

3D Printed Technical Ceramics: Technologies and Global Markets

https://marketpublishers.com/r/3669B000170EN.html

Date: June 2017 Pages: 125 Price: US\$ 2,750.00 (Single User License) ID: 3669B000170EN

Abstracts

The global market for 3D printing of technical ceramics reached \$118 million and \$142 million in 2015 and 2016, respectively. This market is expected to increase from \$174 million in 2017 to \$544 million in 2022 at a compound annual growth rate (CAGR) of 25.6% for 2017-2022.

Mechanical/Chemicals application market is expected to grow from \$78 million in 2017 to \$239 million in 2022 at a CAGR of 25.1% from 2017 through 2022.

Life sciences application market is expected to grow from \$74 million in 2017 to \$256 million in 2022 at a CAGR of 28.2% from 2017 through 2022.



Contents

CHAPTER 1 INTRODUCTION

Study Goals and Objectives Reasons for Doing This Study Intended Audience Scope of Report Methodology and Information Sources Geographic Breakdown Analyst's Credentials Related BCC Research Reports

CHAPTER 2 SUMMARY AND HIGHLIGHTS

CHAPTER 3 MARKET AND TECHNOLOGY BACKGROUND

Definitions and Study Focus 3D PRINTING MARKET Milestones in the History of 3D Printed Technical Ceramics Current and Emerging Applications for 3D Printed Technical Ceramics Life Science Electrical and Electronics Optical and Optoelectronics Mechanical/Chemical Energy

CHAPTER 4 CERAMIC 3D PRINTING TECHNOLOGIES

Fabrication of Technical Ceramics by 3D Printing 3D PRINTING PROCESSES FOR TECHNICAL CERAMICS Powder-based Methods Binder Jetting Multi-jet Fusion Post-printing Processes Preceramic Polymers Selective Laser Sintering Selective Laser Sintering of Binder Coated Powder High-speed Sintering

3D Printed Technical Ceramics: Technologies and Global Markets





Suspension-based Methods

Robocasting

- Direct-write Assembly
- Fused Deposition Modeling
- Precision Extrusion Deposition
- Freeze-form Extrusion Fabrication
- Direct Inkjet Printing
- Nanoparticle Jetting
- Electrohydrodynamic Jet Printing
- Pressurized spray deposition
- Stereolithography
- **Two-photon Polymerization**
- **Digital Light Processing**
- **Continuous Liquid Interface Production**
- Lithography-based Ceramic Manufacturing
- Slurry-based 3D Printing
- Slurry-based Selective Laser Sintering
- Tape-based Methods
- Laser Object Manufacturing
- Post-printing Processes
- Materials for 3D Printed Technical Ceramics
- Latest Technological Developments, 2014 to Present
- Thermoplastic 3D Printing of Ceramics
- Ceramic On-demand Extrusion
- Aerosol Jet Printing
- Additive Manufacturing of Ceramics by Sol-gel Process
- Additive Manufacturing from Preceramic Polymer Beads
- Other Relevant R&D Activities

CHAPTER 5 GLOBAL MARKETS

Analysis Outline Global Market Summary Current Market Status Market by Product Category Market by Material Market by technology Market by Application Market by Region





Market Growth Trends

Industry Growth

Mechanical/Chemical

Filters and Membranes

Catalysts

Aerospace and Defense

Thermal and Acoustic Insulation

Wear- and Corrosion-Resistant Parts

Sensors

Life Science

Implantable Devices

Dentistry/Periodontics/Orthodontics

Tissue Engineering Scaffolds

Autografts

Allografts

Xenografts

Synthetic Materials

Biomaterials

Electrical and Electronics

Circuit Devices

MEMS

Piezoelectric Components

Optical and Optoelectronics

Optical and Optomechanical Components

Lasers

Scintillators

Energy

Fuel Cells

Batteries

Thermoelectric Devices

Technological Trends

Multimaterial 3D Printing

Increasing Automation

Fine Powder Printing Capability

Reduced Barriers to Innovation

Regional Trends

Market Forecast

Market by Product Category

Market by Material

3D Printed Technical Ceramics: Technologies and Global Markets



Market by Technology Market by Application Market by Region

CHAPTER 6 GLOBAL INDUSTRY STRUCTURE

Leading Suppliers **Other Industry Players Company Profiles 3D CERAM 3DYNAMIC SYSTEMS AETHER** CERALINK CERHUM CERIX **ELEMENTUM 3D** EXONE LITHOZ NSCRYPT **PRODWAYS ROBOCASTING ENTERPRISES** SCHUNK GROUP **STEINBACH** XJET

CHAPTER 7 PATENT ANALYSIS

Introduction Summary of Recently Awarded Patents General Trends Trends by Country and Region Trends by Assignee Trends by Patent Category Trends by Application Trends by Material Type Advantages and Disadvantages of Common Ceramic 3D Printing Technologies



List Of Tables

LIST OF TABLES

Summary Table Global Market for 3D Printing of Technical Ceramics, by Application, Through 2021 Table 1 Global Market for 3D Printing, by Material Type, Through 2022 Table 2 Technological Milestones for 3D Printed Technical Ceramics Table 3 Applications of 3D Printed Technical Ceramics in Life Science Table 4 Applications of 3D Printed Technical Ceramics in the Electrical and Electronics Sector Table 5 Applications of 3D Printed Technical Ceramics in the Optical and **Optoelectronics Sector** Table 6 Applications of 3D Printed Technical Ceramics in the Mechanical/Chemical Sector Table 7 Applications of 3D Printed Technical Ceramics in Energy Table 8 Comparison of Common Ceramic 3D Printing Technologies Table 9 Common Materials for 3D Printed Technical Ceramics Table 10 Other Relevant R&D Activities Table 11 Global Market for 3D Printing of Technical Ceramics, by End Use, Through 2022 Table 12 Global Market for 3D Printing of Technical Ceramics, by Product Category, Through 2017 Table 13 Global Market for 3D Printing of Technical Ceramics, by Material, Through 2017 Table 14 Global Market for 3D Printing of Technical Ceramics, by Technology, Through 2017 Table 15 Global Market for 3D Printing of Technical Ceramics, by Application, Through 2017 Table 16 Global Market for 3D Printing of Technical Ceramics, by Region, Through 2017 Table 17 Membrane-Based Separation Processes Table 18 Global Market for Filtration, by Type, Through 2022 Table 19 Global Market for Membranes, by Region, Through 2022 Table 20 Global Market for Catalysts, by Type, Through 2022 Table 21 Global Market for the Aerospace Industry, by Region, Through 2022 Table 22 Global Market for Body and Vehicular Armor, by Type, Through 2022 Table 23 Global Market for Body and Vehicular Armor, by Region, Through 2022 Table 24 Global Market for Body and Vehicular Armor, by Material, Through 2022



Table 25 Global Market for Thermal and Acoustic Insulation, by Sector, Through 2022 Table 26 Global Market for Wear- and Corrosion-Resistant Parts, by Type, Through 2022

Table 27 Global Market for Wear- and Corrosion-Resistant Parts, by Material, Through 2022

Table 28 Global Market for Sensors, by Type, Through 2022

Table 29 Global Market for CSCCs, by Type, Through 2022

Table 30 Global Market for Implantable Devices, by Region, Through 2022

Table 31 Global Market for Implantable Devices, by Type, Through 2022

 Table 32 Global Market for Semiconductors, by Region, Through 2022

Table 33 Global Market for MEMS and NEMS, by Type, Through 2022

Table 34 Global Market for Lasers, by Type, Through 2022

Table 35 Global Market for Fuel Cells, by Type, Through 2022

Table 36 Global Market for Batteries, by Type, Through 2022

Table 37 Global Market for 3D Printing of Technical Ceramics, by Product Category, Through 2022

Table 38 Global Market for 3D Printing of Technical Ceramics, by Material, Through 2022

Table 39 Global Market for 3D Printing of Technical Ceramics, by Technology, Through 2022

Table 40 Global Market for 3D Printing of Technical Ceramics, by Application, Through 2022

Table 41 Global Market For 3D Printing of Technical Ceramics, by Region, Through 2022

Table 42 Leading Suppliers of Equipment, Materials and Services

Table 43 Leading Suppliers by Product Type

Table 44 Leading suppliers for 3D Printing of Technical Ceramics, by Product Type and Region

Table 45 Other Relevant Industry Players

Table 46 3D Printing of Technical Ceramics U.S. Patents, 2017

Table 47 3D Printing of Technical Ceramics U.S. Patents, 2016

 Table 48 3D Printing of Technical Ceramics U.S. Patents, 2015

Table 49 U.S. Patent Trends for 3D Printing of Technical Ceramics, 2015-2017

Table 50 Assignees of U.S. Patents Related to 3D Printing of Technical Ceramics,

2015-201



List Of Figures

LIST OF FIGURES

Summary Figure Summary Figure: Global Market For 3D Printing of Technical

Ceramics, By Application, 2015-2022

Figure 1 Global Market Share for 3D Printing, by Material Type, 2017

Figure 2 3D Printed Technical Ceramics: Worldwide Patent Applications and Patents Issued 1992 to 2016

Figure 3 Basic Steps for Fabrication of 3D Printed Technical Ceramics

Figure 4 Fabrication Processes for 3D Printed Technical Ceramics

Figure 5 Binder Jetting

Figure 6 Selective Laser Sintering

Figure 7 Robocasting

Figure 8 Fused Deposition Modeling

Figure 9 Direct Inkjet Printing

Figure 10 Stereolithography

Figure 11 Continuous Liquid Interface Production

Figure 12 Slurry-Based 3D Printing

Figure 13 Slurry-Based Selective Laser Sintering

Figure 14 Laser Object Manufacturing

Figure 15 Global Market for 3D Printing of Technical Ceramics, by End Use, 2015-2022

Figure 16 Global Market Share for 3D Printing of Technical Ceramics, by Product Category, 2017

Figure 17 Global Market Share for 3D Printing of Technical Ceramics, by Material, 2017 Figure 18 Global Market Share for 3D Printing of Technical Ceramics, by Technology, 2017

Figure 19 Global Market Share for 3D Printing of Technical Ceramics, by Application, 2017

Figure 20 Global Market Share for 3D Printing of Technical Ceramics, by Region, 2017

Figure 21 Global Market Share for Membranes, by Region, 2022

Figure 22 Global Market Share for Catalysts, by Type, 2022

Figure 23 Global Market Share for the Aerospace Industry, by Region, 2022

Figure 24 Global Market Share for Body and Vehicular Armor, by Region, 2022

Figure 25 Global Market Share for Body and Vehicular Armor, by Material, 2022

Figure 26 Global Market Share for Thermal and Acoustic Insulation, by Sector, 2022

Figure 27 Global Market Share for Wear- and Corrosion-Resistant Parts, by Type, 2022

Figure 28 Global Market Share for Wear- and Corrosion-Resistant Parts, by Material,

2022



Figure 29 Global Market Share for Sensors, by Type, 2022 Figure 30 Global Market Share for CSCCs, by Type, 2022 Figure 31 Global Market Share for Implantable Devices, by Region, 2022 Figure 32 Global Market Share for Implantable Devices, by Type, 2022 Figure 33 Global Market Share for Semiconductor Devices, by Region, 2022 Figure 34 Global Market Share for MEMS and NEMS, by Type, 2022 Figure 35 Global Market Share for Lasers, by Type, 2022 Figure 36 Global Market Share for Fuel Cells, by Type, 2022 Figure 37 Global Market Share for Batteries, by Type, 2022 Figure 38 Global Market Share for 3D Printing of Technical Ceramics, by Product Category, 2022 Figure 39 Global Market Share for 3D Printing of Technical Ceramics, by Material, 2022 Figure 40 Global Market Share for 3D Printing of Technical Ceramics, by Technology, 2022 Figure 41 Global Market Share for 3D Printing of Technical Ceramics, by Application, 2022 Figure 42 Global Market Share for 3D Printing of Technical Ceramics, by Region, 2022 Figure 43 Leading suppliers for 3D Printing of Technical Ceramics, by Product Type and Region Figure 44 U.S. Patent Trends for 3D Printing of Technical Ceramics, 2015-2017 Figure 45 Global Patents Shares for 3D Printing of Technical Ceramics, by Region, 2015-2017 Figure 46 Global Patents Shares for 3D Printing of Technical Ceramics, by Country, 2015-2017 Figure 47 U.S. Patents Shares for 3D Printing of Technical Ceramics, by Organization Type, 2015-2017 Figure 48 U.S. Patents Shares for 3D Printing of Technical Ceramics, by Patent Category, 2015-2017 Figure 49 U.S. Patents Shares for 3D Printing of Technical Ceramics, by Application, 2015-2017 Figure 50 U.S. Patents Shares for 3D Printing of Technical Ceramics, by Patent Category, 2015-2017



I would like to order

Product name: 3D Printed Technical Ceramics: Technologies and Global Markets Product link: <u>https://marketpublishers.com/r/3669B000170EN.html</u>

> Price: US\$ 2,750.00 (Single User License / Electronic Delivery) If you want to order Corporate License or Hard Copy, please, contact our Customer Service: <u>info@marketpublishers.com</u>

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <u>https://marketpublishers.com/r/3669B000170EN.html</u>

To pay by Wire Transfer, please, fill in your contact details in the form below:

First name: Last name: Email: Company: Address: City: Zip code: Country: Tel: Fax: Your message:

**All fields are required

Custumer signature _____

Please, note that by ordering from marketpublishers.com you are agreeing to our Terms & Conditions at <u>https://marketpublishers.com/docs/terms.html</u>

To place an order via fax simply print this form, fill in the information below and fax the completed form to +44 20 7900 3970