

# Metal Inorganic Compounds

ROTI<sup>®</sup>METIC  
ROTI<sup>®</sup>REMETIC  
ROTI<sup>®</sup>nanoMETIC



## Content

ROTI <sup>®</sup> METIC (Metal Inorganic Compounds)	p.	2–4
ROTI <sup>®</sup> REMETIC (Rare Earth Metal Inorganic Compounds)	p.	5
ROTI <sup>®</sup> nanoMETIC	p.	6–8

# ROTI<sup>®</sup>METIC (Metal Inorganic Compounds)

## Ultra Pure Metals and Inorganic Compounds

The ROTI<sup>®</sup>METIC product range comprises more than 180 high purity inorganic metals and metal compounds with purity levels ranging from 99,9 % (3N) to 99,9999 % (6N). Modern production technology as well as high quality and safety standards make it possible to achieve these high purity levels of metal traces from 100 ppm to 1 ppm. Up to 60 trace metal compounds are analysed by HR-ICP, ICP-OES, AAS, GD-MS and documented in the batch specific certificate of analysis supplied with the product. Our ultra high purity metals and metal compounds are ideal for the following applications:

- Instrumental analytics
- Chemical analyses & syntheses
- Crystal growth technology
- Nanotechnology
- Laser and Photovoltaic technology
- Optical fibres
- Photonics
- Fuel cells
- Catalysis



Our mission is to offer the quality and service you require in research & development and in production. Excellent value for money and the option of ordering in semi-bulk are strong arguments in favour of the ROTI<sup>®</sup>METIC product range.



## Ultra Pure Metals and Inorganic Compounds

Product name	Purity	Art. No.	Pack Qty.
Aluminium granulate	99,995 % (4N5)	5577.1	25 g
		5577.2	100 g
Aluminium chloride hexahydrate	99,9999 % (6N)	5368.1	25 g
		5368.2	100 g
Aluminium fluoride	99,99 % (4N), anhydrous	5395.1	10 g
		5395.2	50 g
Aluminium nitrate nonahydrate	99,999 % (5N)	5567.1	10 g
		5567.2	50 g
Aluminium oxide	99,995 % (4N5)	5575.1	5 g
		5575.2	25 g
Aluminium sulphate	99,99 % (4N)	1L4Y.1	5 g
		1L4Y.2	25 g
Ammonium bromide	99,999 % (5N)	1L5E.1	5 g
		1L5E.2	25 g
Ammonium carbonate	99,999 % (5N)	1L58.1	10 g
		1L58.2	50 g
Ammonium chloride	99,999 % (5N)	5050.1	50 g
		5050.2	100 g
Ammonium dihydrogen phosphate	99,999 % (5N)	5580.1	25 g
		5580.2	100 g
Ammonium hexachlororhodate(III)	99,995 % (4N5)	5586.1	1 g
Ammonium hexafluorosilicate	99,999 % (5N)	5587.1	10 g
		5587.2	25 g
		5587.3	50 g
Ammonium hydrogen fluoride	99,999 % (5N)	5363.1	25 g
di-Ammonium hydrogen phosphate	99,999 % (5N)	5596.1	100 g
Ammonium iodide	99,999 % (5N)	1L79.1	5 g
		1L79.2	25 g
Ammonium iron(II) sulphate hexahydrate	99,999 % (5N)	1L75.1	5 g
		1L75.2	25 g
Ammonium molybdate(VI)	99,99 % (4N)	5591.1	5 g
		5591.2	25 g
Ammonium monovanadate	99,995 % (4N5)	5590.3	1 g
		5590.2	25 g

Product name	Purity	Art. No.	Pack Qty.
Ammonium perchlorate	99,999 % (5N)	1L6P.1	1 g
		1L6P.2	5 g
Ammonium sulphate	99,999 % (5N)	5606.1	10 g
		5606.2	50 g
Ammonium tetraborate tetrahydrate	99,999 % (5N)	5396.1	25 g
Ammonium tetrachloroaurate(III) hydrate	99,999 % (5N)	1L6Y.1	1 g
Ammonium tetrachloroplatinate(II)	99,99 % (4N)	1L6E.1	1 g
Ammonium tetrathiomolybdate	99,99 % (4N)	5608.1	1 g
Antimony shot	99,999 % (5N)	5608.2	5 g
		4516.2	50 g
Antimony(III) oxide	99,999 % (5N)	1L6T.1	5 g
		1L6T.2	25 g
Antimony(V) oxide	99,999 % (5N)	1L5A.1	5 g
		1L5A.2	25 g
Barium carbonate	99,999 % (5N)	5321.1	25 g
Barium chloride	99,999 % (5N), anhydrous	5321.2	100 g
		5051.1	25 g
Barium chloride dihydrate	99,999 % (5N)	5115.3	25 g
		5115.1	50 g
Barium fluoride	99,995 % (4N5)	5115.2	100 g
		5055.1	25 g
Barium nitrate	99,9995 % (5N5)	5138.1	50 g
		5138.2	100 g
Barium sulphate	99,99 % (4N)	1L70.1	5 g
		1L70.2	25 g
Beryllium acetate basic	99,999 % (5N)	5612.1	5 g
Bismuth pieces	99,999 % (5N)	1L6H.1	10 g
Bismuth(III) oxide	99,999 % (5N)	1L6X.1	10 g
		1L6X.2	50 g
Boric acid	99,999 % (5N)	5614.1	25 g
		5614.2	100 g
Cadmium acetate	99,999 % (5N), anhydrous	5247.1	10 g
		5247.2	25 g

# ROTI<sup>®</sup>METIC (Metal Inorganic Compounds)

Product name	Purity	Art. No.	Pack Qty.	Product name	Purity	Art. No.	Pack Qty.
Cadmium oxide	99,995 % (4N5)	1L63.1	5 g	Indium(III) fluoride	99,999 % (5N)	1L51.1	1 g
		1L63.2	25 g			1L51.2	5 g
		1L74.1	5 g			1L5K.1	1 g
Cadmium sulphate	99,995 % (4N5)	1L74.2	25 g	Indium(III) iodide	99,999 % (5N)	1L5K.2	5 g
		5618.1	5 g			Indium(III) nitrate pentahydrate	99,999 % (5N)
Caesium carbonate	99,995 % (4N5)	5061.1	10 g	Indium(III) oxide	99,999 % (5N)	5630.1	5 g
Caesium chloride	99,999 % (5N)	5061.2	50 g	Iodine(V) oxide	99,99 % (4N)	5630.2	25 g
		4505.1	10 g			5364.1	5 g
Caesium nitrate	99,999 % (5N)	4505.2	50 g	Iron granules	99,99 % (4N)	5364.2	25 g
		1L77.1	10 g			5631.1	5 g
Caesium sulphate	99,99 % (4N)	1L77.2	50 g	Iron(III) nitrate nonahydrate	99,999 % (5N)	5631.2	25 g
		5616.1	5 g			5632.1	5 g
Calcium carbonate	99,999 % (5N)	5616.2	25 g	Iron(III) oxide	99,98 % (3N8)	5632.2	25 g
		1L72.1	1 g			5634.1	5 g
Calcium chloride	99,995 % (4N5)	1L72.2	10 g	Lanthanum(III) nitrate hexahydrate	99,995 % (4N5)	5634.2	25 g
		5056.1	10 g			5366.1	25 g
Calcium chloride hydrate	99,999 % (5N)	5058.1	5 g	Lead(II) acetate trihydrate	99,999 % (5N)	5366.2	100 g
Calcium fluoride	99,99 % (4N)	5058.2	25 g			1L50.1	5 g
Calcium nitrate hydrate	99,999 % (5N)	25LH.1	5 g	Lead(II) iodide	99,99 % (4N)	1L50.2	25 g
Calcium oxalate monohydrate	99,999 % (4N)	25LH.2	25 g			1L5P.1	5 g
		5372.1	10 g	1L5P.2	25 g		
Cerium(III) acetate hydrate	99,999 % (5N)	5372.2	50 g	Lead(II) nitrate	99,999 % (5N)	1L4N.1	10 g
		5312.1	5 g			1L4N.2	50 g
Cerium(III) nitrate hexahydrate	99,999 % (5N)	5312.2	25 g	Lithium bromide	99,999 % (5N)	5062.1	25 g
		5603.1	25 g			5062.2	50 g
Cerium(III) sulphate	99,99 % (4N), anhydrous	5601.1	50 g	Lithium carbonate	99,999 % (5N)	5635.1	10 g
Cerium(III) sulphate octahydrate	99,995 % (4N5)	5601.2	250 g			5635.2	25 g
		5619.1	5 g			5635.3	100 g
Chromium(III) nitrate nonahydrate	99,999 % (5N)	5619.2	25 g	Lithium chloride	99,999 % (5N)	5079.1	25 g
		4498.1	5 g			5079.2	50 g
Chromium(III) oxide	99,9 % (3N)	4498.2	25 g	Lithium fluoride	99,99 % (4N)	5082.1	5 g
		5620.1	5 g			5082.2	25 g
Cobalt powder	99,998 % (4N8)	5620.2	25 g	Lithium hydroxide	99,995 % (4N5)	1L5X.1	5 g
		1L57.1	5 g			1L5X.2	25 g
Cobalt(II) chloride hexahydrate	99,999 % (5N)	5291.1	10 g	Lithium hydroxide monohydrate	99,999 % (5N)	1L73.1	5 g
		5291.2	25 g			1L73.2	25 g
Cobalt(II) nitrate hexahydrate	99,999 % (5N)	5326.1	10 g	Lithium nitrate	99,999 % (5N), anhydrous	5281.1	10 g
Cobalt(II) sulphate hydrate	99,999 % (5N)	5621.1	25 g	Lutetium(III) oxide	99,995 % (4N5)	5281.2	25 g
		5621.2	100 g			5296.1	1 g
Copper pellets	99,999 % (5N)	5386.1	10 g	Magnesium granulate	99,99 % (4N)	1L6K.1	10 g
		5386.2	50 g			1L6K.2	50 g
Copper powder	99,999 % (5N)	1L64.1	5 g	Magnesium chloride hexahydrate	99,999 % (5N)	5347.1	25 g
		1L64.2	25 g			5347.2	100 g
Copper(II) acetate monohydrate	99,995 % (4N5)	1L60.1	5 g	Magnesium nitrate hexahydrate	99,999 % (5N)	5420.1	10 g
		1L60.2	25 g	5420.2	50 g		
Copper(II) chloride dihydrate	99,999 % (5N)	1L67.1	5 g	Magnesium oxide	99,999 % (5N)	5639.1	10 g
		1L67.2	25 g			5639.2	50 g
Copper(II) nitrate hydrate	99,999 % (5N)	1L5Y.1	5 g	Manganese flakes	99,98 % (3N8)	4509.1	25 g
		1L5Y.2	25 g			4509.2	50 g
Copper(II) oxide	99,999 % (5N)	1L53.1	5 g	Manganese(II) acetate tetrahydrate	99,999 % (5N)	5641.1	5 g
		1L53.2	25 g			5641.2	25 g
Europium(III) oxide	99,995 % (4N5)	5394.1	5 g	Manganese(II) carbonate	99,98 % (3N8)	1L68.1	5 g
Gallium(III) nitrate hydrate	99,999 % (5N)	5548.1	25 g			1L68.2	25 g
		Gallium(III) oxide	99,999 % (5N)	5377.1	10 g	5304.1	25 g
Germanium pieces	99,999 % (5N)			1L54.1	1 g	5304.2	100 g
		1L54.2	5 g	5392.1	10 g		
Germanium(IV) oxide	99,999 % (5N)	1L52.1	5 g	Manganese(II) nitrate hydrate	99,995 % (4N5)	5392.2	25 g
		1L52.2	25 g			1L4X.1	5 g
Gold shot	99,999 % (5N)	5622.1	1 g	Manganese(II) oxide	99,99 % (4N)	1L4X.2	10 g
		5622.2	5 g			5383.1	5 g
Holmium(III) oxide	99,99 % (4N)	5338.1	10 g	Manganese(IV) oxide	99,995 % (4N5)	5383.2	25 g
		5338.2	50 g			1L4T.1	10 g
Hydrogen hexachloroplatinate(IV) hydrate	99,995 % (4N5)	5626.1	1 g	Molybdenum pieces	99,98 % (3N8)	1L4T.2	50 g
		5626.2	5 g			4548.1	5 g
Hydrogen tetrachloroaurate(III) hydrate	99,999 % (5N)	5628.1	1 g	Molybdenum(VI) oxide	99,98 % (3N8)	4548.2	10 g
		5629.1	5 g			5643.1	25 g
Indium shot	99,999 % (5N)	5629.2	25 g	Nickel powder	99,995 % (4N5)	5643.2	100 g
		5322.1	5 g			Nickel(II) chloride hexahydrate	99,999 % (5N)
Indium(III) bromide	99,999 % (5N)	5322.2	25 g	Nickel(II) nitrate hexahydrate	99,999 % (5N)		
						5387.2	500 g

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Product name	Purity	Art. No.	Pack Qty.
Nickel(II) oxide	99,999 % (5N)	5388.1	50 g
		5388.2	100 g
Palladium powder	99,999 % (5N)	5648.1	1 g
		5653.1	1 g
Palladium(II) chloride	99,999 % (5N)	5653.2	5 g
		5393.1	1 g
Palladium(II) oxide	99,995 % (4N5)	5393.2	5 g
		1L78.1	5 g
Phosphotungstic acid hydrate	99,995 % (4N5)	1L78.1	5 g
Platinum powder	99,999 % (5N)	5654.1	1 g
		1L76.1	250 mg
Platinum(II) chloride	99,99 % (4N)	1L76.2	1 g
		5064.1	10 g
Potassium bromide	99,995 % (4N5)	5064.2	50 g
		5335.1	10 g
Potassium carbonate	99,995 % (4N5)	5335.2	50 g
		5346.1	25 g
Potassium chloride	99,995 % (4N5)	5346.2	100 g
		1L6N.1	5 g
Potassium dihydrogen phosphate	99,99 % (4N)	1L6N.2	25 g
		5656.1	5 g
Potassium fluoride	99,99 % (4N)	5656.2	25 g
		1L7C.1	5 g
Potassium hexacyano-ferrate(II) trihydrate	99,99 % (4N)	1L7C.2	25 g
		1L6A.1	5 g
Potassium hexacyanoferrate(III)	99,99 % (4N)	1L6A.2	25 g
		5066.1	25 g
di-Potassium hydrogen phosphate	99,99 % (4N), anhydrous	5066.1	25 g
Potassium hydroxide	99,98 % (3N8)	5658.1	100 g
Potassium iodide	99,999 % (5N)	5067.1	25 g
Potassium nitrate	99,999 % (5N)	5659.1	10 g
		5659.2	50 g
Potassium sulphate	99,995 % (4N5)	5071.1	10 g
Potassium tetrachloroaurate(III)	99,995 % (4N5)	5114.1	1 g
		5114.2	5 g
Potassium tetrachloroplatinate(II)	99,95 % (3N5)	5660.1	1 g
Rhodium(III) chloride hydrate	99,95 % (3N5)	5668.1	1 g
Rubidium carbonate	99,99 % (4N)	1L65.1	5 g
		5679.1	5 g
Rubidium chloride	99,98 % (3N8)	5679.2	10 g
		5293.1	5 g
Rubidium nitrate	99,99 % (4N)	5293.2	25 g
		1L71.1	1 g
Rubidium sulphate	99,8 % (2N8)	5686.1	1 g
		5686.2	5 g
Ruthenium(III) chloride	99,9 % (3N), anhydrous	5686.2	5 g
Scandium(III) oxide	99,995 % (4N5)	5735.1	1 g
		4547.1	10 g
Selenium pellets	99,999 % (5N)	4547.2	50 g
		5324.1	10 g
Selenium(IV) oxide	99,999 % (5N)	5324.1	10 g
		5738.1	5 g
Silicon dioxide	99,998 % (4N8)	5738.2	25 g
		5739.1	5 g
Silver bromide	99,999 % (5N)	5739.2	25 g
		5302.1	1 g
Silver chloride	99,9999 % (6N)	5302.2	5 g
		5302.3	25 g
Silver iodide	99,999 % (5N)	1L5C.1	5 g
		1L5C.2	25 g
Silver nitrate	99,9999 % (6N)	4500.1	10 g
		4500.2	50 g
Silver sulphate	99,999 % (5N)	1L6C.1	5 g
		1L6C.2	25 g
Sodium acetate	99,99 % (4N), anhydrous	5380.1	25 g
Sodium bromide	99,999 % (5N)	5086.1	25 g
		5740.1	5 g
Sodium carbonate	99,999 % (5N), anhydrous	5740.2	25 g
		5741.1	5 g
Sodium chloride	99,999 % (5N)	5741.2	25 g
		5741.3	100 g
Sodium fluoride	99,995 % (4N5)	4503.1	10 g
		4503.2	50 g

Product name	Purity	Art. No.	Pack Qty.
Sodium nitrate	99,999 % (5N)	5742.1	25 g
Sodium nitrite	99,99 % (4N)	1L4P.1	10 g
		1L4P.2	100 g
Sodium perrhenate	99,99 % (4N)	1L62.1	250 mg
		1L62.2	1 g
Sodium sulphate	99,999 % (5N)	5076.1	10 g
		5076.2	25 g
Sodium tetrachloropalladate(II)	99,99 % (4N)	1L56.1	1 g
Strontium acetate hydrate	99,995 % (4N5)	1L69.1	1 g
		1L69.2	10 g
Strontium carbonate	99,998 % (4N8)	5376.1	5 g
		5376.2	25 g
Strontium chloride hexahydrate	99,995 % (4N5)	1L5H.1	5 g
		1L5H.2	25 g
Strontium nitrate	99,999 % (5N)	5078.1	25 g
		1L6L.1	5 g
Tantalum powder	99,95 % (3N5)	1L6L.2	25 g
		1L5L.1	5 g
Tantalum(V) oxide	99,99 % (4N)	1L5L.2	25 g
		1L5N.1	10 g
Tellurium pices	99,999 % (5N)	1L5N.2	50 g
		5745.1	5 g
Tellurium(IV) oxide	99,999 % (5N)	5745.2	10 g
		5745.3	50 g
Tetraammineplatinum(II) nitrate	99,995 % (4N5)	5746.1	1 g
		20L3.1	1 g
Thulium(III) chloride hexahydrate	99,9999 % (6N)	20L3.2	5 g
		20L3.3	25 g
Tin shot	99,999 % (5N)	5097.1	5 g
		5097.2	10 g
Tin(IV) oxide	99,999 % (5N)	1L61.1	5 g
		1L61.2	25 g
Titanium pieces	99,99 % (4N)	1L66.1	10 g
		5747.1	5 g
Titanium(IV) oxide	99,999 % (5N), rutile	5747.2	25 g
		5399.1	50 g
Tungsten(VI) oxide	99,995 % (4N5)	5399.2	100 g
		5370.1	5 g
Vanadium(V) oxide	99,995 % (4N5)	5370.2	25 g
		5749.1	10 g
Ytterbium(III) chloride hexahydrate	99,999 % (5N)	5749.1	10 g
Ytterbium(III) oxide	99,999 % (5N)	5303.1	5 g
		5303.2	25 g
Yttrium(III) oxide	99,999 % (5N)	5751.1	10 g
		5751.2	50 g
Zinc shot	99,999 % (5N)	5345.1	25 g
		5345.2	100 g
Zinc bromide	99,999 % (5N)	1L55.1	10 g
		1L55.2	50 g
Zinc chloride	99,999 % (5N)	1L5T.1	5 g
		1L5T.2	25 g
Zinc oxide	99,999 % (5N)	5421.1	25 g
		5421.2	100 g
Zirconyl chloride octahydrate	99,995 % (4N5)	4502.1	10 g
Zirconyl nitrate hydrate	99,99 % (4N)	5415.1	25 g
		5415.2	100 g

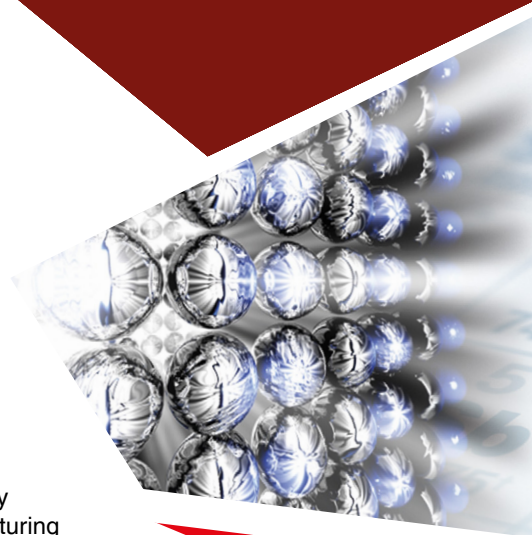
For additional product data and safety information, see our current catalogue or at [www.carlroth.com](http://www.carlroth.com)

# ROTI®REMETIC

## Rare Earth Metal Inorganic Compounds

Our ultra high purity rare earth metal compounds work excellent for:

- Instrumental analytics
- Chemical analyses & syntheses
- Crystal growth technology
- Catalysis
- Doping agents
- Luminescent & fluorescent compounds
- Glas fibre technology
- Laser technology
- Fuel cells
- Oxidizing agents
- Electronic industry
- Ceramic manufacturing



Our mission is to offer the quality and service you require in research & development and in production. Excellent value for money and the option of ordering in semi-bulk are strong arguments in favour of the ROTI®REMETIC product range.

## High-purity metals compounds


Purity refers to TREO (Total Rare Earth Oxides).

Product name	Purity	Art. No.	Pack Qty.
Cerium(III) nitrate hexahydrate	99,9 %	7049.1	5 g
		7049.2	25 g
Cerium(III) oxalate hydrate	99,9 %	7067.1	10 g
		7067.2	50 g
Cerium(IV) oxide	99,99 %	7042.1	10 g
		7042.2	50 g
Dysprosium(III) oxide	99,9 %	7145.1	5 g
		7145.2	25 g
Erbium(III) oxide	99,9 %	7160.1	5 g
		7160.2	25 g
Gadolinium(III) oxide	99,99 %	7136.1	1 g
		7136.2	5 g
		7136.3	25 g
		7136.4	100 g
Lanthanum(III) acetate hydrate	99,9 %	7031.1	100 g
		7031.2	250 g
Lanthanum(III) chloride heptahydrate	99,99 %	223X.1	50 g
		223X.2	100 g
		223X.3	250 g
Lanthanum(III) nitrate hexahydrate	99,999 %	7019.1	25 g
		7019.2	100 g
	99,99 %	7180.1	50 g
		7180.2	250 g
Lanthanum(III) oxalate	99,99 %	7191.1	25 g
		7191.2	100 g
Lanthanum(III) oxide	99,999 %	7410.1	25 g
		7410.2	100 g
Lutetium(III) oxide	99,99 %	7177.1	1 g
		7177.2	5 g
Neodymium(III) acetate hydrate	99,9 %	7107.1	50 g
		7107.2	100 g
Neodymium(III) nitrate hexahydrate	99,9 %	7097.1	25 g
		7097.2	100 g
Neodymium(III) oxide	99,999 %	7092.2	25 g
Praseodymium(III,IV) oxide	99,99 %	7087.1	1 g
		7087.2	5 g
Samarium(III) oxide	99,95 %	7108.1	5 g
		7108.2	25 g
Ytterbium(III) oxide	99,99 %	7353.1	10 g
		7353.2	25 g
		7353.3	50 g
Yttrium(III) oxide	99,99 %	7352.1	25 g
		7352.2	100 g

For additional product data and safety information, see our current catalogue or at [www.carlroth.com](http://www.carlroth.com)

# ROTI® nanoMETIC

## ROTI® nanoMETIC

Made in Germany 

### Nanoparticles


Our nanoparticles are well suited for many applications and are mainly supplied as a hydrophilic powder that can be easily suspended in aqueous solutions. Our portfolio includes metals, metal oxides as well as other compounds in the nanoscale range.

Product name	Purity	Art. No.	Pack Qty.
Aluminium oxide, nano	≥99,8 %, ca. 40 nm, alpha	23C8.1	5 g
		23C8.2	25 g
		23C8.3	100 g
	≥99,9 %, 40 nm, gamma	8250.1	10 g
		8250.2	50 g
		8250.3	100 g
		21EA.1	10 g
		21EA.2	50 g
		21EA.3	100 g
Calcium carbonate	≥97 %, approx. 90 nm	23EE.1	5 g
		23EE.2	10 g
		23EE.3	25 g
Carbon black	≥99 %	21LP.1	10 g
		21LP.2	50 g
Copper, nano	≥99 %, ≥80 nm	8279.1	5 g
		8279.2	25 g
		8279.3	100 g
	≥99 %	21E8.1	1 g
		21E8.2	5 g
		8251.1	10 g
Copper(II) oxide, nano	≥99 %, 15–50 nm	8251.2	50 g
		8251.3	100 g
		21H1.1	5 g
Magnesium oxide, nano	≥99 %, 20 nm	21H1.2	10 g
		21H1.3	25 g
		21TA.1	1 g
Nanodiamonds	5 nm, low ash content	21TA.2	10 g
		21X9.1	1 g
	≥97 %, 5 nm	21X9.2	10 g
Nickel, nano	≥90 %, 50 nm	21E9.1	1 g
		21E9.2	5 g
Silicon dioxide, nano	≥99,5 %, ca. 10 nm, fumed, hydrophilic	21HE.1	25 g
		21HE.2	100 g
	≥99,5 %, ca. 10 nm, fumed, hydrophobic	21HH.1	5 g
		21HH.2	10 g
Titanium(IV) oxide, nano	≥99,9 %, 4–8 nm	21HH.3	25 g
		8254.1	10 g
Tungsten(VI) oxide, nano	100-200 nm	8254.2	50 g
		21PK.1	5 g
		21PK.2	25 g
Zinc oxide, nano	≥99 %, 25 nm	8278.1	10 g
		8278.2	50 g
		8278.3	100 g
Zirconium(IV) oxide, nano	3 nm, hydrophobic	1776.1	1 g
		1776.2	5 g
	3 nm, hydrophilic	2097.1	1 g
		2097.2	5 g
		21LC.1	5 g
	≥97 %, ca. 35 nm, cubic	21LC.2	25 g
		21LC.3	50 g
		21LE.1	5 g
		99,9 %, 45 nm, monoclinic	21LE.2
21LE.3	50 g		

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For information on handling nanomaterials, see the WHO homepage.

## Phosphonic acids

Made in Germany 

Alkylphosphonic acids are perfect hydrophobization ligands, owing to their classical bifunctional chemical structure. They contain a non-polar organic hydrophobic alkyl chain and an active hydrophilic phosphonic acid group. These molecules are capable to strongly bind to the surface of different inorganic materials (SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, TiO<sub>2</sub>, Fe<sub>x</sub>O<sub>y</sub>, ZrO<sub>2</sub>, ZnS etc.) forming a selfassembled coating layer. Phosphonic acids can also be used as ligands for the synthesis of nanoparticles to control the size and hydrophobic properties of the particles. Further they are well soluble in non-polar and many polar solvents. The acids are also soluble in water (especially upon addition of alkali) at lower concentrations.

### Phosphonic acids suitable for the production and modification of nanoparticles

Product name	Art. No.	Pack Qty.
Hexadecylphosphonic acid	8466.1	1 g
	8466.2	5 g
Octadecylphosphonic acid	8468.1	1 g
	8468.2	5 g
Tetradecylphosphonic acid	8465.1	1 g
	8465.2	5 g

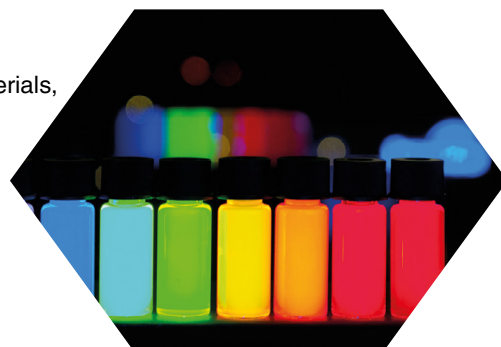
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# ROTI® nanoMETIC

## Quantum Dots (QD)

Quantum dots (QD) are fluorescent nanoparticles of certain semiconducting materials, whose electronic properties closely depend on the size of the particles. The fluorescence wavelength shifts towards red for larger particles, and to blue for the smaller ones. This allows coverage of the complete visible colour spectrum with quantum dots of different sizes and yet the same material. The possibility to control the size of the particles during their manufacturing, allows to precisely adjust their electronic and fluorescent properties. The inorganic nature of quantum dots makes them far more stable than organic fluorescent dyes.



## Quantum Dots, CdTe, hydrophilic

The surface of our cadmium telluride (CdTe) quantum dots is functionalised with COOH groups, which enables optimal dispersion of the particles in aqueous solutions. This also allows easy coupling of the particles to NH<sub>2</sub> groups, which makes the products interesting for a variety of chemical and biochemical applications.

The products are delivered as powder in 2 ml vials with septum. Thus, the quantum dots can be dispersed directly in the vial with the chosen solvent.

Product name	Purity	Art. No.	Pack Qty.
Cadmium telluride	λ max. 510 ±5 nm	8256.1	5 mg
		8256.2	10 mg
	λ max. 520 ±5 nm	24PK.1	5 mg
		24PK.2	10 mg
	λ max. 530 ±5 nm	24PL.1	5 mg
		24PL.2	10 mg
	λ max. 540 ±5 nm	24PN.1	5 mg
		24PN.2	10 mg
	λ max. 550 ±5 nm	24PP.1	5 mg
		24PP.2	10 mg
	λ max. 560 ±5 nm	24PT.1	5 mg
		24PT.2	10 mg
	λ max. 570 ±5 nm	8257.1	5 mg
		8257.2	10 mg
	λ max. 580 ±5 nm	24PX.1	5 mg
		24PX.2	10 mg
	λ max. 590 ±5 nm	24PY.1	5 mg
		24PY.2	10 mg
	λ max. 600 ±5 nm	24T0.1	5 mg
		24T0.2	10 mg
	λ max. 610 ±5 nm	8258.1	5 mg
		8258.2	10 mg
	λ max. 620 ±5 nm	24T1.1	5 mg
		24T1.2	10 mg
	λ max. 630 ±5 nm	24T4.1	5 mg
		24T4.2	10 mg
	λ max. 640 ±5 nm	24T3.1	5 mg
		24T3.2	10 mg
λ max. 650 ±5 nm	24T2.1	5 mg	
	24T2.2	10 mg	

Product name	Purity	Art. No.	Pack Qty.
Cadmium telluride	λ max. 660 ±5 nm	24T5.1	5 mg
		24T5.2	10 mg
	λ max. 670 ±5 nm	24T6.1	5 mg
		24T6.2	10 mg
	λ max. 680 ±5 nm	24T7.1	5 mg
		24T7.2	10 mg
	λ max. 690 ±5 nm	24T8.1	5 mg
		24T8.2	10 mg
	λ max. 700 ±5 nm	24T9.1	5 mg
		24T9.2	10 mg
	λ max. 710 ±5 nm	8260.1	5 mg
		8260.2	10 mg
	λ max. 720 ±5 nm	24TA.1	5 mg
		24TA.2	10 mg
	λ max. 730 ±5 nm	24TC.1	5 mg
		24TC.2	10 mg
	λ max. 740 ±5 nm	24TE.1	5 mg
		24TE.2	10 mg
	λ max. 750 ±5 nm	24TH.1	5 mg
		24TH.2	10 mg
	λ max. 760 ±5 nm	24TK.1	5 mg
		24TK.2	10 mg
	λ max. 770 ±5 nm	24TL.1	5 mg
		24TL.2	10 mg
	λ max. 780 ±5 nm	8261.1	5 mg
		8261.2	10 mg
	λ max. 790 ±5 nm	24TN.1	5 mg
		24TN.2	10 mg

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## Quantum Dots, CdSe/ZnS, hydrophobic

The CdSe/ZnS (core/shell) quantum dots are highly luminescent semiconductor nanocrystals coated with hydrophobic organic ligands consisting mainly of trioctylphosphine oxide. These quantum dots are easily dispersible in hexane, cyclohexane, toluene, chloroform, THF, pyridine and similar solvents but not in water, alcohols and ethers. The thickness of the ZnS shell is approx. 0.6 nm. The products are supplied as dry powders in 2 ml vials with septum. Thus, the quantum dots can be dispersed directly in the vial with the desired solvent.

Product name	Purity	Art. No.	Pack Qty.
CdSe/ZnS	λ max. 530 ±5 nm	24YE.1	5 mg
		24YE.2	10 mg
	λ max. 540 ±5 nm	24YH.1	5 mg
		24YH.2	10 mg
	λ max. 550 ±5 nm	24YT.1	5 mg
		24YT.2	10 mg
	λ max. 560 ±5 nm	24YX.1	5 mg
		24YX.2	10 mg
	λ max. 570 ±5 nm	24YY.1	5 mg
		24YY.2	10 mg
	λ max. 580 ±5 nm	250A.1	5 mg
		250A.2	10 mg
	λ max. 590 ±5 nm	250C.1	5 mg
		250C.2	10 mg
	λ max. 600 ±5 nm	24YK.1	5 mg
		24YK.2	10 mg
	λ max. 610 ±5 nm	24YL.1	5 mg
		24YL.2	10 mg
	λ max. 620 ±5 nm	24YN.1	5 mg
		24YN.2	10 mg
λ max. 630 ±5 nm	24YP.1	5 mg	
	24YP.2	10 mg	
λ max. 640 ±5 nm	24YA.1	5 mg	
	24YA.2	10 mg	
λ max. 650 ±5 nm	24YC.1	5 mg	
	24YC.2	10 mg	

## Quantum Dots, Zn-Cu-In-S/ZnS, hydrophobic, Cd-free

Cd-free

The non-toxic Zn-Cu-In-S/ZnS (core/shell) quantum dots are cadmium-free and are coated with hydrophobic organic ligands (dodecanethiol (DDT)). This modification allows good dispersibility in hexane, cyclohexane, toluene, chloroform, THF, pyridine and similar solvents but not in water, alcohols and ethers. The products are supplied as powder in 2 ml vials with septum. Thus, the quantum dots can be dispersed directly in the vial with the desired solvent.

Product name	Purity	Art. No.	Pack Qty.
Zn-Cu-In-S/ZnS	λ max. 530 ±15 nm	8609.1	5 mg
		8609.2	10 mg
	λ max. 560 ±15 nm	8610.1	5 mg
		8610.2	10 mg
	λ max. 590 ±15 nm	8618.1	5 mg
		8618.2	10 mg
	λ max. 610 ±15 nm	8614.1	5 mg
		8614.2	10 mg
	λ max. 650 ±15 nm	8616.1	5 mg
		8616.2	10 mg
	λ max. 700 ±15 nm	8615.1	5 mg
		8615.2	10 mg

## Quantum Dots, Perovskite, hydrophobic, Cd-free

Cd-free

Perovskite quantum dots of structure PbCsX<sub>3</sub> are Cd-free (Pb-based) and highly luminescent quantum dots. The surface of the quantum dot was modified with hydrophobic organic ligands. These quantum dots are easily dispersible in hexane, cyclohexane, toluene, chloroform, THF, pyridine and similar solvents but not in water, alcohols and ethers.

The products are supplied as powder in 2 ml vials with septum. Thus, the quantum dots can be dispersed directly in the vial with the desired solvent.

The perovskite quantum dots are ideal for industrial applications and can be produced on a large scale.

Product name	Purity	Art. No.	Pack Qty.
Perovskite PbCsX <sub>3</sub>	λ max. 450 ±15 nm	253L.1	5 mg
		253L.2	50 mg
	λ max. 480 ±15 nm	253N.1	5 mg
		253N.2	50 mg
	λ max. 510 ±15 nm	253E.1	5 mg
		253E.2	50 mg
	λ max. 530 ±15 nm	253H.1	5 mg
		253H.2	50 mg
	λ max. 550 ±15 nm	253K.1	5 mg
		253K.2	50 mg

## Quantum Dots, AgInS<sub>2</sub>/ZnS, hydrophobic, heavy-metal-free

Cd-free

AgInS<sub>2</sub>/ZnS (core/shell) are non-toxic heavy metal free (no Cd, Se, Hg and Cu) luminescent quantum dots coated with hydrophobic ligands. These quantum dots are easily dispersible in hexane, cyclohexane, toluene, chloroform, THF, pyridine and similar solvents but not in water, alcohols and ethers.

The products are supplied as powder in 2 ml vials with septum. Thus, the quantum dots can be dispersed directly in the vial with the desired solvent.

Product name	Purity	Art. No.	Pack Qty.
AgInS <sub>2</sub> /ZnS	λ max. 600 ±20 nm	251Y.1	10 mg
		251Y.2	25 mg
	λ max. 640 ±20 nm	252A.1	10 mg
		252A.2	25 mg
	λ max. 710 ±20 nm	251T.1	10 mg
		251T.2	25 mg
	λ max. 760 ±20 nm	251X.1	10 mg
		251X.2	25 mg

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