

# Thermal Barrier Coatings Market Size to Worth Around USD 1.66 billion million by 2031 | Praxair Surface Technologies

*The thermal barrier coatings market is estimated to be valued at USD 17.82 Bn in 2024 and is expected to reach USD 25.41 Bn by 2031*

BURLINGAME, CALIFORNIA, UNITED STATES, July 30, 2024  
/EINPresswire.com/ -- Market Overview:

Thermal barrier coatings are ceramic coating systems designed to provide thermal insulation that allows turbine components to operate at higher temperatures, increasing efficiency. They are used to coat engine and turbine parts in industries such as aerospace, industrial gas turbines, and automotive to increase their durability and protect them from corrosion at high temperatures.



## Market Dynamics:

The global Thermal Barrier Coatings market is witnessing significant growth, thanks to growing aerospace industry and rising demand for higher engine efficiency. The market is expected to grow at a CAGR of over 5% during the forecast period due to increasing air passenger traffic globally and growing demand for lightweight and fuel-efficient aircraft. In addition, advancements in material science have led to development of newer ceramic coating materials with improved thermal insulation properties that can withstand higher combustion temperatures and last longer. This is supporting growing adoption of Thermal Barrier Coatings across major end-use industries such as aerospace, industrial gas turbines, and automotive. However, availability of substitutes and economic cyclicity continue to pose challenges to market players.

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Major Growth Driver: Increasing Demand from Automotive Industry

The automotive industry has been one of the largest end-users of thermal barrier coatings globally. Thermal barrier coatings are extensively used in automobile engines and exhaust systems to protect critical engine components from excess heat and improve fuel efficiency. As emissions standards become more stringent worldwide, automakers are under increased pressure to develop more efficient engines. Thermal barrier coatings play a crucial role in enabling higher combustion temperatures without damaging engine parts. Developing economies like India, China, Brazil, and others are witnessing substantial growth in automobile production and sales. This will drive more demand for thermal barrier coatings from automotive OEMs and manufacturers of engine components.

#### Significant Market Opportunity: Opportunities in Emerging Applications

In addition to the established automotive and power industries, thermal barrier coatings are witnessing growing demand from several newer applications as well. For instance, they allow combustion chambers in diesel engines for marine applications to operate at higher temperatures, improving efficiency. Demand is rising from the aviation sector, where coatings help increase the lifespan of gas turbine engines that power commercial and military aircraft. They are also used to protect critical components in industrial furnaces, diesel locomotives, and gas turbine electrical generators. The ability of thermal barrier coatings to excel under extreme conditions opens up opportunities in emerging areas like renewable energy generation, waste treatment, and more.

#### Noteworthy Market Trend: Rising Adoption of Advanced Coating Materials

Manufacturers are continuously focusing on developing new and advanced materials for thermal barrier coatings to overcome existing limitations and expand application scope. Material innovations could bring step-change improvements in properties such as heat resistance, toughness, adhesion, and fracture resistance. Promising new coating materials gaining acceptance include double ceramic layers (DCL), rare earth oxide-stabilized zirconia, and mullite. Other advanced options under research are nanostructured materials, functionally graded materials, solution precursor plasma sprayed (SPPS) coatings, and hybrid polymer-ceramic coatings. Transition to advanced materials with superior performance will be a defining trend driving the evolution of thermal barrier coatings technology in the coming years.

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- Thermion
- A&A Company
- TWI Ltd.
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- Oerlikon Group
- Honeywell International Inc.
- Parat Technologies
- Hayden Corp
- Air Products and Chemicals Inc
- Starck Inc.
- ASB Industries Inc.
- Ugam Chemicals

Market Segmentation:

By Product Type:

- By Product Type: Metals , Ceramics , Intermetallics , and Others
- By Coating Materials: AL2O3 , Ceramic YSZ , MCrAlY , and Others
- By Technology: HVOF , Vapor Deposition , and Air Plasma

By Applications:

- By Application: Stationary Power Plants , Aerospace , Automotive , and Others

Key Regions/Countries Classified as Follows:

- » North America (U.S., Canada, Mexico)
- » Europe (Germany, U.K., France, Italy, Russia, Spain, Rest of Europe)
- » Asia-Pacific (China, India, Japan, Singapore, Australia, New Zealand, Rest of APAC)
- » South America (Brazil, Argentina, Rest of SA)
- » Middle East & Africa (Turkey, Saudi Arabia, Iran, UAE, Africa, Rest of MEA)

Trends in Navigation Keyword Market:

Market Growth: Expect significant expansion in the navigation keyword market, with a projected Compound Annual Growth Rate (CAGR) of 14.65% from 2024 to 2031.

Increasing Demand: Notice a surge in demand for navigation keywords due to the widespread

adoption of GPS-enabled devices and the need for precise mapping data.

**Technological Innovations:** Witness innovative breakthroughs enhancing the accuracy and reliability of navigation keywords, such as real-time traffic updates, 3D mapping, and augmented reality.

**Tailored Solutions:** Explore industry-specific navigation keyword solutions designed to meet the unique needs of automotive, aviation, and maritime sectors.

**Integration with Advanced Technologies:** Embrace the integration of navigation keywords with cutting-edge technologies like artificial intelligence and the Internet of Things, unlocking advanced functionalities.

**Mobile Applications:** Embrace the convenience and accessibility of navigation keywords through mobile applications, catering to the evolving needs of consumers.

**Environmental Sustainability:** Embrace environmentally conscious navigation keyword solutions that address issues like traffic congestion and air quality, promoting sustainable transportation options.

**Report Highlights:**

- Examination of navigation keyword market share at both country and regional levels
- Thorough analysis of the competitive landscape and emerging trends
- Detailed review of product advancements, technological developments, drivers, and limitations
- Strategic recommendations tailored for key business segments based on market insights
- Valuable guidance for newcomers venturing into the navigation keyword market

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Alice Mutum is a seasoned senior content editor at Coherent Market Insights, leveraging extensive expertise gained from her previous role as a content writer. With seven years in content development, Alice masterfully employs SEO best practices and cutting-edge digital marketing strategies to craft high-ranking, impactful content. As an editor, she meticulously ensures flawless grammar and punctuation, precise data accuracy, and perfect alignment with

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