

Rhodium products



Rhodium is one of the six elements in the platinum group, which consists of platinum, palladium, rhodium, osmium, iridium and ruthenium. Often found with deposits of platinum and commonly obtained from the mining and refining of platinum, it is considered to be the rarest and most valuable precious metal, more valuable than gold or silver. Rhodium is a silver-white metallic element with high melting and boiling points. It is highly reflective and resistant to corrosion and oxidation, which is why it is also classified as a noble metal. It was discovered in 1803 by English chemist William Hyde Wollaston shortly after his discovery of palladium. Wollaston extracted rhodium from a piece of platinum ore that he had obtained from South America. Rhodium was named for the rose-red color of its salts, after the Greek word “rhodon” which means rose. Rarely used by itself, rhodium metal is almost always used as an alloy.

We offer a broad, diverse catalog of rhodium products which are also available in bulk quantities and pack sizes that can be customized to your requirements.

Application highlights:

The Alfa Aesar™ portfolio of rhodium products can be used in a wide range of applications, from chemistry research to manufacturing and industry, from emission control and electrical applications to jewelry.

Rhodium in chemistry

Rhodium is used in research and industrial laboratories primarily as a catalyst. It is preferable to the other platinum group catalysts in the reduction of nitrogen oxides to nitrogen and oxygen. Rhodium is also used to catalyze the reduction of benzene to cyclohexane as well as the addition of hydrosilanes to double bonds, an important step in the manufacture of certain silicone rubbers. In industry, it is used in the catalytic carbonylation of methanol to produce acetic acid by the Monsanto process. The coordination complex of rhodium(I) with tris(triphenylphosphine)chloride, known as Wilkinson's catalyst, is widely used in the hydrogenation of alkenes. The rhodium complex with BINAP(2,2'-bis(diphenylphosphino)-1,1'-binaphthyl) is used for chiral synthesis, as in the synthesis of methanol. Rhodium's ability to withstand high temperatures makes it a perfect material for laboratory crucibles.

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Rhodium in emission control devices

Approximately 87.2% of world rhodium production is used in catalytic converters, often together with palladium and/or platinum, to clean vehicle emissions. It has by far the highest activity for the removal of nitrogen oxides (NOx) from exhaust fumes, as well as very high activity for the oxidation of hydrocarbons and carbon monoxide and very good resistance to the poisons present in the exhaust stream. Its primary drawback, however, is its high cost.

Rhodium in industry

Rhodium is used in the glass industry, mostly for production of fiberglass and flat-panel glass, and in the chemical industry in processes for the production of the herbicide roundup as well as acids such as nitric acid and acetic acid. In automobile manufacturing, rhodium is used in the construction of headlight reflectors. Because of its rarity and its inertness against corrosion and most aggressive chemicals, rhodium is usually alloyed with platinum or palladium for use in high-temperature and corrosion-resistant coatings. Rhodium is sometimes used to cure silicones. Rhodium plated by either electroplating or evaporation is used in the manufacture of optical instruments as well as filters for mammography systems because of the characteristic X-rays it produces. Rhodium neutron detectors are used in nuclear reactors to measure neutron flux levels, providing an accurate 3D “picture” of reactivity and allowing fine tuning to determine the most economical consumption of nuclear fuel.

Rhodium in electrical applications

Rhodium is often alloyed with platinum and iridium to make an oxidation-resistant metal that can withstand high temperatures. These alloys are used in furnace coils, thermocouple and resistance wires, and electrodes for aircraft spark plugs. It is also used in electrical contacts, where it is valued for its low electrical resistance, low and stable contact resistance, and great corrosion resistance.

Rhodium in jewelry and decoration

Its brilliance and resistance to wear and tarnishing make rhodium a perfect material for jewelry. It is electroplated on white gold and platinum jewelry with a surface that guards against scratches and gives a reflective white appearance, preventing tarnishing during wear. It is also used in coating sterling silver to protect against tarnish from the silver sulfide produced from atmospheric hydrogen sulfide. Rhodium has also been used to signify elite status, when more commonly used metals such as silver, gold or platinum were deemed insufficient, as when in 1979 the Guinness Book of World Records gave Paul McCartney a rhodium-plated disc for being history’s all-time best-selling songwriter and recording artist.

Pure Rhodium

Stock No.	Description	Size
13281	Rhodium single crystal, 10mm (0.4in) dia, (100) orientation, $\pm 0.5^\circ$	1 each
13287	Rhodium single crystal, 10mm (0.4in) dia, random orientation	1 each
13558	Rhodium single crystal disc, 10mm (0.4in) dia., 1-2mm (0.04-0.08in) thick, (100) orientation, $\pm 0.5^\circ$	1 each
11521	Rhodium foil, 0.5mm (0.02in) thick, 99.8% (metals basis)	1 each
11522	Rhodium foil, 0.25mm (0.01in) thick, 99.8% (metals basis)	1 each
12072	Rhodium powder, -60 mesh, 99.95% (metals basis)	0.5g, 1g
12353	Rhodium black, 99.9% (metals basis)	0.5g, 2g
38514	Rhodium powder, -325 mesh, 99.95% (metals basis)	1 each
13381	Rhodium slug, 99.95% (metals basis)	1 each
12073	Rhodium sponge, -20 mesh, 99.95% (metals basis)	2g
11575	Rhodium wire, 1.0mm (0.04in) dia, 99.8% (metals basis)	2cm, 10cm
11576	Rhodium wire, 0.5mm (0.02in) dia, 99.8% (metals basis)	2cm, 10cm

Full product listing is available online.

Rhodium Alloys

Stock No.	Description	Size
10062	Platinum 13 wt% Rhodium wire, 0.25mm (0.01in) dia, ISA Type R Standard Grade Thermocouple	25cm, 100cm, 500cm
10063	Platinum 30 wt% Rhodium wire, 0.25mm (0.01in) dia, ISA Type B Standard Grade Thermocouple	50cm, 100cm
10065	Platinum 10 wt% Rhodium wire, 0.25mm (0.01in) dia, ISA Type S Standard Grade Thermocouple	25cm, 100cm, 500cm
10668	Rhodium powder, -22 mesh, Premion®, 99.97% (metals basis), precious metals typically <20ppm each	0.25g, 1g
11524	Rhodium foil, 0.025mm (0.001in) thick, 99.8% (metals basis)	25 × 25mm, 50 × 50mm
11575	Rhodium wire, 1.0mm (0.04in) dia, 99.8% (metals basis)	2cm, 10cm
11576	Rhodium wire, 0.5mm (0.02in) dia, 99.8% (metals basis)	7.5cm, 10cm, 30cm, 50cm, 250cm
12072	Rhodium powder, -60 mesh, 99.95% (metals basis)	0.5g, 1g
12073	Rhodium sponge, -20 mesh, 99.95% (metals basis)	2g
12216	Platinum Rhodium Palladium gauze, 80 mesh woven from 0.076mm (0.003in) dia wire, 99.9% (metals basis)	25 × 25mm, 50 × 50mm, 100 × 100mm
12217	Platinum Rhodium gauze, 80 mesh woven from 0.076mm (0.003in) dia wire, 99.9% (metals basis)	25 × 25mm, 50 × 50mm, 100 × 100mm
12353	Rhodium black, 99.9% (metals basis)	0.5g, 2g
12576	Platinum 30 wt% Rhodium wire, 0.5mm (0.02in) dia, ISA Type B Standard Grade Thermocouple	25cm, 100cm, 500cm
38514	Rhodium powder, -325 mesh, 99.95% (metals basis)	0.5g, 2g
41623	Platinum Rhodium foil, 0.1mm (0.004in) thick, 99.9% (metals basis)	25 × 25mm, 50 × 50mm
41808	Platinum Rhodium foil, 0.025mm (0.001in) thick, 99.9% (metals basis)	25 × 25mm, 50 × 50mm, 100 × 100mm
42866	Rhodium sponge, -20 mesh, 99.9% (metals basis)	1g
42891	Platinum 10 wt% Rhodium wire, 0.076mm (0.003in) dia, ISA Type S Standard Grade Thermocouple	50cm, 2m
42894	Platinum 10 wt% Rhodium wire, 0.203mm (0.008in) dia, ISA Type S Standard Grade Thermocouple	1m, 5m
42902	Platinum 13 wt% Rhodium wire, 0.076mm (0.003in) dia, ISA Type R Standard Grade Thermocouple	50cm, 2m
42912	Platinum 6 wt% Rhodium wire, 0.076mm (0.003in) dia, ISA Type B Standard Grade Thermocouple	50cm, 2m
42913	Platinum 6 wt% Rhodium wire, 0.25mm (0.01in) dia, ISA Type B Standard Grade Thermocouple	50cm, 100cm, 2m
43274	Platinum 20 wt% Rhodium wire, 0.25mm (0.01in) dia, 99.9% (metals basis)	25cm, 100cm
45571	Platinum 30 wt% Rhodium wire, 0.33mm (0.013in) dia, ISA Type B Standard Grade Thermocouple	50cm, 2m
45640	Rhodium foil, 0.025mm (0.001in) thick, 99.8% (metals basis)	25 × 25mm

Full product listing is available online.

Rhodium Compounds

Stock No.	Description	Size
10466	Chloro(1,5-cyclooctadiene)rhodium(I) dimer	250mg, 1g
10467	Di- μ -chlorobis(norbornadiene)dirhodium(I), Rh 44% min	0.5g, 1g
10468	Chlorotris(triphenylphosphine)rhodium(I), 97%	1g, 5g
10547	Tetracarbonyldi- μ -chlorodirhodium(I), Rh 50.1-52.9%	0.25g, 1g
10561	Rhodium(III) 2,4-pentanedionate, Premion [®] , 99.99% (metals basis), Rh 25.2% min	0.5g, 1g, 5g
11032	Rhodium(III) chloride hydrate, Rh 38.5-45.5%	0.25g, 1g, 5g
11770	Rhodium, 5% on alumina powder, reduced	2g, 10g
11814	Rhodium(III) oxide, anhydrous, 99.9% (metals basis), Rh 80.6% min	0.5g, 2g
11815	Rhodium(III) chloride, anhydrous, 99.9% (metals basis), Rh 48.7% min	0.25g, 1g, 5g
33657	Dichloro(pentamethylcyclopentadienyl)rhodium(III) dimer, 99%	250mg, 1g
39288	Bis(ethylene)(2,4-pentanedionato)rhodium(I), Rh 39.9% min	250mg, 1g
39295	Dicarbonyl(2,4-pentanedionato)rhodium(I), 99%	250mg, 1g, 5g
41016	Rhodium(III) sulfate tetrahydrate, Premion [®] , 99.99% (metals basis), Rh 35.9% min	0.25g, 1g, 5g
43702	Rhodium(III) chloride hydrate, Premion [®] , 99.99% (metals basis)	1g, 5g
44031	Bis(1,5-cyclooctadiene)rhodium(I) tetrafluoroborate	1g, 5g
44036	Bis(norbornadiene)rhodium(I) tetrafluoroborate	1g, 5g
45523	Bis(1,5-cyclooctadiene)rhodium(I) hexafluoroantimonate	250mg, 1g
A15965	Rhodium, 5% on carbon, dry	1g, 5g, 25g
H36201	Rhodium, 5% on alumina powder	5g, 25g, 100g
L15152	Rhodium(II) acetate, dimer, 98+%	100mg, 500mg

Full product listing is available online.

For more information contact: www.thermofisher.in/chemicals

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