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| **Type** | **Number** | **Description** | **Priority Date** | **Issue Date** | **Patent Claims** |
| Patent | [**US 8,277,518**](https://www.google.com/patents/US8277518?dq=8,608,807) | A method for treating a fabric to incorporate ultraviolet radiation protection is disclosed which uses zinc oxide particles or nanoparticles to adhere to the fabric. | October 11, 2011 | October 2, 2012 | 14 |
| Patent | [**US 8,608,807**](https://www.google.com/patents/US8608807?dq=8,608,807) | A method for treating a fabric to incorporate ultraviolet radiation protection is disclosed in which initially phosphorylation of the fabric takes place and then zinc oxide particles or nanoparticles are adhered to the fabric. | October 11, 2011 | December 17, 2013 | 20 |
| Patent | [**US 8,690,964**](https://www.google.com/patents/US8690964?dq=8,690,964&hl=en&sa=X&ved=0ahUKEwj91N_p7uDJAhWm6IMKHdeUAPcQ6AEIHDAA) | A method for treating a fabric to incorporate ultraviolet radiation protection is disclosed in which treated zinc oxide particles are placed into a washing machine with the fabric for the zinc oxide particles to adhere to the fabric. | October 11, 2011 | April 8, 2014 | 15 |
| Patent | [**US 9,150,824**](https://www.google.com/patents/US9150824?dq=8,690,964) | A laundry detergent additive for incorporating ultraviolet radiation protection into a cellulose fabric is disclosed which uses zinc oxide particles treated with boronic acid. | October 11, 2011 | October 6, 2015 | 2 |
| Patent | [**US 9,234,310**](https://www.google.com/patents/US9234310?dq=9,234,310&hl=en&sa=X&ved=0ahUKEwjxz_2P2e3SAhWFLyYKHbpYDFAQ6AEIHDAA) | A method for treating a fabric to incorporate ultraviolet radiation protection, enhanced resistance to degradation, and enhanced resistance to fire is disclosed in which zinc oxide nanoparticles are treated with a solution of 3-glycidyloxypropyl-trimethoxysilane. | October 11, 2011 | January 12, 2016 | 17 |
| Patent | [**US 9,284,682**](https://www.google.com/patents/US9284682?dq=9,284,682&hl=en&sa=X&ved=0ahUKEwjvrtz3q5TNAhWIKCYKHe4ND7cQ6AEIHDAA) | A method for treating a fabric to incorporate ultraviolet radiation protection is disclosed in which zinc oxide nanoparticles are treated with a solution of 3-glycidyloxypropyl-trimethoxysilane and is also treated with silicon dioxide. | October 11, 2011 | March 15, 2016 | 11 |
| Patent | [**US 9,404,214**](https://www.google.com/patents/US9404214?dq=9,404,214&hl=en&sa=X&ved=0ahUKEwi-2ZnJ2e3SAhWD0iYKHfd6DpUQ6AEIHDAA) | A laundry detergent composition for incorporating ultraviolet radiation protection into a fabric is disclosed which comprises a laundry detergent and zinc oxide particles treated with boronic acid. | October 11, 2011 | August 2, 2016 | 12 |
| Patent | [**US 9,464,260**](https://www.google.com/patents/US9464260?dq=14/939,540) | A laundry detergent product is disclosed which comprises a quantity of laundry detergent, a quantity of poly (styrene-4-boronic acid), and a quantity of zinc oxide particles. | October 11, 2011 | Oct 11, 2016 | 20 |
| Patent | [**US 10,472,762**](https://patents.google.com/patent/US20190242054A1/en?oq=US+16%2F267%2C946) | Masterbatch rayon. A method for incorporating ultraviolet radiation protection and antimicrobial protection into rayon is disclosed which comprises the steps of adding an additive to rayon in which the additive comprises a quantity of prepared zinc oxide particles modified with a layer of a reactive group. | October 11, 2011 | Nov 12, 2019 | 16 |
| Patent | [**US 10,472,523**](https://patents.google.com/patent/US20190048198A1/en?oq=US+15/893,985) | Polymer Masterbatch. A method for preparing an additive for incorporating ultraviolet radiation protection into a synthetic polymer with the additive and the synthetic polymer for forming a synthetic material comprises numerous steps which include suspending a quantity of zinc oxide particles in a solution of 98% ethyl alcohol and suspending a quantity of benzophenone silane linker in the solution of zinc oxide particles. | October 11, 2011 | Nov 12, 2019 | 18 |
| Patent | [**US 1**](https://patents.google.com/patent/US20180244926A1/en?oq=15/951,834)**0,494,528** | Masterbatch putting ZnO into polymer. A method for incorporating ultraviolet radiation protection and antimicrobial protection into a synthetic polymer prior to forming a synthetic material is disclosed which comprises numerous steps which include providing a quantity of synthetic polymer chips and providing a quantity of prepared zinc oxide particles. | October 11, 2011 | Dec 3, 2019 | 6 |
| Patent | [**US 1**](https://patents.google.com/patent/US20180230314A1/en?oq=15/893,899)**0,557,503** | A fabric used to manufacture a garment having ultraviolet radiation protection is disclosed having a quantity of zinc oxide particles, a quantity of multidentate silane, and a quantity of an acid polymer. | October 11, 2011 | Mar 3, 2020 | 16 |
| Patent | [**US 10,662,317**](https://patents.google.com/patent/US8690964?oq=US+10%2C662%2C317) | Polymer Masterbatch. A method for preparing an additive for incorporating ultraviolet radiation protection into a synthetic polymer with the additive and the synthetic polymer for forming a synthetic material comprises numerous steps which include suspending a quantity of zinc oxide particles in a solution of 98% ethyl alcohol and suspending a quantity of benzophenone silane linker in the solution of zinc oxide particles. | October 11, 2011 | May 26, 2020 | 14 |
| Patent | [**US 10,676,861**](https://patents.google.com/patent/US10676861B1/en?oq=US+10%2C676%2C861) | Masterbatch rayon. A method for incorporating ultraviolet radiation protection and antimicrobial protection into rayon is disclosed which comprises the steps of adding an additive to rayon in which the additive comprises a quantity of prepared zinc oxide particles modified with a layer of a reactive group. | October 11, 2011 | June 9, 2020 | 18 |
| Patent | [**US 10,907,048**](https://patents.google.com/patent/US10907048B2/en?oq=US+10%2c907%2c048) | A product having ultraviolet radiation protection and antimicrobial protection is disclosed which comprises a quantity of rayon, a quantity of zinc oxide particles, and a quantity of a reactive group. | October 11, 2011 | Feb 2, 2021 | 5 |
| Patent | US 11/001,712 | Masterbatch putting ZnO into polymer. A product having ultraviolet radiation protection and antimicrobial protection is disclosed which comprises a quantity of synthetic polymer chips, a quantity of zinc oxide particles with each particle having a surface, and a quantity of a reactive group for modifying each surface of each zinc oxide particle, the quantity of the reactive group sufficient for binding the quantity of  zinc oxide particles to the quantity of synthetic polymer chips prior to the quantity of synthetic polymer chips being formed into a fiber. | October 11, 2011 | May 11, 2021 | 14 |
| Patent  Application | US 16/291,989 | A product having ultraviolet radiation protection and antimicrobial protection is disclosed which has a quantity of a urethane-based binder, a quantity of zinc oxide particles, and a yarn. | October 11, 2011 | NA | 14 |
| Patent Application | US 16/789,838 | A dryer sheet has incorporated therein ultraviolet radiation protection and antimicrobial protection. The dryer sheet comprises a carrier substrate, a quantity of dipalmethyl hydroxyethylammonium methosulfate, a fatty acid, and clay, and a quantity of zinc oxide particles each having a surface treated with an acid polymer with the acid polymer binding to the surfaces of the zinc oxide particles. | Oct 11, 2011 | NA | 20 |
| Patent Application | US 17/171,736 | A product having ultraviolet radiation protection and antimicrobial protection is disclosed which has a fiber formed from an artificial material by varying an additive of zinc oxide particles percentage or concentration added to the artificial material prior to the artificial material being formed into a fiber to control the luster, sheen, or shininess of the fiber. | Oct 11, 2011 | NA | 20 |
| Patent Application | US 17/227,504 | Masterbatch putting ZnO into polymer. A product having ultraviolet radiation protection and antimicrobial protection is disclosed which comprises a quantity of synthetic polymer chips, a quantity of zinc oxide particles with each particle having a surface, and a quantity of a reactive group for modifying each surface of each zinc oxide particle, the quantity of the reactive group sufficient for binding the quantity of zinc oxide particles to the quantity of synthetic polymer chips prior to the quantity of synthetic polymer chips being formed into a fiber. | Oct 11, 2011 | NA | 20 |
| Trademark | US 4,667,852 | ECO UV®  U.S. Trademark Registration for Goods/Clothing, namely, women's shirts, men's shirts, maternity shirts, one-piece garments for infants and toddlers, kid's shirts, T-shirts, sweatshirts, and hats | October 1, 2014 | January 6, 2015 |  |
| Trademark | US 6,229,565 | ECO Zinc and Design  U.S. Trademark Registration for Goods/Fabrics for textile use containing zinc oxide to provide antimicrobial properties | November 2019 | December 2020 |  |
| Trademark Application | US 90/375,444 | ECO ZINC  U.S. Trademark application for Goods/Fabrics for textile use | December 2020 |  |  |
| Knowhow | SLG | Knowhow related to process, chemistry, application, etc. |  |  |  |