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Attorneys for Plaintiff Kolon Industries, Inc.

UNITED STATES DISTRICT COURT

CENTRAL DISTRICT OF CALIFORNIA

Kolon Industries, Inc.,

Plaintiff,

v.

Hyosung Advanced Materials Corp. and Hyosung USA, Inc.,

Defendants.

CASE NO. 8:24-cv-00415

COMPLAINT FOR PATENT INFRINGEMENT

DEMAND FOR JURY TRIAL

Plaintiff Kolon Industries, Inc. ("Kolon" or "Plaintiff") for its Complaint against defendants Hyosung Advanced Materials Corp. ("Hyosung Advanced Materials") and Hyosung USA, Inc. ("Hyosung USA") (collectively, "Hyosung" or "Defendants") alleges as follows:

INTRODUCTION

1. Kolon brings this patent infringement action to protect its valuable technology relating to hybrid tire cord ("HTC") that uses aramid fiber. HTC with aramid fiber is used to reinforce high-performance tires, helping them to keep their shape and support vehicle weight. Demand for HTC with aramid fiber is increasing as the popularity of electric vehicles rises. Electric vehicles' batteries increase vehicle weight and electric engines have high instant torque, requiring the stronger tire construction that HTC with aramid fiber can provide.

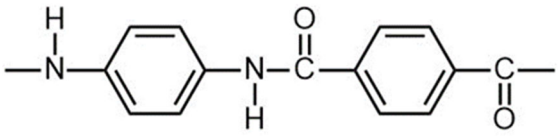
2. Kolon was founded in 1957 as a pioneer in the chemical fiber industry. Kolon's success is in large part due to its significant investment in innovation. Kolon has over 2,700 worldwide patents and patent applications, including approximately 350 issued U.S. patents. Kolon began its tire cord operations in the early 1970s. Since the 1970s, Kolon has been researching aramid and applications for aramid, and Kolon launched its aramid fiber business in 2004. Kolon developed HTC using aramid for the first time in South Korea and has been mass-producing and selling aramid and nylon HTCs since 2015.

3. Hyosung is expanding its business in HTC with aramid fiber using Kolon's patented technology, despite knowing that Kolon has patented this technology that Kolon developed. Hyosung's infringement has forced Kolon to compete against its own technological breakthroughs, and Hyosung continues to profit off Kolon's inventions. Hyosung's conduct in this regard is illegal, unjust, and in violation of the United States patent laws. Hyosung brings this complaint to protect its inventions and to redress Hyosung's willful and deliberate infringement of Kolon's patent rights.

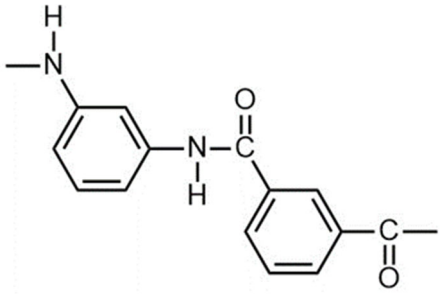
* * *

4. Hyosung is infringing Kolon's patented technology for HTC that uses aramid and nylon fiber.

5. Aramid is short for aromatic polyamide. Aramid can either be para-aramid, which has linkages attached at positions 1 and 4, or meta-aramid, which has linkages at positions 1 and 3, as shown below.



Para-aramid

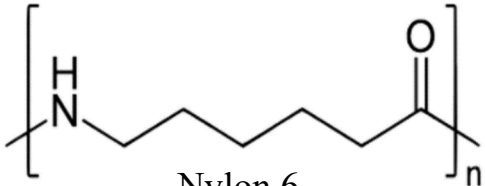


Meta-aramid

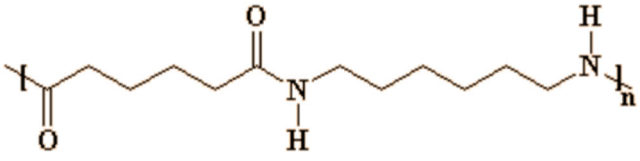
6. Kolon offers para-aramid fiber under the tradename HERACRON® and is one of the world's largest producers of para-aramid fiber.

7. Aramid has five times the tensile strength of steel and is four times more elastic than steel, while weighing only about 20% as much as steel. Aramid is particularly useful as a tire reinforcement material because of its high modulus and heat resistance.

8. Nylon is a family of synthetic polymers with amide backbones, usually linking aliphatic or semi-aromatic groups. Below are the chemical structures of two common types of nylon, nylon 6 and nylon 6,6.



Nylon 6



nylon 6,6

9. Nylon is a low-cost, lightweight, heat-resistant, and durable fiber. Nylon is particularly useful as a tire reinforcement because it has superior adhesivity and high compressive stress, and low cost compared to other materials.

10. Tire cord is a tire reinforcement that maintains the shape of the tire, prevents deformation, and allows the tire to withstand the stresses of the vehicle's weight and driving. For this reason, tire cord has a significant effect on a tire's performance. Tire manufacturers use tire cords made of varied materials depending on the needs of the specific tire and vehicle.

11. HTC is a tire cord made of two or more cord materials. HTC can provide a combination of physical and thermal properties using a single tire cord by combining material properties of multiple cord materials.

12. HTC composed of aramid and nylon exploits the advantages of both aramid and nylon to provide the reinforcement required by high-performance tires. This HTC is also particularly suited for use in tires for electric vehicles to provide the reinforcement needed to provide more wear-resistant and ultra-quiet tires in view of electric vehicles' higher weight, more instant torque, and lower noise output compared to conventional vehicles.

13. HTC composed of aramid and nylon yarns is manufactured by taking aramid and nylon yarns that have themselves been twisted (the primary twist) and twisting the yarns together (the secondary twist) to form a multi-ply yarn. Adhesive is applied to this raw HTC to create dip HTC that is suitable, subject to potential additional processing, for use as a tire reinforcement.

KOLON'S PATENTED TECHNOLOGY

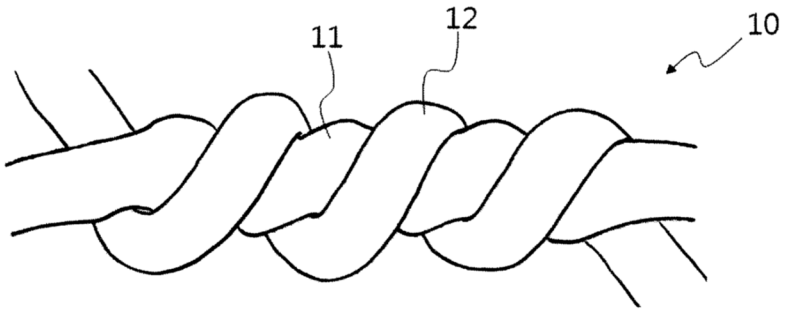
14. Kolon invented improved HTC comprised of aramid and nylon, and methods of manufacturing this HTC, through years of research and development.

15. Nylon has the disadvantages that it has relatively low strength and shows reduced modulus at high temperature, which limits its performance when driving at high speed and may lead to a flat spot during long-term parking. Aramid has the disadvantages that it is more expensive, its high modulus makes it difficult to expand the tire during tire manufacture, and its elongation at break can be too low to provide sufficient fatigue resistance for long-term durability.

16. Use of both aramid and nylon together in a hybrid structure was developed in an effort to address these drawbacks. Before Kolon's inventions, due to the differences in the physical properties of aramid and nylon, the primary twist numbers and twist directions of the aramid and nylon yarns were quite different to try to make the physical properties of nylon more prominent during initial deformation and those of aramid more prominent thereafter. Generally, aramid was primarily twisted at a higher twist number than the nylon, and the two were twisted in opposite directions. For example, the aramid was primarily twisted at a higher twist number in one direction in the opposite direction of the secondary twist, the nylon was primarily twisted at a lower but still high twist number in the same direction as the secondary twist, and the aramid was twisted around the nylon in the resulting structure.

17. The conventional HTC was typically manufactured using ring twisters, which twist each yarn and then twist the yarns together in distinct steps. Using a ring twister involved a three-step process of primarily twisting the aramid yarn, primarily twisting the nylon yarn, and secondarily twisting them together. This manufacturing process had limitations that included low productivity, high variability of physical properties, and high defect rates.

18. HTC comprised of aramid and nylon conventionally had the structure shown below, where the aramid primary-twisted yarn (12) was secondarily twisted around the nylon primary-twisted yarn (11) to form the ply yarn (10).



The aramid yarn would form loops during the twisting process, resulting in an unstable structure. When processing the raw HTC having this conventional

structure to make dip HTC, the friction between HTC and the guides and rollers would cause non-uniformities in the shape of the HTC, resulting in defective product.

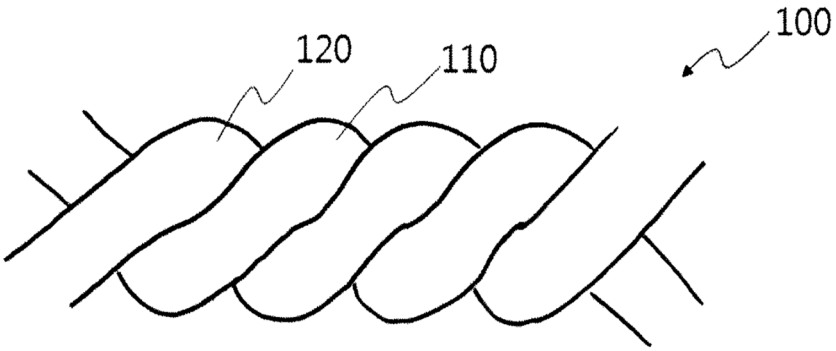
19. Before Kolon's inventions, three-ply aramid and nylon HTCs with one ply of nylon and two plies of aramid were used. It was believed that the three plies, with two plies of aramid, were necessary to provide the HTC properties needed for use in high-performance tires. These three-ply HTCs were made using ring twister machines, twisting each yarn individually and then the yarns together in distinct steps where the number of twists and direction of those twists differed.

20. Kolon invented HTC comprised of aramid and nylon, and methods of manufacturing this HTC, that overcame these limitations and drawbacks associated with conventional aramid and nylon HTC and its manufacture. Kolon developed manufacturing methods that can be used to make HTC more easily and that yields HTC with more uniform physical properties, better strength, and improved fatigue resistance that is suitable for high-performance tires.

21. In the manufacturing methods Kolon developed, the nylon filament, the aramid filament, and the nylon and aramid together are twisted at the same twists per meter (TPM). This method of manufacturing an aramid and nylon HTC can be implemented using a device that performs the primary and secondary twisting processes simultaneously, such as a direct corder or cable corder, and provides advantages of fewer defects and more stable overall structure that provides better uniformity of properties, and thus better yield.

22. Kolon developed two-ply HTC consisting of one ply of primarily-twisted aramid yarn and one ply of primarily-twisted nylon yarn that combines the advantages of aramid and nylon and provides high adhesiveness, heat resistance, and fatigue resistance. The structure of this two-ply HTC (100) where the primarily-twisted nylon yarn (110) and the primarily-twisted aramid yarn (120) are secondarily twisted together using the same TPM as for the primary twisting is

shown below.



23. Kolon invented an improved aramid and nylon HTC having the structure shown above where the aramid primarily twisted yarn would be 1.005 to 1.025 times the length of the nylon primarily twisted yarn (when the secondary twisting of the HTC is removed by untwisting). In the manufacturing process, this difference in length is achieved at least in part by applying higher tension to the nylon filament than to the aramid filament during the twisting process. This aramid primarily twisted yarn has a 0.1 to 5% lower twist number than the twist number of the nylon primarily twisted yarn, after manufacture of the HTC and untwisting.

24. Kolon's improved aramid and nylon HTC is suitable for tire manufacture and disperses the stress applied to the HTC during the repeated tension/compression of the tire. This HTC has superior fatigue resistance, which maintains stability of tires under the repeated application of forces while driving.

25. Kolon's patented aramid and nylon HTC can be more easily manufactured, has more uniform physical properties, and improved strength and fatigue resistance. Using two-ply HTC made of one ply of aramid and one ply of nylon, Kolon achieved comparable performance to three-ply HTC made of two plies of aramid and one ply of nylon.

26. Kolon's methods of manufacturing two-ply HTC creates HTC with superior and more uniform properties in addition to achieving improved manufacturing efficiencies. Specifically, Kolon's methods create two-ply HTC

with superior strength retention rate, strength maintenance percentage, dry heat shrinkage, breaking tenacity, strength at break, elongation at break, and load at specific elongation (LASE). These superior properties meet and exceed the HTC requirements of tire manufactures and therefore mean that Kolon's manufactured HTC has properties necessary for commercial sales to tire manufacturers for use in vehicles sold around the world, including in the United States. Kolon also discovered the ideal weight ratio range of aramid to nylon to achieve these superior properties.

27. Kolon has developed high strength and high endurance (fatigue resistant) IE-grade aramid for mechanical rubber good (MRG) applications with improved elongation (IE) that is suitable for HTC. The high elongation and modulus control enables the product to provide outstanding strength retention and physical properties to the tires.

28. Kolon invested significantly in aramid manufacturing improvements, including by creating a task force of employees to specifically work on aramid manufacturing improvements. This task force improved many aspects of Kolon's aramid manufacturing process.

HYOSUNG'S INFRINGING ACTS

29. The Hyosung entities work together to develop, manufacture, offer for sale, and/or sell, import, or otherwise provide infringing products in the United States, including specifically in this judicial district.

30. Hyosung has had actual knowledge of the patents-in-suit at least since February 4, 2021, when Kolon specifically identified those patents to Hyosung in a letter informing Hyosung that Kolon had succeeded in researching and developing unique HTC and informing Hyosung that it must respect Kolon's patent rights relating to HTC. Hyosung acknowledged receipt of that letter through its March 10, 2021 response. On information and belief, rather than respect Kolon's patent rights, Hyosung chose to infringe the patents-in-suit.

31. On information and belief, with knowledge of the patents-in-suit, Hyosung makes, uses, offers to sell, and/or sells infringing HTC in the United States, and/or imports infringing HTC into the United States—including in this judicial district.

32. On information and belief, with knowledge of the patents-in-suit, Hyosung also intentionally makes, uses, offers to sell, and/or sells aramid designed for use in infringing HTC in the United States, and/or imports aramid designed for use in infringing HTC into the United States—including in this judicial district.

33. In addition, on information and belief, with knowledge of the patents-in-suit, Hyosung offers to sell and sells to tire manufacturers infringing HTC that meets the tire manufacturers' specifications that, on information and belief, Hyosung could not meet without infringing, and does so with knowledge that the infringing HTC will be inserted into tires that will be offered for sale, sold, and/or imported into the United States—including in this judicial district.

34. On information and belief, Hyosung's tire manufacturing partners and vehicle manufacturers who purchase their tires from them infringe the patents-in-suit by using Hyosung's infringing HTC in their tires that they import into the U.S. (as tires themselves or as tires on vehicles), offer for sale, and/or sell in the U.S.—including into this district.

35. Hyosung is in the business of manufacturing, offering for sale, selling, and/or importing into the United States aramid and nylon HTC and aramid for use in such HTC.

36. Hyosung Advanced Materials advertises "Aramid & Hybrid Tirecord" and touts HTC "designed to maximize the advantages of each material" that is "primarily used in premium tires that require high performance." https://www.hyosungadvancedmaterials.com/en/business/tire (accessed 21 Feb 2024). Hyosung USA similarly advertises "tire reinforcements" and "aramid" as part of the "Advanced Materials' business area. https://www.hyosungusa.com/

(accessed 21 Feb 2024).

37. In March 2023, the Korean press reported that, "[i]n response to the growing demand for tires for electric vehicles," Hyosung Advanced Materials was "developing and supplying high-strength cords that allow tire cords to be thinner and reduce the thickness of cords and rubber and thick-denier cords that reduce the weight of tires by using only one tire cord." https://www.businesskorea.co.kr/news/articleView.html?idxno=111587 (accessed 21 Feb 2024). This is a description of the benefits of aramid and nylon HTC.

38. In April 2023, Hyosung announced that it "has introduced advanced **high-strength tirecords** on the combination of cap plies and aramid fiber." https://brand.hyosung.com/en/brand-now/journalism/1194 (Hyosung's emphasis) (accessed 21 Feb 2024). This is a description of aramid and nylon HTC, which is used in cap plies.

39. On information and belief, Hyosung has acquired direct corders or cable corders, and manufactures aramid and nylon HTC using them.

40. On information and belief, Hyosung engages in manufacture of aramid and nylon HTC and imports this aramid and nylon HTC into the United States, including into this judicial district, and offers to sell and/or sells aramid and nylon HTC in the United States.

41. On information and belief, tires made with Hyosung's aramid and nylon HTC and vehicles having tires made with Hyosung's aramid and nylon HTC are offered for sale and sold in the United States, including in this judicial district.

42. Tire manufacturers evaluate samples of tire cord as part of their qualification process and, on information and belief, Hyosung has imported samples of aramid and nylon HTC into the United States to promote its HTC to tire manufacturers.

43. On information and belief, Hyosung has sold aramid and nylon HTC to tire manufacturers. For example, on information and belief, Hyosung sells

aramid and nylon HTC to the South Korean tire manufacturer Hankook & Company Co., Ltd. ("Hankook"). Hankook has tire manufacturing plants around the world, including in the United States.

44. On information and belief, Hyosung's tire manufacturing partners, such as Hankook, integrate Hyosung's aramid and nylon HTC into their tires. For example, on information and belief, Hankook's high performance Ventus S1 evo Z AS X tire, which Hankook advertises includes "Aramid Hybrid Reinforcement" (https://www.hankooktire.com/us/en/tire/ventus/s1evozasx.html (accessed 21 Feb 2024)), incorporates Hyosung's aramid and nylon HTC.

45. On information and belief, Hyosung sells aramid and nylon HTC to tire manufacturers for tires to be used for electric vehicles. For example, on information and belief, Hankook sells these tires with Hyosung infringing HTC in the United States, including in this judicial district. Additionally, on information and belief, Hankook's Ion evo tire for electric vehicles, which Hankook advertises includes "Aramid Hybrid Reinforcement" (https://www.hankooktire.com/us/en/tire/ion/evo.html (accessed 21 Feb 2024)), incorporates Hyosung's aramid and nylon HTC.

46. On information and belief, Hyosung manufactures aramid and nylon HTC products that comply with specifications from tire manufacturer(s) that require Hyosung's HTC to meet certain physical property requirements. For example, Hankook's specifications require meeting requirements for physical properties such as breaking force, elongation at break, elongation at specific load, heat shrinkage, post-manufactured twist number, and breaking force. On information and belief, Hyosung has met these physical property requirements by using Kolon's patented technology. On information and belief, Hyosung would have had to commercially satisfy those specifications and could not feasibly do so without manufacturing its aramid and nylon HTC using Kolon's patented technology.

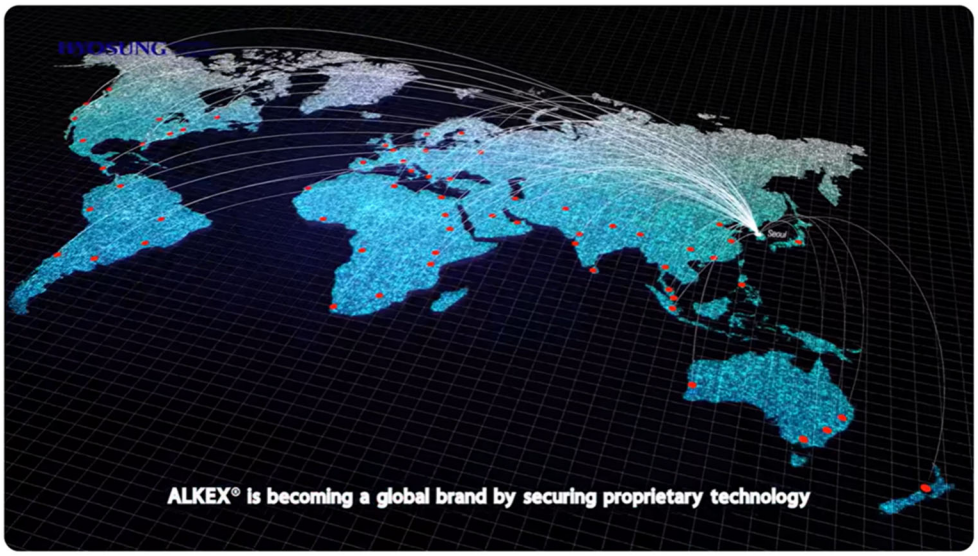
47. On information and belief, Hyosung has entered into agreements to sell aramid and nylon HTC to tire manufacturers, knowing that tires with that HTC would be imported into the United States and/or offered for sale or sold in the United States.

48. On information and belief, tire manufacturers have imported tires with Hyosung's aramid and nylon HTC into the United States, including into this judicial district, and offer to sell and/or sell tires with Hyosung's aramid and nylon HTC, including in this judicial district.

49. On information and belief, Hyosung's tire manufacturing partners have sold tires with Hyosung's aramid and nylon HTC to vehicle manufacturers that have imported tires having aramid and nylon HTC into the United States, including into this judicial district, and offer to sell and/or sell tires with Hyosung's aramid and nylon HTC, including in this judicial district. For example, on information and belief, Hyundai and Kia automobiles, including, e.g., the 2024 Kia EV9 and 2024 Hyundai Ioniq 6 are equipped with Hankook tires that include Hyosung's aramid and nylon HTC.

50. On information and belief, Hyosung makes and imports aramid into the United States, offers to sell, and/or sells into the U.S., including into this district, aramid that is designed for use in HTC.

51. In a Hyosung YouTube video, Hyosung admits that it manufactures its aramid fiber, which Hyosung sells under the tradename ALKEX®, in South Korea. https://www.youtube.com/watch?v=eqMrhzD2Vro&t=1s (accessed 20 Feb 2024). Hyosung Advanced Materials also markets its ALKEX® aramid products at trade shows around the world including, on information and belief, in the United States. In another Hyosung YouTube video (https://www.youtube.com/watch?v=sVVACiFvFe4 (accessed 20 Feb 2024) (screenshot below), Hyosung admits to importing aramid into the United States.



52. Importation records (attached as Exhibit 1) show that Hyosung has imported HTC containing aramid fiber and/or aramid fiber for use in HTC into the United States, including into this judicial district.

53. Hyosung offers aramid yarn and tire reinforcements, which include HTC, for sale in the United States, including in this judicial district. For example, Hyosung's website provides an inquiry sheet for aramid yarn and tire reinforcements accessible in the United States https://www.hyosungadvancedmaterials.com/en/customer/inquiry (accessed 21 Feb 2024). Additionally, for example, Hyosung USA provides contact information for purchasing aramid and tire reinforcement products on its website. Hyosung thus offers these products for sale in the United States and, on information and belief, customers contact Hyosung to purchase these products, including aramid and nylon HTC, in the United States.

54. Hyosung also offers to sell aramid and tire reinforcements through its product manuals and catalogs available in the United States. On information and belief, Hyosung has offered for sale in the United States aramid for use in HTC and/or aramid and nylon HTC.

55. In 2021, Hyosung sought to expand its aramid manufacturing capabilities. Hyosung stated that to meet an increase in demand, it would increase

its production capacity to 3,700 tons per year as of 2021. This represents a threefold increase in production from 2020 to 2021. On information and belief, a driver in demand for Hyosung's expanded aramid manufacturing capabilities was production of HTC.

56. On information and belief, by improving its aramid manufacturing, Hyosung has been able to meet the specifications of tire manufacturers, such as Hankook, and grow its presence in the market for aramid and nylon HTC.

57. To help Hyosung expand its aramid manufacturing capabilities, Hyosung approached employees and ex-employees of Kolon to recruit them. One of the individuals that Hyosung approached was In-Sik Han. Mr. Han was employed by Kolon from 1984 to 2015. During this time, Mr. Han held significant leadership positions at Kolon. For example, Mr. Han held major positions related to research and development of aramid fiber for more than ten years during his time at Kolon.

58. While at Kolon, Mr. Han was involved in developing and improving Kolon's aramid production and HTC products, including involvement in a task force that was responsible for advancements in Kolon's aramid manufacturing process. Mr. Han is named as an inventor on Kolon patents related to aramid and to aramid and nylon HTC. On information and belief, Mr. Han had knowledge of Kolon's intellectual property, including its patent portfolio. On information and belief, Mr. Han has been aware of the patents-in-suit.

59. Hyosung hired Mr. Han and, on information and belief, promoted Mr. Han to lead Hyosung's aramid manufacturing. On information and belief, Hyosung hired Mr. Han despite knowing that Mr. Han had been charged in the United States with conspiring to steal DuPont trade secrets relating to aramid technology (and, on information and belief, remains under indictment). Kolon had resolved this matter with respect to Kolon and terminated Mr. Han's employment at Kolon in 2015.

THE PARTIES

60. Plaintiff Kolon is a company organized and existing under the laws of the Republic of Korea, with its principal place of business at 110 Magokdong-ro, Gangseo-gu Seoul, 07793, Korea.

61. On information and belief, Hyosung Advanced Materials is a company organized and existing under the laws of the Republic of Korea, with its principal place of business at 119, Map-daero, Mapo-gu, Seoul, 04144, Korea.

62. One information and belief, Hyosung USA is a company organized and existing under the laws of the State of Delaware with its principal place of business at 15801 Brixham Hill Ave., Suite 575, Charlotte, NC 28277.

JURISDICTION AND VENUE

63. Kolon incorporates and realleges all the above paragraphs as though fully set forth herein.

64. This is an action for patent infringement arising under the Patent Laws of the United States, 35 U.S.C. § 271 et seq. This Court has subject matter jurisdiction under 28 U.S.C. §§ 1331, 1332, and 1338(a).

65. This Court has personal jurisdiction over Hyosung because, among other reasons, Defendants have committed acts within the Central District of California giving rise to this action and have established minimum contacts with the forum state of California. Defendants directly and/or through subsidiaries or intermediaries (including distributors, retailers, and others) have committed and continue to commit acts of infringement in this District by, among other things, making, using, importing, offering for sale, and/or selling products that, directly or indirectly, infringe the patents-in-suit. Defendants, directly or through intermediaries, have purposefully and voluntarily placed products that, directly or indirectly, infringe the patents-in-suit into the stream of commerce with the intention and expectation that they will be purchased and used, including in this judicial district. Thus, Defendants have purposefully availed themselves of the

benefits of doing business in the State of California, and this judicial district, and the exercise of jurisdiction over Defendants would not offend traditional notions of fair play and substantial justice.

66. In the alternative, this Court has personal jurisdiction over Hyosung Advanced Materials pursuant to Federal Rule of Civil Procedure 4(k)(2) because Hyosung Advanced Materials has sufficient minimum contacts with the United States and, if Hyosung Advanced Materials is not subject to any state's court of general jurisdiction, this Court has personal jurisdiction over Hyosung Advanced Materials because it has sufficient minimum contacts with the United States as a whole.

67. The Court also has personal jurisdiction over Hyosung USA because Hyosung USA maintains an office in this judicial district at 38 Executive Park, Suite 200, Irvine, CA 92614, and has continuous and systematic contacts with the State of California, which include regularly and continuously transacting and doing business in the State of California, including in and from this judicial district.

68. Venue is proper within this judicial district under 28 U.S.C. §§ 1391 and/or 1400(b).

69. Hyosung Advanced Materials is a resident of South Korea and therefore may be sued in any judicial district that has personal jurisdiction over Hyosung Advanced Materials, and this judicial district has personal jurisdiction over Hyosung Advanced Materials. Accordingly, this venue is proper within this judicial district for Hyosung Advanced Materials.

70. Hyosung USA has a regular and established place of business in this District and, on information and belief, has committed acts of patent infringement in this District.

PATENTS-IN-SUIT

71. U.S. Patent No. 9,617,663 ("the '663 patent") was duly and legally issued on April 11, 2017, by the United States Patent and Trademark Office to

inventors Ok Wha Jeon and Min Ho Lee. The '663 patent is entitled "Hybrid Tire Cord and Method of Manufacturing the Same." Kolon is the owner by assignment of the '663 patent. A true and correct copy of the '663 patent is attached hereto as Exhibit 2.

72. U.S. Patent No. 9,789,731 ("the '731 patent") was duly and legally issued on October 17, 2017, by the United States Patent and Trademark Office to inventors Min Ho Lee, Ok Wha Jeon, and Il Chung. The '731 patent is entitled "Hybrid Fiber Cord and Method for Manufacturing the Same." Kolon is the owner by assignment of the '731 patent. A true and correct copy of the '731 patent is attached hereto as Exhibit 3.

73. U.S. Patent No. 10,196,765 ("the '765 patent") was duly and legally issued on February 5, 2019, by the United States Patent and Trademark Office to inventors Ok Wha Jeon and Min Ho Lee. The '765 patent is entitled "Hybrid Tire Cord and Method of Manufacturing the Same." The '765 patent issued from an application that was filed as a continuation of the application for the '663 patent. Kolon is the owner by assignment of the '765 patent. A true and correct copy of the '765 patent is attached hereto as Exhibit 4.

COUNT I

INFRINGEMENT OF THE '663 PATENT

74. Kolon incorporates and realleges all the above paragraphs as though fully set forth herein.

75. As used herein, the "Accused Product" refers to Hyosung's two-ply HTC composed of one ply of aramid and one ply of nylon.

76. On information and belief, Hyosung has infringed and continues to infringe one or more claims of the '663 patent, including but not limited to claim 1, pursuant to 35 U.S.C. § 271(g), at least by without authority importing into the United States and/or offering to sell, selling, and/or using within the United States the Accused Product, which is made by a process patented by claim 1 of the '663

patent and is neither materially changed by subsequent processes nor becomes a trivial or nonessential component of another product.

77. On information and belief, Hyosung's Accused Product is made by the method of manufacturing a hybrid tire cord claimed by the '663 patent.

78. In the method of manufacturing Hyosung's Accused Product, there is a first step of primarily twisting an aramid filament yarn in a first direction to form an aramid primarily twisted yarn.

79. In the method of manufacturing Hyosung's Accused Product, there is a second step of primarily twisting a nylon filament yarn in a second direction to form a nylon primarily twisted yarn. On information and belief, this second step and the first step are conducted simultaneously.

80. On information and belief, in the method of manufacturing Hyosung's Accused Product, there is a third step of secondarily twisting the aramid primarily twisted yarn and the nylon primarily twisted yarn in a third direction to form a plied yarn. On information and belief, this third step is conducted continuously with the first and second steps.

81. On information and belief, in the method of manufacturing Hyosung's Accused Product, Hyosung's first, second, and third steps are conducted by one twister.

82. In the method of manufacturing Hyosung's Accused Product, the second direction is the same as the first direction, and the third direction is opposite the first direction.

83. On information and belief, in the method of manufacturing Hyosung's Accused Product, the tension applied to the nylon filament yarn in the second step is higher than tension applied to the aramid filament yarn in the first step in such an amount that, if the secondary twist of the hybrid tire cord with a predetermined length were untwisted, the aramid primarily twisted yarn would be 1.005 to 1.025 times longer than the nylon primarily twisted yarn.

84. Accordingly, on information and belief, Hyosung's method of manufacturing its Accused Product satisfies each and every limitation of one or more claims of the '663 patent, including but not limited to claim 1. On information and belief, Hyosung was able to meet the specifications of tire manufacturer(s), e.g., Hankook, by manufacturing its Accused Product using the methods claimed in the '663 patent.

85. On information and belief, with knowledge of the '663 patent and its infringement Hyosung has indirectly infringed and continues to indirectly infringe one or more claims of the '663 patent, including but not limited to claim 1, pursuant to 35 U.S.C. § 271(b), at least by without authority actively inducing others, including its tire manufacturing partners, to directly infringe one or more claims of the '663 patent.

86. On information and belief, Hyosung manufactures the Accused Product by a process covered by one or more claims of the '663 patent and then actively induces infringement by others by knowingly providing the Accused Product to be imported into the United States, offered for sale, sold, or used within the United States. The Accused Product is not materially changed by subsequent processes and does not become a trivial and nonessential component of another product regardless of whether it is imported into the United States, offered for sale, sold, or used within the United States in the form of hybrid tire cord itself or as hybrid tire cord integrated into a tire.

87. On information and belief, with knowledge of the '663 patent, Hyosung has indirectly infringed and continues to indirectly infringe one or more claims of the '663 patent, including but not limited to claim 1, pursuant to 35 U.S.C. § 271(c), at least by without authority offering to sell or selling within the United States or importing into the United States aramid filament yarn knowing that it is especially made or especially adapted for use in infringing the '663 patent, and not a staple of article or commodity of commerce suitable for substantial non-

infringing uses.

88. Hyosung's infringement has caused and is continuing to cause damage and irreparable injury to Kolon. Kolon will continue to suffer damage and irreparable injury unless and until that infringement is enjoined by this Court, as a remedy at law alone would be inadequate.

89. Kolon is entitled to injunctive relief and damages in accordance with 35 U.S.C. §§ 271, 281, 283, and 284.

90. On information and belief, Hyosung has been willfully infringing the '663 patent, and thus Kolon is entitled to recover increased damages under 35 U.S.C. § 284. Hyosung's willful infringement makes this case exceptional, and thus Kolon is entitled to recover attorneys' fees under 35 U.S.C. § 285.

COUNT II

INFRINGEMENT OF THE '731 PATENT

91. Kolon incorporates and realleges all the above paragraphs as though set forth fully herein.

92. On information and belief, Hyosung has infringed and continues to infringe one or more claims of the '731 patent, including but not limited to claim 4, pursuant to 35 U.S.C. § 271(g), at least by without authority importing into the United States and/or offering to sell, selling, or using within the United States the Accused Product, which is made by a process patented by claim 4 of the '731 patent and is neither materially changed by subsequent processes nor becomes a trivial or nonessential component of another product.

93. On information and belief, Hyosung's Accused Product is made by the method for manufacturing a hybrid fiber cord claimed by the '731 patent.

94. On information and belief, in the method of manufacturing Hyosung's Accused Product, there is a first step for primarily-twisting a nylon filament at a first twist number of 300 to 500 TPM to produce a nylon primarily-twisted yarn.

95. On information and belief, in the method of manufacturing Hyosung's

Accused Product, there is a second step for primarily-twisting an aramid filament at a second twist number of 300 to 500 TPM to produce an aramid primarily-twisted yarn.

96. On information and belief, in the method of manufacturing Hyosung's Accused Product, there is a third step for secondarily-twisting the nylon and aramid primarily-twisted yarns together at a third twist number to produce a ply yarn in such a way that the nylon and aramid primarily-twisted yarns have identical structures with each other.

97. On information and belief, in the method of manufacturing Hyosung's Accused Product, there is a step of coating the ply yarn with an adhesive.

98. On information and belief, in Hyosung's Accused Product, the ply yarn coated with the adhesive has a strength retention rate of 80% or more after a disc fatigue test is performed according to JIS-L 1017 method of Japanese Standard Associations.

99. On information and belief, in Hyosung's Accused Product, the ply yarn coated with the adhesive has a dry heat shrinkage of 1.5 to 2.5%.

100. On information and belief, in the method of manufacturing Hyosung's Accused Product, the first, second, and third twist numbers are identical with each other.

101. In the method of manufacturing Hyosung's Accused Product, the third step produces a 2-ply secondarily-twisted yarn consisting of 1-ply of nylon primarily-twisted yarn and 1-ply of aramid primarily-twisted yarn.

102. Accordingly, on information and belief, Hyosung's method of manufacturing its Accused Product satisfies each and every limitation of one or more claims of the '731 patent, including but not limited to claim 4. On information and belief, Hyosung was able to meet the specifications of tire manufacturer(s), e.g., Hankook, by manufacturing its Accused Product using the methods claimed in the '731 patent.

103. On information and belief, with knowledge of the '731 patent and its infringement, Hyosung has indirectly infringed and continues to indirectly infringe one or more claims of the '731 patent, including but not limited to claim 4, pursuant to 35 U.S.C. § 271(b), at least by without authority actively inducing others, including its tire manufacturing partners, to directly infringe one or more claims of the '731 patent.

104. On information and belief, Hyosung manufactures the Accused Product by a process covered by one or more claims of the '731 patent and then actively induces infringement by others by knowingly providing the Accused Product to be imported into the United States, offered for sale, sold, or used within the United States. The Accused Product is not materially changed by subsequent processes and does not become a trivial and nonessential component of another product regardless of whether it is imported into the United States, offered for sale, sold, or used within the United States in the form of hybrid tire cord itself or as hybrid tire cord integrated into a tire.

105. On information and belief, with knowledge of the '731 patent, Hyosung has indirectly infringed and continues to indirectly infringe one or more claims of the '731 patent, including but not limited to claim 1, pursuant to 35 U.S.C. § 271(c), at least by without authority offering to sell or selling within the United States or importing into the United States aramid filament knowing that it is especially made or especially adapted for use in infringing the '731 patent, and not a staple of article or commodity of commerce suitable for substantial non-infringing uses.

106. Hyosung's infringement has caused and is continuing to cause damage and irreparable injury to Kolon. Kolon will continue to suffer damage and irreparable injury unless and until that infringement is enjoined by this Court, as a remedy at law alone would be inadequate.

107. Kolon is entitled to injunctive relief and damages in accordance with

35 U.S.C. §§ 271, 281, 283, and 284.

108. On information and belief, Hyosung has been willfully infringing the '731 patent, and thus Kolon is entitled to recover increased damages under 35 U.S.C. § 284. Defendants' willful infringement makes this case exceptional, and thus Kolon is entitled to recover attorneys' fees under 35 U.S.C. § 285.

COUNT III

INFRINGEMENT OF THE '765 PATENT

109. Kolon incorporates and realleges the above paragraphs as though set forth fully herein.

110. Hyosung has infringed and continues to infringe one or more claims of the '765 patent, including but not limited to claim 1, pursuant to 35 U.S.C. § 271(a), at least by without authority making, using, offering to sell and/or selling the Accused Product within the United Sates and/or importing the Accused Product into the United States.

111. Hyosung's Accused Product is a hybrid tire cord.

112. Hyosung's Accused Product comprises a nylon primarily twisted yarn.

113. Hyosung's Accused Product comprises an aramid primarily twisted yarn.

114. In Hyosung's Accused Product, the nylon primarily twisted yarn and the aramid primarily twisted yarn are secondarily twisted together.

115. On information and belief, in Hyosung's Accused Product, if the secondary twist of the hybrid tire cord with a predetermined length were untwisted, a length of the aramid primarily twisted yarn would be 1.005 to 1.025 times a length of the nylon primarily twisted yarn.

116. On information and belief, in Hyosung's Accused Product, the aramid primarily twisted yarn has a 0.1 to 5% lower twist number than a twist number of the nylon primarily twisted yarn.

117. In Hyosung's Accused Product, the hybrid tire cord has a merge structure having a partial covering structure.

118. Accordingly, on information and belief, Hyosung's Accused Product satisfies each and every limitation of one or more claims of the '765 patent, including but not limited to claim 1. On information and belief, Hyosung was able to meet the specifications of tire manufacturer(s), e.g., Hankook, by offering Accused Product that infringes the '765 patent.

119. On information and belief, with knowledge of the '765 patent and its infringement, Hyosung has indirectly infringed and continues to indirectly infringe one or more claims of the '765 patent, including but not limited to claim 1, pursuant to 35 U.S.C. § 271(b), at least by without authority actively inducing others, including its tire manufacturing partners, to directly infringe one or more claims of the '765 patent.

120. On information and belief, Hyosung actively induces infringement by others by knowingly providing the Accused Product to imported into the United States, offered for sale, sold, or used within the United States in the form of hybrid tire cord itself or as hybrid tire cord integrated into a tire.

121. On information and belief, with knowledge of the patents-in-suit, Hyosung has indirectly infringed and continues to indirectly infringe one or more claims of the '765 patent, including but not limited to claim 1, pursuant to 35 U.S.C. § 271(c), at least by without authority, offering to sell or selling within the United States or importing into the United States aramid filament yarn knowing that it is especially made or especially adapted for use in infringing the '765 patent, and not a staple of article or commodity of commerce suitable for substantial non-infringing uses.

122. Hyosung's infringement has caused and is continuing to cause damage and irreparable injury to Kolon. Kolon will continue to suffer damage and irreparable injury unless and until that infringement is enjoined by this Court, as a

remedy at law alone would be inadequate.

123. Kolon is entitled to injunctive relief and damages in accordance with 35 U.S.C. §§ 271, 281, 283, and 284.

124. On information and belief, Hyosung has been willfully infringing the '765 patent, and thus Kolon is entitled to recover increased damages under 35 U.S.C. § 284. Defendants' willful infringement makes this case exceptional, and thus Kolon is entitled to recover attorneys' fees under 35 U.S.C. § 285.

PRAYER FOR RELIEF

WHEREFORE, Kolon respectfully requests judgment in its favor and against Hyosung as follows:

A. Adjudging that Hyosung has infringed the '663, '731, and '765 patents, in violation of 35 U.S.C. § 271;

B. Granting a permanent injunction enjoining Hyosung, its employees, agents, officers, directors, attorneys, representatives, successors, affiliates, subsidiaries and assigns, and all of those in active concert and participation with any of the foregoing persons or entities from infringing, directly or indirectly, the '663, '731, and '765 patents;

C. Ordering Hyosung to account and pay damages adequate to compensate Kolon for Hyosung's infringement, including pre-judgment and post-judgment interest and costs, pursuant to 35 U.S.C. § 284;

D. Ordering an accounting for any infringing sales not presented at trial and an award by the Court of additional damages for any such infringing sales;

E. Ordering that the damages award be increased up to three times the actual amount assessed, pursuant to 35 U.S.C. § 284;

F. An award of Kolon's costs and expenses as a prevailing party;

G. Declaring this case exceptional and awarding Kolon its reasonable attorneys' fees, pursuant to 35 U.S.C. § 285; and

H. Awarding such other and further relief as this Court deems just and

proper.

JURY DEMAND

Pursuant to Rule 38(b) of the Federal Rules of Civil Procedure, Kolon hereby demands trial by jury of all issues so triable.

DATED: February 28, 2024

Respectfully submitted,

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