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Shape Memory Alloys Market Size, Share & Trends Analysis Report By Product (Nitinol, Copper-based), By End Use (Biomedical, Automotive, Aerospace & Defense), By Region, And Segment Forecasts, 2025 - 2030

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Abstracts

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Shape Memory Alloys Market Growth & Trends
The global shape memory alloys market size is expected t%li%reach USD 29.28 billion by 2030, according t%li%a new report by Grand View Research, Inc. It is anticipated t%li%expand at a CAGR of 11.3% from 2025 t%li%2030. Shape memory alloy (SMA) refers t%li%a metallic material that can be bent or stretched in its cool state. The alloy regains its original shape when heated above the transition temperature. Low temperature (martensite) and high temperature (austenite) are tw%li%stable phases of SMAs.
Nickel-titanium alloy (nitinol) is the key product type, which is largely used in medical devices. Medical devices made from nitinol include dental wires, needles, catheter tubes, guidewires, and other surgical instruments. The biomedical industry is facing many challenging applications that are testing the capability of SMAs. Recent research and development activities are aimed at improving the fatigue life of the material and producing materials with low inclusion sizes.
Gradual expansion of the automotive industry is likely t%li%play a significant role in the demand for SMAs over the forecast period. SMA actuators are gaining popularity among automobile manufacturers owing t%li%properties such as shape memory effect (SME) and super elasticity (SE). In addition, SMA actuators d%li%not need complex and bulky design t%li%function. Increasing R&D investments by automobile manufacturers t%li%find potential applications such as climate control, door locks,

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engine control valve, and actuators are anticipated t%li%drive market growth. Aerospace and defense is another promising sector for SMAs. Rising focus on multi-functionality and reliability is driving demand for advanced materials in aerospace applications such as spacecraft, rotorcraft, and fixed-wing aircraft.

Asia Pacific is projected t%li%remain a key region for the market over the coming years. Various research institutes and organizations are focusing on the development of new industrial applications. The region is undergoing significant infrastructural development in railways, roadways, industrial, commercial, and residential sectors. Furthermore, globalization has made the region a lucrative place for investment t%li%aid the development of the economy while catering t%li%a larger population. Asia Pacific als%li%boasts a large aerospace and defense industry, creating novel opportunities for SMAs t%li%be incorporated.

The market is competitive, with various small and large participants. Mergers and acquisitions, R&D investments, and new product launches are key strategic initiatives adopted by market players. For instance, in March 2024, Montagu Private Equity LLP, a private equity firm, announced its plans t%li%acquire Johnson Matthey Plc's Medical Device Components (MDC) business. MDC develops and manufactures specialized components for minimally invasive medical devices. It als%li%focuses on complex and high-precision parts made from platinum group metals and nitinol.

Shape Memory Alloys Market Report Highlights

The biomedical segment had the largest market share, over 55%, in 2024. This segment's large share is attributed t%li%increasing R&D in medical devices and surgical instruments.

The nickel-titanium alloys (nitinol) segment dominated the market by capturing the largest share of 79.6% in 2024. Increasing R&D activities for application-specific products are aiding the growth of this segment.

North America shape memory alloys market secured the largest market share of 35.1% in 2024

Asia Pacific shape memory alloys market is anticipated t%li%expand at the fastest CAGR of 11.7% from 2025 t%li%2030. Increasing production activities in the aerospace and automotive industries are likely t%li%contribute t%li%market growth.

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CHAPTER 7. COMPETITIVE LANDSCAPE

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