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The Global Market for Thermal Management Materials and Systems 2025-2035

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Abstracts

Thermal management materials and systems play a crucial role in maintaining optimal operating temperatures for a wide range of technologies and industries. These solutions are essential for enhancing performance, reliability, and longevity of various devices and systems, particularly in high-heat environments. The thermal management landscape encompasses a diverse array of materials and systems, including thermal interface materials (TIMs), heat spreaders, heat sinks, liquid cooling systems, air cooling solutions, cooling plates, spray cooling technologies, immersion cooling, thermoelectric coolers, coolant fluids, and phase change materials (PCMs).

In the electric vehicle (EV) market, thermal management is paramount for ensuring battery efficiency, safety, and longevity. EV batteries generate significant heat during charging and discharging cycles, necessitating advanced cooling solutions to maintain optimal performance and prevent thermal runaway. Similarly, power electronics and electric motors in EVs require effective thermal management to operate efficiently and reliably under various driving conditions.

Data centers, the backbone of our digital infrastructure, face immense thermal challenges due to the high density of heat-generating equipment. Effective thermal management in data centers is critical for maintaining server performance, reducing energy consumption, and minimizing downtime. As data centers grow in size and complexity, innovative cooling solutions such as liquid and immersion cooling are gaining traction, offering improved efficiency and reduced operating costs.

Beyond EVs and data centers, thermal management materials and systems find applications in consumer electronics, 5G telecommunications infrastructure, aerospace, ADAS (Advanced Driver-Assistance Systems) sensors, and energy systems. In

consumer electronics, thermal management solutions enable the development of more powerful and compact devices while preventing overheating. In 5G infrastructure, advanced cooling technologies are essential for managing the increased heat generation from high-frequency components.

The global market for thermal management materials and systems is experiencing robust growth, driven by technological advancements, increasing power densities in electronic devices, and the growing demand for energy-efficient cooling solutions. As industries continue to push the boundaries of performance and miniaturization, the importance of effective thermal management will only increase, making it a critical factor in the development of next-generation technologies across various sectors.

This comprehensive market report provides an in-depth analysis of the rapidly evolving thermal management industry, offering strategic insights into key trends, technologies, and market opportunities from 2025 to 2035. As industries like electric vehicles, consumer electronics, data centers, and 5G telecommunications face increasing thermal challenges, this report serves as an essential guide for stakeholders navigating the complex landscape of thermal management solutions. The report covers a wide range of thermal management technologies, including:

Thermal Interface Materials (TIMs)

Heat Spreaders and Heat Sinks

Liquid Cooling Systems

Air Cooling Systems

Cooling Plates

Spray Cooling

Immersion Cooling

Thermoelectric Coolers

Coolant Fluids

Phase Change Materials (PCMs)

For each technology, the report provides detailed analysis of:

Material properties and performance characteristics

Latest innovations and emerging trends

Key market players and competitive landscape. Companies profiled include 3M, ADA Technologies, AI Technology Inc., Aismalibar S.A., AllCell Technologies (Beam Global), Amphenol Advanced Sensors, Andores New Energy Co., Ltd., AOK Technologies, AOS Thermal Compounds LLC, Apheros, Arkema, Arieca, Inc., Arteco, Asahi Kasei, Aspen Aerogels, Asperitas Immersed Computing, ATP Adhesive Systems AG, Axalta, Axiotherm GmbH, Azelio, Bando Chemical Industries, Ltd., Beam Global/AllCell, BNNano, BNNT LLC, Bostik, Boyd Corporation, BYK, Cadenza Innovation, Calyos, Carbice Corp., Carbon Waters, Carbodeon Ltd. Oy, Carrar, Chilldyne, Climator Sweden AB, CondAlign AS, Croda Europe Ltd., Cryopak, CSM, Dana, Datum Phase Change Ltd, Detakta Isolier- und Messtechnik GmbH & Co. KG, Devan Chemicals NV, Dexerials Corporation, Deyang Carbonene Technology, Dober, Dow Corning, Dupont (Laird Performance Materials), Dymax Corporation, ELANTAS Europe GmbH, e-Mersiv, Elkem, Elkem Silcones, Enerdyne Thermal Solutions, Inc, Engineered Fluids, Epoxies Etc., Ewald D?rken AG, Exergyn, First Graphene Ltd, FUCHS, Fujipoly, Fujitsu Laboratories, GLPOLY, Global Graphene Group, Goodfellow Corporation, Graphmatech AB, Green Revolution Cooling (GRC), GuangDong KingBali New Material Co., Ltd., HALA Contec GmbH & Co. KG, Hamamatsu Carbonics Corporation, Hangzhou Ruhr New Material Technology Co., Ltd., H.B. Fuller Company, HeatVentors, Henkel AG & Co. KGAA and many more.....

Applications across various industries

Market size and growth projections

The report segments the thermal management market by end-use industries, including:

Consumer Electronics

Electric Vehicles (EVs)

- Data Centers
- ADAS Sensors
- 5G Telecommunications
- Aerospace
- Energy Systems

For each segment, the report offers:

- Market drivers and challenges
- Technology requirements and adoption trends
- In-depth application analysis (e.g., EV battery thermal management, data center cooling)
- Market size and forecast (2025-2035)

Key features of the report include:

- Analysis of advanced materials like carbon nanotubes, graphene, and boron nitride in thermal management
- Evaluation of novel cooling technologies such as two-phase immersion cooling
- Discussion of sustainability trends and the shift towards eco-friendly thermal management solutions
- Impact of Industry 4.0 and IoT on thermal management strategies
- Regional market analysis and growth opportunities
- Profiles of over 170 companies in the thermal management space

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With 400 pages of expert analysis, including 78 tables and 92 figures, this report provides unparalleled insight into the future of thermal management technologies and markets. It is an invaluable resource for:

- Thermal management material and system manufacturers
- Electronics and automotive OEMs
- Data center operators and telecommunications companies
- Investors and financial analysts
- R&D professionals and technology scouts
- Strategy and sustainability executives

As thermal management becomes increasingly critical for product performance and reliability across multiple industries, this report offers the comprehensive market intelligence needed to stay ahead in this dynamic and rapidly growing field.

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Contents

1 INTRODUCTION

1.1 Thermal management
  1.1.1 Active
  1.1.2 Passive
1.2 Thermal Management Systems
  1.2.1 Immersion Cooling Systems for Data Centers
  1.2.2 Battery Thermal Management for Electric Vehicles
  1.2.3 Heat Exchangers for Aerospace Cooling
  1.2.4 Air Cooling Systems
  1.2.5 Liquid Cooling Systems
  1.2.6 Vapor Compression Systems
  1.2.7 Spray Cooling Systems
  1.2.8 Hybrid Cooling Systems:
1.3 Main types of thermal management materials and technologies

2 THERMAL INTERFACE MATERIALS

2.1 What are thermal interface materials (TIMs)?
  2.1.1 Types
  2.1.2 Thermal conductivity
2.2 Comparative properties of TIMs
2.3 Advantages and disadvantages of TIMs, by type
2.4 Prices
2.5 Thermal greases and pastes
2.6 Thermal gap pads
2.7 Thermal gap fillers
2.8 Thermal adhesives and potting compounds
2.9 Metal-based TIMs
  2.9.1 Solders and low melting temperature alloy TIMs
  2.9.2 Liquid metals
  2.9.3 Solid liquid hybrid (SLH) metals
    2.9.3.1 Hybrid liquid metal pastes
    2.9.3.2 SLH created during chip assembly (m2TIMs)
2.10 Carbon-based TIMs
  2.10.1 Multi-walled nanotubes (MWCNT)
    2.10.1.1 Properties

2.10.1.2 Application as thermal interface materials
2.10.2 Single-walled carbon nanotubes (SWCNTs)
2.10.2.1 Properties
2.10.2.2 Application as thermal interface materials
2.10.3 Vertically aligned CNTs (VACNTs)
2.10.3.1 Properties
2.10.3.2 Applications
2.10.3.3 Application as thermal interface materials
2.10.4 BN nanotubes (BNNT) and nanosheets (BNNS)
2.10.4.1 Properties
2.10.4.2 Application as thermal interface materials
2.10.5 Graphene
2.10.5.1 Properties
2.10.5.2 Application as thermal interface materials
2.10.5.2.1 Graphene fillers
2.10.5.2.2 Graphene foam
2.10.5.2.3 Graphene aerogel
2.10.6 Nanodiamonds
2.10.6.1 Properties
2.10.6.2 Application as thermal interface materials
2.10.7 Graphite
2.10.7.1 Properties
2.10.7.2 Natural graphite
2.10.7.2.1 Classification
2.10.7.2.2 Processing
2.10.7.2.3 Flake
2.10.7.2.3.1 Grades
2.10.7.2.3.2 Applications
2.10.7.3 Synthetic graphite
2.10.7.3.1 Classification
2.10.7.3.1.1 Primary synthetic graphite
2.10.7.3.1.2 Secondary synthetic graphite
2.10.7.3.1.3 Processing
2.10.7.4 Applications as thermal interface materials
2.10.8 Hexagonal Boron Nitride
2.10.8.1 Properties
2.10.8.2 Application as thermal interface materials
2.11 Metamaterials
2.11.1 Types and properties

2.11.1.1 Electromagnetic metamaterials
2.11.1.1.1 Double negative (DNG) metamaterials
2.11.1.1.2 Single negative metamaterials
2.11.1.1.3 Electromagnetic bandgap metamaterials (EBG)
2.11.1.1.4 Bi-isotropic and bianisotropic metamaterials
2.11.1.1.5 Chiral metamaterials
2.11.1.1.6 Electromagnetic “Invisibility” cloak
2.11.1.2 Terahertz metamaterials
2.11.1.3 Photonic metamaterials
2.11.1.4 Tunable metamaterials
2.11.1.5 Frequency selective surface (FSS) based metamaterials
2.11.1.6 Nonlinear metamaterials
2.11.1.7 Acoustic metamaterials
2.11.2 Application as thermal interface materials
2.12 Self-healing thermal interface materials
2.12.1 Extrinsic self-healing
2.12.2 Capsule-based
2.12.3 Vascular self-healing
2.12.4 Intrinsic self-healing
2.12.5 Healing volume
2.12.6 Types of self-healing materials, polymers and coatings
2.12.7 Applications in thermal interface materials
2.13 Phase change thermal interface materials (PCTIMs)
2.13.1 Thermal pads
2.13.2 Low Melting Alloys (LMAs)
2.14 Market forecast

3 HEAT SPREADERS AND HEAT SINKS

3.1 Design
3.2 Materials
3.2.1 Aluminum alloys
3.2.2 Copper
3.2.3 Metal foams
3.2.4 Metal matrix composites
3.2.5 Graphene
3.2.6 Carbon foams and nanotubes
3.2.7 Graphite
3.2.8 Diamond

3.2.9 Liquid immersion cooling
3.2.10 Applications
3.2.11 Market players
3.3 Challenges
3.4 Market forecast

4 LIQUID COOLING SYSTEMS

4.1 Design
4.2 Types
4.3 Liquid Coolants
4.4 Components of Liquid Cooling Systems
4.5 Comparative analysis
4.6 Benefits
4.7 Challenges
4.8 Recent innovation
4.9 Market forecast

5 AIR COOLING

5.1 Introduction
5.2 Air Cooling Methods
5.3 Design
5.4 Recent innovations
5.5 Applications
5.6 Market forecast

6 COOLING PLATES

6.1 Overview
6.1.1 Cold Plate/Direct to Chip Cooling
6.1.2 Liquid Cooling Cold Plates
6.1.3 Single-Phase Cold Plate
6.1.4 Two-Phase Cold Plate
6.2 Design
6.3 Enhancement Techniques
6.4 Cost
6.5 Applications
6.6 Recent innovation

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6.7 Market forecast

7 SPRAY COOLING

7.1 Overview
7.2 Heat Transfer Mechanisms
7.3 Spray Cooling Fluids
7.4 Applications
7.5 Recent innovations
7.6 Market forecast

8 IMMERSION COOLING

8.1 Overview
8.2 Common immersion fluids
8.3 Benefits
8.4 Single-Phase Immersion Cooling
8.5 Two-Phase Immersion Cooling
8.6 Challenges
8.7 Recent innovation
8.8 Market forecast

9 THERMOELECTRIC COOLERS

9.1 Thermoelectric Modules
9.2 Performance Factors
9.3 Electronics Cooling

10 COOLANT FLUIDS

10.1 Coolant Fluid Requirements
10.2 Common EV Coolant Fluids
10.3 Recent innovations
10.4 Market forecast

11 PHASE CHANGE MATERIALS

11.1 Properties of Phase Change Materials (PCMs)
11.2 Types

11.2.1 Organic/biobased phase change materials
11.2.1.1 Advantages and disadvantages
11.2.1.2 Paraffin wax
11.2.1.3 Non-Paraffins/Bio-based
11.2.2 Inorganic phase change materials
11.2.2.1 Salt hydrates
11.2.2.1.1 Advantages and disadvantages
11.2.2.2 Metal and metal alloy PCMs (High-temperature)
11.2.3 Eutectic mixtures
11.2.4 Encapsulation of PCMs
11.2.4.1 Macroencapsulation
11.2.4.2 Micro/nanoencapsulation
11.2.5 Nanomaterial phase change materials
11.3 Thermal energy storage (TES)
11.3.1 Sensible heat storage
11.3.2 Latent heat storage
11.4 Battery Thermal Management
11.5 Market forecast

12 MARKETS FOR THERMAL MANAGEMENT MATERIALS AND SYSTEMS

12.1 Consumer electronics
12.1.1 Market overview
12.1.2 Market drivers
12.1.3 Applications
12.1.3.1 Smartphones and tablets
12.1.3.2 Wearable electronics
12.1.4 Global market revenues 2024-2035
12.2 Electric Vehicles (EV)
12.2.1 Market overview
12.2.2 Market drivers
12.2.3 EV Cooling
12.2.3.1 Coolant Fluids
12.2.3.2 Refrigerants
12.2.4 Applications
12.2.4.1 Lithium-ion batteries
12.2.4.1.1 Active vs Passive Cooling
12.2.4.1.2 Air Cooling
12.2.4.1.3 Liquid Cooling

12.2.4.1.4 Refrigerant Cooling
12.2.4.1.5 Thermal Management in 800V Systems
12.2.4.1.6 Cell-to-pack designs
12.2.4.1.7 Cell-to-chassis/body
12.2.4.1.8 Immersion Cooling
12.2.4.1.9 Heat Spreaders and Cooling Plates
12.2.4.1.10 Coolant Hoses
12.2.4.1.11 Thermal Interface Materials
12.2.4.1.12 Fire Protection Materials
12.2.4.1.13 Other
12.2.4.1.14 Commercial use cases
12.2.4.2 Electric motors
12.2.4.2.1 Air Cooling
12.2.4.2.2 Water-glycol Cooling
12.2.4.2.3 Oil Cooling
12.2.4.2.4 Refrigerant Cooling
12.2.4.2.5 Immersion Cooling
12.2.4.2.6 Phase Change Materials
12.2.4.2.7 Motor Insulation and Encapsulation
12.2.4.2.8 Other Technologies
12.2.4.2.9 Commercial use cases
12.2.4.3 Power electronics
12.2.4.3.1 Single- vs Double-Sided Cooling
12.2.4.3.2 TIM1 and TIM2
12.2.4.3.3 Wire Bonding
12.2.4.3.4 Substrate Materials
12.2.4.3.5 Cooling Power Electronics
12.2.4.3.6 Liquid Cooling
12.2.4.4 Charging stations
12.2.4.4.1 Charging Levels
12.2.4.4.2 Liquid Cooling
12.2.4.4.3 Immersion Cooling
12.2.4.4.4 Commercial use cases
12.2.4.5 Cabin heating
12.3 Data Centers
12.3.1 Market overview
12.3.2 Market drivers
12.3.3 Data Center thermal management requirements
12.3.4 Data Center Cooling

12.3.4.1 Cooling Technology
12.3.4.2 Air Cooling
12.3.4.3 Hybrid Liquid-to-Air Cooling
12.3.4.4 Hybrid Liquid-to-Liquid Cooling
12.3.4.5 Hybrid Liquid-to-Refrigerant Cooling
12.3.4.6 Hybrid Refrigerant-to-Refrigerant Cooling
12.3.4.7 Thermal Interface Materials
12.3.4.8 Cold plates
12.3.4.9 Spray Cooling
12.3.4.10 Immersion Cooling
12.3.5 Applications
12.3.5.1 Router, switches and line cards
12.3.5.2 Servers
12.3.5.3 Power supply converters
12.4 ADAS Sensors
12.4.1 Market overview
12.4.2 Market drivers
12.4.3 Applications
12.4.3.1 ADAS Cameras
12.4.3.2 ADAS Radar
12.4.3.3 ADAS LiDAR
12.5 EMI shielding
12.5.1 Market overview
12.5.2 Market drivers
12.5.3 Applications
12.6 5G
12.6.1 Market overview
12.6.2 Market drivers
12.6.3 Applications
12.6.3.1 Antenna
12.6.3.2 Base Band Unit (BBU)
12.7 Aerospace
12.7.1 Market overview
12.7.2 Market drivers
12.7.3 Applications
12.8 Energy systems
12.8.1 Market overview
12.8.1.1 Market drivers
12.8.1.2 Applications

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12.9 Other markets

13 GLOBAL REVENUES

13.1 Global revenues 2023, by type
13.2 Global revenues 2024-2035, by materials type
13.2.1 Telecommunications market
13.2.2 Electronics and data centers market
13.2.3 ADAS market
13.2.4 Electric vehicles (EVs) market
13.3 By end-use market
13.4 By region

14 FUTURE MARKET OUTLOOK

15 COMPANY PROFILES 257 (172 COMPANY PROFILES)

16 RESEARCH METHODOLOGY

17 REFERENCES

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List Of Tables

LIST OF TABLES

Table 1. Comparison active and passive thermal management.
Table 2. Types of thermal management materials and solutions.
Table 3. Thermal conductivities (?) of common metallic, carbon, and ceramic fillers employed in TIMs.
Table 4. Commercial TIMs and their properties.
Table 5. Advantages and disadvantages of TIMs, by type.
Table 6. Thermal interface materials prices.
Table 7. Characteristics of some typical TIMs.
Table 8. Properties of CNTs and comparable materials.
Table 9. Typical properties of SWCNT and MWCNT.
Table 10. Comparison of carbon-based additives in terms of the main parameters influencing their value proposition as a conductive additive.
Table 11. Thermal conductivity of CNT-based polymer composites.
Table 12. Comparative properties of BNNTs and CNTs.
Table 13. Properties of graphene, properties of competing materials, applications thereof.
Table 14. Properties of nanodiamonds.
Table 15. Comparison between Natural and Synthetic Graphite.
Table 16. Classification of natural graphite with its characteristics.
Table 17. Characteristics of synthetic graphite.
Table 18. Properties of hexagonal boron nitride (h-BN).
Table 19. Types of self-healing coatings and materials.
Table 20. Comparative properties of self-healing materials.
Table 21. Benefits and drawbacks of PCMs in TIMs.
Table 22. Global Revenue Forecast for Thermal Interface Materials 2020- 2035 (Millions USD).
Table 23. Challenges with heat spreaders and heat sinks.
Table 24. Global Revenue Forecast for Heat Spreaders and Heat Sinks 2020- 2035 (Millions USD).
Table 25. Comparison of Liquid Cooling Technologies.
Table 26. Different Cooling on Chip Level.
Table 27. Global Revenue Forecast for Liquid Cooling 2020- 2035 (Millions USD).
Table 28. Global Revenue Forecast for Air Cooling 2020- 2035 (Millions USD).
Table 29. Global Revenue Forecast for Cooling Plates 2020- 2035 (Millions USD).
Table 30. Global Revenue Forecast for Spray Cooling 2020- 2035 (Millions USD).

Table 31. Global Revenue Forecast for Immersion Cooling 2020- 2035 (Millions USD).
Table 32. Global Revenue Forecast for Coolant Fluids 2020- 2035 (Millions USD).
Table 33. Common PCMs used in electronics cooling and their melting temperatures.
Table 34. Properties of PCMs.
Table 35. PCM Types and properties.
Table 36. Advantages and disadvantages of organic PCMs.
Table 37. Advantages and disadvantages of organic PCM Fatty Acids.
Table 38. Advantages and disadvantages of salt hydrates
Table 39. Advantages and disadvantages of low melting point metals.
Table 40. Advantages and disadvantages of eutectics.
Table 41. Global Revenue Forecast for PCM Thermal Management Materials 2020-2035 (Millions USD).
Table 42. Motor Cooling Strategy by Power,
Table 43. Cooling Strategy by Motor Type
Table 44. Charging Levels.
Table 45. Comparison of Data Center Cooling Technology.
Table 46. Global revenues for thermal management materials and systems, 2023, by type.
Table 47. Global revenues for thermal management materials & systems, 2024-2035, by end use market (millions USD)
Table 48. Global revenues for thermal management materials and systems 2024-2035, by region (millions USD).
Table 49. Carbodeon Ltd. Oy nanodiamond product list.
Table 50. CrodaTherm Range.
Table 51. Ray-Techniques Ltd. nanodiamonds product list.
Table 52. Comparison of ND produced by detonation and laser synthesis.

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List Of Figures

LIST OF FIGURES

Figure 1. (L-R) Surface of a commercial heatsink surface at progressively higher magnifications, showing tool marks that create a rough surface and a need for a thermal interface material.
Figure 2. Schematic of thermal interface materials used in a flip chip package.
Figure 3. Thermal grease.
Figure 4. Dispensing a bead of silicone-based gap filler onto the heat sink of a power electronics module.
Figure 5. Application of thermal silicone grease.
Figure 6. A range of thermal grease products.
Figure 7. Thermal Pad.
Figure 8. Dispensing a bead of silicone-based gap filler onto the heat sink of a power electronics module.
Figure 9. Thermal tapes.
Figure 10. Thermal adhesive products.
Figure 11. Typical IC package construction identifying TIM1 and TIM2
Figure 12. Liquid metal TIM product.
Figure 13. Pre-mixed SLH.
Figure 14. HLM paste and Liquid Metal Before and After Thermal Cycling.
Figure 15. SLH with Solid Solder Preform.
Figure 16. Automated process for SLH with solid solder preforms and liquid metal.
Figure 17. Schematic diagram of a multi-walled carbon nanotube (MWCNT).
Figure 18. Schematic of single-walled carbon nanotube.
Figure 19. Types of single-walled carbon nanotubes.
Figure 20. Schematic of a vertically aligned carbon nanotube (VACNT) membrane used for water treatment.
Figure 21. Schematic of Boron Nitride nanotubes (BNNTs). Alternating B and N atoms are shown in blue and red.
Figure 22. Graphene layer structure schematic.
Figure 23. Illustrative procedure of the Scotch-tape based micromechanical cleavage of HOPG.
Figure 24. Graphene and its descendants: top right: graphene; top left: graphite = stacked graphene; bottom right: nanotube=rolled graphene; bottom left: fullerene=wrapped graphene.
Figure 25. Detonation Nanodiamond.
Figure 26. DND primary particles and properties.

Figure 27. Flake graphite.
Figure 28. Applications of flake graphite.
Figure 29. Graphite-based TIM products.
Figure 30. Structure of hexagonal boron nitride.
Figure 31. Classification of metamaterials based on functionalities.
Figure 32. Electromagnetic metamaterial.
Figure 33. Schematic of Electromagnetic Band Gap (EBG) structure.
Figure 34. Schematic of chiral metamaterials.
Figure 35. Nonlinear metamaterials- 400-nm thick nonlinear mirror that reflects frequency-doubled output using input light intensity as small as that of a laser pointer.
Figure 36. Schematic of self-healing polymers. Capsule based (a), vascular (b), and intrinsic (c) schemes for self-healing materials. Red and blue colours indicate chemical species which react (purple) to heal damage.
Figure 37. Stages of self-healing mechanism.
Figure 38. Self-healing mechanism in vascular self-healing systems.
Figure 39. Comparison of self-healing systems.
Figure 40. PCM TIMs.
Figure 41. Phase Change Material - die cut pads ready for assembly.
Figure 42. Global Revenue Forecast for Thermal Interface Materials 2020- 2035 (Millions USD).
Figure 43. Global Revenue Forecast for Heat Spreaders and Heat Sinks 2020- 2035 (Millions USD).
Figure 44. Global Revenue Forecast for Liquid Cooling 2020- 2035 (Millions USD).
Figure 45. Global Revenue Forecast for Air Cooling 2020- 2035 (Millions USD).
Figure 46. Direct Water-Cooled Server .
Figure 47. Global Revenue Forecast for Cooling Plates 2020- 2035 (Millions USD).
Figure 48. Global Revenue Forecast for Spray Cooling 2020- 2035 (Millions USD).
Figure 49. Global Revenue Forecast for Immersion Cooling 2020- 2035 (Millions USD).
Figure 50. Global Revenue Forecast for Coolant Fluids 2020- 2035 (Millions USD).
Figure 51. Phase-change TIM products.
Figure 52. PCM mode of operation.
Figure 53. Classification of PCMs.
Figure 54. Phase-change materials in their original states.
Figure 55. Thermal energy storage materials.
Figure 56. Phase Change Material transient behaviour.
Figure 57. Global Revenue Forecast for PCM Thermal Management Materials 2020- 2035 (Millions USD).
Figure 58. Schematic of TIM operation in electronic devices.
Figure 59. Schematic of Thermal Management Materials in smartphone.

Figure 60. Wearable technology inventions.
Figure 61. Global market revenues in electronics 2018-2024, by type, million USD.
Figure 62. Application of thermal interface materials in automobiles.
Figure 63. EV battery components including TIMs.
Figure 64. Battery pack with a cell-to-pack design and prismatic cells.
Figure 65. Cell-to-chassis battery pack.
Figure 66. TIMS in EV charging station.
Figure 67. Image of data center layout.
Figure 68. Application of TIMs in line card.
Figure 69. ADAS radar unit incorporating TIMs.
Figure 70. Coolzorb 5G.
Figure 71. TIMs in Base Band Unit (BBU).
Figure 72. Global revenues for thermal management materials and systems, 2024-2035, by type.
Figure 73. Global revenues for thermal management materials and systems in telecommuncations, 2024-2035, by type.
Figure 74. Global revenues for thermal management materials and systems in electronics & data centers, 2024-2035, by type.
Figure 75. Global revenues for thermal management materials and systems in ADAS, 2024-2035, by type.Source: Future Markets, Inc.
Figure 76. Global revenues for thermal management materials and systems in Electric Vehicles (EVs), 2024-2035, by type.
Figure 77. Global revenues for thermal management materials and systems 2024-2035, by market.
Figure 78. Global revenues for thermal management materials and systems 2024-2035, by region (millions USD).
Figure 79. Boron Nitride Nanotubes products.
Figure 80. Transtherm® PCMs.
Figure 81. Carbice carbon nanotubes.
Figure 82. Internal structure of carbon nanotube adhesive sheet.
Figure 83. Carbon nanotube adhesive sheet.
Figure 84. HI-FLOW Phase Change Materials.
Figure 85. Thermoelectric foil, consists of a sequence of semiconductor elements connected with conductive metal. At the top (in red) is the thermal interface.
Figure 86. Parker Chomerics THERM-A-GAP GEL.
Figure 87. Cr?do™ ProMed transport bags.
Figure 88. Metamaterial structure used to control thermal emission.
Figure 89. Shinko Carbon Nanotube TIM product.
Figure 90. The Sixth Element graphene products.

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Figure 91. Thermal conductive graphene film.
Figure 92. VB Series of TIMS from Zeon.

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