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United States Airless Tires Market Assessment, By Material [Rubber, Plastic], By Type [Radial Tires, Bias Tires], By Rim Size [Less than 15 inches, 15-20 inches, 21-25 inches, 26-30 inches, 31-35 inches, more than 35 inches], By Vehicle Type [Passenger Vehicles, Commercial Vehicles, Three Wheelers, Two Wheelers, Others], By Sales Channel [Direct, Channel], By Region [North-East, South-East, Mid-West, West, Southwest, Eastern], Opportunities and Forecast, 2022-2030F

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Abstracts

The United States Airless Tires Market size was valued at USD 25.4 million in 2022, expected to reach USD 42.04 million in 2030 with a CAGR of 6.5% for the forecast period between 2023 and 2030. In 2022, the United States achieved the 5th position globally regarding tire exports, with a total export value reaching USD 4.9 billion. This significant figure contributed a substantial 5.4% to the overall export statistics of the country. The U.S. tire industry is experiencing a transformative wave of innovation in the form of airless tires, often called non-pneumatic or air-free tires. These groundbreaking tire designs radically depart from traditional tires that depend on air pressure for support and shock absorption. Instead, airless tires are ingeniously engineered to operate without the requirement for inflation.

Airless tires are a revolutionary innovation in the tire industry, eliminating the need for frequent maintenance and puncture risk. They are reliable across various applications, including off-road vehicles, construction machinery, military vehicles, and standard

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automobiles, enhancing safety and minimizing downtime. In the United States, the automotive industry recorded sales of 13.7 million vehicles in 2022, underscoring the nation's significance as a substantial tire market. The rise of electric vehicles (EVs) and autonomous vehicles has fueled demand for low-maintenance and hassle-free tires, aligning with evolving consumer preferences. Furthermore, the United States, renowned for its military and space technology advancements, presents additional opportunities for applying airless tires in various high-tech sectors.

Emission Regulations Boost the Market for Tires with Reduced Carbon Footprints

The United States is addressing its carbon footprint and becoming a leader in climate action. A 2020 study highlighted the environmental issue of tire dust, specifically 6PPD, a chemical compound that prevents tire cracking. When exposed to ground-level ozone, 6PPD transforms into toxic compounds, including 6PPD-quinone, posing risks to aquatic life. Conventional tires, made up of natural and synthetic rubber, break down over time, contributing to environmental concerns. The US actively seeks solutions to reduce the ecological impact of tire-related pollutants and waste.

At the Consumer Electronics Show (CES) 2023, Goodyear unveiled a groundbreaking tire compound of 90% sustainable materials, including bio-based carbon black, soybean oil, and pine tree resins. This innovative formulation incorporates 17 sustainable components and advanced production methods to reduce emissions throughout manufacturing. Goodyear's sustainable compound aims to address these concerns while meeting regulatory and internal testing standards. It also offers lower rolling resistance, improving electric and internal combustion vehicle efficiency. This advancement represents a significant stride toward a more sustainable future in the tire industry.

Airless Tires Find Optimal Fit in Industrial Vehicle Sector

The United States has a thriving industrial economy, featuring a substantial presence of large and medium industrial vehicles and agricultural machinery that operate at consistent speeds. This situation presents a promising opportunity for the adoption of airless tires. Continental has introduced Super Elastic (CSE) Tires designed to be compatible with industrial pneumatic tire rims. These tires boast a robust tread with exceptional cut and wear resistance, a cushion compound with outstanding damping properties, low rolling resistance, and minimal heat generation. They find ideal applications in various scenarios, including forklifts (both for load and steering wheels) and short-distance transportation, particularly in areas prone to cuts and wear. This

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underscores their durability and suitability for demanding industrial settings.

Original Equipment Manufacturers (OEMs) approach the commercial use of airless tires with cautious optimism, especially in sectors that represent a significant portion of the automotive industry. While some challenges related to damping and vibrations exist, OEMs remain steadfast in their commitment to continuous research and innovation in tire technology. Their unwavering dedication reflects their pursuit of advanced tire solutions that meet diverse application requirements and reshape the automotive landscape.

Government Rules on Sustainable Materials Create Path for Airless Tires

Government regulations wield significant influence over the tire industry, primarily due to the potential environmental ramifications tied to tire manufacturing, usage, and disposal. These processes can potentially release harmful and toxic substances, underscoring the critical need for regulatory oversight. Taking proactive steps to address these concerns, the U.S. Tire Manufacturers Association (USTMA), representing some of the world's largest tire companies, has assembled a consortium comprising 16 tire manufacturers. They aim to conduct an alternative analysis for 6PPD, a commonly used tire chemical, as California's Safer Consumer Product Regulations (SCPR) mandated.

This action was prompted by the California Department of Toxic Substances Control (DTSC) designating 6PPD in tires as a Priority Product under the state's Safer Consumer Products (SCP) program. Additionally, various states, including Virginia, have implemented regulations pertaining to airless tires, reinforcing the pivotal role of government regulations in advancing environmental safety within the tire industry. These measures aim to identify and embrace safer alternatives, mitigate environmental impact, and safeguard both consumers and the planet. Airless tires, capable of adapting and aligning with these regulations, have the potential to emerge as a superior substitute, further bolstering the industry's commitment to environmental sustainability.

Electric and Autonomous Vehicle Boom Propels Airless Tire Sales

The United States is experiencing rapid growth in the electric vehicle (EV) sector, particularly in autonomous vehicle adoption. With their low maintenance requirements and durability, airless tires are gaining popularity due to their potential to reduce maintenance costs and enhance stability. Autonomous vehicles, operating at fixed speeds and designated lanes, can also benefit from airless tires, reducing wear and eliminating the need for traditional tires.

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In June 2019, Michelin and General Motors joined forces for a close partnership to design and produce airless tires jointly. These innovative tires are slated for integration into the next generation of Chevrolet Bolt electric vehicles. This significant collaboration highlights their shared dedication to advancing automotive technology, particularly in enhancing the performance and sustainability of electric cars. Their efforts intend to position airless tire technology at the forefront of electric vehicle design, promising efficiency, safety, and eco-friendliness enhancements for the forthcoming Chevrolet Bolt models. Through this strategic collaboration, Michelin and General Motors are poised to revolutionize the driving experience with cutting-edge airless tire solutions that cater to electric vehicle enthusiasts' evolving preferences and demands.

Airless Tires Find Applications in the United States Defense and Aerospace Sector

The United States, with its significant defense spending, has been instrumental in developing Unmanned Ground Vehicles (UGVs) for challenging terrains. A US-based company, Michelin has developed the Michelin X Tweel, a second-generation Tweel airless radial tire widely used in military vehicles. The technology enhances situational awareness, reduces risks to soldiers, and is used in all-terrain vehicles, reducing risks to human personnel. Michelin's investments have led to the development of the Michelin X Tweel SSL 2, a product that significantly enhances mobility and safety in demanding environments.

In addition to established players like Michelin, innovative startups like The Shape Memory Alloy Radial Technology (SMART) Tire Company are exploring advanced materials for tire innovation. SMART Tire Company's flagship product is a super-elastic car tire made from a unique nickel-titanium material called Nitinol, classified as a shape memory alloy (SMA). The material combines rubber's elasticity with titanium's strength, ideal for extreme deformation and reshaping tires. Currently used in aerospace and defense due to its specialized manufacturing, its adoption may increase as major OEMs transition towards airless tires, demonstrating the industry's progress.

Impact of COVID-19

The COVID-19 pandemic has significantly impacted the airless tire market in the United States. Global supply chain disruptions and manufacturing processes caused tire production and distribution delays in the U.S. market. The economic slowdown and reduced consumer spending, particularly on non-essential automotive accessories, temporarily hindered market growth. The decline in the wholesale tire business can be

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attributed to reduced consumer activity in local tire retail stores. However, the pandemic highlighted the importance of safety and reliability in critical sectors like logistics, military operations, and agriculture. Airless tires, known for their resilience and puncture resistance, gained interest and investment in these sectors. The shift towards e-commerce and last-mile delivery services increased demand for vehicles, including delivery trucks and industrial equipment. Airless tires gained appeal due to their durability and suitability for intensive use.

Impact of Russia-Ukraine War

The United States airless tire market has experienced significant disruptions due to the Russia-Ukraine conflict, resulting in supply chain interruptions and manufacturing delays. These uncertainties have negatively affected investor confidence and trade relationships. Consequently, companies operating in the airless tire market are reevaluating their supply chain strategies and reducing their dependence on unstable regions. This shift in perspective is prompting these companies to explore alternative manufacturing and sourcing options, potentially reshaping the market's dynamics. In addition to the supply chain disruptions, the increasing oil prices have impacted tire prices across the industry. Major tire manufacturers, including Michelin, have responded by raising their prices. Furthermore, the ongoing conflict in Ukraine has compelled Michelin to cease tire production in Russia, further complicating the situation in the United States airless tire market.

Key Players Landscape and Outlook

The rapid expansion of the airless tire market in the United States can be predominantly attributed to the surging demand from the electric and autonomous vehicle sectors. These encompass self-driving cars, delivery robots, and drones, all requiring highly durable tires with minimal maintenance requirements. Airless tires have emerged as the ideal solution, eliminating the risk of punctures and blowouts ensuring uninterrupted and secure operations for autonomous vehicles.

CEAT is gearing up to enter the United States market by the end of 2023, marking the culmination of a two-year-long effort. This tire manufacturer successfully introduced truck and bus radial tires to the European market in July of the previous year and is set to expand its presence further. CEAT's strategy involves strengthening its foothold in the United States and European markets by offering specialized tires, emphasizing its commitment to diversifying its product offerings and expanding its global reach.

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Furthermore, the integration of airless tires in unmanned vehicles by the United States defense and aerospace industry has further fueled the demand for these innovative tires. On the commercial front, notable collaborations like Michelin's partnership with General Motors indicate the potential availability of airless tires in mainstream vehicle lines in the coming years. These developments signal a promising future for airless tires, offering enhanced durability, safety, and reliability across various industries and applications.

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*Companies mentioned above DO NOT hold any order as per market share and can be changed as per information available during research work

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