ECP
ROSATOM

Electrochemical Plant, Joint-Stock Company (ECP) is an enterprise of the conversion and enrichment complex within TVEL Fuel Company, a part of Rosatom. Our main product is low-enriched uranium (235U isotope) intended for the nuclear fuel production. With the help of the gas centrifuge technology used to enrich uranium, we can also produce isotopes of other chemical elements.

ECP is among the largest stable isotopes producers and is in the world's top five for the production of isotopes.
ECP shares over 40% of the contracts made on the global market for stable isotopes.
The annual output of isotopes reaches hundreds of kilograms.

PRODUCED ISOTOPES

ECP ROSATOM

Isotope	Natural abundance, %	Enrichment level, %	Delivered as (chemical formula)
CARBON (C, carboneum)			
^{12}C	98,94	99,90	dioxide (CO_2)
^{13}C	1,06		
SILICON (Si, silicium)			
^{28}Si	92,255	99,999	element (Si, powder, crystal); oxide (SiO_2), fluoride (SiF_4), monosilane (SiH_4), trichlorosilane ($SiHCl_3$)
^{29}Si	4,672	99,30	
^{30}Si	3,073	99,60	
SULPHUR (S, sulfur)			
^{32}S	94,856	99,95	element (S)
^{33}S	0,763	99,90	fluoride (SF_6)
^{34}S	4,365		sodium sulfate (Na_2SO_4)
^{36}S	0,016		
ARGON (Ar, argon)			
^{36}Ar	0,3336	99,90	gas (Ar)
^{38}Ar	0,0629		
^{40}Ar	99,6035	99,99	
IRON (F, ferrum)			
^{54}Fe	5,845	99,90	metal (Fe)
^{56}Fe	91,754		oxide (Fe_2O_3)
^{57}Fe	2,119	96,00	
^{58}Fe	0,282	99,90	
NICKEL (Ni, niccolum)			
^{58}Ni	68,0769	99,90	metal (Ni)
^{60}Ni	26,2231	99,50	oxide (NiO)
^{61}Ni	1,1399		
^{62}Ni	3,6345		
^{64}Ni	0,9256	99,90	
ZINC (Zn, zincum)			
^{64}Zn, depl.	49,17	< 1	metal (Zn), oxide (powder, pellets, ZnO), acetate ($Zn(CH_3COO)_2 \cdot H_2O$)
^{64}Zn	49,17	99,90	
^{66}Zn	27,73	99,00	
^{67}Zn	4,04	78,00	
^{68}Zn	18,45	99,00	
^{70}Zn	0,61	99,50	

PRODUCED ISOTOPES

ECP ROSATOM

Isotope	Natural abundance, %	Enrichment level, %	Delivered as (chemical formula)
GERMANIUM (Ge, germanium)			
^{70}Ge	20,52	99,90	metal (Ge)
^{72}Ge	27,45		oxide (GeO_2)
^{73}Ge	7,76		fluoride (GeF_4)
^{74}Ge	36,52		
^{76}Ge	7,75		
SELENIUM (Se, selenium)			
^{74}Se	0,86	99,90	metal (Se)
^{76}Se	9,23		oxide (SeO_2)
^{77}Se	7,60		
^{78}Se	23,69	98,90	fluoride (SeF_6)
^{80}Se	49,80	99,90	
^{82}Se	8,82		
KRYPTON (Kr, krypton)			
^{78}Kr	0,355	99,90	gas (Kr)
^{80}Kr	2,286		
^{82}Kr	11,593		
^{83}Kr	11,500		
^{84}Kr	56,987		
^{86}Kr	17,279		
MOLYBDENUM (Mo, molybdaenum)			
^{92}Mo	14,649	99,90	metal (Mo)
^{94}Mo	9,187	99,50	oxide (MoO_3)
^{95}Mo	15,873		fluoride (MoF_6)
^{96}Mo	16,673		
^{97}Mo	9,582		
^{98}Mo	24,292		
^{100}Mo	9,744	99,90	
TIN (Sn, stannum)			
^{112}Sn	0,97	99,90	metal (Sn)
^{114}Sn	0,66	98,00	
^{115}Sn	0,34	90,00	
^{116}Sn	14,54	99,50	
^{117}Sn	7,68	90,00	
^{118}Sn	24,22	98,50	
^{119}Sn	8,59	87,00	
^{120}Sn	32,58	99,00	
^{122}Sn	4,63	99,00	
^{124}Sn	5,79	99,90	

PRODUCED ISOTOPES

ECP ROSATOM

Isotope	Natural abundance, %	Enrichment level, %	Delivered as (chemical formula)
TELLURIUM (Te, tellurium)			
^{120}Te	0,09	99,90	metal (Te)
^{122}Te	2,55		oxide (TeO_2)
^{123}Te	0,89		fluoride (TeF_6)
^{124}Te	4,74		
^{125}Te	7,07		
^{126}Te	18,84		
^{128}Te	31,74		
^{130}Te	34,08		
XENON (Xe, xenon)			
^{124}Xe	0,095	99,90	gas (Xe)
^{126}Xe	0,089		
^{128}Xe	1,910		
^{129}Xe	26,401		
^{130}Xe	4,071		
^{131}Xe	21,232		
^{132}Xe	26,909		
^{134}Xe	10,436		
^{136}Xe	8,857		
TUNGSTEN (W, wolframium)			
^{180}W	0,12	99,90	metal (W)
^{182}W	26,50	99,80	oxide (WO_3)
^{183}W	14,31		fluoride (WF_6)
^{184}W	30,64		
^{186}W	28,43	99,90	
IRIDIUM (Ir, iridium)			
^{191}Ir	37,30	99,90	metal (Ir) multi-sized discs, powder, needles
^{193}Ir	62,70		
LEAD (Pb, plumbum)			
^{204}Pb	1,40	99,90	metal (Pb)
^{206}Pb	24,10		
^{207}Pb	22,10	99,00	
^{208}Pb	52,40	99,80	

The Electrochemical Plant has long been a reputable global manufacturer of high-quality isotopes that find various applications such as international scientific experiments.

ISOTOPES ON REQUEST

ECP ROSATOM

Isotope	Natural abundance, %	Enrichment level, %	Delivered as (chemical formula)
BORON (B, borum)			
^{10}B	19,65	99,90	fluoride (BF_3)
^{11}B	80,35		
CHROME (Cr, chromium)			
^{50}Cr	4,345	99,00	oxide (CrO_3)
^{52}Cr	83,789		
^{53}Cr	9,501	98,00	
^{54}Cr	2,365	95,00	
ZIRCONIUM (Zr, zirconium)			
^{90}Zr	51,45	99,00	oxide (ZrO_2)
^{91}Zr	11,22	95,00	
^{92}Zr	17,15	99,00	
^{94}Zr	17,38		
^{96}Zr	2,80		
CADMIUM (Cd, cadmium)			
^{106}Cd	1,245	99,50	metal (Cd) oxide (CdO) sulfate ($CdSO_4$)
^{108}Cd	0,888		
^{110}Cd	12,470		
^{111}Cd	12,795	97,00	
^{112}Cd	24,109	98,70	
^{113}Cd	12,227	93,00	
^{114}Cd	28,754	99,40	
^{116}Cd	7,512	99,90	
OSMIUM (Os, osmium)			
^{184}Os	0,02	99,90	metal (Os)
^{186}Os	1,59	99,80	
^{187}Os	1,96	99,60	
^{188}Os	13,24	99,80	
^{189}Os	16,15	99,60	
^{190}Os	26,26	99,30	
^{192}Os	40,78	99,60	

The Electrochemical Plant pioneered the production of non-uranium isotopes with gas centrifuges.

Our first equipment for stable isotopes was put into operation on November 9, 1971.
A few grams of 57Fe iron isotope enriched to 80 % became the first product to come out of this line.

Today we can produce 115 stable isotopes of 22 chemical elements.
Moreover, the Electrochemical Plant has accumulated extensive experience in the production of high-purity substances and radioisotopes with high specific activity — nickel-63 (^{63}Ni), krypton-85 (^{85}Kr).

The Electrochemical Plant is advancing towards new technologies that will open international and Russian markets for rare earth element isotopes (their prospective applications are scientific research, starting materials for nuclear medicine, nuclear power).

January 25,1993, marked the creation of a workshop for production of isotopes. This unit encompassed the entire process cycle: from the synthesis of process substances to the separation of isotopes in the cascades of gas centrifuges to the making of marketable forms of stable isotopes.

Gas centrifuge technology is the most advanced industrial method for isotope separation.
This method of isotope separation allows to reach maximum enrichment and high chemical purity, while ensuring a competitive price. With our production capacity we can make the required isotopes in great amounts, even on an industrial scale.

Our analytical laboratory complies with GOST ISO/ IEC17025-2009.

Our isotopes find various applications: nuclear medicine, biomedical and nuclear physics research, nuclear industry, space and aircraft engineering, radio electronics, chemistry, geology, metallurgy, spectroscopy, nondestructive testing, agriculture, metrology, pharmaceuticals, radiology.

Over their entire production history, our isotopes have been used in 30 countries around the world and are supplied to the American, European and Asian markets.

The main supplier of our isotopes is JSC Isotope, the sole authorized operator of the Rosatom State Corporation. It partners with more than 100 foreign companies and over 600 organizations in Russia.

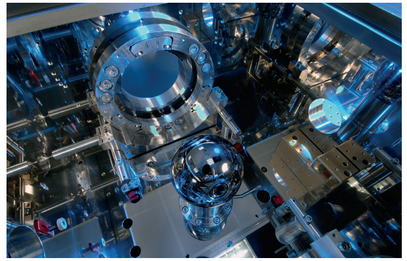
Our management system for the production and supply of isotopes is certified for
ISO 9001:2015, ISO 14001:2015,
ISO 45001:2018, ISO 50001:2011


CERTIFICATE TIC

The quality of ECP's isotopes is verified by consumer laboratories and independent testing centers, including the laboratory of the Fresenius Institute (Germany), Evans Analytical Group (USA), GIRedMet (Moscow), State Research Center For Geological Testing (China), Can Test (Canada) and others.

Our isotopes have been supplied to scientific laboratories and research centers all over the world, including Stanford University, Massachusetts Institute of Technology, NASA Jet Propulsion Laboratory, Berkeley National Laboratory (USA), Cambridge University, University of Nottingham (UK), Paul Scherrer Institute (Switzerland), Australia's Nuclear Science and Technology Organisation, University of Tokyo (Japan), and Physikalisch-Technische Bundesanstalt (Germany).

Our isotopes have found application in more than 20 international research programs.
Among them, the search for neutrinoless double β-decay (projects NEMO-3, MAJORANA, AMoRE, GERDA, LEGEND); registration of solar neutrino (project XMASS); studying the "dark matter" of the Universe (project WARP); project Kilogram-2 to create a new standard for mass, and other projects.



ECP
ROSATOM

ELECTROCHEMICAL PLANT,
JOINT-STOCK COMPANY

RF, 663690, Krasnoyarsk Region,
Zelenogorsk,
Pervaya Promyshlennaya Street,
building 1.

http://www.ecp.ru

Tel. +7 (39169) 3–33–21
Fax +7 (39169) 9–42–43

E-mail:
taifun@ecp.ru
market.ecp@rosatom.ru

ECP
ROSATOM

ELECTROCHEMICAL PLANT, JOINT-STOCK COMPANY

ISOTOPE PRODUCTION


Isotope production workshop (building «Svetlana»)