

## Market Report

# Global Optical Coatings Market

Published: April, 2014

Publisher: Acmite Market Intelligence

Language: English

Pages: 520

Price: from 1,490 Euro

## Abstract

As an enabling technology, thin film optical coatings find increasing use in many industries and add value to optical products. Advancements in thin film fabrication, deposition technologies as well as material science lead to the exploration of new application markets. The optical coatings market demonstrates rapid growth driven by demand from specialized applications and the ever expanding optoelectronics Industry.

Global demand on optical coatings was valued at approximately US\$6.5 billion in 2013 and is expected to grow by 6.5% annually in the coming years. Electronics and semiconductor combined presents the largest application market, while fiber optics & telecommunication combined is the fastest growing one. Instrumentation and security markets will continue their steady growth. Global trends in energy efficiency and solar energy provide vast potential for optical coatings suppliers.

Acmite Market Intelligence has finished a most comprehensive report on global optical coatings market. It is ready for order.

The report examines the current products and application areas, provides extensive market data of 2013, and market forecast through 2018 to 2022. It also evaluates market chances and risks, outlines the competition landscape, and anticipates future trends based on a series of influence factors.

- 225 pages analyzing the market
- 75 figure tables
- 250 optical coatings manufacturers profiled

With a multi-dimensional and in-depth view of global optical coatings market, this report is ideal help for you with decision-making in market entry and penetration, product research and development, and strategic management.

## Table of Contents

### Volume I

<b>1. Definition and segmentation.....</b>	<b>1</b>
1.1 Market definition and segmentation.....	1
1.2 Products, features and applications.....	8
1.3 Optical coatings deposition technology.....	12
<b>2. Macro-environment.....</b>	<b>17</b>
2.1 Trends in the global economy.....	17
2.2 Global photonics industry.....	25
<b>3. Overview of optical coatings market.....</b>	<b>29</b>
3.1 Market data.....	29
3.1.1 Optical coatings market by material.....	29
3.1.2 Optical coatings market by type.....	32
3.1.3 Optical coatings demand by deposition technology.....	35
3.1.4 Optical coatings market by application.....	37
3.1.5 Optical coatings market by region.....	39
3.2 Market trends and chances.....	41
3.3 Industrial dynamics.....	50
3.4 Investment, M&A.....	58
3.5 Competition analysis.....	64
<b>4. Market by material.....</b>	<b>71</b>
4.1 Oxides.....	71
4.1.1 Products, features and uses.....	71
4.1.2 Market size and forecast.....	73
4.1.2.1 Oxide-based optical coatings market by type.....	75
4.1.2.2 Oxide-based optical coatings market by use.....	76
4.1.2.3 Oxide-based optical coatings market by region.....	77

4.2 Fluorides.....	78
4.2.1 Products, features and uses.....	78
4.2.2 Market size and forecast.....	81
4.2.2.1 Fluoride-based optical coatings market by type.....	83
4.2.2.2 Fluoride-based optical coatings market by use.....	84
4.2.2.3 Fluoride-based optical coatings market by region.....	85
4.3 Metallic.....	86
4.3.1 Products, features and uses.....	86
4.3.2 Market size and forecast.....	90
4.3.2.1 Metallic optical coatings market by type.....	92
4.3.2.2 Metallic optical coatings market by use.....	93
4.3.2.3 Metallic optical coatings market by region.....	94
4.4 Others.....	95
<b>5 Market by type.....</b>	<b>97</b>
5.1 Antireflective coatings.....	97
5.1.1 Products, features and applications.....	97
5.1.2 Market size and forecast.....	99
5.1.2.1 Anti-reflective coatings market by type.....	101
5.1.2.2 Anti-reflective coatings market by coating material.....	102
5.1.2.3 Anti-reflective coatings market by product.....	103
5.1.2.4 Anti-reflective coatings market by application.....	104
5.2 Reflective coatings.....	105
5.2.1 Products, features, applications.....	105
5.2.2 Market size and forecast.....	109
5.2.2.1 Reflective coatings market by type.....	111
5.2.2.2 Reflective coatings market by product.....	112
5.2.2.3 Reflective coatings market by application.....	113
5.2.2.4 Reflective coatings market by region.....	114
5.3 Filter coatings.....	115
5.3.1 Products, features, applications.....	115
5.3.2 Market size and forecast.....	119

5.3.2.1 Filter coatings market by type.....	121
5.3.2.2 Filter coatings market by product.....	122
5.3.2.3 Filter coatings market by application.....	123
5.3.2.4 Filter coatings market by region.....	124
5.4 Beamsplitter coatings.....	125
5.4.1 Products, features and applications.....	125
5.4.2 Market size and forecast.....	129
5.4.2.1 Beam splitter coatings market by type.....	131
5.4.2.2 Beam splitter coatings market by product.....	132
5.4.2.3 Beam splitter coatings market by application.....	133
5.4.2.4 Beam splitter coatings market by region.....	134
5.5 Conductive Coatings.....	135
5.5.1 Products, features and applications.....	135
5.5.2 Market size and forecast.....	138
5.5.2.1 Conductive coatings market by type.....	140
5.5.2.2 Conductive coatings market by product.....	141
5.5.2.3 Conductive coatings market by application.....	142
5.5.2.4 Conductive coatings market by region.....	143
5.6 Optical protective coatings.....	144
5.6.1 Products, features, and applications.....	144
5.6.2 Market size and forecast.....	146
5.6.2.1 Protective coatings market by type.....	148
5.6.2.2 Protective coatings market by use.....	149
5.6.2.3 Protective coatings market by application.....	150
5.6.2.4 Protective coatings market by region.....	151
5.7 Electrochromic coatings.....	152
5.7.1 Products, features and applications.....	152
5.7.2 Market size and forecast.....	153
5.7.2.1 Electrochromic coatings market by type.....	154
5.7.2.2 Electrochromic coatings market by use.....	155
5.7.2.3 Electrochromic coatings market by application.....	156
5.7.2.4 Electrochromic coatings market by region.....	157

5.8 Others.....	158
<b>6. Market by application.....</b>	<b>159</b>
6.1 Electronics & semiconductor.....	159
6.1.1 Products and market segmentation.....	159
6.1.2 Market size and forecast.....	161
6.1.2.1 Optical coatings demand in electronics & semiconductor by segment..	163
6.1.2.2 Optical coatings demand in electronics & semiconductor by type....	164
6.1.2.3 Optical coatings demand in electronics & semiconductor by region.	165
6.2 Telecommunication & optical communication.....	166
6.2.1 Products and market segmentation.....	166
6.2.2 Market size and forecast.....	169
6.2.2.1 Optical coatings demand in fiber optics & telecommunication by segment.....	170
6.2.2.2 Optical coatings demand in fiber optics & telecommunication by type.....	171
6.2.2.3 Optical coatings demand in fiber optics & telecommunication by region.....	172
6.3 Automotive.....	173
6.3.1 Products and market segmentation.....	173
6.3.2 Market size and forecast.....	176
6.3.2.1 Optical coatings demand in automotive by segment.....	178
6.3.2.2 Optical coatings demand in automotive by type.....	179
6.3.2.3 Optical coatings demand in automotive by region.....	180
6.4 Medical.....	181
6.4.1 Products and market segmentation.....	181
6.4.2 Market size and forecast.....	182
6.4.2.1 Optical coatings demand in medical by segment.....	185
6.4.2.2 Optical coatings demand in medical by type.....	186
6.4.2.3 Optical coatings demand in medical by region.....	187
6.5 Instrumentation.....	188
6.5.1 Products and market segmentation.....	188

6.5.2 Market size and forecast.....	190
6.5.2.1 Optical coatings demand in instrumentation by segment.....	191
6.5.2.2 Optical coatings demand in instrumentation by type.....	192
6.5.2.3 Optical coatings demand in instrumentation by region.....	193
6.6 Architecture.....	194
6.6.1 Products and market segmentation.....	194
6.6.2 Market size and forecast.....	197
6.6.2.1 Optical coatings demand in architecture by segment.....	198
6.6.2.2 Optical coatings demand in architecture by type.....	199
6.6.2.3 Optical coatings demand in architecture by region.....	200
6.7 Military & defense.....	201
6.7.1 Products and market segmentation.....	201
6.7.2 Market size and forecast.....	203
6.7.2.1 Optical coatings demand in military & defense by segment.....	204
6.7.2.2 Optical coatings demand in military & defense by type.....	205
6.7.2.3 Optical coatings demand in military & defense by region.....	206
6.8 Security and Safety.....	207
6.8.1 Products and market segmentation.....	207
6.8.2 Market size and forecast.....	209
6.8.2.1 Optical coatings demand in security and authentication by segment...	210
6.8.2.2 Optical coatings demand in security and authentication by type.....	211
6.9 Others.....	212
6.9.1 Consumer goods (non-electronics) .....	212
6.9.2 Green energy.....	213
6.9.3 Environment.....	213
6.9.4 Entertainment.....	213
<b>7 Market by region.....</b>	<b>215</b>
7.1 Western Europe.....	215
7.1.1 Consumption of optical by product type in W. Europe.....	215
7.1.2 Consumption of optical coatings by application in W. Europe.....	216
7.1.3 Consumption of optical coatings by country.....	217

7.2 North America.....	218
7.2.1 Consumption of optical coatings by product in N. America.....	218
7.2.2 Consumption of optical coatings by application.....	219
7.2.3 Consumption of optical coatings by country.....	220
7.3 Japan.....	221
7.3.1 Consumption of optical coatings by product type in Japan.....	221
7.3.2 Consumption of optical coatings by application in Japan.....	222
7.4 Asia Pacific*.....	223
7.4.1 Consumption of optical coatings by product in Asia Pacific*.....	223
7.4.2 Consumption of optical coatings by application in Asia Pacific*.....	224
7.4.3 Consumption of optical coating by country in Asia Pacific*.....	225
7.5 ROW.....	226
7.5.1 Consumption of optical by product type in ROW.....	226
7.5.2 Consumption of optical coatings by application in ROW.....	227
7.5.3 Consumption of optcial coating by selected country in ROW.....	228

## Volume II

Company profiles (ca. 250).....	1-295
---------------------------------	-------

**Note:**

Regions:

North America: US, Canada, Mexico (NAFTA region)

Asia Pacific: Countries of Asia, Australia, New Zealand

Asia Pacific\*: Asia Pacific excluding Japan

## **5 Market by product type**

### **5.1 Antireflective coatings**

#### **5.1.1 Products, features and applications**

Antireflection coatings are coatings used to reduce reflection from surfaces of the optic. Deposited anti-reflective coatings vary in complexity from single layer to 10 or more layers.

Whenever a ray of light moves from one medium to another (such as when light enters a sheet of glass after travelling through air), some portion of the light is reflected from the surface (known as the interface) between the two media. Antireflection coatings reduce glare and ghost images from secondary reflections. This will result in a clearer and sharper image on any optical substrate.

#### **Single-layer interference AR coatings**

The simplest interference AR coating consists of a single quarter-wave layer of transparent material whose refractive index is the square root of the substrate's refractive index. Such coatings, theoretically, gives zero reflectance at the center wavelength and decreased reflectance for wavelengths in a broad band around the center.

#### **Multilayer AR coatings**

Multilayer antireflective coatings can reach the lowest reflectivity at a center wavelength. It is often applied to single laser wavelength or multiple, closely-spaced wavelength system to guarantee the lowest loss for center wavelength. The multilayer broadband antireflective coating can reach higher transmission for broadband spectrum than the single layer broadband antireflective coatings. Therefore, it is the ideal for a wide range of multi-wavelength laser and white light application.

....

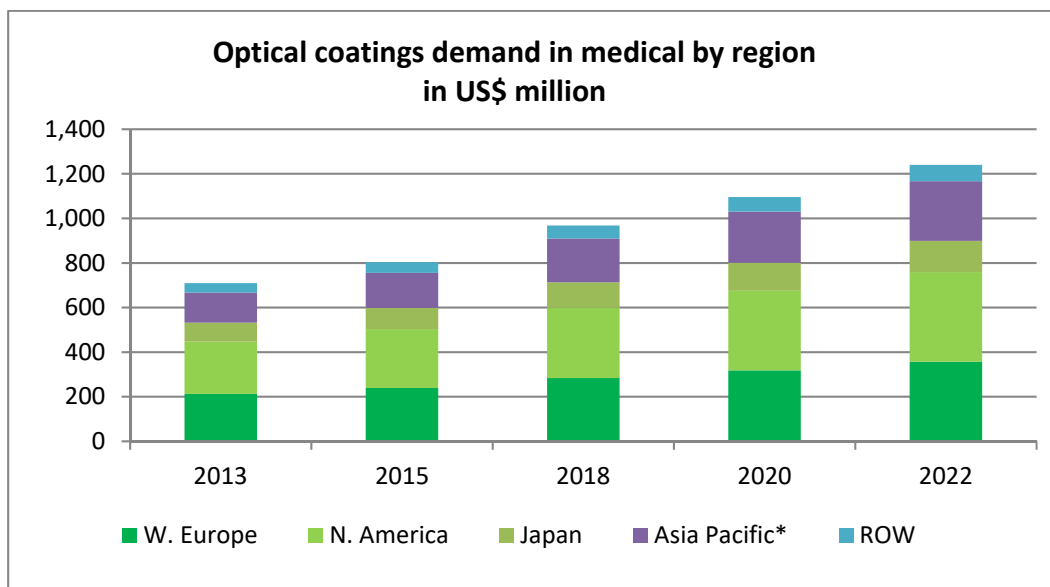
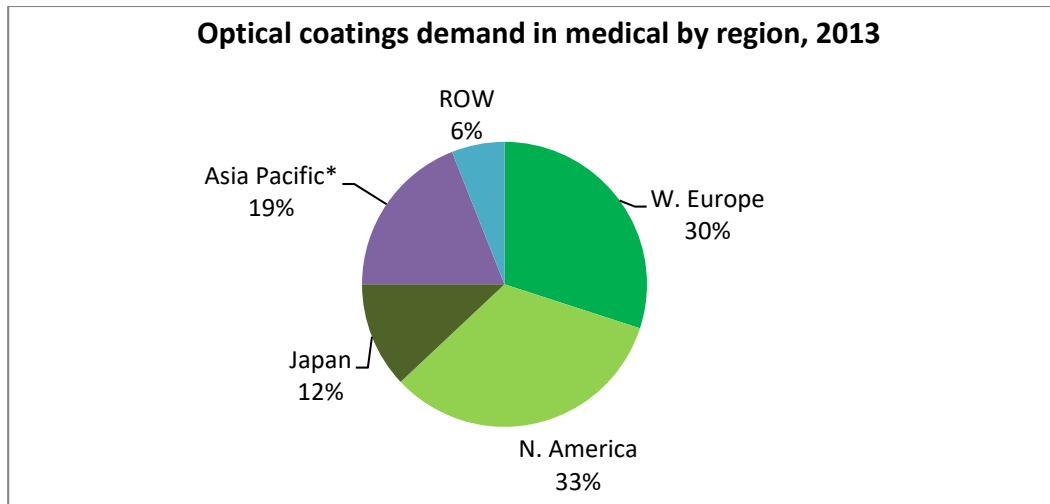
(Vol. I P.97)



**6.4.2.3 Optical coatings demand in medical by region**

Optical coatings demand in medical by region in US\$ million

	2013	2015	2018	2020	2022	CAGR
W. Europe	213	239	284	318	357	5.8%
N. America	234	264	317	357	402	6.1%
Japan	85	95	112	126	140	5.6%
Asia Pacific*	135	157	197	230	267	7.8%
ROW	43	48	58	65	74	6.2%
Total	710	803	968	1096	1240	6.4%



(Vol. I P.187)

## 6.6 Architecture

### 6.6.1 Products and market segmentation

As one of the fundamental elements of architecture, windows serve a very practical purpose. Advances in coating technology allow windows to play a greater role in energy efficiency. The impact of windows on energy consumption is various and complex, consequently many technical approaches have emerged for optical coatings to improve the performance of windows.

There are several optical coating systems used in architecture: anti-glare (anti-reflection) coatings, low emissivity coatings, solar control coatings, electrochromic coatings, etc.

Most modern architectural glazing incorporates optical coatings for thermal and aesthetic functionality. Coating processes are often closely coupled to the glass float line (such as pyrolytic coatings), or in subsequent vacuum coating processes. They can provide the key functionalities of low emissivity (and spectral selectivity, with respective coating stacks) and glare reduction.

#### **Anti-reflective coatings / anti-glare coatings**

Anti-reflective coatings / anti-glare coatings aim at reducing reflective or transmissive glare, and are therefore almost always designed as absorptive coatings. For thin film coatings, metals such as chromium, nickel, or suitable alloys (nickel-chrome or even stainless steel in varying compositions) are the most typical materials.

#### **Solar control coatings**

Solar control coatings are very commonly applied to glass. The fundamental function of a solar control coating is to reduce the heat gain of a window or facade by reducing the transmission of solar energy and to keep building ... ..

... ..

(Vol. I P.194)

## **PPG Industries Inc. (US)**

One PPG Place

Pittsburgh, PA 15272

USA

Phone: +1 412-434-3131

Fax: +1 412-434-4170

<http://www.ppg.com>

Year of Foundation: 1883

Number of Employees: 41,400

Revenue: USD 15,108.0 million

### **Company profile**

PPG Industries Inc. is a company specializing in the manufacture and sale of coatings, optical and specialty materials, and glass products.

The company operates in five business units:

- Performance Coatings
- Industrial Coatings
- Architectural Coatings
- Optical and Specialty Materials
- Glass.

The company's optical products include lenses, optical lens materials, sun lenses, and amorphous precipitated silicas.

PPG's Hi-Gard® Lens Coating is applied to form a scratch resistant coating on ophthalmic lenses made from plastic materials. This optical coating material is a low viscosity solution, which is applied by conventional dip and spin coating ... ..

... ..

(Vol. II P. 215)



# Order Form

**Please return this form**

Via Fax: +49-2102-8761 471 or  
 Via Email: market@acmite.com or  
 Via Post: Acmite Market Intelligence / Dechenstr. 17, 40878 Ratingen, Germany

If you have any question please email to: market@acmite.com

Code	Product	Page	Basic License*	Site License**	Corporate License***
C0621	Global Optical Coatings Market, Volume I	225	<input type="checkbox"/> EUR 1490	<input type="checkbox"/> EUR 1690	<input type="checkbox"/> EUR 2390
C0622	Global Optical Coatings Market, Volume II	295	<input type="checkbox"/> EUR 790	<input type="checkbox"/> EUR 990	<input type="checkbox"/> EUR 1290
C0620	Global Optical Coatings Market, Total (Volume I + II)	520	<input type="checkbox"/> EUR 1990	<input type="checkbox"/> EUR 2390	<input type="checkbox"/> EUR 3390
<i>Sum</i>			<input type="checkbox"/> <i>EUR</i> _____	<input type="checkbox"/> <i>EUR</i> _____	<input type="checkbox"/> <i>EUR</i> _____

\* Basic license: non-printable and non-copyable PDF, for single user only

\*\* Site license: printable and copyable PDF, for one business site

\*\*\* Corporate license: printable and copyable PDF, for all business sites

If hard copy is wished, 50 EUR is charged for each volume and each copy. Please make a notice here: \_\_\_\_\_.

Company: \_\_\_\_\_ Contact Person: Mr  Ms  Dr

Address: \_\_\_\_\_ Name: \_\_\_\_\_

\_\_\_\_\_ Position /Dept.: \_\_\_\_\_

Zip Code: \_\_\_\_\_ Phone: \_\_\_\_\_

Country: \_\_\_\_\_ Fax: \_\_\_\_\_

Homepage: \_\_\_\_\_ Email: \_\_\_\_\_

Date: \_\_\_\_\_ Signature: \_\_\_\_\_