Heraeus

Precious Metals

Precious Metal Catalysts

for the Fine Chemical, Pharmaceutical and Agrochemical Industry

Process Optimization with Precious Metal Catalysis

Catalysts are a particularly crucial component in the production processes of the fine chemical, pharmaceutical and agrochemical industries. Complex molecules require complicated, multi-step synthesis routes that often result in low yields and a larger amount of by-products. For companies in these industries, optimizing these synthesis pathways is critical as it directly impacts cost efficiency and sustainability. This challenge requires innovative approaches and advanced technologies to improve production methods and reduce waste.

Heraeus Precious Metals offers a comprehensive range of homogeneous and heterogeneous precious metal catalysts that are characterized by high activity, selectivity and reusability. This makes them the perfect tool for carrying out complex syntheses, e.g. for the production of active ingredients under low pressure and at low temperature, which nevertheless enable the highest yields. The application of recycling strategies enhances the cost-efficient and sustainable use of scarce precious metals.

HOMOGENEOUS CATALYSTS

- Extensive portfolio of salts and compounds for all precious metals
- Focus on palladium phosphines for C-C coupling reactions
- High quality catalysts, e.g. for asymmetric hydrogenation, hydroformylation, hydrosilylation
- Tailor-made solutions for customer processes

HETEROGENEOUS CATALYSTS

- High quality catalysts, e.g. for hydrogenation and oxidation reactions
- Customized and value engineered catalyst solutions to your application needs
- Perfect combination of activity, selectivity and reusability for highest performance
- High expertise in custom and toll manufacturing solutions

A Unique One-Stop-Shop: Precious Metals Services

PRECIOUS METALS TRADING

Through trading centers in Hanau (Germany), New York City, Shanghai and Hong Kong, Heraeus Precious Metals is able to execute precious metal trades under current market conditions. In addition to sales and purchasing transactions, it can provide financing options to it's customers based on precious metal leasing.

PRECIOUS METALS ANALYTICS

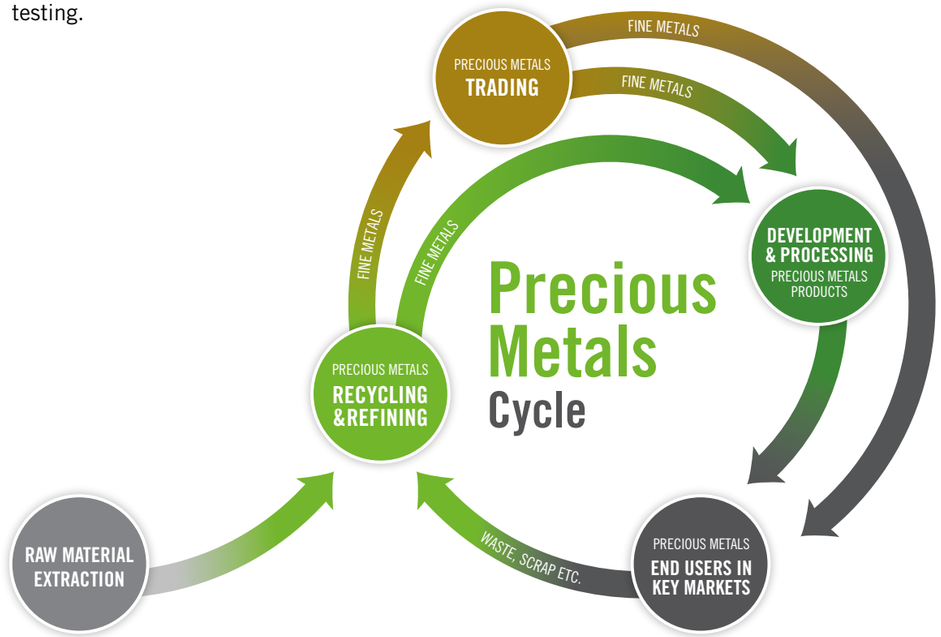
The Global Competence Center Analytics combines state-of-the-art equipment for a wide range of analytical methods with a highly qualified team of precious metal scientists. Services include expert advice to customers to provide them with optimum support in product quality, development projects and the determination of precious metal content and purity in order to meet industry standards for quality and material testing.

PRECIOUS METALS INNOVATION

Heraeus Precious Metals operates Global Innovation Centers in Germany, China and the USA. The team of researchers and developers work on developing new products, advising customers and collaborating with them on synthesis solutions.

PRECIOUS METALS RECYCLING

As specialists in the handling of spent precious metal catalysts, Heraeus offers the fastest possible precious metal recovery with the highest yield. The reclaimed precious metal can be used again for the manufacture of new catalysts.



Pd(0) Compounds

Product Name	CAS No.	Formula	Avg. PM Content	Mol. Weight
$Pd_2(dba)_3$	51364-51-3	$C_{68}H_{56}O_4Pd_2$	20.0%	1150.03
$Pd(dba)_2$	32005-36-0	$C_{34}H_{28}O_2Pd$	20.0%	575.02
Pd_2dba_3 x $CHCl_3$	52522-40-4	$C_{52}H_{43}Cl_3O_3Pd_2$	20.6%	1035.10
$Pd(PPh_3P)_4$	14221-01-3	$C_{72}H_{60}P_4Pd$	9.2%	1155.59

Pd(II) Compounds

Product Name	CAS No.	Formula	Avg. PM Content	Mol. Weight
$PdCl_2$	7647-10-1	$PdCl_2$	60.0%	177.31
Pd(II) acetate	3375-31-3	$C_4H_{12}O_4Pd$	48.0%	224.51
Pd(II) acetate „N-free“	3375-31-3	$C_{12}H_{36}O_{12}Pd_3$	47.4%	224.51
$Pd(acac)_2$	14024-61-4	$C_{10}H_{14}O_4Pd$	34.9%	304.64
$[Pd(allyl)Cl]_2$	12012-95-2	$C_6H_{10}Cl_2Pd_2$	58.2%	365.89
$Pd(COD)Cl_2$	12107-56-1	$C_8H_{12}Cl_2Pd$	37.3%	285.50
$Pd(MeCN)_2Cl_2$	14592-86-4	$C_4H_6Cl_2N_2Pd$	41.0%	259.43
$Pd(PhCN)_2Cl_2$	14220-64-5	$C_{14}H_{10}Cl_2N_2Pd$	27.7%	383.57

As key players in organic synthesis, palladium catalysts offer a wide array of chemical transformations. Popular options include catalysts like $Pd(PPh_3)_4$ and $Pd(OAc)_2$ for cross-coupling and C-H activation respectively. Other significant catalysts such as $PdCl_2(PPh_3)_2$ and $Pd(dba)_2$ pave the way for Stille and Sonogashira reactions. Further palladium compounds and information are available on request. Our technical experts will be pleased to advise you on your inquiries.

Homogeneous Catalysts > **Palladium**

Pd(II) Phosphine Complexes: Monodentate Ligands

Product Name	CAS No.	Formula	Avg. PM Content	Mol. Weight
$Pd(PPh_3)_2Cl_2$	13965-03-2	$C_{36}H_{30}Cl_2P_2Pd$	15.0%	701.90
$Pd(P(o\text{-}tol)_3)_2Cl_2$	40691-33-6	$C_{42}H_{42}Cl_2P_2Pd$	13.5%	786.06
$Pd(Amphos)_2Cl_2$	887919-35-9	$C_{32}H_{56}Cl_2N_2P_2Pd$	15.0%	708.08
$Pd(PtBu_2Ph)_2Cl_2$	34409-44-4	$C_{28}H_{46}Cl_2P_2Pd$	17.1%	621.94
$Pd(PCy_3)_2Cl_2$	29934-17-6	$C_{36}H_{66}Cl_2P_2Pd$	14.4%	738.19

Pd(II) Phosphine Complexes: Bidentate Ligands

Product Name	CAS No.	Formula	Avg. PM Content	Mol. Weight
$Pd(dppe)Cl_2$	19978-61-1	$C_{26}H_{24}Cl_2P_2Pd$	18.5%	575.74
$Pd(dppp)Cl_2$	59831-02-6	$C_{27}H_{26}Cl_2P_2Pd$	18.0%	589.77
$Pd(dppb)Cl_2$	29964-62-3	$C_{28}H_{28}Cl_2P_2Pd$	17.6%	603.79
$Pd(dppf)Cl_2$	72287-26-4	$C_{34}H_{28}Cl_2FeP_2Pd$	14.5%	731.70
$Pd(dppf)Cl_2$ x CH_2Cl_2	95464-05-4	$C_{35}H_{30}Cl_4FeP_2Pd$	13.0%	816.64
$Pd(dtbpf)Cl_2$	95408-45-0	$C_{26}H_{44}Cl_2FeP_2Pd$	16.3%	651.74
$Pd(DPEPhos)Cl_2$	205319-06-8	$C_{36}H_{28}Cl_2OP_2Pd$	14.9%	715.88
$Pd(Xantphos)Cl_2$	205319-10-4	$C_{39}H_{32}Cl_2OP_2Pd$	14.1%	755.95

Further phosphine complexes and information are available on request. Our technical experts will be pleased to advise you on your inquiries.

Pt(II) Compounds

Product Name	CAS No.	Formula	Avg. PM Content	Mol. Weight
$Pt(acac)_2$	15170-57-7	$C_5H_7O_2Pt$	49.6%	393.29
$Pt(PPh_3)_2Cl_2$	15604-36-1	$C_{36}H_{30}Cl_2P_2Pt$	24.7%	790.57
$[Pt(cyclohexene)Cl_2]_2$	12176-53-3	$C_{12}H_{20}Cl_4Pt_2$	56.0%	696.26
$Pt(COD)Cl_2$	12080-32-9	$C_8H_{12}Cl_2Pt$	52.1%	374.16
$Pt(nbd)Cl_2$	12152-26-0	$C_7H_8Cl_2Pt$	54.5%	358.12
$Pt(MeCN)_2Cl_2$	13869-38-0	$C_4H_6Cl_2N_2Pt$	56.0%	348.09
$Pt(BnCN)_2Cl_2$	15617-19-3	$C_{14}H_{10}Cl_2N_2Pt$	41.3%	472.23

Further platinum compounds and information are available on request. Our technical experts will be pleased to advise you on your inquiries.

Hydrosilylation Catalysts

Product Name	CAS No.	Formula	Avg. PM Content	Mol. Weight
Karstedt's catalyst	68478-92-2	$O[Si(CH_3)_2CH{=}CH_2]_2Pt$	19.7%	–
Ashby's catalyst	68585-32-0	$C_{12}H_{24}O_4SiPt$	17.0%	–
$Pt(dodecene)Cl_2$	129153-28-2	$C_{12}H_{24}Cl_2Pt$	4.2%	–
$(MeCp)PtMe_3$ (UV curing)	94442-22-5	$C_9H_{16}Pt$	61.1%	319.30

Hydrosilylation catalysts are available in many concentrations and dilutions – please inquire.

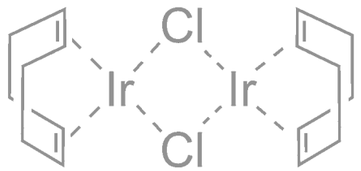
Ir(I) Compounds

Product Name	CAS No.	Formula	Avg. PM Content	Mol. Weight
$[Ir(COD)Cl]_2$	12112-67-3	$C_{16}H_{24}Cl_2Ir_2$	57.2%	671.70
$[Ir(COD)_2]BF_4$	35138-23-9	$C_{16}H_{24}I_2Ir_2$	38.3%	495.39
$[Ir(COD)OMe]_2$	12148-71-9	$C_{16}H_{24}I_2Ir_2$	45.0%	854.60

Ir(III) Compounds

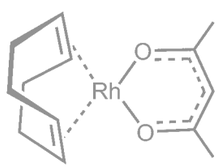
Product Name	CAS No.	Formula	Avg. PM Content	Mol. Weight
Ir acetate	52705-52-9	$C_{12}H_{24}O_{16}Ir_3$	49.0%	1000.97
$Ir(acac)_3$	15635-87-7	$C_{15}H_{21}O_6Ir$	39.3%	489.53
$[IrCp^*Cl_2]_2$	12354-84-6	$C_{20}H_{30}Cl_4Ir_2$	48.3%	796.71

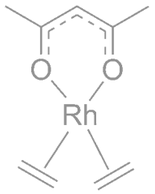
Further iridium compounds and information are available on request. Our technical experts will be pleased to advise you on your inquiries.

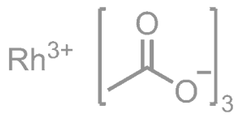


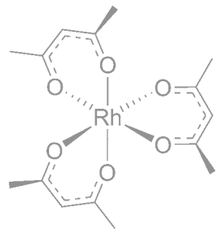
Rh(I) Compounds

Product Name	CAS No.	Formula	Avg. PM Content	Mol. Weight
$Rh(PPh_3)_3Cl$	14694-95-2	$C_{54}H_{45}P_3ClRh$	11.1%	925.22
$Rh(PPh_3)_3(CO)(H)$	17185-29-4	$C_{55}H_{45}P_3ORh$	11.2%	918.78
$Rh(acac)(CO)_2$	14874-82-9	$C_7H_7O_4Rh$	39.9%	258.03
Rh(acac)(COD)	12245-39-5	$C_{13}H_{19}O_2Rh$	33.2%	310.19
$Rh(acac)(ethylene)_2$	12082-47-2	$C_9H_{15}O_2Rh$	40.0%	258.12
$Rh(acac)(PPh_3)(CO)$	25470-96-6	$C_{24}H_{23}O_3PRh$	20.9%	493.32
$[Rh(ethylene)_2Cl]_2$	12081-16-2	$C_8H_{16}Cl_2Rh_2$	53.0%	388.93
$[Rh(COD)Cl]_2$	12092-47-6	$C_8H_{16}Cl_2Rh_2$	51.0%	493.08
$[Rh(COD)_2]BF_4$	35138-22-8 / 207124-65-0	$C_{16}H_{24}BF_4Rh$	25.3%	406.07
$[Rh(COD)_2]OTf$	99326-34-8	$C_{17}H_{24}F_3O_3SRh$	22.0%	468.34
$[Rh(COD)(dppb)]BF_4$	79255-71-3	$C_{36}H_{40}BF_4P_2Rh$	14.2%	724.36
$[Rh(COD)((R,R)\text{-Et-Du-Phos})]BF_4$	228121-39-9	$C_{30}H_{48}BF_4P_2Rh$	15.6%	660.37
$[Rh(nbd)Cl]_2$	12257-42-0	$C_{14}H_{16}Cl_2Rh_2$	44.6%	460.99
$[Rh(nbd)_2]BF_4$	36620-11-8	$C_{14}H_{16}BF_4Rh$	27.5%	373.99
$[Rh(nbd)_2]OTf$	178397-71-2	$C_{15}H_{16}F_3O_3SRh$	23.6%	436.25









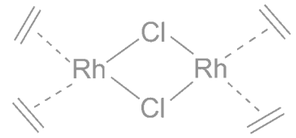
Rh(II) Compounds

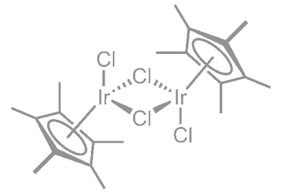
Product Name	CAS No.	Formula	Avg. PM Content	Mol. Weight
Rh(II) acetate	15956-28-2	$C_8H_{12}O_8Rh_2$	46.6%	441.99
Rh(II) octanoate	73482-96-9	$C_{32}H_{60}O_8Rh_2$	26.4%	778.64
Rh(II) 2-ethylhexanoate	20845-92-5	$C_{24}H_{45}O_6Rh$	2.3%	532.52

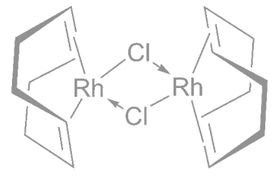
Rh(III) Compounds

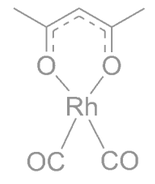
Product Name	CAS No.	Formula	Avg. PM Content	Mol. Weight
Rh(III) acetate	42204-14-8	$C_6H_9O_6Rh$	37.5%	280.04
$Rh(acac)_3$	14284-92-5	$C_{15}H_{21}O_6Rh$	25.7%	403.26
$[RhCp^*Cl_2]_2$	12354-85-7	$C_{20}H_{30}Cl_4Rh_2$	16.7%	618.07

Further rhodium compounds and information are available on request. Our technical experts will be pleased to advise you on your inquiries.









Ru(0) Compounds

Product Name	CAS No.	Formula	Avg. PM Content	Mol. Weight
$Ru_3(CO)_{12}$	15243-33-1	$C_{12}O_{12}Ru_3$	47.5%	639.33

Ru(I) Compounds

Product Name	CAS No.	Formula	Avg. PM Content	Mol. Weight
$[CpRu(CO)_2]_2$	12132-87-5	$C_{14}H_{10}O_4Ru_2$	45.5%	444.37

Ru(II) Compounds

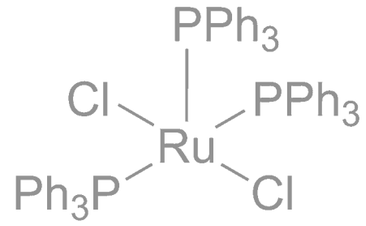
Product Name	CAS No.	Formula	Avg. PM Content	Mol. Weight
$Ru(PPh_3)_3Cl_2$	15529-49-4	$C_{54}H_{45}Cl_2P_3Ru$	10.5%	958.83
$[Ru(CO)_3Cl_2]_2$	22594-69-0	$C_6O_6Cl_4Ru_2$	39.5%	512.01
$Ru(DMSO)_4Cl_2$	11070-19-2	$C_8H_{24}Cl_2O_4RuS_4$	20.8%	484.48
$[Ru(COD)Cl_2]n$	50982-12-2	$C_8H_{12}Cl_2Ru$	33.5%	280.16
$[Ru(benzene)Cl_2]_2$	37366-09-9	$C_{12}H_{12}Cl_4Ru_2$	40.4%	500.18
$[Ru(toluene)Cl_2]_2$	52462-27-8	$C_{14}H_{16}Cl_4Ru_2$	38.3%	528.23
$[Ru(p\text{-}cymene)Cl_2]_2$	52462-29-0	$C_{20}H_{28}Cl_4Ru_2$	33.0%	612.39
Ru(p-cymene)(TsEN)Cl	208988-63-0	$C_{19}H_{27}ClN_2O_2RuS$	20.9%	484.03
$[Ru(mesitylene)Cl_2]_2$	52462-31-4	$C_{18}H_{24}Cl_4Ru_2$	34.6%	584.34

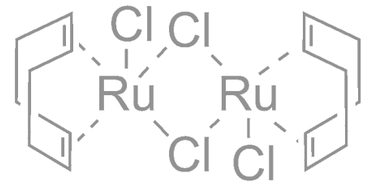
Ru(III) Compounds

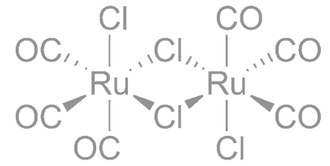
Product Name	CAS No.	Formula	Avg. PM Content	Mol. Weight
Ru acetate	55466-76-7	$C_{12}H_{18}O_{13}Ru_3.C_2H_3O_2$	34.7%	–
$Ru(acac)_3$	14284-93-6	$C_{15}H_{21}O_6Ru$	25.4%	398.39

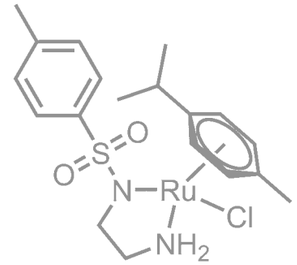
Further ruthenium compounds and information are available on request. Our technical experts will be pleased to advise you on your inquiries.

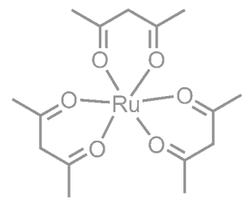
Homogeneous Catalysts > **Ruthenium**

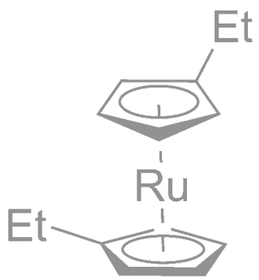


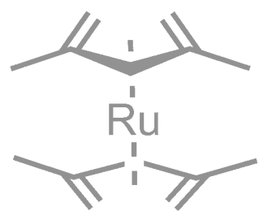


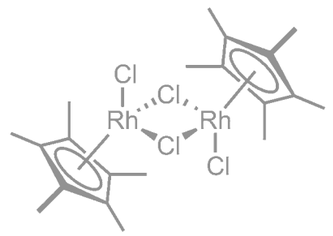












Platinum / Carbon

Name	Metal	Loading	Support Material	Form	Application
HeraSelect® HS-100	Pt	5%	Activated Carbon	Powder	❱ Hydrogenation of: aromatics; Aliphatic aldehydes and ketones to alcohols; alkenes ❱ Reduction of nitro compounds to anilines and substituted anilines ❱ Reduction of nitriles ❱ Oxidation of alcohols
HeraSelect® HS-101	Pt	1%	Activated Carbon	Powder	❱ Hydrogenation of: Aliphatic aldehydes and ketones to alcohols; alkenes ❱ Reduction of nitriles ❱ Reduction of halogenated nitroaromatics
HeraSelect® HS-102	Pt	1.5%	Activated Carbon	Powder	❱ Hydrogenation of: Aliphatic aldehydes and ketones to alcohols; alkenes ❱ Reduction of nitriles ❱ Reduction of halogenated nitroaromatics
HeraSelect® HS-103	Pt	5%	Activated Carbon	Powder	❱ Hydrogenation of: aromatics; Aliphatic aldehydes and ketones to alcohols; alkenes ❱ Reduction of nitro compounds to anilines and substituted anilines ❱ Reduction of nitriles ❱ Oxidation of alcohols
HeraSelect® HS-105	Pt	3%	Activated Carbon	Powder	❱ Hydrogenation of: Aliphatic aldehydes and ketones to alcohols; alkenes ❱ Reduction of nitriles
HeraSelect® HS-106	Pt	5%	Activated Carbon	Powder	❱ Hydrogenation of: aromatics; Aliphatic aldehydes and ketones to alcohols; alkenes ❱ Reduction of nitro compounds to substituted anilines ❱ Reduction of nitriles ❱ Oxidation of alcohols

Heterogeneous Catalysts > **Platinum / Carbon**

Platinum / Carbon

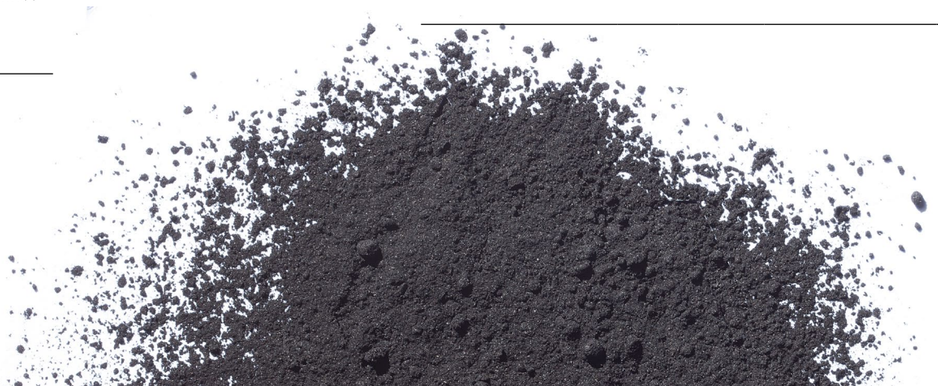
Name	Metal	Loading	Support Material	Form	Application
HeraSelect® HS-107	Pt	10%	Activated Carbon	Powder	❱ Hydrogenation of: aromatics; Aliphatic aldehydes and ketones to alcohols; alkenes ❱ Reduction of nitro compounds to anilines and substituted anilines ❱ Reduction of nitriles ❱ Oxidation of alcohols
HeraSelect® HS-108	Pt	5%	Activated Carbon	Powder	❱ Hydrogenation of: aromatics; Aliphatic aldehydes and ketones to alcohols; alkenes ❱ Reduction of nitro compounds to substituted anilines ❱ Reduction of nitriles ❱ Oxidation of alcohols
HeraSelect® HS-109	Pt	5%	Activated Carbon	Powder	❱ Hydrogenation of: aromatics; Aliphatic aldehydes and ketones to alcohols; alkenes ❱ Reduction of nitro compounds to substituted anilines ❱ Reduction of nitriles ❱ Oxidation of alcohols
HeraSelect® HS-110	Pt	1%	Activated Carbon	Powder	❱ Hydrogenation of: aromatics; Aliphatic aldehydes and ketones to alcohols; alkenes

Contact us and we guide you to the most efficient option for your process including type, precious metal loading and recommended operating conditions.

Heterogeneous Catalysts > **Palladium / Carbon**

Palladium / Carbon

Name	Metal	Loading	Support Material	Form	Application
HeraSelect® HS-200	Pd	5%	Activated Carbon	Powder	❱ Hydrogenation of: aromatic aldehydes and ketones to alcohols; alkenes; α,β-unsaturated carbonyl compounds, fatty acids, benzyl compounds ❱ Dehydrogenation ❱ Dehalogenation ❱ Reduction of nitro compounds to anilines and substituted anilines ❱ Reduction of nitriles ❱ Oxidation of alcohols
HeraSelect® HS-201	Pd	5%	Activated Carbon	Powder-wet	❱ Hydrogenation of: aromatic aldehydes and ketones to alcohols; alkenes; α,β-unsaturated carbonyl compounds, fatty acids, benzyl compounds ❱ Dehydrogenation ❱ Dehalogenation ❱ Reduction of nitro compounds to anilines and substituted anilines ❱ Reduction of nitriles ❱ Oxidation of alcohols
HeraSelect® HS-201	Pd	5%	Activated Carbon	Powder-dry	❱ Hydrogenation of: aromatic aldehydes and ketones to alcohols; alkenes; α,β-unsaturated carbonyl compounds, fatty acids, benzyl compounds ❱ Dehydrogenation ❱ Dehalogenation ❱ Reduction of nitro compounds to anilines and substituted anilines ❱ Reduction of nitriles ❱ Oxidation of alcohols
HeraSelect® HS-202	Pd	5%	Activated Carbon	Powder-dry	❱ Hydrogenation of: aromatic aldehydes and ketones to alcohols; alkenes; α,β-unsaturated carbonyl compounds, fatty acids, benzyl compounds ❱ Dehydrogenation ❱ Dehalogenation ❱ Reduction of nitro compounds to anilines and substituted anilines ❱ Reduction of nitriles ❱ Oxidation of alcohols
HeraSelect® HS-202	Pd	5%	Activated Carbon	Powder-wet	❱ Hydrogenation of: aromatic aldehydes and ketones to alcohols; alkenes; α,β-unsaturated carbonyl compounds, fatty acids, benzyl compounds ❱ Dehydrogenation ❱ Dehalogenation ❱ Reduction of nitro compounds to anilines and substituted anilines ❱ Reduction of nitriles ❱ Oxidation of alcohols
HeraSelect® HS-203	Pd	10%	Activated Carbon	Powder	❱ Hydrogenation of: aromatic aldehydes and ketones to alcohols; alkenes; α,β-unsaturated carbonyl compounds, fatty acids, benzyl compounds ❱ Dehydrogenation ❱ Dehalogenation ❱ Reduction of nitro compounds to anilines and substituted anilines ❱ Reduction of nitriles ❱ Oxidation of alcohols
HeraSelect® HS-205	Pd	3%	Activated Carbon	Powder	❱ Hydrogenation of: aromatic aldehydes and ketones to alcohols; alkenes; α,β-unsaturated carbonyl compounds, fatty acids ❱ Dehydrogenation ❱ Reduction of nitro compounds to anilines and substituted anilines ❱ Reduction of nitriles ❱ Oxidation of alcohols
HeraSelect® HS-206	Pd	5%	Activated Carbon	Powder	❱ Hydrogenation of: aromatic aldehydes and ketones to alcohols; alkenes; α,β-unsaturated carbonyl compounds, fatty acids, benzyl compounds ❱ Dehydrogenation ❱ Dehalogenation ❱ Reduction of nitro compounds to anilines and substituted anilines ❱ Reduction of nitriles ❱ Oxidation of alcohols



Name	Metal	Loading	Support Material	Form	Application
HeraSelect® HS-207	Pd	10%	Activated Carbon	Powder	❱ Hydrogenation of: aromatic aldehydes and ketones to alcohols; alkenes; α,β-unsaturated carbonyl compounds, fatty acids, benzyl compounds ❱ Dehydrogenation ❱ Dehalogenation ❱ Reduction of nitro compounds to anilines and substituted anilines ❱ Reduction of nitriles ❱ Oxidation of alcohols
HeraSelect® HS-208	Pd, Pt	4%; 1%	Activated Carbon	Powder	❱ Hydrogenation of alkenes ❱ Reduction of nitro compounds to anilines and substituted anilines ❱ Reduction of nitriles
HeraSelect® HS-209	Pd	5%	Activated Carbon	Powder	❱ Hydrogenation of: aromatic aldehydes and ketones to alcohols; alkenes; α,β-unsaturated carbonyl compounds, fatty acids, benzyl compounds ❱ Dehydrogenation ❱ Dehalogenation ❱ Reduction of nitro compounds to anilines and substituted anilines ❱ Reduction of nitriles ❱ Oxidation of alcohols
HeraSelect® HS-210	Pd	5%	Activated Carbon	Powder	❱ Hydrogenation of: aromatic aldehydes and ketones to alcohols; alkenes; α,β-unsaturated carbonyl compounds, fatty acids, benzyl compounds ❱ Dehydrogenation ❱ Dehalogenation ❱ Reduction of nitro compounds to anilines and substituted anilines ❱ Reduction of nitriles ❱ Oxidation of alcohols
HeraSelect® HS-211	Pd	7%	Activated Carbon	Powder	❱ Hydrogenation of: aromatic aldehydes and ketones to alcohols; alkenes; α,β-unsaturated carbonyl compounds, fatty acids, benzyl compounds ❱ Dehydrogenation ❱ Dehalogenation ❱ Reduction of nitro compounds to anilines and substituted anilines ❱ Reduction of nitriles ❱ Oxidation of alcohols

Contact us and we guide you to the most efficient option for your process including type, precious metal loading and recommended operating conditions.

Rhodium / Carbon

Name	Metal	Loading	Support Material	Form	Application
HeraSelect® HS-300	Rh	5%	Activated carbon	Powder	❱ Hydrogenation of aromatics ❱ Hydrogenation of aliphatic aldehydes and ketones to alcohols

Ruthenium / Carbon

Name	Metal	Loading	Support Material	Form	Application
HeraSelect® HS-900	Ru	5%	Activated Carbon	Powder	❱ Hydrogenation of: aromatic aldehydes and ketones to alcohols
HeraSelect® HS-901	Ru	10%	Activated Carbon	Powder	❱ Hydrogenation of aromatics ❱ Hydrogenation of aliphatic aldehydes and ketones to alcohols

Platnium, Palladium / Carbon

Name	Metal	Loading	Support Material	Form	Application
HeraSelect® HS-112-M	Pt	2.5%	Polymer-based carbon	Microspheres	❱ Hydrogenation of alkenes and nitro compounds
HeraSelect® HS-212-M	Pd	2.5%	Polymer-based carbon	Microspheres	❱ Hydrogenation of alkenes and nitro compounds

Palladium / Alumina

Name	Metal	Loading	Support Material	Form	Application
HeraSelect® K-02145	Pd	5%	Alumina	Powder	❱ Hydrogenation ❱ Benzyl-Group elimination
HeraSelect® K-0250 NG	Pd	5%	Alumina	Powder	❱ Hydrogenation ❱ Benzyl-Group elimination

Contact us and we guide you to the most efficient option for your process including type, precious metal loading and recommended operating conditions.

Around the Globe … and Around the Clock

Heraeus Precious Metals is globally leading in the precious metals industry. The company is part of the Heraeus Group and covers the value chain from trading to precious metals products to recycling. It has extensive expertise in all platinum group metals as well as gold and silver.

With about 3,000 employees at 15 sites worldwide, Heraeus Precious Metals offers a broad portfolio of products that are essential for many industries such as the automotive, chemicals, semiconductor, pharmaceutical, hydrogen and jewelry industry.

By 2025 Heraeus Precious Metals will be the first company in the industry that operates carbon neutral.

Chemicals Footprint

Trading Locations

Production & Recycling Locations

R&D Innovation Centers

[1]Joint Venture

Circlear – Products Made with 100% Recycled Precious Metals

Using Circlear allows you to reduce your Scope 3 carbon footprint: Recycled precious metals enable circularity for these scarce resources and reduce the need for extraction of primary metals. Precious metals that are recovered using recycling processes have the same high quality and purity. Their major benefit is the significantly reduced carbon footprint – up to 98%* lower than that of primary metals. They therefore have a lower adverse impact on the environment and biodiversity.

All Circlear precious metals are 100% recycled, originating from secondary sources such as spent chemical or automotive catalysts. This is verified and audited by TÜV Süd in accordance with ISO 14021.

* based on International Platinum Group Metals Association reports from 2022 and 2023

We conserve resources and promote a circular economy.

RESOURCES are **precious** to us

We are committed to realize the potential of precious metals as responsibly as possible.

We underline this commitment with our pledge to responsibility: **precious to us.**

Our pledge to RESPONSIBILITY

PEOPLE are **precious** to us

CLIMATE is **precious** to us

We prioritize people's well-being and interests.

We decarbonize our business.

Heraeus Precious Metals

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