



Открытое Акционерное Общество
**«ЮЖНОУРАЛЬСКИЙ ЗАВОД
«КРИСТАЛЛ»**



ул. Береговая, 2, город Южноуральск, Челябинская область, Россия, 457040
ИНН 7424004900 / КПП 742401001 / БИК 047501779 / ОКПО 07621047 / ОКОНХ 14771
к/сч 30101810400000000779 в Южноуральском РКЦ / р/сч 40702810747020000063
в ОАО Челябинвестбанк, адрес банка: г. Южноуральск, ул. Космонавтов, 13
телефон: (35134) 4-33-12, факс: (35134) 4-33-20

Dear Sirs,

Our company, Plant KRISTALL, with 125 autoclaves (volume is from 4 to 7 meters cubic) for hydrothermal growth, is one of the largest manufacturers of cultured quartz crystal in the world. We offer for delivery high-quality quartz of the following types:

- optical (one-side) quartz crystals (Dimensions of crystals along axes - Z=20-45mm, X=86-90mm, Y=200-205mm),
- piezo quartz crystals (Dimensions of crystals along axes - Z=20-100mm, X=76-100mm, Y=200-260mm),
- quartz lumbered bars (swept; Density of inclusions - according to IEC 60758 and is better Ia)
- Chemically pure synthetic quartz for glass melting

The plant's quality management system is certified as per ISO 9001-2008.

Our products are manufactured according to IEC 60758.

For more information you may visit our web-site www.kristallplant.com

We will be glad to supply our products on mutually beneficial conditions!

Best regards,

D.S. Abdrafikov, General director

Уважаемые господа,

Наша компания, завод KRISTALL со 125 автоклавами (объем от 4 до 7 метров кубических) для гидрогтермального синтеза является крупнейшим производителем синтетического кварца в мире.

Мы предлагаем для поставки кварц высокого качества следующих типов:

- оптика (односторон крист) Z=23-45mm, X=86-90mm, Y=200-205mm,
- пьезокварц Z=23-100mm, X>76-92mm, Y=200-230mm,
- секции (электроочищенные, включения лучше Ia по МЭК 60758).
- Химически чистый синтетический кварц для плавки стекла

На предприятии действует система качества ИСО 9001-2008.

Наша продукция изготавливается по стандарту МЭК 60758.

Для более подробной информации вы можете посетить наш сайт www.kristallplant.com

Мы будем рады поставлять вам нашу продукцию на взаимовыгодных условиях!

С уважением,

Генеральный директор

Д.С. Абдрафиков

Certificate

Standard

ISO 9001:2008

Certificate Registr. No. **75 100 70257**

TÜV Rheinland InterCert certifies:

Certificate Holder:

JSC Yuzhnouralsk Plant KRISTALL

457040, Chelyabinsk region,
Yuzhnouralsk, Beregovaya street, 2
Russian Federation

Scope:

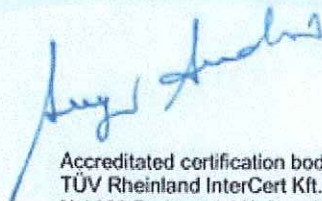
production and delivery of synthetic quartz crystalz, quartz
lumbered bars and quartz seeds.

An audit was performed. Proof has been furnished that the
requirements according to ISO 9001:2008 are fulfilled.

Validity:

The certificate is valid from **04.09.2011** until **03.09.2014**.
First certification: 2008

Brussels, 04.09.2011



Accredited certification body
TÜV Rheinland InterCert Kft.
H-1132 Budapest, Váci road 48/a-b
www.tuv.com



DGA-ZM-09-08-00



TÜVRheinland®
Precisely Right.

PLANT MANAGEMENT AND QUALITY POLICY

The Plant for producing synthetic quartz crystals for electronics, in Yuzhnouralsk of Chelyabinsk Region, is established on October 29, 1962.

The history of the Plant construction is closely related to the development of electronic engineering industry in Russia. The Plant belongs to the first production facilities worldwide that started synthetic quartz crystal growing, crystal handling, and providing high-quality quartz to radio electronic industry in Russia and abroad.

In 1958, the USSR Government Resolution was adopted on construction in the Urals of the second plant for synthetic quartz mass production in high-pressure autoclaves of domestic manufacture. The plant construction began in 1961 in Yuzhnouralsk, Chelyabinsk Region. Alongside with construction, the erection of auxiliary equipment for production and subsequent erection of the main production equipment was carried out. In October 1962, the first autoclave cycle was incorporated into the production process, and the plant created its first product in 1963.

Today, OJSC "Yuzhnouralsk Plant "KRISTALL" is the largest synthetic quartz producer in Russia and in the world. It shares about 25% of the world's output of synthetic quartz crystal products. Undoubtedly, it should be credited to the Plant Management.

Stanislav Nikolayevich Abdrakfov was elected the Plant General Manager in 1994. Born in Plast of Chelyabinsk Region on November 10, 1950, Stanislav N. Abdrakfov obtained a higher education qualification of an electrical engineer at the Chelyabinsk Polytechnic Institute, winning the Russian Federation State Prize for Science and Technology and taking his Ph.D. degree in Economics. His engineering career development has been closely related to the Plant "Kristall" since 1983, now Stanislav N. Abdrakfov is Chairman of the Board of Directors of the OJSC "Yuzhnouralsk Plant "KRISTALL."

When Stanislav N. Abdrakfov became General Manager, the Plant was officially bankrupt. He succeeded in setting up economic ties, and under his direction, the Plant emerged as the worldwide leader in quartz crystal production. In recognition of his great achievements in the plant development under new economic conditions, he was awarded the State RF "Order of Honor" in 1998. Young specialists take employment in the company, adopt and accumulate extensive experience, and contribute to the company's success through their energy and enterprise, initiative.

Denis Stanislavovich Abdrakfov works as the Plant General Director since 2011. Denis S. Abdrakfov is a leberate administrator and effectively manages of the Plant.



Stanislav N. Abdrakfov,
Chairman of the Board of Directors



Denis S. Abdrakfov,
General Director

The Plant's facilities comprise 125 autoclaves coming in 1.0 to 7.4 m³ capacities, where pure crystal drops are produced at pressures up to 1,200 atmospheres and temperatures up to 4,000 °C. The resource base of the Plant also includes more than 80 multi-blade quartz cutting machines. Its production facilities are fully provided with seed crystal plates of its own making. The company has well-equipped laboratory facilities for testing raw materials and final products.

www.kristallplant.com

PLANT MANAGEMENT AND QUALITY POLICY

The pieces of natural vein quartz are the basic raw materials for piezoquartz production.

The Plant holds inventory of main types of stock raw materials to meet the demand during a two-year period (natural quartz, and high purity reagents such as sodium carbonate, lithium nitrate, and sodium hydrate). The criteria by which the Plant evaluates its suppliers include quality of the products they supply, the arrangements they make for delivery, and economic stability.

The Plant exports more than 90% of its products to Japan, China, South Korea, European countries and the USA.

Today, the Plant KRISTALL is an efficient team of 330 professionals who are engaged in the development and production of high-tech products, with engineering personnel constituting one-third of the whole team and honorably representing their country on the world market.

The production of the plant - optical and piezoelectric synthetic quartz crystals, lumbered bars of different size under the Customer's order, and colored varieties of quartz for jewelry industry.

The OJSC "Yuzhnouralsk Plant "Kristall" celebrated its 50th anniversary on October 29, 2012, and now it is taking solid steps toward the company's future growth.

Its production output meets the requirements of the International Standard IEC 60758-2008 "Quartz crystal"

A Quality Management System is operated by the Plant.

The Plant's Quality System was certified by RW TüV (Germany) in 1997.

In 1998, the Quality System was certified according to the Russian National Standard (GOST R) for compliance with the requirements of GOST R ISO 9002-96.

In 2000, the Plant was awarded the Government Quality Prize.

It became a Prize Winner of the Competitions "20 Best Goods of Chelyabinsk Region" and "100 Best Russian Products" in 2002.

In 2003, the Plant became a recipient of the Quality Prize established by the Russian Presidential Envoy to the Urals Federal District.

In September 2003, the Plant obtained two certificates for compliance with requirements of the ISO 9001-2000 international standards and with demands of the national standard GOST R 9001-2001.

In 2004, the Plant became the All-Russian Prime Prize "Russian National Olympus" winner, and, in the same year, it received two golden "High Quality New Millennium" medals for high quality of quartz crystals and products from the US Chamber of Commerce.

In 2010, the Plant's Quality Management System is certified as per ISO 9001-2008, and the company confirms its annual compliance with requirements of the International Standard up to now. Our quality policy applies to all spheres of the Plant's activities, and aims at production of synthetic quartz crystals, oriented lumbered quartz bars and wafers of quartz meeting the Customer's requirements.

The Plant's objective is the highest level of meeting our customers' requirements, in terms of the volume of production, the range of products and quality, in a severely competitive economic environment.

In the sphere of quality, the OJSC "Yuzhnouralsk Plant "Kristall" sets the following tasks:

- To produce the goods meeting the Customer's requirements, in the volume that will allow to combine the consumption requirements and the enterprise capacity as much as practical

- To expand the product range
- To arrange for delivery within the agreed periods
- To minimize the production costs

To study customers' needs, maintain close ties with customers on a regular basis, and adhere to the "open-door policy"

- To cooperate with suppliers of materials and associated items to ensure procurement quality
- To provide training and development of specialists' and workers' vocational competence
- To improve the Quality System operated at the company

These Quality Management tasks are top priorities for each department and for all personnel at our plant - from the General Director down to any employee. The Plant's administration accepts responsibility for carrying out of the Quality Policy, and securing a full mobilization of adequate resources to provide normal operation of the Quality Management System.



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ONE-SIDE CRYSTALS («Optics») Technical Specification for One-Side Crystals

1. Modification: Right-Hand
2. Q-value

Grade	$Q \times 10^3$, min	α_{2500}
B	2,4	0,045
C	1,8	0,060



6. Seed

Dimensions, mm:

- Along the X Axis 78-82
- Along the Z Axis 2.0 max

Orientation:

Angle formed by the seed surfaces "X" and "Y" relative to axes X and Y: 0° +/-30°.

3. Inclusions Density

Grade according to inclusions density	Quantity of inclusions according to dimensions, pcs/cm ³			
	<30 mm	30-70mm	70-100mm	>100mm
Ia	2	1	0	0
Ib	3	2	1	1

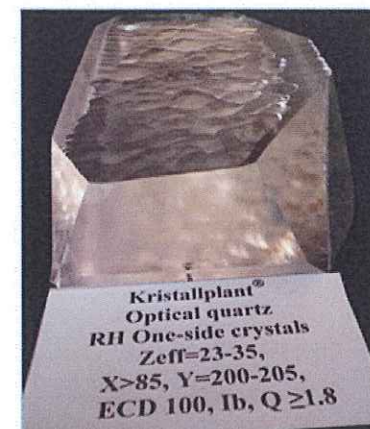
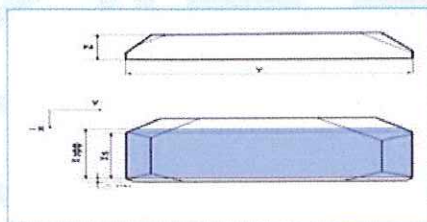


4. Etch Channel Density

Grade	1	2	3
ECD, pcs/ cm ²	>10	>30	>100

5. Dimensions Along Axes

Zeff,mm	X,mm	Y,mm
23-35	>85	200-205
35-45	>90	200-205



7. Outward Appearance:

Optical and electrical twins are not allowed.

The following growth features may be observed on crystals:

- On each side of seed, no more than two puncture holes made by the seed with a size of no more than 1.25 mm along the Z axis.
- Cracks along the Z axis due to the wire holder.
- Cracks and puncture fractures on rhombohedron, no more than 5 mm deep; or in conformity with the samples approved by the Customer.

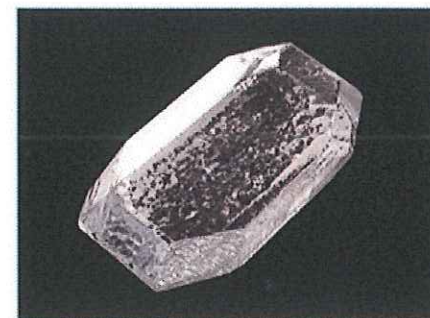
MARK 2.10 Crystals and MARK 2.30 Crystals

Technical Specification for Piezoelectric Quartz Crystals Grown from Z-Cut Seeds

Size 2.10 (2.15; 2.20 at the Customer's request) and
Size 2.30 (2.35; 2.40 at the Customer's request)

1. Modification: Right-Hand
2. Q-value

Grade	Qx10 ⁴ , min	α_{3500}
B	2,4	0,045
C	1,8	0,060
D	1,4	0,080



7. Outward Appearance:
The Z-zone of crystals should have no twins, punctures, cracks.

The following growth features may be observed on crystals:

- On each side of seed crystal, no more than two puncture holes made by the seed crystal with a size of no more than 1.25 mm along the Z axis
- Cracks along the Z axis due to the wire holder
- Cracks and puncture fractures on rhombohedron, no more than 5 mm deep; or in conformity with the samples approved by the Customer.

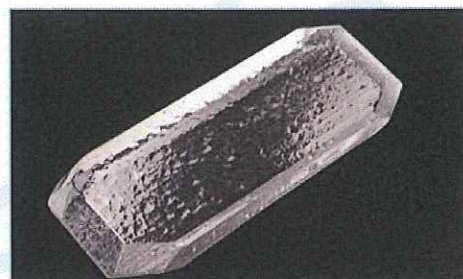
3. Etching Inclusion Density (as per IEC 60758)

4. Inclusions Density (as per IEC 60758)

	<30 mm	30-70mm	70-100mm	>100mm
Ib	3	2	1	1
I	6	4	2	2
II	9	5	4	3
III	12	8	6	4
IV	Are not standardized			

5. Crystal Dimensions Along Axes

	Z, mm	X, mm	Y, mm
Mark 2.10	23-33	>76-92	200-230
Mark 2.15	33-43	>80	200-230
Mark 2.20	43-53	>90	200-230



6. Seed Crystal

Dimensions, mm:

- along X axis 67
- along Z axis 2,0 max

Orientation:

Angle formed by the seed crystal surfaces "X" and "Y" relative to axes X and Y: 0° +/-30°.

Size 2.30 (2.35; 2.40 at the Customer's request)

1. Modification: Right-Hand
2. Q-value

Grade	Qx10 ⁴ , min	α_{3500}
B	2,4	0,045
C	1,8	0,060
D	1,4	0,080

3. Etch Channel Density

Grade	1	2	3	4
ECD, pcs/ cm ²	<10	<30	<100	<300



4. Inclusions Density

Grade according to inclusions density	Quantity of inclusions according to dimensions, pcs/cm ³			
	<30 mm	30-70mm	70-100mm	>100mm
Ib	3	2	1	1
I	6	4	2	2
II	9	5	4	3
III	12	8	6	4
IV	Are not standardized			

5. Crystal Size Along Axes

	Z, mm	X, mm	Y, mm
Mark 2.10	63-73	>95	200-240
Mark 2.15	73-83	>95	200-240
Mark 2.20	83-93	>100	200-260



6. Seed Crystal

Dimensions, mm:

- Along the X Axis.....67-76 for Marks 2.30 and 2.35
- Along the X Axis.....76-102 for Marks 2.35 and 2.40
- Along the Z Axis.....2,0 max

Orientation:

Angle formed by the seed crystal surfaces "X" and "Y" relative to axes X and Y: 0° +/-30'.



7. Outward Appearance:

1. The Z-zone of crystals should have no twins, punctures, cracks.
2. The following growth features may be observed on crystals:
 - On each side of seed crystal, no more than two puncture holes made by the seed crystal with a size of no more than 1.25 mm along the Z axis
 - Cracks along the Z axis due to the wire holder
 - Cracks and puncture fractures on rhombohedron, no more than 5 mm deep; or in conformity with the samples approved by the Customer.

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CRYSTAL SECTIONS

Technical Specification for Oriented Quartz Sections

1. Pure Z
2. Right-Hand Modification
3. Q-value

Grade	Qx10 ⁴ , min	α ₅₅₀
B	2,4	0,045
C	1,8	0,060
D	1,4	0,080



4. 1. Inclusions Density

Grade according to inclusions density	Quantity of inclusions according to dimensions, pcs/cm ³			
	<30 mm	30-70mm	70-100mm	>100mm
I	6	4	2	2
II	9	5	4	3
III	12	8	6	4
IV	Are not standardized			



5. Section Size Along Axes or Other Dimensions at Customer's Request

Z, mm	X, mm	Y, mm
(+/-0,2mm)	(+/-0,1mm)	200-230
20	10	200-230
18	9	



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6. Section Surface Orientation

- Angle between surfaces $+X/-X$ toward axes Y and Z $0^\circ \pm 15'$
- Angle of surface Z toward axis Y $0^\circ \pm 30'$
- Angle of surface Z toward axis X $0^\circ \pm 15'$



7. Seed Crystal

Dimensions, mm:

- Along the X Axis 10.0 ± 0.1
- Along the Z Axis 2.0 max
- Along the Y Axis $200-220$

Orientation:

- Angle formed by axes Y' and Y $0^\circ 00' \pm 30'$

Centricity

The seed crystal shall be located in the center of the section between surfaces Z.
The size of the seed crystals zone shall not exceed 3.5 mm.

8. Finished Surface Roughness

Diamond wheel (or at the Customer's request)

Prices for all types of products are established by agreement with the Customer, based on quality of the products and the scope and terms of supply.

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SOCIAL WELFARE POLICIES

The Plant "Kristall" has successfully implemented a number of social projects which aim to improve the citizens' working conditions, as well as their health and quality of life through leisure and recreation. Using a variety of techniques, therapeutic recreation specialists working at the Health Center "Kristall" provide a wide range of medical and preventive treatment services and recreational activities for individuals with disabilities or illnesses. Every summer, the Plant's Health Improvement Camp for Children "Olympia" situated on the picturesque lake shore opens its doors.

Within the framework of social programs available at the enterprise, the plant workers enjoy the benefits and privileges with the Health Center and Children's Camp. receive compensation for the cost of meals, and, on an annual basis, substantial support is provided to the old-age pensioners. Regular meetings with retired Kristall Plant workers are held. The City Volleyball Team and the KVN-Team "Piezo-Effect" obtain the company's support. Thus, the Plant takes an active role in the life of Yuzhnouralsk.



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