

**UNITED STATES DISTRICT COURT  
EASTERN DISTRICT OF MICHIGAN  
SOUTHERN DIVISION**

LG CHEM, LTD. and  
TORAY INDUSTRIES, INC.,

Plaintiffs,

v.

AMPEREX TECHNOLOGY LIMITED,

Defendant.

Case No. \_\_\_\_

**JURY TRIAL DEMANDED**

**COMPLAINT FOR PATENT INFRINGEMENT**

Plaintiffs LG Chem, Ltd. and Toray Industries, Inc. file this Complaint for Patent Infringement and allege as follows:

**PARTIES**

1. Plaintiff LG Chem, Ltd. (“LGC”) is a corporation organized and existing under the laws of South Korea, having a principal place of business at 128 Yeoui-daero, Yeongdeungpo-gu, Seoul, 07336, South Korea. LGC is a global leader in broad-ranging chemical, material, and energy technologies, including the development, manufacture, and support of state-of-the-art lithium-ion batteries that are widely used in various electronic and automotive applications around the world.

2. Plaintiff Toray Industries, Inc. (“Toray”) is a corporation organized and existing under the laws of Japan, having a principal place of business at Nihonbashi Mitsui Tower, 1-1, Nihonbashi-Muromachi 2-chome, Chuo-ku, Tokyo 103-8666, Japan. Toray is a global leader in broad-ranging chemical, material, and electronics technologies.

3. On information and belief, Defendant Ampere Technology Limited (“ATL”) is a Chinese corporation having a principal place of business at 3503 Wharf Cable TV Tower, 9 Hoi Shing Road, Tsuen Wan N.T., Hong Kong.

### **JURISDICTION AND VENUE**

4. This action for patent infringement arises under the laws of the United States, Title 35 of the United States Code, 35 U.S.C. § 1 *et seq.*, including 35 U.S.C. §§ 271, 281-285. This Court has subject matter jurisdiction over this action pursuant to 28 U.S.C. §§ 1331 and 1338.

5. This Court has personal jurisdiction over ATL because, *inter alia*, upon information and belief, ATL has committed acts of patent infringement and/or contributed to or induced acts of patent infringement by others in this District and continues to do so. ATL regularly does business or solicits business, engages in other persistent courses of conduct, and/or derives substantial revenue from products and/or services provided to individuals in this District and in this State. Upon information and belief, ATL has purposefully and voluntarily imported infringing

devices into the United States, or contributed to the importation of infringing devices, with the knowledge and expectation that the same will end up in, and be marketed, sold, and purchased in, this District and in this State. ATL has also purposefully placed or contributed to the placement of its infringing products into the stream of commerce of this District and has availed itself of the benefits of the market in this District.

6. Moreover, ATL owns property in the United States. For example, it has filed patent applications in the United States that have resulted in, for example, U.S. Patent No. 9,118,192. ATL also maintains an English-version website at <https://www.atlbattery.com/en>. On this website, ATL provides information regarding its activities and products, including its battery products. On information and belief, ATL's website is directed to marketing, offering for sale, and selling its products and services in the United States, including directed to marketing, offering for sale, and selling its products and services in the Eastern District of Michigan.

7. Venue is proper in this District pursuant to 28 U.S.C. §§ 1391 and 1400 because Defendant is a foreign entity subject to personal jurisdiction in this District and has committed acts of patent infringement in this District.

### **THE PATENTS-IN-SUIT**

8. On February 16, 2010, United States Patent No. 7,662,517 (“the ’517 patent”), entitled “Organic/Inorganic Composite Microporous Membrane and

Electrochemical Device Prepared Thereby,” was duly and legally issued by the United States Patent and Trademark Office from U.S. Patent Application Serial No. 11/721,259, which was filed on June 8, 2007, and claims priority to Korean patent applications KR 10-2004-0110400 and KR 10-2004-0110402, both filed on December 22, 2004. A true and correct copy of the ’517 patent is attached to this Complaint as Exhibit A.

9. At the time of issuance, LGC was the owner, by valid assignment, of the entire right, title, and interest in and to the ’517 patent. In April 2017, LGC executed a deed of assignment through which it conveyed certain rights to—and received certain rights from—Toray. The ’517 patent is valid, enforceable, and is currently in full force and effect.

10. On December 29, 2009, United States Patent No. 7,638,241 (“the ’241 patent”), entitled “Organic/Inorganic Composite Separator Having Morphology Gradient, Manufacturing Method Thereof and Electrochemical Device Containing the Same,” was duly and legally issued by the United States Patent and Trademark Office from U.S. Patent Application Serial No. 11/997,948, which was filed on February 5, 2008, and claims priority to Korean patent application KR 10-2005-0118315 filed on December 6, 2005. A true and correct copy of the ’241 patent is attached to this Complaint as Exhibit B.

11. At the time of issuance, LGC was the owner, by valid assignment, of the entire right, title, and interest in and to the '241 patent. In April 2017, LGC executed a deed of assignment through which it conveyed certain rights to—and received certain rights from—Toray. The '241 patent is valid, enforceable, and is currently in full force and effect.

12. On May 4, 2010, United States Patent No. 7,709,152 (“the '152 patent”), entitled “Organic/Inorganic Composite Separator Having Porous Active Coating Layer and Electrochemical Device Containing the Same,” was duly and legally issued by the United States Patent and Trademark Office from U.S. Patent Application Serial No. 12/158,934, which was filed on June 23, 2008, and claims priority to Korean patent application KR 10-2007-0011818 filed on February 5, 2007. A true and correct copy of the '152 patent is attached to this Complaint as Exhibit C.

13. At the time of issuance, LGC was the owner, by valid assignment, of the entire right, title, and interest in and to the '152 patent. In April 2017, LGC executed a deed of assignment through which it conveyed certain rights to—and received certain rights from—Toray. The '152 patent is valid, enforceable, and is currently in full force and effect.

## **BACKGROUND**

14. LGC was founded in 1947 and is widely recognized as one of the most respected chemical companies in the world, relentlessly pursuing the enhancement of the quality of life through continuous technological development and breakthrough innovations. LGC is also known as one of the world's largest and most innovative producers of lithium-ion batteries. Its lithium-ion batteries are widely recognized as being among the most compact, lightweight, efficient, and safe in the industry. Naturally, LGC possesses numerous intellectual property rights covering chemical, mechanical, and electrical technologies, and much more, relating to lithium-ion battery technology.

15. Among LGC's numerous lithium-ion battery innovations is the patented Safety Reinforced Separator ("SRS") technology. SRS technology offers superior safety through the improvement of the mechanical strength and heat resistance of batteries by applying a ceramic coating to the battery's separator layer, thereby enhancing robustness and reducing the potential for short circuits inside the battery. As a result of SRS and other innovations, LGC's lithium-ion batteries have enjoyed tremendous success in various markets—including the automotive industry where the availability of safe, high-performance lithium-ion batteries is critical.

16. LGC has extensive involvement in the U.S. market, particularly in the State of Michigan, with its innovative battery technology. In fact, LGC supplies,

through its plants in Michigan, millions of battery cells to U.S. companies like General Motors, and Chrysler. For example, LGC's subsidiary LG Chem Power Inc. ("LGCPI") has operated a facility in Troy, Michigan since 2005. LGCPI has invested millions of dollars in the Troy facility and employs more than 150 people. Moreover, LGC's subsidiary LG Chem Michigan Inc. ("LGCMI") has operated a facility in Holland, Michigan since 2010. LGCMI has invested hundreds of millions of dollars in the Holland facility and employs more than 450 people. In sum, LGC has invested hundreds of millions of dollars and employs hundreds of people in the United States, primarily in Michigan, who are dedicated to the design, research, development, manufacturing, testing, quality control, and customer care of its lithium-ion batteries for its U.S. customers.

17. Defendant ATL designs, manufactures, sells, and markets rechargeable lithium ion/polymer battery cells, packs, and systems for companies worldwide. Its battery products are used in a variety of products such as laptop computers, smart phones, digital media players, digital cameras and camcorders, cordless tools, and various consumer electronics. On information and belief, ATL, either directly or through entities under its control or influence, manufactures, makes, uses, sells, offers for sale, and/or imports products that fall within the scope of one or more claims of the Patents-in-Suit directly in the United States. Defendant ATL competes directly with LGC by flooding the U.S. market with inexpensive, low-quality

batteries made entirely in China. While cells made by ATL can be found in various products all throughout the United States, ATL has no official corporate presence in the U.S. and has made virtually zero investments in the U.S. economy.

**COUNT 1: INFRINGEMENT OF THE '517 PATENT**

18. LGC hereby incorporates by reference its allegations contained in paragraphs 1 through 17 of this Complaint as though fully set forth herein.

19. Upon information and belief, ATL has infringed and continues to infringe, either literally or under the doctrine of equivalents, at least claim 1 of the '517 patent pursuant to 35 U.S.C. §§ 271(a), (b), and (c), by making, using, offering to sell, and/or selling in the United States, and/or importing into the United States, at least the ATL Cell 844297.

20. Claim 1 of the '517 patent is directed to an organic/inorganic composite porous separator comprising: (1) a polyolefin-based separator substrate; and (2) an active layer formed by coating at least one region selected from the group consisting of a surface of the substrate and a part of pores present in the substrate with a mixture of inorganic particles and a binder polymer. Moreover, (i) the inorganic particles in the active layer are interconnected among themselves and are fixed by the binder polymer, and interstitial volumes among the inorganic particles form a pore structure, (ii) the inorganic particles have a size between 0.001  $\mu\text{m}$  and 10  $\mu\text{m}$  and are present in the mixture of inorganic particles with the binder polymer in an

amount of 50-99 wt % based on 100 wt % of the mixture, and (iii) the separator has uniform pore structures both in the active layer and the polyolefin-based separator substrate.

21. ATL's products infringe at least claim 1 the '517 patent. For example, the ATL Cell 844297 includes a separator substrate made from polyethylene, which is a type of polyolefin. The ATL cell also includes an active layer made from a mixture of aluminum oxide, which is a type of inorganic particle, and PVDF-HFP, which is a type of binder polymer. The inorganic particles in the ATL Cell 844297's active layer are interconnected among themselves and are fixed by the binder polymer, and interstitial volumes among the inorganic particles form a pore structure. The inorganic particles in the ATL Cell 844297's active layer have a size between 0.001  $\mu\text{m}$  and 10  $\mu\text{m}$  and are present in the mixture of inorganic particles with the binder polymer in an amount of 50-99 wt % based on 100 wt % of the mixture. Further, the separator in the ATL Cell 844297 has uniform pore structures both in the active layer and the polyolefin-based separator substrate.

22. Other ATL products similarly infringe one or more claims of the '517 patent. Such other products include at least ATL's 425882, 346176, and 494397 cells as well as ATL's cell for A1445.

23. In addition to its direct infringement, ATL has been and is now indirectly infringing by way of inducing infringement and/or contributing to the infringement of one or more claims of the '517 patent.

24. On information and belief, ATL induces, and continues to induce, infringement of the '517 patent with specific intent that these acts infringe the '517 patent. On information and belief, ATL actively induces others to infringe the '517 patent by selling infringing products in the United States and by providing materials and instructions for operation of the '517 patent, with the specific intent and knowledge that the materials and instructions direct, teach, or assist others to infringe the '517 patent.

25. For example, ATL has induced infringement of the '517 patent by selling and providing lithium-ion cells to various customers who use and/or sell infringing products in the United States, without license or authority, for the manufacture of and for the purpose of incorporation into products containing lithium-ion cells for importation and sale in the United States. ATL induced such infringing acts and knew or should have known that its actions would induce actual infringement of the '517 patent. Upon information and belief, ATL had actual notice of the '517 patent no later than May 11, 2017, when LGC provided ATL with a copy of the '517 patent and a claim chart explaining how ATL directly infringed, contributorily infringed, and/or induced its customers and users to

infringe the '517 patent. ATL also has actual knowledge and notice based at least upon the receipt of this Complaint.

26. On information and belief, ATL also contributorily infringes the '517 patent through its sale and offers to sell within the United States and/or import into the United States components of infringing products, constituting a material part of the '517 patent claims, knowing the same to be especially made or especially adapted for use in an infringement of the '517 patent, and not a staple article or commodity of commerce suitable for substantial non-infringing use. For example, on information and belief, ATL's infringing products and/or components thereof are specifically designed for use in infringement of the '517 patent. Due to their specific designs, ATL's infringing products and/or components thereof do not have any substantial non-infringing uses.

27. Despite having knowledge of its infringement, ATL continues to intentionally and willfully infringe at least claim 1 of the '517 patent, or at the very least act with willful blindness and/or a reckless disregard of LGC's patent rights. As a result of ATL's willful infringement, LGC is entitled to treble damages and attorneys' fees and costs incurred in this action, along with prejudgment interest under 35 U.S.C. §§ 284, 285. As a result of ATL's unlawful infringement of the '517 patent, LGC has suffered and will continue to suffer damage. LGC is entitled

to recover from ATL the damages adequate to compensate for such infringement, which have yet to be determined.

**COUNT 2: INFRINGEMENT OF THE '241 PATENT**

28. LGC hereby incorporates by reference its allegations contained in paragraphs 1 through 27 of this Complaint as though fully set forth herein.

29. Upon information and belief, ATL has infringed and continues to infringe, either literally or under the doctrine of equivalents, at least claim 1 of the '241 patent pursuant to 35 U.S.C. § 271(a) by making, using, offering to sell, and/or selling in the United States, and/or importing into the United States, at least the ATL Cell 844297.

30. Claim 1 of the '241 patent is directed to an organic/inorganic composite separator comprising: (1) a porous substrate having pores; and (2) a porous active layer containing a mixture of inorganic particles and a binder polymer with which at least one surface of the porous substrate is coated. Moreover, the porous active layer shows heterogeneity of composition morphology toward a thickness direction in which a content ratio of the binder polymer/inorganic particles present in a surface region of the porous active layer is higher than that of the binder polymer/inorganic particles present inside the porous active layer.

31. ATL's products infringe at least claim 1 the '241 patent. For example, the ATL Cell 844297 includes a porous separator substrate made from polyethylene,

which is a type of polyolefin. The ATL cell also includes an active layer made from a mixture of aluminum oxide, which is a type of inorganic particle, and PVDF-HFP, which is a type of binder polymer. Further, the ATL Cell 844297's active layer exhibits heterogeneity of composition morphology toward a thickness direction in which a content ratio of the binder polymer/inorganic particles present in a surface region of the porous active layer is higher than that of the binder polymer/inorganic particles present inside the porous active layer.

32. Other ATL products similarly infringe one or more claims of the '241 patent. Such other products include at least ATL's 425882, 346176, and 494397 cells as well as ATL's cell for A1445.

33. In addition to its direct infringement, ATL has been and is now indirectly infringing by way of inducing infringement and/or contributing to the infringement of one or more claims of the '241 patent.

34. On information and belief, ATL induces, and continues to induce, infringement of the '241 patent with specific intent that these acts infringe the '241 patent. On information and belief, ATL actively induces others to infringe the '241 patent by selling infringing products in the United States and by providing materials and instructions for operation of the '241 patent, with the specific intent and knowledge that the materials and instructions direct, teach, or assist others to infringe the '241 patent.

35. For example, ATL has induced infringement of the '241 patent by selling and providing lithium-ion cells to various customers who use and/or sell infringing products in the United States, without license or authority, for the manufacture of and for the purpose of incorporation into products containing lithium-ion cells for importation and sale in the United States. ATL induced such infringing acts and knew or should have known that its actions would induce actual infringement of the '241 patent. Upon information and belief, ATL had actual notice of the '241 patent no later than May 11, 2017, when LGC provided ATL with a copy of the '241 patent and a claim chart explaining how ATL directly infringed, contributorily infringed, and/or induced its customers and users to infringe the '241 patent. ATL also has actual knowledge and notice based at least upon the receipt of this Complaint.

36. On information and belief, ATL also contributorily infringes the '241 patent through its sale and offers to sell within the United States and/or import into the United States components of infringing products, constituting a material part of the '241 patent claims, knowing the same to be especially made or especially adapted for use in an infringement of the '241 patent, and not a staple article or commodity of commerce suitable for substantial non-infringing use. For example, on information and belief, ATL's infringing products and/or components thereof are specifically designed for use in infringement of the '241 patent. Due to their

specific designs, ATL's infringing products and/or components thereof do not have any substantial non-infringing uses.

37. Despite having knowledge of its infringement, ATL continues to intentionally and willfully infringe at least claim 1 of the '241 patent, or at the very least act with willful blindness and/or a reckless disregard of LGC's patent rights. As a result of ATL's willful infringement, LGC is entitled to treble damages and attorneys' fees and costs incurred in this action, along with prejudgment interest under 35 U.S.C. §§ 284, 285. As a result of ATL's unlawful infringement of the '241 patent, LGC has suffered and will continue to suffer damage. LGC is entitled to recover from ATL the damages adequate to compensate for such infringement, which have yet to be determined.

### **COUNT 3: INFRINGEMENT OF THE '152 PATENT**

38. LGC hereby incorporates by reference its allegations contained in paragraphs 1 through 37 of this Complaint as though fully set forth herein.

39. Upon information and belief, ATL has infringed and continues to infringe, either literally or under the doctrine of equivalents, at least claim 1 of the '152 Patent pursuant to 35 U.S.C. § 271(a) by making, using, offering to sell, and/or selling in the United States, and/or importing into the United States, at least the ATL Cell 844297.

40. Claim 1 of the '152 patent is directed to an organic/inorganic composite separator, comprising: (1) a polyolefin porous substrate having pores; and (2) a porous active layer containing a mixture of inorganic particles and a binder polymer, with which at least one surface of the polyolefin porous substrate is coated. Moreover, (i) the porous active layer has a peeling force of 5 gf/cm or above, and a thermal shrinkage of the separator after being left alone at 150° C for 1 hour is 50% or below in a machine direction (MD) or in a transverse direction (TD), and (ii) the inorganic particles and the binder polymer are mixed in a weight ratio of 50:50 to 99:1.

41. ATL's products infringe at least claim 1 the '152 patent. For example, the ATL Cell 844297 includes a porous separator substrate made from polyethylene, which is a type of polyolefin. The ATL cell also includes an active layer made from a mixture of aluminum oxide, which is a type of inorganic particle, and PVDF-HFP, which is a type of binder polymer. Further, the separator in the ATL Cell 844297 has a peeling force above 5 gf/cm, and a thermal shrinkage below 50% in the machine and transverse directions. Additionally, the inorganic particles and the binder polymer in the ATL Cell 844297's porous active layer are mixed in a weight ratio of 50:50 to 99:1.

42. Other ATL products similarly infringe one or more claims of the '152 patent. Such other products include ATL's cell for A1445.

43. In addition to its direct infringement, ATL has been and is now indirectly infringing by way of inducing infringement and/or contributing to the infringement of one or more claims of the '152 patent.

44. On information and belief, ATL induces, and continues to induce, infringement of the '152 patent with specific intent that these acts infringe the '152 patent. On information and belief, ATL actively induces others to infringe the '152 patent by selling infringing products in the United States and by providing materials and instructions for operation of the '152 patent, with the specific intent and knowledge that the materials and instructions direct, teach, or assist others to infringe the '152 patent.

45. For example, ATL has induced infringement of the '152 patent by selling and providing lithium-ion cells to various customers who use and/or sell infringing products in the United States, without license or authority, for the manufacture of and for the purpose of incorporation into products containing lithium-ion cells for importation and sale in the United States. ATL induced such infringing acts and knew or should have known that its actions would induce actual infringement of the '152 patent. Upon information and belief, ATL had actual notice of the '152 patent no later than May 11, 2017, when LGC provided ATL with a copy of the '152 patent and a claim chart explaining how ATL directly infringed, contributorily infringed, and/or induced its customers and users to

infringe the '152 patent. ATL also has actual knowledge and notice based at least upon the receipt of this Complaint.

46. On information and belief, ATL also contributorily infringes the '152 patent through its sale and offers to sell within the United States and/or import into the United States components of infringing products, constituting a material part of the '152 patent claims, knowing the same to be especially made or especially adapted for use in an infringement of the '152 patent, and not a staple article or commodity of commerce suitable for substantial non-infringing use. For example, on information and belief, ATL's infringing products and/or components thereof are specifically designed for use in infringement of the '152 patent. Due to their specific designs, ATL's infringing products and/or components thereof do not have any substantial non-infringing uses.

47. Despite having knowledge of its infringement, ATL continues to intentionally and willfully infringe at least claim 1 of the '152 patent, or at the very least act with willful blindness and/or a reckless disregard of LGC's patent rights. As a result of ATL's willful infringement, LGC is entitled to treble damages and attorneys' fees and costs incurred in this action, along with prejudgment interest under 35 U.S.C. §§ 284, 285. As a result of ATL's unlawful infringement of the '152 patent, LGC has suffered and will continue to suffer damage. LGC is entitled

to recover from ATL the damages adequate to compensate for such infringement, which have yet to be determined.

**PRAYER FOR RELIEF**

WHEREFORE, LGC and Toray pray for judgment in their favor against ATL, and granting relief as follows:

A. For a judgment declaring that ATL has infringed the Asserted Patents directly, contributorily, and by inducement;

B. For a judgment declaring that ATL's infringement of each of the Asserted Patents is willful;

C. For a full accounting for and an award to LGC of damages as a result of ATL's infringement of the Asserted Patents, including enhanced damages pursuant to 35 U.S.C. § 284, together with interest and costs;

D. For a judgment declaring that this case is exceptional and awarding LGC its expenses, costs, and attorneys' fees in accordance with 35 U.S.C. § 285 and Rule 54(d) of the Federal Rules of Civil Procedure;

E. For such other and further relief as the Court deems just and proper.

**DEMAND FOR A JURY TRIAL**

LGC and Toray hereby demand a trial by jury in this action.

Dated: October 25, 2017

**KERR, RUSSELL AND WEBER, PLC**

By: /s/ Fred K. Herrmann

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