

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE**

HANWHA Q CELLS & ADVANCED
MATERIALS CORPORATION,

Plaintiff,

v.

JINKOSOLAR HOLDING CO., LTD.,
JINKOSOLAR (U.S.) INC.,
JINKO SOLAR (U.S.) INDUSTRIES INC.,
JINKO SOLAR CO., LTD.,
ZHEJIANG JINKO SOLAR CO., LTD., AND
JINKO SOLAR TECHNOLOGY SDN. BHD.

Defendants.

Civil Action No. _____

DEMAND FOR JURY TRIAL

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Hanwha Q CELLS & Advanced Materials Corporation (“Hanwha Q CELLS” or “Plaintiff”) files this Complaint for patent infringement against Defendants JinkoSolar Holding Co., Ltd., JinkoSolar (U.S.) Inc., Jinko Solar (U.S.) Industries Inc., Jinko Solar Co., Ltd., Zhejiang Jinko Solar Co., Ltd., and Jinko Solar Technology Sdn. Bhd. (collectively, “Jinko,” “Jinko Defendants,” or “Defendants”), and alleges as follows:

NATURE OF THE ACTION

1. This action is brought against Jinko Defendants for infringement of U.S. Patent No. 9,893,215 (the “’215 Patent”), which is directed to solar cells. Hanwha Q CELLS is the sole owner by assignment of all right, title, and interest in and to the ’215 Patent, including the right to recover damages for past infringement.

2. A true and correct copy of the ’215 Patent is attached as Exhibit 1.

THE PARTIES

3. Plaintiff Hanwha Q CELLS & Advanced Materials Corporation is a corporation organized under the laws of the Republic of Korea with an address at 86 Cheonggyecheon-ro, Jung-gu, Seoul, Republic of Korea 04541.

4. Hanwha Q CELLS is one of the largest photovoltaic solar cell and solar module manufacturers in the world. Through its research and development facility, Hanwha Q CELLS has pioneered applications of solar cell technology that achieves higher power conversion efficiency than traditional solar cells.

5. Defendant JinkoSolar Holding Co., Ltd. (“Jinko Holding”) is a Cayman Islands corporation that, upon information and belief, has a registered address at No. 1 Jingke Road, Shangrao Economic Development District, Jiangxi, 334100, China. Jinko Holding has operating subsidiaries in China, including Jinko Solar Co., Ltd. and Zhejiang Jinko Solar Co., Ltd., as well as numerous subsidiary and/or affiliate corporations located within and outside of China, including two in the United States, identified below. Jinko Holding is traded on the New York Stock Exchange under the symbol “JKS.”

6. Defendant JinkoSolar (U.S.) Inc. (“Jinko US”) is a Delaware corporation that, upon information and belief, has an address at 595 Market Street, Suite 2200, San Francisco, CA 94105. Jinko US is a wholly-owned subsidiary of Jinko Holding. On information and belief, Jinko US has imported, or sold after importation, infringing solar cells and/or solar modules.

7. Defendant Jinko Solar (U.S.) Industries Inc. (“Jinko Industries”) is a Delaware corporation that, upon information and belief, has an address at 595 Market St., Suite 2200, San Francisco, CA 94105.¹ Jinko Industries is, on information and belief, the owner and operator of a

¹ Upon information and belief, Jinko Industries is also known as JinkoSolar (U.S.) Industrial Inc.

manufacturing facility that Jinko Holding has developed in Jacksonville, Florida at 4660 POW-MIA Memorial Parkway, and which is or will be importing a large number of infringing solar cells and/or modules. Jinko Industries is a wholly-owned subsidiary of Jinko Holding.

8. Defendant Jinko Solar Co., Ltd. (“Jiangxi Jinko”) is a Chinese corporation that, upon information and belief, has an address at No. 1 Jingke Road, Shangrao Economic Development Zone, Jiangxi, 334100, China. Jiangxi Jinko is, on information and belief, the owner and operator of a manufacturing facility that Jinko Holding has developed in Jiangxi, China. On information and belief, Jiangxi Jinko manufactures and sells infringing solar modules for import into the U.S. Jiangxi Jinko is a wholly-owned subsidiary of Jinko Holding.

9. Defendant Zhejiang Jinko Solar Co., Ltd. (“Zhejiang Jinko”) is a Chinese corporation that, upon information and belief, has an address at No. 58 Yuanxi Road, Yuanhua Industrial Park, Yuanhua Town, Haining City, 314416, China. Zhejiang Jinko is, on information and belief, the owner and operator of a manufacturing facility that Jinko Holding has developed in Zhejiang, China. On information and belief, Zhejiang Jinko manufactures and sells infringing solar cells and modules for import into the U.S. Zhejiang Jinko is a wholly-owned subsidiary of Jinko Holding.

10. Defendant Jinko Solar Technology Sdn. Bhd. (“Jinko Malaysia”) is a Malaysian corporation that, upon information and belief, has an address at 14A Jalan Tun Mohd Fuad, Taman Tun Dr Ismail, Kuala Lumpur, Wilaya, Persekutuan, Malaysia, and with a place of business located at 2481, Tingkat Perusahaan 4A, Kawasan Perusahaan Bebas Perai, Perai, Penang Pulau Pinang, 13600, Malaysia. Jinko Malaysia is, on information and belief, the owner and operator of a manufacturing facility that Jinko Holding has developed in Malaysia. On

information and belief, Jinko Malaysia manufactures and sells infringing solar cells and modules for import into the U.S. Jinko Malaysia is a wholly-owned subsidiary of Jinko Holding.

JURISDICTION AND VENUE

11. This is an action for patent infringement under the patent laws of the United States of America, 35 U.S.C. §§ 1, *et seq.*, including 35 U.S.C. §§ 271 and 281–85. This Court therefore has subject matter jurisdiction over this action pursuant to 28 U.S.C. §§ 1331 and 1338.

12. This Court has personal jurisdiction over each of the Defendants.

13. Defendant Jinko US is a Delaware corporation. Thus, Jinko US resides within, and has consented to, personal jurisdiction within the District of Delaware.

14. Defendant Jinko Industries is a Delaware corporation. Thus, Jinko Industries resides within, and has consented to, personal jurisdiction within the District of Delaware.

15. Defendant Jinko Holding has conducted and continues to conduct business in the State of Delaware and in the District of Delaware. Jinko Holding, upon information and belief, directly and/or through its subsidiaries, makes or assembles products that are covered by the subject matter of the '215 Patent and that are and have been imported, offered for sale, sold, purchased, and used within the District of Delaware. Jinko Holding, upon information and belief, directly or through intermediaries (including subsidiaries, distributors, retailers, contractors, and others), purposefully and voluntarily ships, distributes, offers for sale, sells, installs, uses, and advertises infringing products to consumers in the District of Delaware. Additionally, Jinko Holding, directly and/or through distribution networks, regularly places infringing products within the stream of commerce, with the knowledge and/or understanding that such products will be sold in the District of Delaware. Upon information and belief, Jinko Holding has committed acts of patent infringement within the State of Delaware and in the District of Delaware. Jinko Holding has purposefully availed itself of the benefits of the State of Delaware and the exercise

of jurisdiction over Jinko Holding would not offend traditional notions of fair play and substantial justice.

16. Defendants Jiangxi Jinko, Zhejiang Jinko, and Jinko Malaysia, upon information and belief, directly and/or through their subsidiaries or affiliates, make or assemble products that are covered by the subject matter of the '215 Patent and that are and have been imported, offered for sale, sold, purchased, and used within the District of Delaware. Jiangxi Jinko, Zhejiang Jinko, and Jinko Malaysia, upon information and belief, directly and/or through intermediaries (including subsidiaries, affiliates, distributors, retailers, contractors, and others), including distribution networks controlled by affiliated entities, regularly place infringing products within the stream of commerce, with the knowledge and/or understanding that such products are shipped, distributed, offered for sale, sold, installed, used, and advertised to consumers within the District of Delaware. Jiangxi Jinko, Zhejiang Jinko, and Jinko Malaysia have committed acts of patent infringement within the State of Delaware and in the District of Delaware. Jiangxi Jinko, Zhejiang Jinko, and Jinko Malaysia have purposefully availed themselves of the benefits of the State of Delaware and the exercise of jurisdiction over those Defendants would not offend traditional notions of fair play and substantial justice.

17. In the event that this Court does not have personal jurisdiction over Defendants Jinko Holding, Jiangxi Jinko, Zhejiang Jinko, and Jinko Malaysia by virtue of the above, this Court nonetheless has personal jurisdiction over those Defendants pursuant to Federal Rule of Civil Procedure 4(k)(2) because this case arises under federal law, Jinko Holding, Jiangxi Jinko, Zhejiang Jinko, and Jinko Malaysia are not subject to jurisdiction in any state's courts of general jurisdiction, and Jinko Holding, Jiangxi Jinko, Zhejiang Jinko, and Jinko Malaysia have purposefully availed themselves of the privilege of conducting business in the United States by

making, using, offering to sell, or selling infringing products within the United States, or importing infringing products into the United States.

18. Venue is proper in this District for Defendants Jinko US and Jinko Industries under 28 U.S.C. §§ 1391(b) and (c) and 28 U.S.C. § 1400 because, among other reasons, Jinko US and Jinko Industries are subject to personal jurisdiction in the District of Delaware and reside in the District of Delaware.

19. Venue is proper in this District for Defendants Jinko Holding, Jiangxi Jinko, Zhejiang Jinko, and Jinko Malaysia under 28 U.S.C. § 1391(c) because, among other reasons, those Defendants are subject to personal jurisdiction and are not resident in the United States.

THE PATENTED INVENTION

20. Hanwha Q CELLS incorporates the allegations of the preceding paragraphs as if fully set forth herein.

21. The '215 Patent is entitled "Method for Manufacturing a Solar Cell with a Surface-Passivating Dielectric Double Layer, and Corresponding Solar Cell." The '215 Patent issued from U.S. Patent Application Serial No. 12/742,818 (the "'818 Application"). The '818 Application is a national stage application of PCT/EP2008/065067, with a 35 U.S.C. § 371(c) date of July 2, 2010 and claims the benefit of German Patent Application Serial No. 10 2007 054 384.2, filed on November 14, 2007. The '215 Patent identifies Jan Schmidt and Bram Hoex as the inventors.

22. The technology claimed in the '215 Patent concerns solar cells, which are semiconductor devices that utilize the photovoltaic effect to convert sunlight (i.e., photons) into electricity. '215 Patent, col. 3:7–20, Ex. 1. The photovoltaic effect refers to the generation of energy-containing charge carriers when a material, such as silicon, is exposed to sunlight. Sunlight exposure creates negative and positive charge carriers within a silicon substrate. *See id.*,

col. 1:16–22. The energy contained in these charge carriers must be extracted and utilized externally without the charge carriers recombining at the boundary surface of the silicon substrate and neutralize each other, a process known as recombination. *See id.*, col. 1:14–22.

23. The '215 Patent discloses a structure of solar cells with certain efficiency advantages versus other types of solar cells. *See id.*, col. 6:8–34. The solar cell structure of the '215 Patent includes a silicon substrate, a first dielectric layer comprising aluminum oxide on a surface of the silicon substrate, and a second dielectric layer on the first dielectric layer of different materials and with hydrogen being embedded into the second dielectric layer. *Id.*, col. 5:58–64.

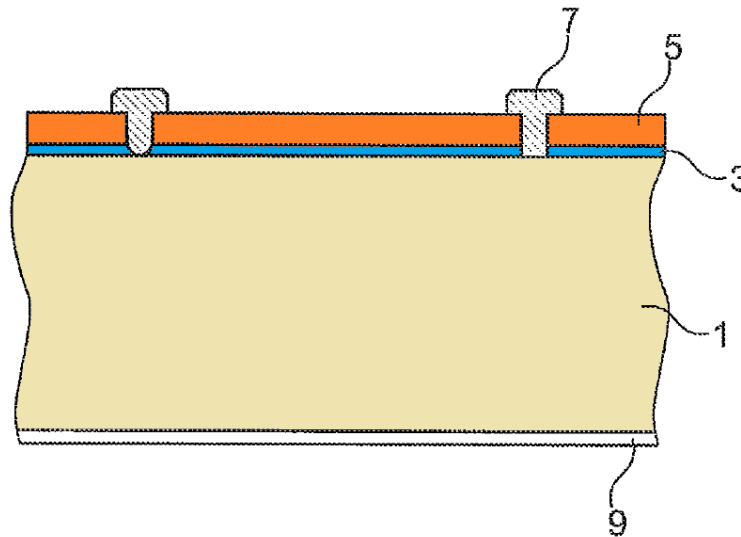


Figure 1

24. Figure 1 (above and colored) from the '215 Patent shows an exemplary illustration depicting the first and second dielectric layers on a silicon substrate (1). The first dielectric layer comprising aluminum oxide (3) is deposited on a surface of the silicon substrate, and the second dielectric layer (5) is deposited on top of the first dielectric layer. *Id.*, col. 7:30–35. The second dielectric layer has hydrogen embedded within the layer. *Id.*, col. 7:65–8:3.

25. The use of these surface-passivating dielectric layers reduces surface recombination of charge carriers, allowing greater extraction of energy-containing charge carriers for external utilization. *Id.*, col. 2:58–60, 3:1–4. The use of the surface-passivating dielectric layers may increase light absorption in the substrate, and increase the efficiency of light conversion into electricity. *Id.*, col. 3:7–20. Further, the solar cells with the disclosed structure maintain their stable passivation properties while withstanding the high temperatures used in today’s industrial manufacturing processes. *Id.*, col. 3:4–7. As a result, the invention of the ’215 Patent allows more energy to be extracted from the solar cell, while remaining durable through the manufacturing process. *Id.*, col. 3:4–27.

CLAIMS FOR PATENT INFRINGEMENT

Count I: Infringement of U.S. Patent No. 9,893,215

26. Hanwha Q CELLS incorporates the allegations of the preceding paragraphs as if fully set forth herein.

27. Jinko Defendants are in the business of designing, manufacturing, using, offering to sell, selling, and importing products, including solar cells and modules, both under the Jinko brand and, upon information and belief, as a contract manufacturer for other companies.

28. Hanwha Q CELLS is informed and believes, and thereon alleges, that Jinko has infringed, is currently infringing, or will infringe the ’215 Patent in violation of 35 U.S.C. § 271 by, among other things, making, using, offering to sell, or selling, within the United States, or importing into the United States, without license or authority, products—including solar cells and solar modules—that infringe the ’215 Patent (the “Accused Products”), literally or under the doctrine of equivalents.

29. Jinko states that it manufactures its solar cells in factories in Zhejiang province, China or in Penang, Malaysia. Upon information and belief, those factories are operated by

Zhejiang Jinko and Jinko Malaysia, respectively. Upon information and belief, those solar cells are then incorporated into Jinko-branded solar modules at one of Jinko's factories in Jiangxi or Zhejiang provinces, China, or in Penang, Malaysia. Jinko also manufactures Jinko-branded solar modules at its factories in China or Malaysia. Upon information and belief, those factories are operated by Jiangxi Jinko, Zhejiang Jinko, and Jinko Malaysia, respectively. Jinko's manufacturing capacity consists of over 931,000 square meters of industrial space in Jiangxi and Zhejiang provinces, in China, for the manufacture of silicon ingots, silicon wafers, solar cells, and solar modules, as well as approximately 20,000 square meters of industrial space in Penang, Malaysia.

30. Upon information and belief, Jinko Holding has developed a solar module assembly facility in Jacksonville, Florida, which is operated by Jinko Industries and used to incorporate Jinko solar cells into finished Jinko solar modules. Upon further information and belief, the solar module assembly facility has or will have an annual production capacity of 400 megawatts of solar modules.

31. Jinko offers for sale and sells the aforementioned solar modules to customers within the United States. Upon information and belief, Jinko's net revenue in the United States was about 4.1 billion RMB, 7.7 billion RMB, and 4.1 billion RMB in 2015, 2016, and 2017, respectively.

32. Upon information and belief, Jinko has entered into business agreements that depend on its importation of infringing solar cells and/or modules. Jinko and NextEra Energy have entered into an agreement where Jinko has offered to sell or sold solar modules to NextEra Energy. On information and belief, Jinko's agreement with NextEra Energy will require the importation of Jinko solar cells manufactured outside the U.S. in order to be assembled into solar

modules at the Florida facility. Upon further information and belief, Jinko's agreement with NextEra Energy either has required or will require importation into the United States of Jinko solar modules manufactured in Jinko's facilities in China or in Malaysia in order to fulfill the supply obligations under the agreement. Upon information and belief, those solar modules are or will be used in NextEra Energy's solar projects across the United States.

33. Jinko has also entered into agreements with other companies, including sPower and Swinerton Renewable Energy, to supply Jinko solar modules. Upon information and belief, Jinko has offered to sell or sold solar modules to sPower for solar projects across the United States. Jinko also has offered to sell or sold 132-megawatt capacity of its 1,500-volt monocrystalline PERC modules to Swinerton Renewable Energy for the construction of a solar energy project in Boulder City, Nevada. On information and belief, Jinko imported accused Jinko solar modules manufactured outside the U.S. in order to supply Swinerton Renewable Energy's solar energy project in Boulder City, Nevada.

34. Based on the information presently available to it, Hanwha Q CELLS alleges that Jinko's Accused Products include, but are not limited to, the following solar modules: JKM280M; JKM285M; JKM290M; JKM295M; JKM300M; JKM275M-60; JKM280M-60; JKM285M-60; JKM290M-60; JKM295M-60; JKM300M-60; JKM305M-60; JKM310M-60; JKM315M-60; JKM320M-60; JKM360M-72; JKM365M-72; JKM370M-72; JKM375M-72; JKM380M-72; JKMS280M-60-MX; JKMS285M-60-MX; JKMS290M-60-MX; JKMS295M-60-MX; JKMS300M-60-MX; JKM315M-60HL; JKM320M-60HL; JKM325M-60HL; JKM330M-60HL; and JKM335M-60HL. Hanwha Q CELLS further alleges that the Accused Products are manufactured in Jinko's factories operated by Jiangxi Jinko, Zhejiang Jinko, and Jinko Malaysia. Hanwha Q CELLS further alleges that, upon information and belief, one or more

of the Accused Products are or will be manufactured in Jinko's Florida factory operated by Jinko Industries.

35. As an exemplary infringing product, Jinko JKM295M-60B can be purchased within the United States and contains sixty individual solar cells.² Upon information and belief, the Jinko JKM295M-60B solar module includes solar cells that infringe at least claims 12–14 of the '215 Patent. For example, Jinko JKM295M-60B contains each element of and infringes at least claim 12 of the '215 Patent, which recites the following:

12. A solar cell comprising:

a silicon substrate;

a first dielectric layer comprising aluminium oxide on a surface of the silicon substrate; and

a second dielectric layer directly on a surface of the first dielectric layer, materials of the first dielectric layer and the second dielectric layer differing and hydrogen being embedded into the second dielectric layer;

wherein the first dielectric layer has a thickness of less than 50 nm and is interposed between the surface of the silicon substrate and the second dielectric layer.

36. Specifically, the Jinko JKM295M-60B solar module is comprised of a silicon substrate and a stack of layers, including a first dielectric layer, and a second dielectric layer. The materials of the first and second dielectric layers differ. The first dielectric layer comprises aluminum oxide, and the second dielectric layer includes the elements silicon and nitrogen. The first dielectric layer is less than 50 nanometers thick. The second dielectric layer contains hydrogen. The first dielectric layer is interposed between the second dielectric layer and the surface of the silicon substrate.

² Upon information and belief, the identifier "B" at the end of "JKM295M-60B" indicates that this solar module uses a black backsheet or frame.

37. A cross-sectional measurement mapping of the backside edge of a sample piece extracted from a representative solar cell in a Jinko JKM295M-60B module indicates that the solar cell comprises a silicon substrate, followed by a first dielectric layer including the elements of aluminum and oxygen, which is followed by a second dielectric layer of different materials than the layer including aluminum and oxygen.

38. A depth profile measurement on a sample prepared from a representative solar cell contained in a Jinko JKM295M-60B module shows that elements of aluminum and oxygen are present inside a 50-nanometer band, indicating a first dielectric layer comprising aluminum oxide of a thickness less than 50 nanometers.

39. A depth profile measurement on a sample prepared from a representative solar cell contained in a Jinko JKM295M-60B module also shows the presence of hydrogen in the second dielectric layer, indicating that hydrogen is embedded into the second dielectric layer.

40. Upon information and belief, the exemplary Jinko JKM295M-60B solar module is representative of many other products that are made, used, offered for sale, or sold, within the United States, or imported into the United States, by or on behalf of Jinko, and that present the same or substantially similar features as the exemplary Jinko JKM295M-60B solar module. Accordingly, on information and belief, Hanwha Q CELLS alleges that numerous other Jinko products infringe at least claims 12–14 of the '215 Patent and have been made, used, offered for sale, or sold within the United States, or imported into the United States, by or on behalf of Jinko.

41. Hanwha Q CELLS anticipates that discovery will further confirm the full scope of infringing products that are made, used, offered for sale, or sold, within the United States, or imported into the United States, by or on behalf of Jinko. Hanwha Q CELLS makes the

preliminary identification of the Accused Products without the benefit of discovery or claim construction in this action, and expressly reserves the right to augment, supplement, and revise its identifications based on additional information obtained through discovery or otherwise.

42. Jinko has had knowledge of the '215 Patent since before this Complaint was filed, or at a minimum will receive notice of the '215 Patent upon filing of this Complaint.

43. Jinko's acts of infringement have caused damage to Hanwha Q CELLS in an amount yet to be determined and subject to proof at trial.

PRAYER FOR RELIEF

WHEREFORE, Hanwha Q CELLS prays for relief as follows:

A. Judgment that Jinko Defendants have directly infringed the '215 Patent, both literally and under the doctrine of equivalents;

B. Jinko Defendants be ordered to account for and compensate Plaintiff Hanwha Q CELLS for Jinko Defendants' infringing activities, including supplemental damages for any post-verdict infringement up until entry of the final judgment with an accounting as needed, together with pre-judgment and post-judgment interest on the damages awarded;

C. An award of enhanced damages under 35 U.S.C. § 284 to the extent that the Court deems appropriate;

D. An award of reasonable attorney fees pursuant to 35 U.S.C. § 285 to the extent that the Court deems this case is an exceptional case;

E. Injunctive relief in that Jinko Defendants, their affiliates, subsidiaries, officers, agents, servants, employees, and successors and assigns, and other persons who are in active concert or participation with anyone in the foregoing, be preliminarily and permanently enjoined from infringement of the '215 Patent, including but not limited to an injunction against making,

using, offering to sell, selling within the United States, and importing into the United States, products that infringe the '215 Patent;

- F. Costs of suit incurred herein; and
- G. Any and all other relief that the Court deems just and equitable.

DEMAND FOR JURY TRIAL

Hanwha hereby demands a trial by jury on all issues.

Dated: March 5, 2019

Respectfully submitted,

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