater than two to three times the statistical noise could be seen with the naked eye in the standard powder diagram (supplementary expert opinion of SV Prof. O of 2 January 2023, p. 3 to question 2). This standard is also used in the patent application, which does not mention the Rietveld refinement at any point - although it has been known for a long time. Any secondary phases which are not recognizable as such by the method of X-ray diffraction analysis must therefore be disregarded for the assessment of the pure solid solution according to the invention. Rather, the teaching according to the patent in suit requires a pure solid solution in the sense that the (properly performed) X-ray diffraction analysis produces a spectrum in which no secondary phases are recognizable.

This result also corresponds to the required functional consideration. Accordingly, those secondary phases which are of no essential importance for the material properties must be disregarded (BGH judgment, para. 21). This is because by requiring a "pure solid solution" after calcination, the patent in suit intends to distinguish itself in particular from the compositions known in the prior art, in which segregation occurs when heated to 1000°C. In this context, segregation means that a far-reaching change in the internal structure occurs, which is shown in the X-ray diffraction spectrum by an identifiable secondary phase. Such secondary phases would have a noticeably negative effect on the suitability of the composition as a component of three-way catalysts. This is what the teaching of the patent in suit seeks to avoid by requiring a "pure solid solution". In this respect, the court expert assumes that only secondary phases of at least 1 to 2 per cent by weight would impair the suitability of the composition for use in multifunctional catalysts (supplementary expert opinion of Prof. O of 2 January 2023, p. 3 on question 5; cf. also: minutes of the oral hearing of 2 November 2023, p. 9). However, such secondary phases are also visible to the naked eye in the X-ray diffraction spectrum; a Rietveld refinement is not required in this respect.

III. 141

Based on this interpretation of the patent in suit, all three challenged embodiments - the challenged embodiment I, however, only in certain production batches - make direct use of the technical teaching of patent in suit claim 1 in the version of the Federal Supreme Court's judgement of invalidity. 142

The fact that the challenged embodiments realize features 1 and 2 of the feature analysis reproduced above is rightly beyond dispute between the parties. Further comments on this are therefore superfluous. The parties only dispute whether the challenged embodiments also fulfil the requirements of feature group 3. This must be affirmed. 143

1. 144

Feature 3.1 of claim 1 of the patent in suit requires that the composition according to the invention has a specific surface area of 25 m² /g to 51 m² /g after calcination for 6 hours at 1000°C. 145

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As explained in the context of the interpretation, it is irrelevant for the teaching according to the invention which type of isotherm the surfaces of the challenged embodiments have. In particular, the scope of protection of the patent in suit also includes isotherms which do not belong to type II or IV; in this case, too, the surface value is to be determined according to the BET method.

aa) 147

With regard to the challenged embodiments II and III, it is undisputed between the parties that a determination according to the BET method results in a surface area value within the claimed range. The product F (challenged embodiment III) has a specific surface area of 43.54 m² /g after calcination for 4 hours at 1000°C, the product E (challenged embodiment II) has a specific surface area of 47.73 m² /g after calcination for 4 hours at 1000°C. An increase in the calcination time from 4 to 6 hours indisputably leads at most to a slight reduction in the specific surface area. Feature 3.1 is thus realized. 148

bb) 149

With regard to the challenged embodiment I, surface values inside and outside the claimed area were determined in the course of various measurements. It is undisputed that the defendant used the designations D and G for the same product. In its writ of 8 November 2019 (p. 5), the defendant states in this regard: 150

"Consequently, product G, which according to the invoicing was delivered to P GmbH, is a part of batch 08-30 of the embodiment D challenged here. The different designation is based on an internal adjustment." 151

According to the product catalogue submitted as Exhibit rop C14, batch 06-2-21-1 of product G (internal designation: M) has a specific surface area of 49.10 m² /g after calcination at 1000°C for 4 hours. This value was not contested by the defendant. Since an increase in the calcination time from 4 to 6 hours indisputably leads to at most a slight reduction in the specific surface area, batch 06-2-21-1 of product G fulfils feature 3.1 of claim 1 of the patent in suit. The same applies to batches 051191 and 051192 of product D. In this respect, it is undisputed that these two batches have a specific surface area between 25 and 51 m² /g (see defendant's writ of 15 June 2020, p. 2). 152

The tests carried out in the Netherlands on the challenged embodiment 153 I, on the other hand, only revealed a non-patentable surface area. The analysis report according to Exhibit B17 / B17a shows a specific surface area of 52.3 m² /g (+/- 0.3) for batch 08-30 of product D after calcination at 1000°C for 6 hours. For batch 08-24 of product D, a surface area value of 54 m² /g (+/- 0.4) was determined. Both values are therefore above the patent-compliant upper limit of 51 m /g.² 153

The skilled person understands that the area specification included in the claim limits the scope of protection of claim 1 of the patent in suit and that exceeding or falling short of the specified surface area is no longer part of the protected technical teaching. The inclusion of numerical or dimensional data in the claim - as here - makes it clear that they are intended to co-determine and thus also limit the subject matter of the patent (see BGH, NJW 1992, 2830 – Chrom-Nickel-Legierung). It is therefore not possible to regard such indications as 154

less binding, merely exemplary definitions of the protected technical teaching. In principle, a clear numerical indication conclusively determines and limits the protected subject matter in this respect; exceeding or falling short of it is therefore generally no longer to be counted as part of the subject matter of the claim (BGH, GRUR 2002, 511, 512 - Kunststoffrohrteil; BGH, GRUR 2002, 515, 517 - Schneidmesser I; BGH, GRUR 2002, 519, 521 - Schneidmesser II; BGH, GRUR 2002, 523, 525 - Custodiol I; BGH GRUR 2002, 527, 529 - Custodiol II).

On the other hand, this does not exclude the possibility that a person skilled in the art may consider a certain degree of imprecision, for example comprising customary measurement tolerances, to be compatible with the technical meaning of a numerical indication. However, since the infringement court is bound by the act of grant - and consequently also by its further fate in the validity proceedings - it is impossible to carry out a patent interpretation and/or a determination of the scope of protection in the infringement proceedings by which such subject matter that was taken away from the patent owner as subject matter in the validity proceedings is reincluded in the patent and its protection (Senate, GRUR-RS 2022, 38378 para. 23 - Lichtemmitierendes Bauelement). 155

As part of the nullity proceedings, the Federal Supreme Court included the upper limit of 51 m² /g at issue here in claim 1 in its judgment of 6 August 2019 (Exhibit rop C11), thereby limiting the previously open-ended range. As reasons, he stated that the patent in suit did not contain any generalizing teaching that would enable the skilled person for the first time to search for further improvement possibilities and to exceed the maximum value specifically indicated in the patent. Rather, the contribution of the patent in suit is limited to showing new ways in which the specific surface area of a composition according to the invention can be further increased. From the required evaluative point of view, only the area that can be achieved with the disclosed method is to be regarded as executably disclosed (Exhibit rop C11, p. 27/28). The Senate is bound by this limitation of the claim. It is true that embodiments with a specific surface area of 51.3 m² /g or even 51.4 m² /g may still realize feature 3.1, since usual measurement tolerances are in the range of +/- 0.3 to 0.4 m² /g. However, embodiments with a specific surface area of 52.3 m² /g or 54 m² /g can no longer be included in the scope of protection. Insofar as the plaintiffs refer in this respect to manufacturing tolerances of +/- 5 m² /g, these may occur in practice in the manufacture of products of the type in question. However, the patent in suit has fixed itself to a certain range, whereby it specifies a binding lower limit and a binding upper limit. In contrast, the patent in suit does not provide for additional tolerances that go beyond this range. 156

b) The plaintiffs have further conclusively argued and demonstrated that the challenged embodiments according to feature 3.2 are in the form of a pure solid solution of the cerium oxide and the dopant in the zirconium oxide after calcination for 6 hours at 1000°C according to the invention. 157

aa) 158

According to the analysis report of the Dutch expert referred to by the plaintiffs (Exhibit B 17/17a), samples of product D seized in the Netherlands were analyzed by X-ray diffraction. The X-ray diffraction patterns of the samples are shown in Figure 1 of the analysis report. From this plot it can be seen that the experimental X-ray diffraction 159

pattern of the analyzed samples shows a clear shift towards lower 2-theta values compared to cubic zirconia. According to the Dutch expert's explanations, it can be concluded that a significant amount of cerium is present in the analyzed sample; furthermore, the combined elemental composition and solid phase structure suggest that the cerium is present in solid solution in the zirconia (Exhibit B17a, IV. B.2.).

Although the Dutch expert or the technical expert consulted did not measure the diffraction patterns on samples that were calcined at 1000°C for 6 hours, but on samples that were calcined at 800°C (Exhibit B17a, IV. B.2.), the plaintiffs corrected this inaccuracy, as shown in Exhibit C4, by carrying out their own X-ray diffraction analysis. According to the plaintiffs' uncontradicted submission, the subject of this X-ray diffraction analysis were samples of product D seized in the Netherlands, which the plaintiff 1. procured for analysis purposes. According to the plaintiffs' submission, which also remained uncontradicted, the X-ray diffraction patterns were formed by the plaintiff 1. after calcining these samples at 1000°C for 6 hours. The defendant does not raise any substantiated objections to the accuracy of the results of the X-ray diffraction analysis carried out by the plaintiff re 1. submitted as Exhibit rop C4. In particular, it does not submit any (deviating) results of its own X-ray diffraction analysis.

160

The X-ray diffraction spectra determined by the plaintiff re 1. are indisputably practically identical to those of the Dutch expert. As the District Court found without challenge, they show precisely the bands that are characteristic of cubic zirconium dioxide in sharp demarcation. The peaks are again shifted from the pure cubic zirconia phase towards the cubic cerium oxide phase. However, this shift is typical. It is due to the fact that the samples contain a large amount of cerium and the incorporation of the cerium into the crystal lattice of the zirconium oxide results in a shift in the position of the peaks. The X-ray diffraction spectra according to Exhibit rop C4 - as well as the diffraction spectra determined by the Dutch expert - do not show any interfering secondary phases, but only the shifted peaks of the phase to be assigned to the zirconium oxide. The defendant does not claim that an interfering secondary phase can be identified in the X-ray diffraction spectra.

161

The same applies to the contested embodiments II and III. The plaintiffs have submitted corresponding X-ray diffraction spectra as Exhibits rop C13 and rop C14. These also show no interfering secondary phases. Although the submitted X-ray diffraction spectra show a so-called "amorphous phase" associated with diffuse scattering, this cannot be regarded as independent according to the statements of the court expert and, in particular, does not contradict the definition of a pure solid solution (supplementary expert opinion of SV Prof. O of 2 January 2023 p. 6 to item I.4; minutes of the oral hearing of 2 November 2023, p. 2, 19). In this respect, the Federal Supreme Court also states in its judgment of 6 August 2019 that, from a practical point of view, a sufficient degree of probability for the existence of secondary phases outside the scope of protection of the patent in suit is not given if it cannot be ruled out with absolute certainty on the basis of an X-ray diffraction pattern that further crystal phases or cerium are present in amorphous form (Exhibit rop C11, p. 17, first paragraph).

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Insofar as Exhibit rop C14 contains the statement "Tetragonal/cubic wt% 100 %" with regard to the challenged embodiment III, the plaintiffs have explained this comprehensibly by stating that the 100% indicates the proportion of the tetragonal phase in relation to any cubic phase present. If the value - as here - is 100%, it is a pure solid solution because the only measurable phase is tetragonal and a cubic phase cannot be determined. The Senate is not convinced by the defendant's statement to the contrary, according to which the statement means that the product comprises a total of 100% tetragonal and cubic phase. It is not apparent what significance such a statement should have for the potential customer.

Insofar as the defendant disputes the proper performance of the analyses of the challenged embodiments II and III with ignorance, this is inadmissible. Pursuant to Section 138 (4) Code of Civil Procedure (ZPO), it is generally not sufficient for a party that offers or markets a product attacked as patent infringing to deny with ignorance the concrete submissions of the opposing party regarding its technical properties. A party offering or placing a product on the market may not evade responsibility for an infringement by not taking note of the product's characteristics and functionality. If such a party does not have the relevant information itself, it is obliged, as far as possible and reasonable, to obtain this information from third parties, for example by asking manufacturers and suppliers or by carrying out its own investigations. In infringement litigation, the party against whom a claim is asserted can therefore generally be required to respond specifically to the opponent's submission on the technical properties of the challenged embodiment (BGH, GRUR 2023, 474 para. 29 - CQI Report II; Senate, BeckRS 2017, 162300 para. 118 et seq.; Senate, GRUR-RS 2016, 111011 para. 69 - Lichtemmittierende Vorrichtung; Senate, BeckRS 2016, 3307n para. 89). If the plaintiff has submitted its own investigation results and/or a private expert opinion for the reasons of its infringement allegation, it is not sufficient for a substantial dispute to describe the plaintiff's submission as insufficient and to criticize the investigations and documents submitted. Rather, it is up to the defendant to arrange for its own investigations, if possible, and - if applicable - to counter the plaintiff's submission on this basis (Senate, GRUR-RS 2021, 39600 para. 71 - Rasierapparat). However, the expert defendant does not argue that interfering secondary phases would be recognizable in the XRD diffractogram if the method of X-ray diffraction analysis were applied "correctly"; as far as can be seen, it has not produced its own X-ray diffraction spectra, and in any case has not submitted them.

164

bb)

On the contrary, the defendant argues that the skilled person would use Raman spectroscopy - which in its opinion is more accurate - instead of X-ray diffraction analysis to determine the patent-compliant absence of secondary phases and the existence of a pure solid solution of the cerium oxide and the dopant in the zirconium oxide (see also Exhibit B27, p. 2 et seq.). The court expert refuted this in his report. According to his explanations, typical applications of Raman spectroscopy are structure determination, qualitative analysis of multi-component systems and quantitative analysis. However, Raman spectroscopy cannot be used to determine long-range order (crystal structure). It is precisely this crystal structure that is important in the context of the teaching according to the invention, but not the local structure measured by means of Raman spectrography. For this reason, Raman spectrography cannot replace X-ray structure analysis.

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At best, a meaningful supplement to X-ray diffraction analysis by Raman spectrography is possible (cf. expert opinion of SV Prof. O of 18 May 2022, p. 11 last paragraph, p. 14 first paragraph).

Insofar as Raman spectrography is in principle suitable for verifying the results obtained by means of X-ray diffraction analysis with regard to the existence of a pure solid solution, the Raman spectra submitted by the defendant (Exhibits B40, B62, B64) are not, however, able to refute the results of the X-ray diffraction spectra submitted by the plaintiffs. 167

The defendant argues that a purely cubic phase would only show a single peak at approximately 465 cm^{-1} , whereas tetragonal phases would show a total of six peaks at approximately 140, 260, 309, 454, 600 and 630 cm^{-1} . Since the Raman spectra produced by it - the defendant re 1 - showed neither a single peak at 465 cm^{-1} , nor six peaks at approx. 140, 260, 309, 454, 600 and 630 cm^{-1} , neither a purely cubic nor a purely tetragonal phase was present. Rather, at least two different phases can be assumed. 168

In contrast, the plaintiffs argue that the dopants contained in the challenged embodiments can both cause their own bands in a Raman spectrum and influence the bands of the other elements. In this respect, Raman spectroscopy is considerably disturbed by the presence of dopants - in contrast to X-ray diffraction analysis (see also: Exhibit B27, p. 5, last paragraph). While the use of dopants in the X-ray diffraction spectrum leads to a slight change in the overall lattice structure, the dopants could cause further peaks in the Raman spectrum. Against this background, the Raman spectra submitted by the defendant re 1. could show a tetragonal phase, as they would contain all six peaks characteristic of this with slight shifts. 169

The fact that dopants can cause additional peaks in the Raman spectrum is confirmed by the private expert opinion of Prof. Q submitted by the defendant. Based on this, the defendant's private expert concludes that the challenged embodiments are multiphase and not pure solid solutions (Exhibit B78, p. 5, 6). The defendant has argued in its writings that dopants may only be present in the composition according to the invention to such an extent that - (also) in the Raman spectrum - there is no deviation from the ideal lattice structure of the pure zirconium oxide. However, the patent in suit offers no evidence for such an assumption. The presence of doping agents has a disruptive effect on the analysis result, particularly when Raman spectrography is used as an analytical method. However, the same does not apply to the X-ray diffraction spectrography referred to in the patent application. It provides - undisputed in this respect - practically usable analysis results with regard to the presence of interfering secondary phases even in the presence of doping agents. Raman spectroscopy is not mentioned anywhere in the patent in suit; whether dopants act as an interfering variable in its use is recognizably irrelevant for the teaching according to the patent in suit. 170

From a functional point of view, it is decisive in this respect that the composition according to the invention has no secondary phases which could reduce its suitability for use in multifunctional catalysts. With regard to the challenged embodiments, the defendant itself does not claim anything to this effect, nor can it be established that this is the case from 171

the Raman spectra submitted by it. In this respect, the court expert states that the Raman spectra only provide evidence that the environment of the central cations is partially distorted (no local cubic symmetry). Such a distortion of the oxygen lattice is to be expected in substitutional solid solutions with cations of such different sizes. In addition, the challenged embodiments are macrocrystalline materials with a large surface area. Since the surface of nanomaterials has a defect structure with local distortions and Raman spectroscopy is only sensitive to the surface of crystallites, Raman spectroscopy can only be used to make very limited statements about the phase purity of the crystallites (expert opinion of SV Prof. O of 18 May 2022, p. 14). The court expert therefore comes to the convincing conclusion for the Senate that the Raman spectra submitted by the defendant do not contradict the assumption of a pure solid solution within the meaning of the patent in suit (expert opinion of Prof. O of 18 May 2022, p. 14).

cc) 172

The results of the X-ray diffraction spectra submitted by the plaintiffs are also not refuted by the Rietveld analyses carried out by the defendant (Exhibits B16, B 63). Irrespective of any methodological errors in the preparation of these analyses (see: plaintiffs' writ of 13 March 2020, p. 7 et seq.; supplementary expert opinion of SV O of 2 January 2023, p. 6 on question I.3), the defendant itself does not claim that the analyses submitted prove a multiphase nature of the challenged solutions. Its submission merely states that the Rietveld refinements carried out make several phases appear entirely possible. In this respect, it states in its writ of 21 February 2020 (p. 8 para. 32): 173

"Here, too, the expert fails to recognize the essential message of the Rietveld refinements submitted. These theoretical considerations were not intended to determine which compositions the challenged embodiments actually have. It should merely be made clear that the experimentally obtained XRD data can be refined in any way." 174

This is also confirmed by Dr R, the private expert commissioned by the defendant, who states in her expert opinion that the assignment to one of the two crystal structures or even to mixtures of both structures is arbitrary and ambiguous (Exhibit B71 p. 4 centre). However, if the data can be refined in any way, they are not able to refute the results of the XRD analyses submitted by the plaintiffs. 175

This applies all the more since the plaintiffs have made their own Rietveld refinements, which confirm the single-phase nature of the challenged embodiments (see Exhibit C16, pp. 13-14, 15-18, 23-32). Insofar as the defendant criticizes in this respect that the Rietveld refinements are based on the XRD measurements of the Dutch expert, who did not calcine the samples in accordance with the specifications of the patent in suit, the plaintiffs' later XRD measurements deviate from this only insignificantly. The defendant did not carry out its own measurements that would contradict this, and in any case did not submit them. 176

III. 177

The District Court correctly stated in the contested judgment that the defendant is obliged to recall the infringing products from the plaintiffs, both of whom are entitled to take action according to the uncontested findings of the District Court, and, because it has culpably 178

infringed the patent in suit, is also obliged to pay damages to the plaintiff 2. and, in order to enable it to calculate its claims for damages, must provide an account of the extent of its acts of use and infringement.

With regard to the challenged embodiments II and III, there is no dispute between the parties that the defendant offered these in Germany, sold and delivered them to Germany. But also with regard to the challenged embodiment I, there is an act of use in Germany in accordance with the patent in suit. In this respect, it is irrelevant whether a product D/E from batch 06-2-21-1 was offered or placed on the market in Germany. In any case, the defendant supplied 1000 kg each of batches 051191 and 051192 of product D/E to H GmbH (now: B GmbH) in 2005. It can be assumed that the delivery was preceded by a corresponding offer. Products from batches 051191 and 051192 of product D/E fulfil the features of claim 1 of the patent in suit (see above).

179

IV. 180

The plaintiffs' claims arising from the infringement of claim 1 of the patent in suit are not precluded by the defence of exhaustion in the case in dispute. It cannot be established that the defendant was authorized to offer and supply the accused embodiments to the extent of the acts of use asserted in the complaint.

181

According to the established case law of the Federal Supreme Court, the exclusive right arising from a product patent is exhausted with regard to those copies of the protected product that have been put on the market by the patent owner or with his consent by a third party. The lawful acquirers as well as subsequent third-party acquirers are authorized to use these products as intended, to sell them to third parties or to offer them to third parties for one of these purposes (BGH, GRUR 2023, 474 para. 44 - CQI Report II; BGH, GRUR 2023, 47 para. 41 - Scheibenbremse II; BGH, GRUR 2018, 170 para. 35 - Trommleinheit; BGH, GRUR 2012, 1118 para. 17 - Palettenbehälter II; BGH, GRUR 2007, 769 para. 27 - Pipettensystem). An agreement in which the patent owner undertakes not to assert any claims against the contracting party on the basis of the patent generally leads to the exhaustion of rights with regard to products placed on the market on this basis (BGH, GRUR 2023, 474 para. 48 - CQI Report II). Exhaustion is an exception to the exclusive rights of the patent owner, the requirements for which are generally the responsibility of the party invoking exhaustion (BGH, GRUR 2000, 299, 301 - Karate; BGH, GRUR 1976, 579, 581 - Tylosin), in this case the defendant.

182

In the present case, the defendant refers to an agreement between the plaintiffs and B GmbH, the existence of which the plaintiffs do not dispute. Rather, the plaintiffs have conceded that they have permitted the B Group to use mixed oxides supplied by the defendant in the manufacture of their catalysts in the period from 1 January 2014 to 31 December 2019. Even if the B Agreement were to be suitable in principle to justify an exhaustion defence for the products offered and supplied by the defendant, the exhaustion effect would in any case be limited to the product that was placed on the market with the approval of the property right holder (BGH, GRUR 2023, 474 para. 66 - CQI Report II). According to the conceded content of the B agreement, this would therefore only affect mixed oxides that were supplied to B in the period from 1 January 2014 to 31 December 2019.

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Since the term of protection of the patent in suit expired with effect from 28 June 2016, the subject matter of the complaint is in any case only deliveries made by the defendant up to that date. The plaintiffs withdrew their complaint regarding deliveries made to the B Group in the period from 1 January 2014 to 28 June 2016 in a writ dated 20 April 2023. The defendant agreed to the partial withdrawal of the claim at the oral hearing on 2 November 2023. The corresponding deliveries are therefore no longer in dispute.

Insofar as the defendant asserts that it can be assumed that the B agreement covers further periods or that there are further agreements with B, there is no substantiated submission to this effect. The plaintiffs have expressly denied any agreements with B beyond the period from 1 January 2014 to 31 December 2019. They have thus fulfilled any secondary burden of proof incumbent on them. 185

The request made by the defendant re 1. in its writ of 29 June 2023 for the submission of all agreements that the plaintiffs have concluded with B GmbH or a company affiliated with it concerning the patent in suit and/or the attacked embodiments, as well as complete evidence of the payments made by B to the plaintiffs in accordance with these agreements or other consideration provided, remains unsuccessful. Irrespective of the question of whether the request for submission is sufficiently specific, there is in any case no reason to issue a corresponding order. 186

Insofar as the defendant seeks to base a claim for submission on Sections 421, 422 Code of Civil Procedure (ZPO) in conjunction with Section 810 BGB. Section 810 German Civil Code (BGB), the requirements of Section 810 BGB are clearly not met. The B-agreement was neither drawn up in the interests of the defendant, nor does it notarize a legal relationship existing between the defendant and another party, nor does the B-agreement contain negotiations on a legal transaction between the defendant and another party. 187

However, the requirements for a production order pursuant to Section 142 Code of Civil Procedure (ZPO) are also not met. Pursuant to Section 142 Code of Civil Procedure, the production of a document or other document may be ordered in patent infringement proceedings if there is a certain degree of probability of an infringement of property rights and if the production is suitable and necessary to clarify the facts of the case and is also proportionate and appropriate, taking into account the legally protected interests of the party obliged to produce it (BGH, GRUR 2013, 316 para. 22 - Rohrmuffe; BGH, GRUR 2006, 962 - Restschadstoffentfernung; Senate, GRUR-RS 2020, 39519 para. 81 - Aufweckverfahren; Düsseldorf Higher Regional Court [15. ZS], BeckRS 2015, 16355 para. 124; Düsseldorf Higher Regional Court [15th ZS], GRUR-RS 2016, 6348 para. 37 - Eigendrehfrequenz). However, Section 142 Code of Civil Procedure (ZPO) does not release the party referring to a document from its burden of presentation and substantiation. Accordingly, the court may not order the submission of documents for the sole purpose of obtaining information, but only if there is a conclusive, fact-based submission by the party (von Selle in BeckOK Code of Civil Procedure ZPO, 50th edition, as of 1 September 2023, Section 142 para. 11 with further references). Section 142 Code of Civil Procedure (ZPO) does not authorize the court to request (all possible) documents for the purpose of obtaining information, irrespective of a conclusive submission. Rather, the document to be submitted should contain circumstances relevant to the decision requested by the court, but does not serve the purpose of investigation (Düsseldorf District Court, BeckRS 2014, 1803). 188

In their writ of 29 September 2023, the plaintiffs made extensive submissions on the content of the agreement concluded with B and thus sufficiently clarified the facts of the case. 189

They also expressly stated that there were no further agreements with B, in particular an agreement from 2022. There are no indications that this statement by the plaintiffs is not true. Insofar as the defendant believes that there are such indications in the plaintiffs' previous procedural behavior, the Senate does not agree. It may be true that the plaintiffs, in the context of their various legal disputes, in some cases withdrew their complaints relatively late with regard to deliveries to B in the period from 1 January 2014 to 31 December 2019. However, according to the defendant's own submission, these partial withdrawals of claims all only covered the period from 1 January 2014 to 31 December 2019 or shorter periods within this period. The defendant does not provide any indications that corresponding agreements could also have been made with B for the period before 1 January 2014 or after 31 December 2019. Rather, its assumptions in this regard are made in the blue.

Moreover, it would first of all be up to the defendant to enquire with its customer about the content of the agreement concluded with the defendant. The defendant does not claim that it cannot obtain any information from B about the content of the agreement(s) concluded. 190

V. 191

The decision on costs follows from Sections 92 (1), 97 (1), 269 (3) sentence 2 Code of Civil Procedure (ZPO). 192

The decision on provisional enforceability is based on Sections 708 No. 10, 711, 108 (1) sentence 1 Code of Civil Procedure (ZPO). 193

There is no reason to allow an appeal on points of law because the requirements set out in Section 543 of the Code of Civil Procedure (ZPO) are not met. As an individual case decision, the case is neither of fundamental importance within the meaning of Section 543 (2) No. 1 Code of Civil Procedure (ZPO) nor does the safeguarding of uniform case law or the further development of the law require an appeal court decision within the meaning of Section 543 (2) No. 2 Code of Civil Procedure (ZPO). 194

The determination of the value in dispute for the proceedings at first instance was to be amended as follows (Section 63 (3) GKG). In their statement of claim dated 31 July 2014, the plaintiffs put the total value in dispute at EUR 3,500,000.00. The complaint was directed against defendant re 1 and defendant re 2; it was based on three patents, including the patent in suit (patent C). By decision of 21 January 2016 issued in the main proceedings (4b O 82/14), the District Court ordered that the (complaint) patents B and C be heard and decided in separate proceedings. The amount in dispute for the separate proceedings, including the proceedings relating to the patent in suit, was provisionally set at EUR 1,200,000.00 in each case. In its suspension order of 3 March 2016 issued in the present proceedings, the District Court also provisionally set the amount in dispute at EUR 1,200,000.00. Neither the withdrawal of the action against the defendant re 2 in the meantime nor the settlement of the application for injunctive relief after the expiry of the term of protection of the patent in suit lead to a reduction in the value in dispute to be determined for the court proceedings in accordance with Section 3 (1) GKG. 195

Dr X

Dr Y

Z

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