

High Temperature Insulation Materials Market by Material Type (Ceramic Fibers, Insulating Firebricks, Calcium Silicate), End-use Industry (Petrochemical, Ceramic, Glass, Iron & Steel, Cement), Temperature Range, and Region - Global Forecast to 2030

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Report description:

The high temperature insulation materials market is projected to reach USD 5.23 billion by 2030 from USD 4.32 billion in 2025, at a CAGR of 3.9% during the forecast period.

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High temperature insulation materials are being steadily used in heavy industries such as metallurgy, cement, glass, and petrochemicals, due to stringent safety and energy-efficiency regulations from organizations like the Bureau of Energy Efficiency (India) and material standards from ASTM International. Materials such as ceramic fiber blankets, calcium silicate boards, and refractory bricks are manufactured to offer dimensional stability, low thermal conductivity, and durability at operating temperatures ranging from 600C to over 1,500C. They support lining in industrial furnaces, insulation of process equipment, high-temperature ductwork, and thermal protection in complex manufacturing systems. Further, according to NASA evaluations, these materials enable reliable performance in space nuclear systems by withstanding extreme radiant heat fluxes. The US Department of Energy guidelines place their role as reducing industrial energy losses by up to 20% in high-heat processes. "Ceramic fibers are projected to be the fastest-growing material type in the high temperature insulation materials market during the forecast period."

Ceramic fibers are expected to be the most rapidly expanding material category in the high temperature insulation materials market during the forecast period, due to their exceptional thermal resistance, low thermal conductivity, and outstanding energy

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efficiency. These fibers can withstand extremely high temperatures of more than 1,700C and, therefore, are used in various critical applications, such as petrochemical processing, iron & steel production, power generation, and high-temperature furnaces. The low weight and ease of installation improve the efficiency while also decreasing the overall maintenance costs. Developments in fiber chemistry, biodegradable formulations, and further enhancements in durability are expanding their application areas in industries seeking safer, efficient, and environmentally compliant insulation solutions, driving strong market growth.

"Cement is projected to be the fastest-growing end-use industry in the high temperature insulation materials market during the forecast period."

During the forecast period, the cement segment is expected to be the fastest-growing end-use industry in the high-temperature insulation materials market, driven by rising global construction activities and an increased focus on energy efficiency. The manufacturing process for cement involves kiln operations at temperatures exceeding 1,450C, driving demand for high-performance insulation materials that reduce heat loss, ensure fuel efficiency, and extend the lifespan of refractory bricks. Additionally, the modernization of cement plants, regulations aimed at reducing emissions, and the growing trend towards environmentally friendly manufacturing are all expected to be major factors driving the use of ceramic fibers, insulating firebricks, and calcium silicate products in the market. High-temperature insulation materials will be instrumental in lowering operational costs, enhancing thermal performance, and facilitating decarbonization, thereby allowing the total high-temperature insulation materials market in the cement industry to grow at a rapid pace.

"Asia Pacific is projected to be the fastest-growing region in the high temperature insulation materials market during the forecast period."

Asia Pacific is expected to have the fastest growth in the high temperature insulation materials market. Quick industrialization and a large-scale rise in the cement, petrochemical, metal, and glass industries are the main factors that are resulting in the rapid growth of the area. Adoption is being buoyed by the implementation of stricter regulatory energy-efficiency standards, more infrastructure investment, and the rising demand for high-performance insulation to reduce heat loss and CO2 emissions. There are also further reasons for the positive growth outlook, including ongoing capacity increases and a competitive manufacturing base.

By Company Type: Tier 1: 40%, Tier 2: 30%, and Tier 3: 30%

By Designation: Directors: 30%, Managers: 20%, and Others: 50%

By Region: North America: 20%, Europe: 10%, Asia Pacific: 40%, South America: 10%, and the Middle East & Africa 20%

Notes: Others include sales, marketing, and product managers.

Tier 1: >USD 1 Billion; Tier 2: USD 500 Million-1 Billion; and Tier 3: <USD 500 Million

Companies Covered: 3M (US), Morgan Advanced Materials plc (UK), RHI Magnesita GmbH (Austria), Luyang Energy-saving Materials Co., Ltd. (China), Etex Group (Belgium), Calcey (France), Alkegen (US), SHINAGAWA REFRA Co., Ltd. (Japan), IBIDEN (Japan), and Grupo NUTEC (Mexico) are covered in the report.

The study includes an in-depth competitive analysis of these key players in the high temperature insulation materials market, with their company profiles, recent developments, and key market strategies.

Research Coverage

This research report categorizes the high temperature insulation materials market based on material type (ceramic fibers, insulating fire bricks, calcium silicate, and other types), temperature range [600-1,100C (1,112-2,012F), 1,100-1,500C (2,012-2,732F), 1,500-1,700C (2,732-3,092F), and 1,700C (3,092F) and above], and end-use industry (petrochemical, ceramic, glass, aluminum, iron & steel, cement, refractory, powder metallurgy, and other end-use industries). The report's scope covers detailed information regarding the drivers, restraints, challenges, and opportunities influencing the growth of the high temperature insulation materials market. A detailed analysis of the key industry players has been done to provide insights into their business overview, products offered, and key strategies, such as mergers, acquisitions, product launches, and expansions, associated with the high temperature insulation materials market. This report covers a competitive analysis of upcoming startups in the high temperature insulation materials market ecosystem.

Reasons to Buy the Report

The report will offer the market leaders/new entrants with information on the closest approximations of the revenue numbers for the overall high temperature insulation materials market and the subsegments. It will help stakeholders understand the

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competitive landscape, gain more insights into positioning their businesses better, and plan suitable go-to-market strategies. The report will help stakeholders understand the pulse of the market and provide them with information on key market drivers, restraints, challenges, and opportunities.

The report provides insights into the following points.

- Analysis of key drivers (rising demand from high-heat and heavy industries, stringent energy efficiency and emission regulations, growing demand for lightweight and high-performance insulation solutions in the aerospace and automotive industries), restraints (health, safety, and environmental regulations increasing compliance costs, supply chain volatility and high capital costs limiting market expansion), opportunities (industrial expansion in emerging economies, rising demand from decarbonization, retrofit, and energy-efficiency projects), and challenges (performance degradation and technical complexity in extreme multi-hazard environments, certification and testing bottlenecks hindering material adoption).
- Product Development/Innovation: Detailed insights into upcoming technologies, research & development activities, and product & service launches in the high temperature insulation materials market.
- Market Development: Comprehensive information about profitable markets - the report analyzes the high temperature insulation materials market across varied regions.
- Market Diversification: Exhaustive information about new products & services, untapped geographies, recent developments, and investments in the high temperature insulation materials market.
- Competitive Assessment: In-depth assessment of market shares, growth strategies, and service offerings of leading players such as 3M (US), Morgan Advanced Materials plc (UK), RHI Magnesita GmbH (Austria), Luyang Energy-saving Materials Co., Ltd. (China), Etex Group (Belgium), Caldersy (France), Alkegen (US), SHINAGAWA REFRA Co., Ltd. (Japan), IBIDEN (Japan), and Grupo NUTEC (Mexico), among others.

Table of Contents:

1	INTRODUCTION	27
1.1	STUDY OBJECTIVES	27
1.2	MARKET DEFINITION	27
1.3	STUDY SCOPE	28
1.3.1	MARKETS COVERED AND REGIONAL SCOPE	28
1.3.2	INCLUSIONS AND EXCLUSIONS	29
1.3.3	YEARS CONSIDERED	30
1.3.4	CURRENCY CONSIDERED	30
1.3.5	UNITS CONSIDERED	30
1.4	STAKEHOLDERS	30
1.5	SUMMARY OF CHANGES	31
2	EXECUTIVE SUMMARY	32
2.1	KEY INSIGHTS AND MARKET HIGHLIGHTS	32
2.2	KEY MARKET PARTICIPANTS: MAPPING OF STRATEGIC DEVELOPMENTS	33
2.3	DISRUPTIONS SHAPING HIGH-TEMPERATURE INSULATION MATERIALS MARKET	34
2.4	HIGH-GROWTH SEGMENTS & EMERGING FRONTIERS	35
2.5	SNAPSHOT: GLOBAL MARKET SIZE, GROWTH RATE, AND FORECAST	36
3	PREMIUM INSIGHTS	37
3.1	ATTRACTIVE OPPORTUNITIES FOR PLAYERS IN HIGH-TEMPERATURE INSULATION MATERIALS MARKET	37
3.2	ASIA PACIFIC: HIGH-TEMPERATURE INSULATION MATERIALS MARKET, BY TYPE AND COUNTRY	38
3.3	HIGH-TEMPERATURE INSULATION MATERIALS MARKET, BY MATERIAL TYPE	39
3.4	HIGH-TEMPERATURE INSULATION MATERIALS MARKET, BY TEMPERATURE RANGE	39
3.5	HIGH-TEMPERATURE INSULATION MATERIALS MARKET, BY END-USE INDUSTRY	40
3.6	HIGH-TEMPERATURE INSULATION MATERIALS MARKET, BY KEY COUNTRIES	41

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4	MARKET OVERVIEW	42
4.1	INTRODUCTION	42
4.2	MARKET DYNAMICS	42
4.2.1	DRIVERS	43
4.2.1.1	Expanding demand from high-heat and heavy industries	43
4.2.1.2	Stringent energy efficiency and emission regulations	44
4.2.1.3	Growing demand for lightweight and high-performance insulation solutions in aerospace and automotive industries	45
4.2.2	RESTRAINTS	45
4.2.2.1	Health, safety, and environmental regulations increasing compliance costs	45
4.2.2.2	Supply chain volatility and high capital costs limiting market expansion	46
4.2.3	OPPORTUNITIES	46
4.2.3.1	Industrial expansion in emerging economies	46
4.2.3.2	Rising demand from decarbonization, retrofit, and energy-efficiency projects	47
4.2.4	CHALLENGES	48
4.2.4.1	Performance degradation and technical complexity in extreme multi-hazard environments	48
4.2.4.2	Certification and testing bottlenecks hindering material adoption	48
4.3	UNMET NEEDS AND WHITE SPACES	49
4.3.1	UNMET NEEDS IN HIGH-TEMPERATURE INSULATION MATERIALS MARKET	49
4.3.2	WHITE SPACE OPPORTUNITIES	49
4.4	INTERCONNECTED MARKETS AND CROSS-SECTOR OPPORTUNITIES	50
4.4.1	INTERCONNECTED MARKETS	50
4.4.2	CROSS-SECTOR OPPORTUNITIES	51
4.5	STRATEGIC MOVES BY TIER - 1/2/3 PLAYERS	51
4.5.1	KEY MOVES AND STRATEGIC FOCUS	52
5	INDUSTRY TRENDS	53
5.1	PORTER'S FIVE FORCES ANALYSIS	53
5.1.1	THREAT OF NEW ENTRANTS	54
5.1.2	THREAT OF SUBSTITUTES	54
5.1.3	BARGAINING POWER OF SUPPLIERS	55
5.1.4	BARGAINING POWER OF BUYERS	55
5.1.5	INTENSITY OF COMPETITIVE RIVALRY	55
5.2	MACROECONOMIC ANALYSIS	56
5.2.1	INTRODUCTION	56
5.2.2	GDP TRENDS AND FORECASTS	56
5.3	VALUE CHAIN ANALYSIS	57
5.4	ECOSYSTEM ANALYSIS	59
5.5	PRICING ANALYSIS	60
5.5.1	PRICING ANALYSIS BASED ON MATERIAL TYPE	61
5.5.2	PRICING ANALYSIS BASED ON REGION	61
5.6	TRADE ANALYSIS	62
5.6.1	EXPORT SCENARIO (HS CODE 690220)	62
5.6.2	IMPORT SCENARIO (HS CODE 690220)	63
5.7	KEY CONFERENCES AND EVENTS, 2025-2026	65

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- 5.8 TRENDS/DISRUPTIONS IMPACTING CUSTOMER BUSINESS 65
- 5.8.1 TRENDS/DISRUPTIONS IMPACTING CUSTOMER BUSINESS 65
- 5.9 INVESTMENT AND FUNDING SCENARIO 67
- ?
- 5.10 CASE STUDY ANALYSIS 67
- 5.10.1 ENERGY SAVINGS AND PERFORMANCE IMPROVEMENT IN STEEL LADLES USING WDS MICROPOROUS INSULATION 68
- 5.10.2 CONVERTING DIVERTER DAMPERS FROM STONE WOOL TO SUPERWOOL PLUS BLANKET 68
- 5.10.3 SUPERWOOL PRIME FOR EXPANSION JOINTS IN ANODE BAKING FURNACE 69
- 5.11 IMPACT OF 2025 US TARIFF ON HIGH-TEMPERATURE INSULATION MATERIALS MARKET 70
- 5.11.1 INTRODUCTION 70
- 5.11.2 KEY TARIFF RATES 70
- 5.11.3 PRICE IMPACT ANALYSIS 71
- 5.11.4 IMPACT ON KEY COUNTRIES/REGIONS 71
- 5.11.4.1 US 71
- 5.11.4.2 China 72
- 5.11.4.3 Europe 72
- 5.11.4.4 Mexico 72
- 5.11.5 IMPACT ON END-USE INDUSTRIES 72
- 6 STRATEGIC DISRUPTION THROUGH TECHNOLOGY, PATENTS, DIGITAL, AND AI ADOPTIONS 73
- 6.1 KEY EMERGING TECHNOLOGIES 73
- 6.1.1 ALUMINA-ENHANCED AEROGELS AND MULLITE COMPOSITES 73
- 6.1.2 PHONONIC NANO-STRUCTURED AND HOLLOW MICROSPHERE BOARDS 73
- 6.1.3 HIGH-ENTROPY OXIDE FIBERS AND PYROCHLORE STRUCTURES 74
- 6.2 COMPLEMENTARY TECHNOLOGIES 74
- 6.2.1 HIGH-TEMPERATURE SENSORS AND EMBEDDED MONITORING SYSTEMS 74
- 6.3 TECHNOLOGY/PRODUCT ROADMAP 75
- 6.3.1 SHORT-TERM (2025-2027) | PERFORMANCE STABILIZATION & EARLY DIGITIZATION 75
- 6.3.2 MID-TERM (2027-2030) | TECHNOLOGY SCALING & ADVANCED SYSTEM INTEGRATION 76
- 6.3.3 LONG-TERM (2030-2035+) | NEXT-GENERATION MATERIALS & FULLY DIGITAL THERMAL ENVIRONMENTS 77
- 6.4 PATENT ANALYSIS 78
- 6.4.1 INTRODUCTION 78
- 6.4.2 METHODOLOGY 78
- 6.4.3 INSIGHTS 78
- 6.5 FUTURE APPLICATIONS 82
- 6.5.1 THERMAL PROTECTION SYSTEMS (TPS) FOR NEXT-GEN AEROSPACE & SPACECRAFT 82
- 6.5.2 HIGH-TEMPERATURE INSULATION FOR HYDROGEN PRODUCTION & STORAGE 83
- 6.5.3 ADVANCED THERMAL MANAGEMENT FOR ELECTRIC VEHICLES (EVs) 83
- 6.6 IMPACT OF AI/GEN AI ON HIGH-TEMPERATURE INSULATION MATERIALS MARKET 84
- 6.6.1 TOP USE CASES AND MARKET POTENTIAL 84
- 6.6.2 BEST PRACTICES IN HIGH-TEMPERATURE INSULATION MATERIALS PROCESSING 85
- 6.6.3 CASE STUDIES OF AI IMPLEMENTATION IN HIGH-TEMPERATURE INSULATION MATERIALS MARKET 85
- 6.6.4 INTERCONNECTED ADJACENT ECOSYSTEM AND IMPACT ON MARKET PLAYERS 86
- 6.6.5 CLIENTS' READINESS TO ADOPT GENERATIVE AI IN HIGH-TEMPERATURE INSULATION MATERIALS MARKET 86
- 6.7 SUCCESS STORIES AND REAL-WORLD APPLICATIONS 87
- 6.7.1 AEROSPACE THERMAL PROTECTION: SPACE SHUTTLE AND BEYOND 87
- 6.7.2 AUTOMOTIVE EXHAUST SYSTEMS: FORD'S HIGH-PERFORMANCE

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ENGINE INSULATION	87
6.7.3 INDUSTRIAL KILN OPTIMIZATION: OVERSEAS CERAMIC MANUFACTURING PROJECT	87
7 SUSTAINABILITY AND REGULATORY LANDSCAPE	88
7.1 REGIONAL REGULATIONS AND COMPLIANCE	88
7.1.1 REGULATORY BODIES, GOVERNMENT AGENCIES, AND OTHER ORGANIZATIONS	88
7.1.2 INDUSTRY STANDARDS	91
7.2 SUSTAINABILITY INITIATIVES	92
7.2.1 CARBON IMPACT AND ECO-APPLICATIONS OF HIGH-TEMPERATURE INSULATION MATERIALS	92
7.2.1.1 Carbon impact reduction	92
7.2.1.2 Eco-applications	93
7.3 SUSTAINABILITY IMPACT AND REGULATORY POLICY INITIATIVES	93
7.4 CERTIFICATIONS, LABELING, ECO-STANDARDS	94
8 CUSTOMER LANDSCAPE & BUYER BEHAVIOR	96
8.1 DECISION-MAKING PROCESS	96
8.2 BUYER STAKEHOLDERS AND BUYING EVALUATION CRITERIA	98
8.2.1 KEY STAKEHOLDERS IN BUYING PROCESS	98
8.2.2 BUYING CRITERIA	99
8.3 ADOPTION BARRIERS & INTERNAL CHALLENGES	99
8.4 UNMET NEEDS FROM VARIOUS END-USE INDUSTRIES	100
8.5 MARKET PROFITABILITY	102
8.5.1 REVENUE POTENTIAL	102
8.5.2 COST DYNAMICS	102
8.5.3 MARGIN OPPORTUNITIES, BY APPLICATION	102
9 HIGH-TEMPERATURE INSULATION MATERIALS MARKET, BY MATERIAL TYPE	104
9.1 INTRODUCTION	105
9.2 CERAMIC FIBERS	107
9.2.1 REFRACTORY CERAMIC FIBER (RCF)	107
9.2.1.1 Growing demand for high-efficiency, high-temperature insulation to drive market	107
9.2.2 LOW BIOPERSISTENT CERAMIC FIBERS	107
9.2.2.1 Regulatory push toward safer, eco-friendly insulation materials supporting adoption	107
9.2.3 POLYCRYSTALLINE CERAMIC FIBERS	108
9.2.3.1 Demand for ultra-high-temperature insulation solutions to drive market	108
9.3 INSULATING FIREBRICKS	108
9.3.1 ACIDIC REFRACTORY BRICKS	108
9.3.1.1 Demand for refractories resistant to acidic slag and atmospheres to fuel market growth	108
9.3.2 NEUTRAL REFRACTORY BRICKS	109
9.3.2.1 Increasing use of multipurpose refractories for mixed chemical environments to support market growth	109
9.3.3 BASIC REFRACTORY BRICKS	109
9.3.3.1 Adoption in alkaline slag environments to support market growth	109
9.4 CALCIUM SILICATE	109
9.4.1 LIGHTWEIGHT CALCIUM SILICATE	109
9.4.1.1 Increasing demand for low thermal conductivity backup insulation to drive market	109
9.4.2 MEDIUM DENSE CALCIUM SILICATE	110
9.4.2.1 Rising adoption of asbestos-free, high-stability insulation solutions to drive demand	110
9.4.3 DENSE CALCIUM SILICATE	110

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- 9.4.3.1 Need for high-strength, high-performance components in molten metal handling to fuel adoption 110
- 9.5 OTHER TYPES 110
- 9.5.1 PERLITE 110
- 9.5.2 VERMICULITE 110
- 9.5.3 MICROPOROUS MATERIALS 111
- 10 HIGH-TEMPERATURE INSULATION MATERIALS MARKET, BY TEMPERATURE RANGE 112
- 10.1 INTRODUCTION 113
- 10.2 600C-1100C (1112F-2012F) 115
- 10.2.1 WIDE MATERIAL COMPATIBILITY AND HIGH ADOPTION IN MID-TEMPERATURE INDUSTRIAL APPLICATIONS TO DRIVE DEMAND 115
- 10.3 1100C-1500C (2012F-2732F) 115
- 10.3.1 INCREASED DEMAND IN PETROCHEMICAL AND METAL PROCESSING TO DRIVE MARKET 115
- 10.4 1500C-1700C (2732F-3092F) 115
- 10.4.1 GROWING ADOPTION IN METAL PROCESSING, CERAMICS, CEMENT, AND IRON & STEEL INDUSTRIES DRIVING DEMAND 115
- 10.5 1700C (3092F) AND ABOVE 115
- 10.5.1 RISING NEED FOR ULTRA-HIGH-TEMPERATURE REFRACTORIES IN GLASS, STEEL, AND SOLAR POWER APPLICATIONS TO FUEL DEMAND 115
- 11 HIGH-TEMPERATURE INSULATION MATERIALS MARKET, BY END-USE INDUSTRY 116
- 11.1 INTRODUCTION 117
- 11.2 PETROCHEMICALS 119
- 11.2.1 RISING ENERGY DEMAND AND EMISSION CONTROL DRIVING INSULATION MATERIAL ADOPTION 119
- 11.3 CERAMIC 120
- 11.3.1 HIGH ENERGY DEPENDENCE AND EMISSION REGULATIONS FUELING ADOPTION 120
- 11.4 GLASS 120
- 11.4.1 HIGH-TEMPERATURE OPERATIONS AND DECARBONIZATION EFFORTS TO DRIVE MARKET GROWTH 120
- 11.5 ALUMINUM 121
- 11.5.1 DEMAND FOR HIGH THERMAL EFFICIENCY TO SUPPORT MARKET GROWTH 121
- 11.6 IRON & STEEL 121
- 11.6.1 ENERGY EFFICIENCY IMPERATIVES DRIVING INSULATION ADOPTION IN STEELMAKING 121
- 11.7 CEMENT 122
- 11.7.1 HIGH ENERGY INTENSITY AND EMISSION REDUCTION TARGETS FUELING ADOPTION 122
- 11.8 REFRACTORY 122
- 11.8.1 DEMAND FOR HIGH-EFFICIENCY FURNACE DESIGNS BOOSTING ADOPTION 122
- 11.9 POWDER METALLURGY 122
- 11.9.1 RISING ADOPTION OF HIGH-TEMPERATURE SINTERING FOR ADVANCED POWDERED METAL PARTS TO DRIVE MARKET 122
- 11.10 OTHER END-USE INDUSTRIES 123
- 12 HIGH-TEMPERATURE INSULATION MATERIALS MARKET, BY REGION 124
- 12.1 INTRODUCTION 125
- 12.2 ASIA PACIFIC 127
- 12.2.1 CHINA 134
- 12.2.1.1 Industrial capacity expansion accelerating demand for advanced high-temperature insulation 134
- 12.2.2 INDIA 137
- 12.2.2.1 Government-led industrial expansion and energy-efficiency mandates accelerating insulation adoption 137
- 12.2.3 JAPAN 139

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12.2.3.1	Strong energy-efficiency mandates sustaining demand	139
12.2.4	SOUTH KOREA	142
12.2.4.1	K-Green New Deal and 2050 net-zero commitments fueling demand	142
12.2.5	REST OF ASIA PACIFIC	144
12.3	EUROPE	147
12.3.1	GERMANY	154
12.3.1.1	Strong industrial base and advanced manufacturing to drive demand	154
12.3.2	FRANCE	157
12.3.2.1	Rising energy costs and industrial modernization strengthening demand	157
12.3.3	TURKEY	160
12.3.3.1	Export competitiveness and decarbonization policies to drive demand	160
12.3.4	RUSSIA	162
12.3.4.1	Industrial resilience, energy security pressures, and import-substitution policies to drive demand	162
12.3.5	UK	165
12.3.5.1	Industrial decarbonization pressures and efficiency upgrades accelerating demand	165
12.3.6	REST OF EUROPE	167
12.4	NORTH AMERICA	170
12.4.1	US	176
12.4.1.1	Expanding energy-intensive industries and strong regulatory push for thermal efficiency supporting market growth	176
12.4.2	CANADA	178
12.4.2.1	Rising industrial decarbonization pressures to propel market growth	178
12.4.3	MEXICO	181
12.4.3.1	Industrial recovery and thermal-efficiency regulations accelerating adoption	181
12.5	SOUTH AMERICA	183
12.5.1	BRAZIL	189
12.5.1.1	Rising cement production & sales to drive demand for advanced kiln insulation	189
12.5.2	ARGENTINA	192
12.5.2.1	Rising clinker output and furnace modernization to boost adoption	192
12.5.3	REST OF SOUTH AMERICA	194
12.6	MIDDLE EAST & AFRICA	196
12.6.1	GCC COUNTRIES	203
12.6.1.1	Saudi Arabia	206
12.6.1.1.1	Massive petrochemical and refining capacity expansion driving demand	206
12.6.1.2	UAE	208
12.6.1.2.1	Expanding metals, petrochemicals, and cement production driving adoption	208
12.6.1.3	Rest of GCC Countries	211
12.6.2	SOUTH AFRICA	213
12.6.2.1	Growing demand for energy efficiency and furnace modernization across high-heat industries to fuel market growth	213
12.6.3	REST OF MIDDLE EAST & AFRICA	215
13	COMPETITIVE LANDSCAPE	218
13.1	OVERVIEW	218
13.2	KEY PLAYERS' STRATEGIES	218
13.3	MARKET SHARE ANALYSIS	220
13.4	REVENUE ANALYSIS	224
13.5	COMPANY VALUATION AND FINANCIAL METRICS	225
13.6	BRAND COMPARISON	226
13.7	COMPANY EVALUATION MATRIX: KEY PLAYERS, 2024	228

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- 13.7.1 STARS 228
- 13.7.2 EMERGING LEADERS 228
- 13.7.3 PERVASIVE PLAYERS 228
- 13.7.4 PARTICIPANTS 228
- 13.7.5 COMPANY FOOTPRINT: KEY PLAYERS, 2024 230
 - 13.7.5.1 Company footprint 230
 - 13.7.5.2 Region footprint 230
 - 13.7.5.3 Material type footprint 231
 - 13.7.5.4 Temperature range footprint 231
 - 13.7.5.5 End-use industry footprint 232
- 13.8 COMPANY EVALUATION MATRIX: STARTUPS/SMES, 2024 233
 - 13.8.1 PROGRESSIVE COMPANIES 233
 - 13.8.2 RESPONSIVE COMPANIES 233
 - 13.8.3 DYNAMIC COMPANIES 233
 - 13.8.4 STARTING BLOCKS 233
 - 13.8.5 COMPETITIVE BENCHMARKING: STARTUPS/SMES, 2024 235
 - 13.8.5.1 Detailed list of key startups/SMEs 235
 - 13.8.5.2 Competitive benchmarking of key startups/SMEs 236
- 13.9 COMPETITIVE SCENARIO 237
 - 13.9.1 PRODUCT LAUNCHES 237
 - 13.9.2 DEALS 238
 - 13.9.3 EXPANSIONS 239
- 14 COMPANY PROFILES 241
 - 14.1 KEY PLAYERS 241
 - 14.1.1 3M 241
 - 14.1.1.1 Business overview 241
 - 14.1.1.2 Products/Solutions/Services offered 242
 - 14.1.1.3 MnM view 244
 - 14.1.1.3.1 Key strengths 244
 - 14.1.1.3.2 Strategic choices 244
 - 14.1.1.3.3 Weaknesses and competitive threats 244
 - 14.1.2 MORGAN ADVANCED MATERIALS PLC 245
 - 14.1.2.1 Business overview 245
 - 14.1.2.2 Products/Solutions/Services offered 246
 - 14.1.2.3 Recent developments 249
 - 14.1.2.3.1 Expansions 249
 - 14.1.2.4 MnM view 249
 - 14.1.2.4.1 Key strengths 249
 - 14.1.2.4.2 Strategic choices 249
 - 14.1.2.4.3 Weaknesses and competitive threats 249
 - 14.1.3 RHI MAGNESITA GMBH 250
 - 14.1.3.1 Business overview 250
 - 14.1.3.2 Products/Solutions/Services offered 251
 - 14.1.3.3 Recent developments 252
 - 14.1.3.3.1 Deals 252
 - 14.1.3.3.2 Expansions 252

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- 14.1.3.4 MnM view 253
- 14.1.3.4.1 Key strengths 253
- 14.1.3.4.2 Strategic choices 253
- 14.1.3.4.3 Weaknesses and competitive threats 253
- 14.1.4 LUYANG ENERGY-SAVING MATERIALS CO., LTD. 254
- 14.1.4.1 Business overview 254
- 14.1.4.2 Products/Solutions/Services offered 254
- 14.1.4.3 Recent developments 256
- 14.1.4.3.1 Expansions 256
- 14.1.4.4 MnM view 257
- 14.1.4.4.1 Key strengths 257
- 14.1.4.4.2 Strategic choices 257
- 14.1.4.4.3 Weaknesses and competitive threats 257
- 14.1.5 ETEX GROUP 258
- 14.1.5.1 Business overview 258
- 14.1.5.2 Products/Solutions/Services offered 259
- 14.1.5.3 Recent developments 261
- 14.1.5.3.1 Deals 261
- 14.1.5.4 MnM view 261
- 14.1.5.4.1 Key strengths 261
- 14.1.5.4.2 Strategic choices 261
- 14.1.5.4.3 Weaknesses and competitive threats 261
- 14.1.6 CALDERYS 262
- 14.1.6.1 Business overview 262
- 14.1.6.2 Products/Solutions/Services offered 262
- 14.1.6.3 Recent developments 264
- 14.1.6.3.1 Product launches 264
- 14.1.6.3.2 Deals 264
- 14.1.6.4 MnM view 265
- 14.1.7 ALKEGEN 266
- 14.1.7.1 Business overview 266
- 14.1.7.2 Products/Solutions/Services offered 266
- 14.1.7.3 MnM view 267
- 14.1.8 SHINAGAWA REFRA CO., LTD. 268
- 14.1.8.1 Business overview 268
- 14.1.8.2 Products/Solutions/Services offered 269
- 14.1.8.3 Recent developments 271
- 14.1.8.3.1 Deals 271
- 14.1.8.3.2 Expansions 272
- 14.1.8.4 MnM view 272
- 14.1.9 IBIDEN 273
- 14.1.9.1 Business overview 273
- 14.1.9.2 Products/Solutions/Services offered 274
- 14.1.9.3 MnM view 275
- 14.1.10 GRUPO NUTEC 276
- 14.1.10.1 Business overview 276
- 14.1.10.2 Products/Solutions/Services offered 276

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14.1.10.3	Recent developments	278
14.1.10.3.1	Product launches	278
14.1.10.3.2	Expansions	278
14.1.10.4	MnM view	278
14.2	OTHER PLAYERS	279
14.2.1	PYROTEK	279
14.2.2	RATH-GROUP	280
14.2.3	MAFTEC CO., LTD.	281
14.2.4	BNZ MATERIALS	282
14.2.5	COTRONICS CORP.	283
14.2.6	ADL INSULFLEX, INC.	284
14.2.7	M.E. SCHUPP INDUSTRIEKERAMIK GMBH	285
14.2.8	YESO INSULATING PRODUCTS COMPANY LIMITED	286
14.2.9	ZIRCAR CERAMICS	287
14.2.10	FIBRECAST INC.	288
14.2.11	MINERAL SEAL CORPORATION	289
14.2.12	REFMON	290
14.2.13	VITCAS	291
14.2.14	FIRWIN CORPORATION	292
14.2.15	TECHNO WORLD CORPORATION	293
	?	
15	RESEARCH METHODOLOGY	294
15.1	RESEARCH DATA	294
15.1.1	SECONDARY DATA	295
15.1.1.1	Key data from secondary sources	295
15.1.2	PRIMARY DATA	295
15.1.2.1	Key data from primary sources	296
15.1.2.2	Key industry insights	296
15.1.2.3	Breakdown of interviews with experts	297
15.2	MARKET SIZE ESTIMATION	297
15.3	BASE NUMBER CALCULATION	298
15.3.1	DEMAND-SIDE APPROACH	298
15.3.2	SUPPLY-SIDE APPROACH	299
15.4	MARKET FORECAST APPROACH	299
15.4.1	SUPPLY SIDE	299
15.4.2	DEMAND SIDE	299
15.5	DATA TRIANGULATION	299
15.6	FACTOR ANALYSIS	300
15.7	RESEARCH ASSUMPTIONS	301
15.8	RESEARCH LIMITATIONS AND RISK ASSESSMENT	301
16	APPENDIX	302
16.1	DISCUSSION GUIDE	302
16.2	KNOWLEDGESTORE: MARKETSandMARKETS' SUBSCRIPTION PORTAL	305
16.3	CUSTOMIZATION OPTIONS	307
16.4	RELATED REPORTS	307
16.5	AUTHOR DETAILS	308

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