

Needle Coke - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2025 - 2030)

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Report description:

Needle Coke Market Analysis

The Needle Coke Market size is estimated at 2.23 million metric tons in 2025, and is expected to reach 4.5 million metric tons by 2030, at a CAGR of 15.11% during the forecast period (2025-2030). This rapid upswing stems from the parallel rise of electric-arc-furnace (EAF) steelmaking and lithium-ion battery manufacturing, two sectors that together reshape global carbon material demand. The steel industry's move toward EAF technology is intensifying the call for ultra-high-power graphite electrodes, while the electric-vehicle boom is expanding synthetic-graphite anode requirements. Tight feedstock availability, geographic concentration of production, and new trade controls are creating persistent supply tension that reinforces upward pricing trends across the needle coke market. Producers with secure decant-oil supply and advanced delayed-coking assets continue to control pricing power.

Global Needle Coke Market Trends and Insights

Increasing Investments in EAF Steel Capacity

Global steelmakers are accelerating the shift from blast furnaces to EAF technology to cut carbon emissions and improve raw-material flexibility. EAF installations already contribute 30% of world steel output and account for 43% of planned capacity additions slated for late 2025. India's National Steel Policy targets an EAF share of up to 40% by 2030, while China seeks a 15% EAF contribution by 2025. Each new furnace requires ultra-high-power electrodes that rely on premium petroleum-needle coke, so

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steel decarbonization directly enlarges overall needle coke market demand. Capital spending on EAF projects remains focused in Asia-Pacific, yet North American steel majors are also adding arc furnaces to meet sustainability goals and capitalize on abundant scrap supply. The trend locks in multi-year offtake commitments and encourages integrated coke producers to expand capacity.

Soaring Li-ion Battery Production for EVs

Lithium-ion battery manufacturing is scaling at a pace that exceeds earlier forecasts. Global EV battery plants consumed more than 630,000 tons of graphite in 2023, a figure expected to multiply by mid-decade as new giga-factories begin operations. Synthetic graphite holds critical performance advantages in fast-charge stability and purity, underpinning rising penetration rates within high-energy-density anodes. To secure supply, automotive OEMs have struck long-term agreements with needle-coke-based synthetic-graphite suppliers such as Panasonic Energy's pact with NOVONIX that commences deliveries in 2025. The surge in anode demand draws petroleum-based needle coke away from traditional steel customers, tightening the global feedstock pool and supporting elevated margins for qualified producers inside the needle coke market.

Occupational and Environmental Hazards in Delayed Coking

The U.S. Environmental Protection Agency's 2024 coke-oven rule mandates zero leaking doors and continuous benzene monitoring, pushing operators to retrofit emission controls. Similar measures under 40 CFR Part 63 tighten oversight of refinery coking drums, escalating compliance spend and downtime risk. These obligations strain output in the near term, curb expansion appetite, and may shift new capacity to regions with less stringent frameworks. For the needle coke market, supply constraints materialize faster than demand moderation, amplifying volatility.

Other drivers and restraints analyzed in the detailed report include:

Scrap-Steel Mandates in China and EU / Refinery Upgrades Boosting Low-Sulphur Decant-Oil Supply / Raw-Material Price Volatility /

For complete list of drivers and restraints, kindly check the Table Of Contents.

Segment Analysis

Petroleum-based material captured 85.73% of the needle coke market share in 2024 and is forecast to advance at a 16.34% CAGR to 2030. The segment benefits from established delayed-coking infrastructure, reliable FCC decant-oil supply, and superior crystalline orientation that meets ultra-high-power electrode tolerances. It grew to roughly 1.91 million tons in 2025 and should exceed 3.80 million tons by 2030, underscoring the rising petroleum needle coke market size within the larger carbon-materials value chain. Adoption of synthetic-graphite anodes injects additional momentum, but refinery rationalization in the United States and Western Europe introduces regional feed shortages. Asian refiners continue to commission flexi-coker units, offsetting partial supply loss elsewhere.

Coal-tar-pitch-based products occupy the remaining volume but supply an important diversification lever for electrode and battery producers. Despite technical hurdles, the two commercial coal-needle plants maintained stable output through 2024. Upstream integration with metallurgical coke ovens gives operators incremental cost advantages when steel cycles are favorable. Growth potential stays capped by limited pitch availability, yet incremental debottlenecking keeps the segment relevant. Ongoing research into catalyst-assisted graphitization may elevate coal-needle quality, broadening its addressable share in the needle coke market.

The Needle Coke Market Report is Segmented by Product Type (Petroleum-Based Needle Coke and Coal-Tar Pitch-Based Needle

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Coke), Application (Graphite Electrodes, Lithium-Ion Batteries, and Other Applications), and Geography (Asia-Pacific, North America, Europe, South America, and Middle-East and Africa). The Market Forecasts are Provided in Terms of Volume (Metric Tons).

Geography Analysis

Asia-Pacific leads with 88.31% of the needle coke market and is projected to preserve a 15.72% CAGR through 2030. China anchors both supply and demand, producing more than 900 million tons of crude steel in 2023 and operating the world's largest battery-anode capacity. Beijing's export license requirement for high-purity graphite introduced in late 2023 reduced outbound shipments by 91% year on year, a development that heightened supply-chain vigilance among Western buyers. India emerges as a demand multiplier as it targets 240-260 million tons of annual steel by 2035 and intends to lift EAF penetration to 40%.

North America accounts for a smaller base yet gains strategic relevance through localization. Tariff proposals of 93.5% on Chinese graphite underscore Washington's focus on self-reliance. Europe holds moderate volume growth as policy favors circular-economy steel production and battery recycling. Stora Enso's lignin-graphite plant in Finland signals commitment to lower-carbon anode material.

Other territories such as South America, the Middle East, and Africa are at earlier adoption stages but record growing interest. Saudi Arabia awarded Chevron Lummus Global a 75,000 TPA needle-coke complex license in 2024, marking the Middle East's first large-scale entry into specialty coke, while emerging steel clusters in Egypt and Brazil explore local electrode supply to reduce import exposure.

List of Companies Covered in this Report:

Baosteel Group / China National Petroleum Corporation / ENEOS Corporation / GrafTech International / Indian Oil Corporation / Mitsubishi Chemical Group Corporation / Nippon Steel Corporation / PetroChina / Phillips 66 Company / POSCO Future M / Shandong Yida New Materials Co., Ltd. / Shanxi Hongte Coal Chemical Co Ltd / Sinopec / Tokai Carbon Co., Ltd /

Additional Benefits:

The market estimate (ME) sheet in Excel format /
3 months of analyst support /

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