Beyond Specifications: Navigating the Future of PCMO in China

Market Analysis and Application Insights

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As China continues to evolve into a global automotive powerhouse, the Passenger Car Motor Oil (PCMO) market is undergoing a significant transformation. Driven by regulatory shifts, technological advancements, and changing consumer behaviors, the landscape is becoming increasingly complex—but also full of opportunity. Here's a comprehensive look at the latest market and application insights shaping the future of PCMO in China.

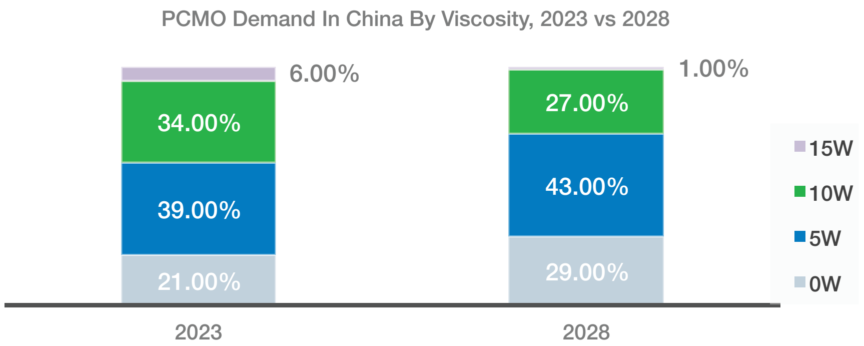
China Market Overview: A Landscape in Transition|

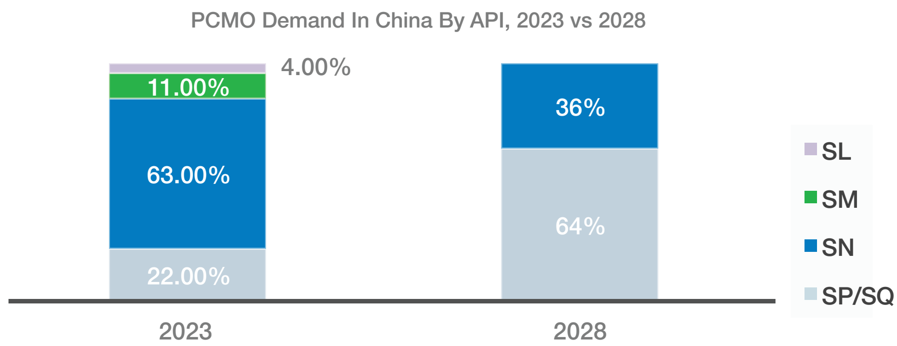
Economic and Automotive Growth

Despite global economic headwinds, China's passenger vehicle (PV) market remains resilient. New car sales are projected to grow at a CAGR of 3.7%, with 278 million vehicles in the car parc as of 2024. Notably, Plug-in Hybrid Electric Vehicles (PHEVs) are gaining traction, now accounting for over 10% of the fleet, thanks to mature technology and government support.

PCMO Demand Trends

- Viscosity Shift: OEMs` are increasingly adopting lower viscosity grades (e.g., W-20) to meet fuel economy and emissions targets.
- API Categories: The API SP/SQ categories are expected to dominate by 2028, driven by stricter emissions regulations.
- China plans to establish a national standard for PCMO.
- Base Oil Preferences: There is a clear shift toward Group III and synthetic base oils, valued for their durability and extened drain intervals.





Local OEMs and the Rise of Chinese Brands

Chinese PV OEMs, such as BYD, Geely, and Chery, are not only expanding domestically but also making strides globally. These manufacturers are heavily investing in hybrid engine development, particularly 1.5L TGDi platforms for PHEVs. This trend is shaping the demand for high-performance, low-viscosity engine oils that can withstand the unique stresses of hybrid powertrains.

Growth Of China OEM In PV And New Energy Vehicles (NEV)

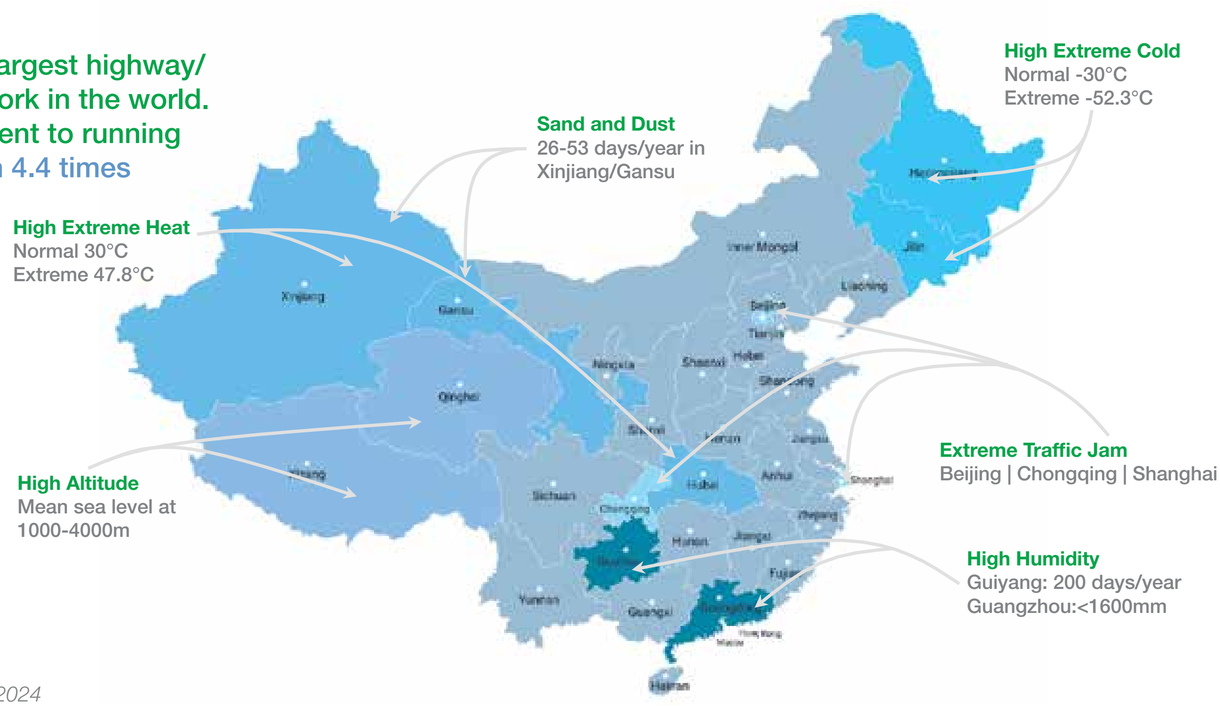
Total PV Sales (2024) **27.56M** +5.8% YOY	JV OEM Market Share **-9% in 2024** 44% in 2023
China OEM Contribution **+23.1%** YOY	BYD CHERY China PV OEMs Share **+15% in 2024** 50% in 2023
NEV Contribution **+35.5%** YOY	NIO XPENG Start-ups in NEV Share **+2% in 2024** 6% in 2023

Environmental and Operational Challenges

Harsh Driving Conditions

China's vast geography and diverse climate—from humid coastal cities to dusty inland regions—create harsh operating environments for engine oils. Add to this the frequent traffic congestion in Tier 1 cities, and the need for robust, high-performance lubricants becomes clear.

China have the largest highway/ motorway* network in the world. Which is equivalent to running around the Earth 4.4 times



Source: Global Times, 2024

Regulatory Complexity

China's regulatory framework combines European, North American, and domestic standards, making compliance a constantly evolving target. Engine oil specifications must align with API, ACEA, and GB standards, while also meeting the OEM's specific requirements.

Application Insights: Complexity and Opportunity

Engine Oil Challenges

The diversity of engine technologies and operating conditions in China demands tailored lubricant solutions. From sludge control to oxidation resistance, oils must deliver across a wide range of performance metrics.

Dedicated Hybrid Engines

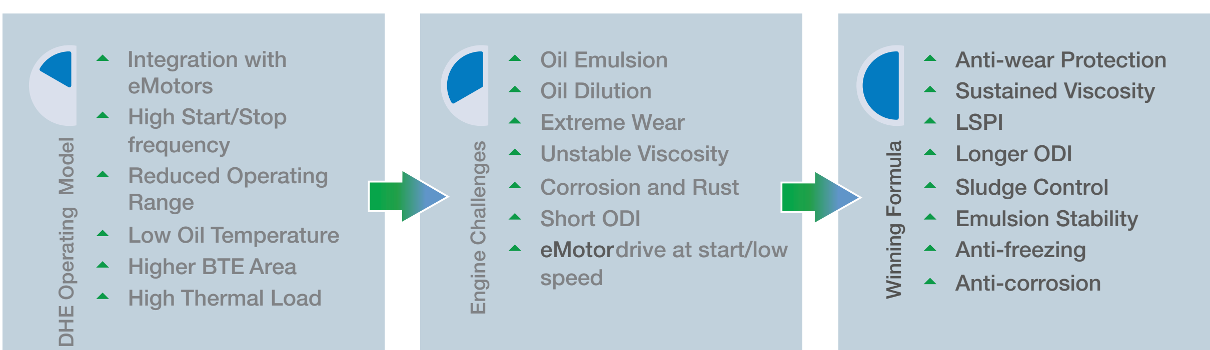
With vehicle ownership still growing (200 per 1,000 people, compared to 500 in developed countries), the market remains ripe for expansion. The increasing share of NEVs is reshaping lubricant needs, especially for dedicated hybrid fluids.

Hybrid powertrains—particularly PHEVs and REEVs (range extended electric vehicles)—fundamentally change engine operation compared to conventional ICE vehicles. Instead of running continuously across the versatile operating conditions, dedicated hybrid engines (DHEs) run intermittently, often confined to narrow, high-efficiency zones, while eMotors manage low-speed driving and transient loads.

This shift creates a more demanding lubricant environment. Frequent start-stop events, extended engine-off periods, and lower oil temperatures promote oil dilution and water accumulation, increasing the risk of emulsion and corrosion. When the engine does engage, it operates in high-efficiency regions with elevated thermal load, placing additional stress on viscosity stability and wear protection.

Overall, hybrid engines present a dual operating profile—cooler, intermittent operation alongside concentrated high-load events—requiring lubricants that can manage contamination while maintaining durability. This is why conventional PCMO formulations fall short, and hybrid-specific solutions must deliver strong emulsion control, robust anti-wear performance, and stable viscosity across highly variable duty cycles.

Dedicated Hybrid Engine (DHE) Oil Requirements and Solutions



DHE engines aren't just different—they demand a solution engineered to address hybrid-specific challenges.

Digital Disruption: The Rise of Online Sales Channels

Platforms like Tuhu, Tmall, and JD.com are transforming how consumers purchase engine oil. Online sales are growing year-over-year, with top-selling products including:

Global oil major brands and European OEM genuine oil.

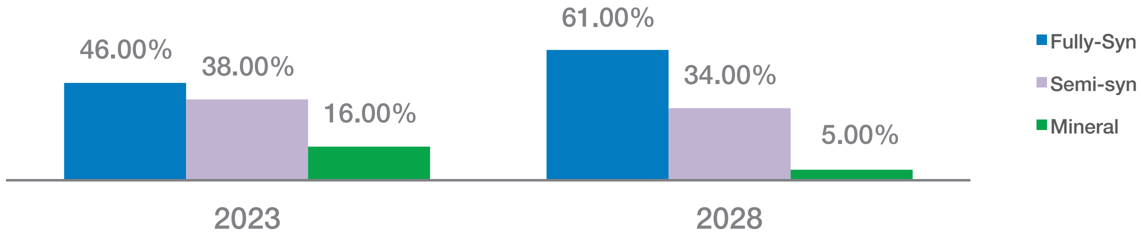
Search terms like “API SQ” dominate consumer queries, highlighting the importance of performance-based marketing.

Source: TUHU

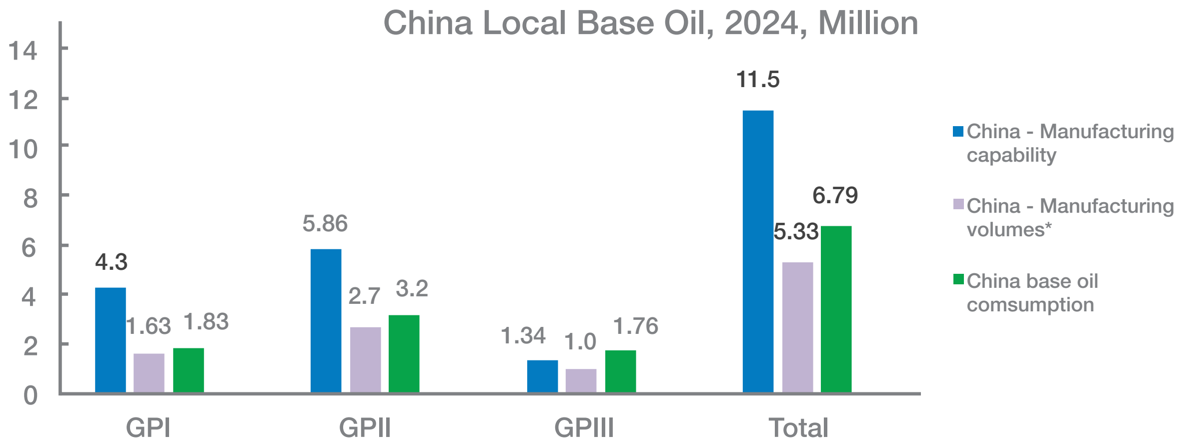
China local base oil industry

In the last decade, China invested a lot in petrochemical industry. As a result of this investment, China has multiple high quality base oil options for synthetic formulation. This is linked to the increase in market demand for low viscosity engine oil and, in turn, the market demand for high fuel economy.

PCMO Demand In China By Formulation, 2023 Vs 2028



Source: Opportunities in Lubricants: China Market Analysis. Base Year: 2023



Source: Sinopec Presentation in Global Base Oil Seminar 2025, Yantal

Strategic Takeaways for Market Success

1. Invest in High-Performance Formulations: Focus on synthetic base oils and lower viscosity grades to meet evolving OEM and regulatory demands.
2. Tailor to Hybrid Applications: Develop products specifically for PHEV engines, which are becoming mainstream.
3. Leverage Digital Channels: Optimize product visibility and performance claims on e-commerce platforms to enhance brand presence and drive sales.
4. Adapt to Regional Needs: Account for China's diverse geography, climate, and fuel quality in product development to ensure optimal performance.

Aligning for Market Success

The China PCMO market is at a pivotal juncture. While overall demand may plateau, the shift toward higher-quality, application-specific lubricants presents a compelling opportunity for growth. By aligning with local OEM trends, regulatory developments, and digital consumer behaviors, lubricant marketers and formulators can position themselves for long-term success in this dynamic market.

Turn insight into competitive advantage.

Contact Afton to explore how our advanced PCMO technologies can help you meet China's fast-shifting viscosity, performance, and hybrid-application requirements.

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