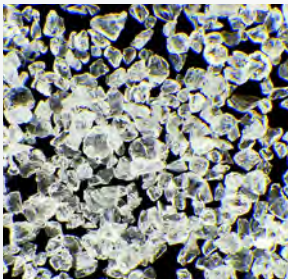
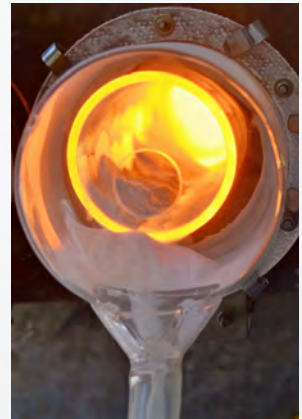




## ABOUT US

Russian Quartz LLC is the leading manufacturer of high purity quartz concentrates in Russia and the only manufacturer of ultra high purity quartz concentrates with the average content of  $\text{SiO}_2$  - 99,999%.

**The company produces the high purity quartz concentrates under the brand RQ:**  
RQ-6K, RQ-3K, RQ-2K, RQ-2Ki, RQ-2KF, RQ-2Kff, RQ-1K.



High purity quartz concentrate is the product of natural quartz grinding, purified from mineral and chemical impurities. Total amount of impurities is no more than 12-30 ppm, depending on the grade. There is also the ultra high purity quartz with the average content of impurities of less than 9 ppm.

## QUARTZ DEPOSIT

The main source of raw quartz for the company is the Kyshtym deposit - Quartz Vein No.175, containing natural quartz with rare combination of characteristics — minimum B & P content, the lowest Al, Alkali, Cu, Ni, Cr, Fe content.

Kyshtym quartz has the highest chemical purity and good transparency, and for more than 50 years been successfully used as raw material for quartz tubes of various diameter, ingots and crucibles for photovoltaic and semi-conductor industries.



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The Vein No.175 has a large reserve of quartz ore of constant quality confirmed by the audit IMC Montan. The mining is carried out using underground method, which allows to work all year round.

Stability of quality of the quartz ore from the Vein No. 175 is confirmed both by the long-term operation of the mine and the stable quality characteristics of the HPQ made of this quartz ore.

## ANALYTICAL LAB

Russian Quartz has a modern laboratory that allows to perform all the necessary analyses to assess the quality of ore and the finished high purity quartz concentrates, such as:



—Chemical analysis (ICP-OES method). The accuracy of determining the content of the main impurity elements is 0.01ppm, for individual elements is 0.001 ppm.

—Mineralogical analysis.

—Particle size distribution analysis (Sieve analysis).

—Bulk density analysis.



All laboratory equipment undergoes the necessary inspection procedures in a timely manner, as well as cross-correlation procedures with consumers' analytical laboratories in order to avoid errors and deviations in assessing the quality of the finished product.

# RUSSIAN QUARTZ LLC

## QUALITY MANAGEMENT SYSTEM



Russian Quartz's production areas are certified in accordance with ISO 9001:2015 for development, production, enrichment and sale of high purity quartz concentrates by "DKS RUS" LLC (Russia).

In addition to the ISO 9001: 2015 standards, Russian Quartz has developed and applied its own quality control procedures, allowing to control all parameters and aspects of the production of HPQ, from ore quality control to finished product storage and logistics to the consumer.

## PRODUCTS

Typical values by mass fraction of the elements, ppm:

	Al	B	Ca	Cr	Cu	Fe	K	Li	Mg	Mn	Na	Ni	Ti
RQ-3K	5,0	-	0,35	-	-	0,40	0,20	0,29	0,10	-	0,45	-	2,7
RQ-2K	3,9	0,07	0,12	0,01	0,01	0,20	0,13	0,30	0,05	0,01	0,30	0,01	2,9
RQ-2Kf	4,2	0,07	0,09	0,01	0,01	0,11	0,12	0,30	0,08	<0,01	0,30	0,01	2,8
RQ-2Kff	3,9	0,07	0,12	0,01	0,01	0,10	0,12	0,30	0,10	0,01	0,30	0,01	2,7
RQ-2Ki	3,9	0,07	0,10	0,01	0,01	0,09	0,09	0,29	0,09	<0,01	0,29	0,01	2,8
RQ-1K	3,6	0,07	0,10	<0,01	<0,01	0,05	0,03	0,29	0,07	<0,01	0,05	<0,01	2,9

Content of impurity elements of grade RQ-6K, no more than, %

	Al	Ca	Fe	K	Na
Specification	0,4	0,2	0,03	0,2	0,3

Quality Management System in accordance with ISO 9001:2015  
Certificate registration number: 21110060 QM 15







## PRODUCTS

## RQ-1K

Chemical content, ppm

	Al	B	Ca	Cr	Cu	Fe	K	Li	Mg	Mn	Na	Ni	Ti
Specification	4	0,1	0,3	0,01	0,01	0,1	0,1	0,4	0,1	0,01	0,1	0,01	3
Typical value	3,6	0,07	0,10	<0,01	<0,01	0,05	0,03	0,29	0,07	<0,01	0,05	<0,01	2,9

Particle size distribution

Mesh size	Micron (μm)	Limit (wt %)
>80	>180	≤2
200 - 80	75-180	≥93
<200	<75	≤5

## RQ-2K

Chemical content, ppm

	Al	B	Ca	Cr	Cu	Fe	K	Li	Mg	Mn	Na	Ni	Ti
Specification	5	0,1	0,5	0,1	0,1	0,4	0,3	0,4	0,2	0,1	0,5	0,01	3
Typical value	3,9	0,07	0,12	0,01	0,01	0,20	0,13	0,30	0,05	0,01	0,30	0,01	2,9

Particle size distribution

Mesh size	Micron (μm)	Limit (wt %)
>50	>300	≤1
200 - 50	75-300	≥98,5
<200	<75	≤0,5

## RQ-2Ki

Chemical content, ppm

	Al	B	Ca	Cr	Cu	Fe	K	Li	Mg	Mn	Na	Ni	Ti
Specification	5	0,1	0,3	0,01	0,01	0,2	0,3	0,4	0,2	0,01	0,5	0,01	3
Typical value	3,9	0,07	0,10	0,01	0,01	0,09	0,09	0,29	0,09	<0,01	0,29	0,01	2,8

Particle size distribution

Mesh size	Micron (μm)	Limit (wt %)
>80	>180	≤2
200 - 80	75-180	≥93
<200	<75	≤5

## PRODUCTS

## RQ-2Kf

Chemical content, ppm

	Al	B	Ca	Cr	Cu	Fe	K	Li	Mg	Mn	Na	Ni	Ti
Specification	5	0,1	0,3	0,1	0,1	0,4	0,3	0,4	0,2	0,1	0,5	0,1	3
Typical value	4,2	0,07	0,09	0,01	0,01	0,11	0,12	0,30	0,08	<0,01	0,30	0,01	2,8

Particle size distribution

Mesh size	Micron (μm)	Limit (wt %)
>100	>165	≤2
200 - 100	75-165	≥68
<200	<75	≤30

## RQ-2Kff

Chemical content, ppm

	Al	B	Ca	Cr	Cu	Fe	K	Li	Mg	Mn	Na	Ni	Ti
Specification	5	0,1	0,3	0,1	0,1	0,4	0,3	0,4	0,2	0,1	0,5	0,1	3
Typical value	3,9	0,07	0,12	0,01	0,01	0,10	0,12	0,30	0,10	0,01	0,30	0,01	2,7

Particle size distribution

Mesh size	Micron (μm)	Limit (wt %)
>120	>125	≤3
140 - 120	100-125	≤20
200-140	75-100	≥40
<200	<75	≥20

## RQ-3K

Chemical content, ppm

	Al	Ca	Fe	K	Li	Mg	Na	Ti
Specification	8	1	0,9	1	0,4	0,5	1,8	3
Typical value	5,0	0,35	0,40	0,20	0,29	0,10	0,45	2,7

Particle size distribution

Mesh size	Micron (μm)	Limit (wt %)
>50	>300	≤1
200 - 50	75-300	≥94
<200	<75	≤5



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## APPLICATION

Grade	Content of impurities, no more than, %	Application
RQ-6K	1,13 %	semi-enriched product for further processing of HPQ
RQ-3K	<17 ppm	special glass for car headlights, bactericidal UV lamps, special lamps, halogen headlights, fluorescent lamps, lamps for projectors
RQ-2K	<11 ppm	transparent layer of crucibles of the solar and semiconductor industry, production of large-diameter quartz tubes and quartz products
RQ-2Ki	<10,1 ppm	transparent layer of crucibles of the solar and semiconductor industry, production of large-diameter quartz tubes and quartz products
RQ-2Kf	<11 ppm	large diameter quartz tubes and quartz products
RQ-2Kff	<11 ppm	multicomponent glass, quartz products, special optics
RQ-1K	<9 ppm	RQ grade after the chlorination process, developed for semiconductor crucibles and quartz glass for the semiconductor industry

## SEMICONDUCTORS



- crucibles
- high-purity quartz glass products, for example, crucibles, tubes, equipment for processing and etching of silicon wafers

Recommended grades:

**RQ-1K**

## PHOTOVOLTAICS



- PV crucibles

Recommended grades:

**RQ-2Ki, RQ-2K**

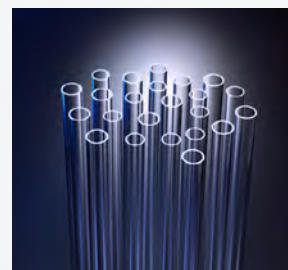
## OPTICS



- high quality optical lenses and other optical equipment

Recommended grades:  
**RQ-2KF, RQ-2Kff**

## LIGHTING



- all types of quartz lamps, including automotive and ultraviolet lamps

Recommended grades:  
**RQ-3K, RQ-2K**





**RUSSIAN QUARTZ LLC**

+7 (35151) 4-38-45  
info@russianquartz.com

# RUSSIAN QUARTZ LLC

## Legal/postal address:

456870, Chelyabisk region, Kyshtym, Kaslinskoe highway, 3

Tel: +7 (35151) 4-38-45

Fax: + 7 (35151) 4-38-48

e-mail: info@russianquartz.com

sales@russianquartz.com

Web-site: www.russianquartz.com



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