

The Global Market for Nanotechnology and Nanomaterials in Cosmetics, Personal Care and Sunscreens

Nanomaterials, applications, regulations, global market size and companies

Contents

1 EXECUTIVE SUMMARY.....	15
1.1 The market for nanomaterials products continues to grow.....	15
1.2 Innovative solutions in health and beauty.....	16
1.3 Market drivers.....	21
1.3.1 Demand for high quality products with enhanced properties....	21
1.3.2 Demand for high sun protection.....	22
1.3.3 Increasing demand for non-chemical sun filters.....	23
1.3.4 Regulatory approval.....	24
1.3.5 Improved delivery of active ingredients.....	24
1.3.6 Growth in anti-aging product market.....	25
2 REGULATIONS AND SAFETY.....	26
2.1 Zinc oxide nanoparticles.....	26
2.1.1 Toxicity and safety.....	26
2.1.2 Regulation.....	28
2.2 Titanium dioxide nanopartilces.....	30
2.2.1 Toxicity and safety.....	30
2.2.2 Regulation.....	31
2.3 European Union.....	31
2.3.1 REACH.....	32
2.3.2 Biocidal Products Regulation.....	33
2.3.3 National nanomaterials registers.....	33
2.3.4 Cosmetics Regulation.....	35
2.4 United States.....	36

2.4.1	Food and Drug Administration (FDA).....	36
2.5	Asia-Pacific.....	37
2.6	OECD.....	38
3	ZINC OXIDE NANOPARTICLES.....	39
3.1	Types.....	39
3.2	Properties utilized in cosmetics, personal care and sunscreens.....	40
3.3	Market structure in cosmetics, personal care and sunscreens.....	40
3.4	Products.....	41
4	TITANIUM DIOXIDE NANOPARTICLES.....	44
4.1	Types.....	44
4.1.1	Micronparticle TiO ₂ versus Nanoparticle TiO ₂	45
4.1.2	Nanoparticle TiO ₂	45
4.2	Properties utilized in cosmetics, personal care and sunscreens.....	46
4.3	Market structure in cosmetics, personal care and sunscreens.....	47
4.4	Products.....	49
5	NANOCARRIER DELIVERY SYSTEMS.....	50
5.1	Nanoemulsions.....	50
5.1.1	Properties utilized in cosmetics, personal care and sunscreens....	52
5.1.2	Products.....	54
5.2	Liposomes.....	55
5.2.1	Properties utilized in cosmetics, personal care and sunscreens....	56
5.2.2	Products.....	56
5.3	Niosomes.....	58
5.3.1	Properties utilized in cosmetics, personal care and sunscreens....	59
5.3.2	Products.....	59
5.4	Solid Lipid Nanoparticles (SLN).....	60
5.4.1	Properties utilized in cosmetics, personal care and sunscreens....	61
5.4.2	Products.....	63
5.5	Nanostructured Lipid Carriers (NLC).....	64

5.5.1	Properties utilized in cosmetics.....	64
5.5.2	Products.....	66
5.6	Nanocapsules & nanospheres.....	66
5.6.1	Properties utilized in cosmetics, personal care and sunscreens....	67
5.6.2	Products.....	68
5.7	Dendrimers.....	69
5.7.1	Types.....	70
5.7.2	Properties utilized in cosmetics, personal care and sunscreens....	71
5.7.3	Products.....	71
5.8	Fullerenes.....	72
5.8.1	Properties utilized in cosmetics, personal care and sunscreens....	72
5.8.2	Products.....	73
5.9	OTHER NANOMATERIALS.....	74
5.9.1	Metal and metal oxide nanoparticles.....	74
5.9.1.1	Properties utilized in cosmetics, personal care and sunscreens	74
5.9.1.2	Products.....	75
5.9.2	Nano-hydroxyapatite.....	75
5.9.2.1	Properties utilized in cosmetics and sunscreens.....	75
5.9.2.2	Products.....	75
5.9.3	Nanocellulose.....	76
5.9.3.1	Properties utilized in cosmetics and sunscreens.....	76
5.9.3.2	Products.....	76

6 GLOBAL MARKET SIZE..... 78

6.1	Market segmentation.....	79
6.2	Market revenues, 2010-2022.....	81

7 COMPANY PROFILES..... 83-125 (50 company profiles)

Tables

Table 1: Applications of nanomaterials in the cosmetics, personal care and sunscreen markets. 17

Table 2: Concentration limits (%) of nano-ZnO in sunscreens in main regional markets. 29

Table 3: Concentration limits (%) of nano-TiO ₂ in sunscreens in main regional markets.	31
Table 4: National nanomaterials registries in Europe.....	34
Table 5: Main zinc oxide nanoparticle suppliers, products, primary particle size.	41
Table 6: Market structure for Nano-TiO ₂ in cosmetics and sunscreens.....	47
Table 7: Main titanium dioxide nanoparticles suppliers, products, primary particle size.	49
Table 8: Nanoemulsions in cosmetics, personal care and sunscreens.....	53
Table 9: Cosmetics, personal care and sunscreen products and formulations incorporating nanoemulsions.....	54
Table 10: Cosmetics, personal care and sunscreen products incorporating liposomes.	57
Table 11: Cosmetics, personal care and sunscreen products incorporating niosomes.	59
Table 12: Cosmetics, personal care and sunscreen products incorporating solid lipid nanoparticles (SLN).....	63
Table 13: Properties of NLCs utilized in cosmetics, personal care and sunscreen products.	65
Table 14: Cosmetics, personal care and sunscreen products incorporating nanostructured lipid carriers.....	66
Table 15: Cosmetics, personal care and sunscreen products incorporating nanocapsules & nanospheres.....	68
Table 16: Cosmetics, personal care and sunscreen products incorporating dendrimers.	71
Table 17: Cosmetics, personal care and sunscreen products incorporating fullerenes.	73
Table 18: Cosmetics, personal care and sunscreen products incorporating metal and metal oxide nanoparticles.....	75
Table 19: Cosmetics, personal care and sunscreen products incorporating nano-hydroxyapatite.	76
Table 20: Cosmetics, personal care and sunscreen products incorporating nanocellulose.	77
Table 21: Global market segmentation for cosmetics, personal care and sunscreen products incorporating nanomaterials, by region, 2018.....	80
Table 22: Global market for cosmetics, personal care and sunscreens incorporating nanomaterials, revenues in USD, 2010-2029.....	81

Figures

Figure 1: Market structure for Nano-ZnO in cosmetics and sunscreens.....	41
Figure 2: Schematic of o/w nanoemulsion.....	51
Figure 3: Structure of niosome.....	59
Figure 4: Structure of lipid nanodispersed vehicle systems.....	61
Figure 5: Schematic of nanocapsule.....	67

Figure 6: Dendrimer structure..... 69

Figure 7: Global market segmentation for cosmetics, personal care and sunscreen products incorporating nanomaterials, by market sub-sector, 2018..... 79

Figure 8: Global market for cosmetics, personal care and sunscreens incorporating nanomaterials, revenues in USD, 2010-2029..... 82