

FEDERAL PATENT COURT

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-please always indicate reference and parties involved-

Reference: 3 Ni 12/23 (EP)

Your reference: 204442NDE-EP/SJlhp

Plaintiff/Appellant: Zhuhai CosMX Battery Co. Ltd. c
Defendant/respondent: Ningde Amperex Technology Limited

Summons to attend oral proceedings

In the proceedings concerning the patent

EP 3 627 606 (EN 60 2019 008 303)

the date for oral proceedings before the Federal Patent Court has been scheduled for

Tuesday, July 15, 2025 / 09:30 a.m.,

to which you are hereby invited.

Please register at the **office building of the Federal Patent Court** in 81549 Munich, Cincinnatistraße 64, 1st floor, cabin 1.402 (Sessions Service). Please ask there for the courtroom where the hearing will take place.

If you intend to attend the hearing with more than ten people, please notify the hearing service prior to the hearing date.

It is pointed out that in the absence of a party, the proceedings may be held and decided without him.

The parties should consider whether the interests of both sides can be better served by an amicable settlement than by a decision of the Senate. For reasons of procedural economy and cost savings, appropriate considerations should be made without delay and negotiations should be commenced in good time.

that a result can already be achieved before the oral hearing and that this can be avoided if possible.

In any case, the Senate shall at the beginning of the oral proceedings (cf. Sec. 279 a. F. or Section 278 (1) new version of the Code of Civil Procedure) discuss the possibilities of an amicable settlement of the present dispute and any infringement dispute. For this purpose, it would be expedient if the parties or their legal representatives were present at the meeting. In any case, they should inform their legal representatives comprehensively about all circumstances relevant for a settlement and, if possible, authorize them comprehensively for a settlement conclusion, but at least be reachable by telephone for their legal representatives at any time on the day of the appointment.

On the basis of a preliminary assessment of the factual and legal situation, the Senate points out the following (Sec. 83 (1) sentence 1 Patent Law):

1. The preliminary assessment of the factual and legal situation is based on the feature breakdown FIN-NK4 submitted by the plaintiff (which is shortened to the abbreviated designation NK4, which incidentally also applies to all other documents submitted by the plaintiff, which are generally designated only as NK instead of the abbreviated designation FIN-NK used by the plaintiff).

2. The objective task underlying the patent in suit is to provide an electrolyte composition that prevents premature degradation of the electrolyte and thus deterioration of battery performance (see NK2, para. [0004]).

3. The person skilled in the art dealing with such a task, a chemist with a university degree who has several years of professional experience in the field of production and development of lithium-ion batteries, will understand the term relevant for the assessment of novelty and inventive step, contained both in the patent feature [1.2] and in the patent feature [1.3]: *"...on the total weight of the electrolyte"* as follows:

It is apparent from paragraph [0112] of the patent in suit that the percentages by weight of the dinitrile component (X), the trinitrile component (Y), and the propyl propionate (Z) specified in Tables 1-1 to 9 for the electrolytes according to the patent are added to the base electrolyte, which always contains a concentration of 1.15 mol/L of LiPF₆, and the components EC, PC and DEC in a ratio of 1:1:1.

Consequently, according to the teaching of the patent in suit, the propyl propionate (PP for short) is not a constituent of the base electrolyte according to the patent. The values for X, Y and Z given in the granted patent claim 1 are therefore the wt.% present in the final electrolyte, so that dilution by the base electrolyte is irrelevant (cf. NK2, p. 18, lines 27 to 29). Also, granted patent claim 1 does not distinguish between the basic electrolyte mentioned in the embodiments and the final electrolyte, but refers in general form to the "*electrolytes*". The skilled person therefore inevitably understands the term "*electrolyte*" according to the patent to mean the final electrolyte and thus knows that, in addition to the components mentioned in features [1.1.1 to 1.1.3], it contains further components which originate from the basic electrolyte, even if these are only explicitly mentioned in the granted subclaims 7 to 11. In view of this, the term "*...on the total weight of the electrolyte*" contained in the granted patent claim 1 conveys, from a technical point of view, the information that the % by weight mentioned in the granted patent claim 1 refers to the final electrolyte.

The reference in the granted patent claim 12 exclusively to the granted patent claim 11 is an obvious error which is to be corrected to a reference to the preceding patent claims 1 to 11. On the one hand, this is supported by the fact that the backreference, due to the wording "*...according to one of the claims*", must be directed to several patent claims already by purely legal reasoning and thus not only patent claim 11 can be meant. On the other hand, in the original disclosure EP 3 627 606 A1, the corresponding claim 13 directed to an electrochemical device is also directed to the preceding claims 1 to 12, concerning an electrolyte. There is nothing to prevent correcting this obvious error in the auxiliary requests, provided that they otherwise prove to be admissible.

4. Neither the disclosure of NK5 nor of NK6 or NK7 is prejudicial to novelty with respect to the subject matter of the patent in suit.

4.1 Contrary to the plaintiff's view, the electrolytes described in issued claim 1 are not anticipated by embodiments 4 and 6 described in NK5.

For the component Z (= propyl propionate, abbreviated PP) according to the patent, 20 mass fractions are given in the NK5 publication, based on the non-aqueous organic solvent of embodiments 4 and 6, which is calculated in each case from EC:PC:DEC:FB:EP:PP = 25:10:30:5:10:20. Information on how the weight % for the individual components of the solvent and thus also for PP in the final electrolyte

composition can be determined on this basis is not given in NK5.

Based on the data disclosed in NK5, a conversion of the mass fractions for PP given therein into wt.% with respect to the total weight of the electrolyte according to the patent feature [1.3], even with the inclusion of general expert knowledge, is likely not possible from the point of view of the Senate, because, as the plaintiff itself indicates, further assumptions as well as the neglect of more or less minor errors are required for this, which, however, makes the correctness of the calculations appear doubtful.

When discussing a correct interpretation of paragraph [0037] of NK5 with regard to the addition of LiPF₆ to the base electrolyte solution described therein, a final clarification of the information contained therein does not appear to be possible. This is because the "slow" addition of LiPF₆ mentioned in paragraph [0037] could, as the plaintiff argues, indicate that LiPF₆ is to be added as a salt and thus in a non-dissolved form, since in this case the release of heat of solution is to be expected. Also, the plaintiff's argument that the indication of the mass fractions of EC and DEC in the base electrolyte of embodiments 4 and 6 would be superfluous if a 1.0 M LiPF₆ solution with EC and DEC as solvent, as indicated in W1, were added to it, cannot be dismissed. However, the plaintiff's view is contradicted by the wording of paragraph [0037] in NK5, which clearly states that "... *LiPF₆ is slowly added to the electrolyte solution at a concentration of 1.0 mol/L*" and not that LiPF₆ is added up to a concentration of 1.0 mol/L. In addition, according to documents W1 to W3, the commercial distribution of 1.0 M LiPF₆ solution in the "battery grade", i.e. known for use in batteries.

In view of the ambiguity of the statement in paragraph [0037] of NK5 regarding the addition of LiPF₆, even a reworking of the teaching Von NK5 does not necessarily lead to an electrolyte with the patent feature [1.3], since the person skilled in the art first has to try out in which way, amount and, if necessary, in which solvent LiPF₆ is to be added to the base electrolyte of NK5. This is because in order to determine the weight percentage of propyl propionate in the final electrolyte composition, he needs data on the total weight of the solvent composition or data on the total weight or total volume of the final electrolyte composition. However, since this information does not inevitably result even from a reworking of the teaching of NK5, the printed publication NK5 cannot be considered to be detrimental to novelty.

4.2 Contrary to the plaintiff's view, the subject matter of the patent in suit is also

not anticipated by the fact that, when reworking **comparative example 6** as well as **embodiment 25** according to the teachings of publication NK6, which, like NK5, discloses electrolytes for lithium secondary batteries, the proportions of the final electrolyte according to the patent would also result for the PP.

NK6 neither implicitly nor explicitly discloses the wt.% of PP in the final electrolyte composition, since in NK6 - similar to NK5 - no exact amounts or final concentrations are disclosed for the solvent composition, but only a relative mass ratio of EC:PP:DEC:PC - 25:25:40:10. Thus, it is clear from Table 3 of NK6 that to characterize the electrolyte composition, only the percentages for the additives and functional compounds and the concentration for the electrolyte substance such as LiPF₆ are disclosed, respectively, with respect to the final electrolyte (cf. NK6a/b, Table 3 in conjunction with paras. [0026 and 0038]), since these substances are added to the base electrolyte stepwise. It follows that the composition of the organic solvent in NK6 is also determined only in general terms by a mass ratio, which makes it impossible to convert the mass fraction of PP to the total weight of the electrolyte for the reasons already mentioned previously in connection with NK5. Consequently, the calculations made by the plaintiff do not lead to a different assessment of the factual situation in this case either. This is because the calculations are based on basic assumptions, such as the estimation of the electrolyte weight as well as the volume of the final electrolyte, which are not specified in NK6, so that the calculations, irrespective of the question whether the skilled person would have carried out such calculations at all, have no basis in the disclosure content of NK6. Based on this, it also does not matter whether the plaintiff calculates the weight percentage of propyl propionate using an iterative calculation approach (NK6d) or the algebraic approach reproduced in NK6g.

4.3 Rechargeable lithium batteries are also the subject of NK7. The amount of PP in **Examples 1 and 2** is disclosed herein in percent by volume. Therefore, NK7 does not contain an explicit disclosure of the amount of PP in the unit "weight percent in final electrolyte composition" according to the patent feature [1.3]. As in the previous publications NK5 and NK6, no information can be taken from NK7 which would allow the vol.% mentioned therein to be converted into the unit of feature [1.3] according to the patent. In view of this, NK7 also does not disclose the patent feature [1.3] either explicitly or implicitly.

5. The subject matter of the patent in suit is also based on an inventive step. This is because the prior art does not contain any indications that an improvement of the

electrolyte composition depends on the ratio of the weight percentages of the trinitrile compound (Y) to PP (Z) relative to the total weight of the electrolyte being 0.009 to 0.33, thus satisfying formula (3) according to the patent.

5.1 It is true that the electrolyte compositions of NK5 in the case of **embodiments 4 and 6** appear to implicitly satisfy the formulae (1) and (2) according to the patent. However, for the reasons previously stated under 3. above, neither the weight percent of PP based on the total weight of the electrolyte plays a role in the teaching of NK5, nor does NK5 direct the attention of the skilled person to the ratio of trinitrile compound to PP (Y/Z). This is already impossible because the teaching of NK5 deals with the provision of electrolyte solutions which do not necessarily have to contain a trinitrile compound (cf. NK5a/b, patent claim 1, structural formula I, R = H, CH₃ CHF or CN). Therefore, NK5 does not provide any suggestions or hints for the compliance with the formula (3) $Y/Z = 0.009$ to 0.33 according to the patent.

5.2 For the electrolytes described in NK6, the tricyanophosphite compounds of formula (I) and the tricyanophosphate compounds of formula (II) are essential (cf. NK6a/b, patent claim 1). In addition, the dinitriles ADN, SN and DENE are mentioned as possible additives for the electrolytes in NK6, as is HTC� as a possible trinitrile compound (see NK6a/b, patent claim 7). In addition, PP is considered as a possible component of the organic solvent (cf. NK6a/b, patent claim 5 in conjunction with Table 3, second column). While it appears that the electrolytes used in embodiment 25 as well as comparative example 6 of NK6 would satisfy the formulas (1) and (2) according to the patent, albeit unrecognized. However, the electrolyte of Comparative Example 6 exhibits a slight lithium precipitation which, according to the teaching of NK6, is precisely to be avoided (cf. NK6a/b, para. [0042] in conjunction with para. [0043]). A comparison of embodiment 25 and Comparative Example 6, which differ only by an additional tricyanophosphate compound of formula lie in the electrolyte of embodiment 25, thus makes it clear that the dinitrile and trinitrile compounds according to the patent in suit as well as PP do not yield an electrolyte that improves the SEI film, the cycling performance as well as the high-temperature performance of the lithium secondary battery according to the teaching of NK6, even if the formulas (1) and (2) according to the patent are observed (cf. NK6a/b, summary in conjunction with par. [0043]). Accordingly, the NK6 at most brings components such as dinitrile and trinitrile compounds as known additives and PP as a common component in organic solvents for electrolyte compositions used in lithium secondary batteries into the field of view of the skilled person. However, since there is no further information in NK6 on the ratio in which these components are to be used in relation to each other, the

person skilled in the art does not receive any suggestion for complying with the formula (3) according to the patent in NK6.

5.3 The electrolyte of NK7 is intended to increase the safety of lithium batteries by improving their thermal durability. The electrolyte provided for this purpose contains, among other things, an organic solvent with a C3-Cs alkyl propionate, a lithium salt and a trinitrile compound of formula 1 (see NK7, Abstract). Accordingly, the presence of propyl propionate is not mandatory for the teaching of NK7 (cf. NK7, PA3 in conjunction with par. [0040]). In examples 1 and 2 of NK7, PP is used and, in addition to the trinitrile compound HTC_N, the dinitrile compound succinonitrile is also used. However, NK7 does not contain any information on the ratio of these three components to each other or on the ratio of the trinitrile compound to PP. Consequently, the NK7 does not contain any information that would suggest, in particular, compliance with the formula (3) according to the patent. This also applies to a synopsis of NK5, NK6 and NK7.

5.4 NK8a deals with non-aqueous electrolytes that are characterized by low viscosity, high electrical conductivity and a high flash point and thus improve the safety and also the charging properties of batteries (cf. NK8a, para. [0001]). Carboxylic acid esters are considered in NK8a to reduce the viscosity of the electrolyte while increasing its electrical conductivity (cf. NK8a, para. [0022]). Propyl propionate is indeed mentioned in NK8a as a possible carboxylic acid ester for this purpose (Cf. NK8a, para. [0024]). However, it is not mentioned among the preferred carboxylic acid esters (cf. NK8a, para. [0024], last sentence in connection with PA3). Knowing this, propyl propionate is not the first choice for the skilled person among carboxylic acid esters when it comes to improving electrolytes for batteries. NK8a also provides that the electrolytes described therein contain a nitrile compound (see NK8a, paras. [0027 to 0029] in conjunction with PA4). However, a trinitrile compound is not considered necessary in NK8a. Consequently, it is not apparent what reason the skilled person should have to apply the concentration for carboxylic acid esters of preferably 5 to 30% given in NK8a specifically to PP and to transfer it to the electrolyte solutions of NK5, NK6 or NK7, in which instead of the nitrile compounds of NK8a trinitrile compounds are used. Moreover, even when NK8a is viewed together with NK5, NK6 and/or NK7, there is at the same time no indication that attention should be paid to compliance with the formula (3) according to the patent.

6. In this situation, the auxiliary requests are not relevant according to the current state of the facts and the dispute. Nevertheless, as a precautionary measure, attention is drawn to the following:

6.1 The respective patent claim 1 of the auxiliary requests 2 to 7 neither shows an inadmissible extension nor an extension of the scope of protection.

The new features in claim 1 of auxiliary request 2 are taken from granted claim 3 (originally claim 4) and relate to the dinitrile compounds mentioned therein without the compound butanedinitrile.

There is also no extension of the scope of protection, because the granted patent claim 1 is not further specified with regard to the type and number of dinitrile compounds to be used; since these are only defined in more detail in the granted patent claim 3, they are thus freely selectable within the scope of the granted patent claim 1.

The argument that the excluded butanedinitrile was regularly used in the original examples of Tables 1-1 and 2 to 9 cannot support the existence of an inadmissible extension. This is because Table 1-2 of the original documents also identifies other dinitrile compounds as being beneficial (see EP 3 627 606 A1, p. 19, Table 1-2 in conjunction with p. 20, lines 20-24). This makes it clear that the originally disclosed teaching does not consider the use of butanedinitrile to be mandatory, especially since even in the original documents the specific compound butanedinitrile is mentioned only in subclaim 4 as one of about 40 compounds.

The preceding explanations also speak analogously against the assumptions of an extension of the scope of protection or an inadmissible extension in auxiliary requests 3 to 7. The additional substitution of the term "comprises" by the word "is" is merely a linguistic correction, since "comprises" in its meaning "consisting of" / "containing" / "comprising" seems to make sense only in connection with compositions containing various components, but not when selecting a trinitrile compound from a collective of trinitrile compounds.

6.2 However, if the electrolyte of the granted claim 1 according to the main claim proves not to be inventive, the additional features of the respective claim 1 of the auxiliary requests 1 to 7 should not be suitable for establishing an inventive step.

The further specification of the wt.% for dinitrile and trinitrile compounds as well as propyl propionate is still so broadly defined with 0.1 to 10 wt.-% / or 5 to 50 wt.% in **auxiliary request 1** that the person skilled in the art does not require any inventive step to determine them.

Since electrolyte solutions that do not contain butanedinitrile are known to the skilled person from the prior art (cf. NK5a/b, para. [0046], embodiments 4 and 6), the omission of butanedinitrile in **auxiliary request 2** also does not indicate any inventive step. This also applies to **auxiliary request 3**, which focuses on the three known dinitriles ADN, DENE and 1,4-dicyano-2-butene as well as combinations thereof, especially since the combination of ADN and DENE is already routinely used in NK6 and is thus within the field of view of the person skilled in the art (cf. NK6a/b, para. [0034 and 0035], third column in each case).

Since in the prior art HCN is also the only trinitrile compound used in electrolyte compositions for batteries, the electrolyte of patent claim 1 according to **auxiliary request 4** is also not based on an inventive step (cf. NK5a/b, embodiments 4 and 6).

The additional features in the respective patent claim 1 of auxiliary requests 5, 6 and 7 cannot establish an inventive step either, since 1,3-propanesultone (PS) and fluoroethylene carbonate (FEC) are customary additives in electrolytes for lithium secondary batteries (cf. NK6a/b, para. [0015] in conjunction with Table 3 and PA7).

A copy of this notice will be forwarded to the infringement court (Sec. 83 (1), 3rd sentence, Patent Law).

The parties shall be given the opportunity, within

3 months

to comment conclusively on this reference by means of relevant requests or additions to their submissions and also in other respects (Sec. 83 (2), 1st sentence, Patent Law).

The respective counterparty shall be granted a further period of time of

2 months

from receipt of any statement by the other party.

The Senate may reject a party's plea in law or an amendment to the complaint or a defense of the defendant with an amended version of the patent, which is raised only after the expiry of a time limit set for this purpose under Sec. 83 (2) Patent Act, and decide without further investigation if the consideration of the new plea would require an

adjournment of the already scheduled date for oral proceedings and the party concerned does not sufficiently excuse the delay (Sec. 83 (4) Patent Act).

The plaintiff is ordered within one month a translation to file a translation of the patent in suit into German with the court.

Schramm

Presiding Judge at the Federal Patent Court

Attachment: -

certified
Court Registry of
the 3rd Senate

Wellmann

Judicial Officer as
clerk of the Court
Registry

Acknowledgement of
receipt