

Issued Patents, Published Applications and Other IP

Type	Number	Description	Priority Date	Issue Date	Patent Claims
Patent	US 8,277,518	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	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	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	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	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-glycidyoxypropyl-trimethoxysilane.	October 11, 2011	January 12, 2016	17
Patent	US 9,284,682	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-glycidyoxypropyl-trimethoxysilane and is also treated with silicon dioxide.	October 11, 2011	March 15, 2016	11

Issued Patents, Published Applications and Other IP

Patent	US 9,404,214	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	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	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	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 10,494,528	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

Issued Patents, Published Applications and Other IP

Patent	US 10,557,503	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	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	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	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	October 11, 2011	May 11, 2021	14

Issued Patents, Published Applications and Other IP

		to the quantity of synthetic polymer chips prior to the quantity of synthetic polymer chips being formed into a fiber.			
Patent	US 11,306,208	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	April 19, 2022	20
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

Issued Patents, Published Applications and Other IP

Patent Application	US 17/328,919	A product having ultraviolet radiation protection and antimicrobial protection is disclosed which comprises a quantity of zinc oxide particles with each particle having a surface, a paste, and a quantity of a reactive group for modifying each surface of each zinc oxide particle. ZnO nanoparticles can be made in a paste with a liquid that is compatible with a molten polymer. The paste is added to the molten polymer in an appropriate concentration to form a master batch that can later be used with an additional polymer to produce extruded filaments containing ZnO nanoparticles.	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.			