



PGMs Explained

PGMs stand for Platinum Group Metals—a family of six rare, noble metals (platinum, palladium, rhodium, iridium, osmium, ruthenium) that share similar chemical properties and are often found together in ores. They are denser than most metals, highly corrosion-resistant, and excellent catalysts (substances that speed up chemical reactions without being consumed). PGMs are essential in industry due to their stability at high temperatures and ability to purify emissions.

Top Producers (2024 Estimates)

South Africa leads PGM mining (over 70% of global supply), followed by Russia (about 10%). China dominates gold (12% of world production) and silver (15%). Other key players: Australia for gold, Mexico and Peru for silver, Zimbabwe for PGMs.

Biggest Uses Breakdown

Automotive: 60% of PGMs go into catalytic converters (devices in car exhausts that reduce pollution). Electronics: Silver and gold for wiring and circuits due to conductivity. Green Tech: All metals surging in EVs (electric vehicles), solar panels, and fuel cells (devices converting hydrogen to electricity). Jewelry/Investment: Gold and platinum for rings and bars; silver for coins.

Rarity and Production Facts

PGMs total just 400 tonnes mined yearly—far less than gold (3,000+ tonnes) or silver (26,000 tonnes). They make up only 0.0155 parts per million of Earth's crust, with ore grades as low as 2-6 grams per tonne (requiring massive energy to extract). Recycling supplies 25% of PGMs, from old car parts and electronics.

Environmental Impact

PGMs help clean air by removing car exhaust toxins, offsetting mining pollution (which uses lots of water and energy). But mining can harm local ecosystems; bioaccumulation (buildup in food chains) from emissions poses risks to wildlife and humans. Green recycling is growing to reduce this.

Market Trends for 2025

Precious metals market projected to hit \$865 billion by 2030 (9.1% annual growth). Gold prices stable high (~\$4,200/oz) from geopolitics; PGMs may rebound from 2024 lows due to EV demand. Asia Pacific (China, India) drives 47% of consumption, fueled by jewelry and tech.

Unique Properties

PGMs are the densest metals (iridium/osmium denser than gold by 11%). They resist chemical attack, making them ideal for harsh environments like space (NASA uses iridium). Osmium (not on chart) is toxic as a gas but rare in trade.

