

The image features a dark gray background on the right side, which contains the text. On the left side, there is a grid of colored squares. The top row consists of a large tan square with a fine white grid pattern and a smaller red square. Below the tan square is a light blue square with a fine white grid pattern. The bottom row is divided into four squares: a blue square, a light gray square, a light blue square, and a light gray square. The red square is positioned at the top right of the grid, overlapping the tan square and the dark gray background.

OSMIUM

Sunshine element

The rarest noble metal is
world of precious metals.

OSMIUM



Essential information for investors, manufacturers and jewelers

Since 2014, osmium is tradable as the last of the eight precious metals. It is available in the form of jewelry or as an investment metal. With its crystalline luster and properties, it has already made an unequaled and triumphant entrance in this short time.

Learn more about osmium. It is worth it.

This brochure gives you insight into the world of osmium, accounts for its unique properties, explains the extreme shortage and the possible opportunities and risks with the last of the eight precious metals.

You will also obtain a lot of useful information on the processing of osmium.

The Osmium Identification Code is explained separately. You will learn how to recognize crystalline osmium reliably and where to acquire it.

Enjoy reading, your Osmium team!



OSMIUM-Institute

The „Osmium-Institut zur Inverkehrbringung und Zertifizierung von Osmium GmbH“ (Osmium-Institute Germany) serves the purpose to facilitate a secure recognition of crystalline osmium.

A team of specialists performs these tasks and informs traders, educates processing companies and is available as advisors.

For private individuals and companies, the Osmium-Institute provides experts who confirm the authenticity of osmium and verify the Osmium Identification Code.

Osmium-Institutes are the first port of call for all osmium related press and television information. They maintain an FAQ list and answer all scientific questions around osmium.

The Osmium-Institute Germany is tasked with building up an international network of local institutes on all continents.

The primary task of the institutes is the introduction of osmium to the market, which includes all steps from importing crystalline osmium into Germany to arranging first delivery to wholesale partners worldwide.

Internationally, osmium is imported into the country predominantly by the respective local Osmium-Institutes to Introduce and Certify Osmium. The objective is to have the highest level of security for buyers and processing companies.



Picture: Osmium small curved bar in raw form and osmium diamonds

Jewelers and manufacturers are increasingly using osmium in the manufacture of jewelry. Osmium can be set into jewelry similar to a diamond or a gemstone. Every jeweler and manufacturer can order almost any shape desired.

The shapes can be very creative. There are only a few processing guidelines to adhere to when working with osmium.

Availability of Osmium

Worldwide, osmium is only available through selected specialist traders who supply osmium exclusively with a certificate of authenticity, issued by the “Osmium-Institut zur Inverkehrbringung und Zertifizierung von Osmium GmbH” in Germany. Each piece is associated with an eight-digit letter-number code; the Osmium Identification Code.

Osmium is used in the jewelry market exclusively in its crystalline form. The natural occurrence of osmium is the harmful osmium sponge that does not belong in private hands.

However, osmium is available in its crystalline form since 2014. It is available as jewelry and in small bars of various sizes as an investment metal.

Osmium is the substitute for gold and silver in the investment market:

... Not replaceable and incredibly rare

... Available in the form of divisible bars

... Presumably even more valuable in times of crisis than today

... The new asset class

Rarity

Osmium is not only the rarest noble metal but also the rarest non-radioactive element of all. The mining of osmium is performed in conjunction with platinum. Only approximately one ounce of osmium is contained in 10,000 tons of platinum ore. Also, the separation of these metals is complicated and expensive.

When platinum mining decreases, osmium becomes even rarer. At present, the extraction of osmium is far below one metric ton per year.

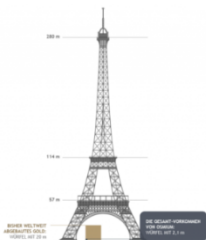
Part of this quantity is available for crystallization. The remainder is used in vanishingly small amounts in medicine or at universities. However, reliable and accurate information on this is not available for osmium.

An example for clarification:

- Obtaining one ounce of osmium requires 250 completely filled 40-ton trucks of platinum ore.
- This ounce of osmium fits into the volume of a single sugar cube. Approximately 9 m^3 of osmium are available worldwide.
- Approximately 2 m^3 of this is mineable and recoverable. That's about 44,000 kg of osmium.

Comparing the capacity with gold

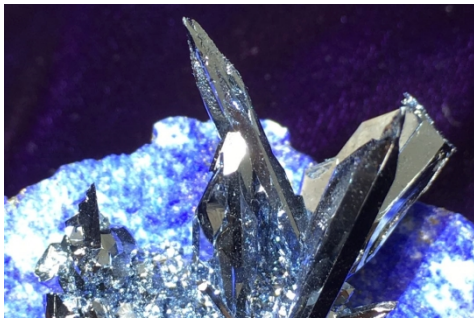
- The globally available amount of gold fits into a cube with an edge length of 24 meters and will increase further due to the currently very active mining.
- The globally available amount of osmium fits into a cube with an edge length of only **2.1 meters!**



There are less than **9 m³** of osmium compared to roughly **13.800 m³** of gold.

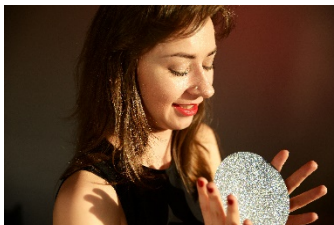
In terms of volume, gold is thus contained in the continental crust 1,500 times more often than osmium.

Gold just won't run out. Osmium will! And soon...



Picture:
Osmium
crystal

Osmium on the fast track!



The shortage, use, and rarity speak clearly for the element.

Osmium is the generation metal

The growing demand from jewellers and jewellery manufacturers is one of the reasons why people contemplate owning osmium.

Osmium, which is processed by jewelers and bought by customers, will eventually disappear entirely from the market and fulfil its final purpose among private customers. It is worn as jewelry or stored in a safe location.

Either way, osmium is usually not returned to the commodity market as it cannot merely be melted down like gold or silver. Osmium diamonds and stars can be removed from jewelry without any issues. Otherwise, the osmium would have to be crystallized again at great expense during recycling. Thus, the rarity inevitably increases further and further.

In fact, we speak of osmium not as a shortage or the search for new deposits, but as a non-availability that has never occurred with any other element before.

The osmium market is supplied by a so-called natural monopoly, because there is only one company internationally which can crystallize osmium and only one entity which guarantees the international placing on the market.

The osmium price is formed by several essential factors, including supply and demand. However, there are also factors such as electricity demand for crystallization, stocks of raw osmium, pre-order volumes, number of active ovens or simply the current reject rate.

This trend could cause a unique situation on the market if we reach the point of non-availability. This is likely but it is difficult to predict in terms of time. Even osmium experts who are discussing this scenario can only provide estimates due to the many influential factors to be considered.

This phenomenon is often discussed and therefore already has its own name.

It is called Osmium Big Bang!

The Osmium Big Bang

According to experts, the comparison with the Big Bang refers to a price development that could trigger a multiplication of the price for crystalline osmium.

The following factors may contribute to this development:

- No more significant mining in platinum mines.
- Decreasing concentration of osmium in extracted platinum.
- Only small amounts of crystalline osmium still available.
- End of recycling due to the high costs and extreme prices in recycling.

Once all these conditions are met, the shortage reaches its peak. It is difficult to predict how long this will take.

Based on the osmium price in 2018, osmium worth over 45 billion euros will have to be invested in or sold on the world market in order for the mineable osmium to be on the market.

This effect may occur in a few years, driven by hype, but may as well take another decade or longer.

This is another reason why in the United States osmium is called the generation metal: Because osmium is bought for one's children. One hopes for a long-term increase in value of the "next generation metal".

Most experts expect the Osmium Big Bang to happen in five to ten years.

Should large jewelry manufacturers jump on the opportunity early, the Osmium Big Bang will be approaching faster.

In this case, the continuous manufacturing in future jewelry production will decimate the available crystalline osmium in a short time frame, because osmium cannot be crystallized and cut at any rate.

The development for osmium pearls is particularly exciting, as the reject rates in production increase with increasing production quantities.

The result of these developments will most likely lead to less and less osmium being available for retail.

Conclusion:

- **Extreme price developments can occur.**

Osmium is superlative with unique characteristics

The reason why jewelers increasingly want to work with osmium and why investors have discovered osmium as a new asset class lies in the unique characteristics of the precious metal. Besides the myth surrounding it, osmium is also considered to be extraordinary in terms of its physical properties.

Osmium has the highest abrasion resistance of all materials. You could make the world's most durable nail file from it. Furthermore, it has the highest density of all elements and compounds in chemistry. Therefore, it cannot be counterfeited by enclosing a heavy core in a bar.

It has a unique bluish-silvery to bluish-whitish luster, which unfolds particularly upon reflection of sunlight and LED artificial light.

Its high reflectivity mirrors light from the crystal structure in all directions. In this way, you can see the sparkling and stunning color spectrum in sunlight from every angle.

It provides special shielding against gamma radiation and is a superconductor at low temperatures.

The bulk modulus, i.e., the resistance against extreme pressures, is also higher with osmium than with any other element. You could build the tallest houses or the most stable submarines out of osmium if only there were more of it available.

Opportunities with osmium

Osmium is the new silver or gold when it comes to investments. As it cannot be replaced and is incredibly rare, it will probably be even more valuable in times of crisis than it is already today.

In addition, when in star rows, osmium can be divided into small units just like SplitBars if this should become necessary.

The extreme shortage will most likely quickly lead to non-availability. If osmium is introduced to the market as a jewelry metal by this time, the shortage will become even more drastic, as explained.

This results in the following opportunities for osmium owners:

- Resale without a spread in international markets should be strived for.
- Unlimited durability and straightforward transportability.
- Constant proof of authenticity through the OIC, as explained below.
- Extreme value density, low storage volumes.

Before you buy osmium as an individual, inform yourself on www.osmium-institute.com or contact your local Osmium-Institute. You can enter the Osmium Identification Code (OIC) on www.osmium-identification-code.com.

Discoverer



In 1804, the British chemist Smithson Tennant discovered the element osmium together with iridium.

He achieved this when investigating the insoluble residues of platinum ores, which had previously been dissolved in aqua regia.

Picture: Smithson Tennant

1761 - 1815

Since osmium tetroxide has a pungent, chlorine-like odor, Tennant named it “osme” after the Greek word for smell. In 1814, Jöns Jakob Berzelius assigned the present symbol Os to Osmium.

At the beginning of the 20th century, osmium had its first important application in incandescent lamp filaments thanks to Carl Auer von Welsbach.

Interesting facts about osmium



- Osmium is roughly 1,000 times rarer than diamonds and used in the most spectacular jewelry pieces and most exclusive wristwatches.
- It is available through many jewelers and every listed retail seller or wholesaler affiliated with an Osmium-Institute.
- Most of the osmium in private hands is located in Europe. However, countries like Australia and China are pushing into the market and will change it over the long term.
- The enthusiasm for osmium is growing steadily and internationally.

This brand name may ring a bell: „OSRAM“?

The company name of this bulb manufacturer is a portmanteau word combining **Osmium** and **Wolfram** (German for tungsten).

The first lamp filaments made from osmium emitted a wonderful, soft light. A light bulb from these days can still be seen in the Deutsches Museum in Munich, Germany.

Unfortunately, osmium was just too rare and got hence replaced by tungsten.

The precious metals and their „superstar“

Precious metals are metals that are resistant to corrosion, i.e., they are permanently chemically stable in natural environments under the action of air and water.

Because of this stability, gold and silver have been used since antiquity for making jewelry and coins.

In the last four centuries, platinum metals have been discovered, which are as corrosion resistant as gold.

Gold, silver, platinum, and palladium all played a role in world markets until today.



Picture: Osmium in the periodic table among the eight precious metals.

Since 2014, osmium is available at the Osmium-Institutes and their retailers, as it can now be used in its crystallized form.

Thus, it can be used as a asset or jewelry metal in the market. Non-crystalline osmium is harmful to health.

For this reason, osmium could not be marketed before the crystallization process was discovered.

- The precious metals became available from the right to the left, at intervals of several years.
- Of course, gold and silver have been known since antiquity and have long been the only reliable means of payment. Osmium is currently not at this stage yet, but its key properties open perspectives.
- Palladium and platinum were already brought into the financial market before the year 2000 and were also used for special pieces of jewelry, such as open platinum rings, which can hold a diamond without a setting between the two ends.
- The most recent market launch for precious metals was ruthenium, which started with a furious rally at the end of 2017.
- Iridium and rhodium have had similar price movements on the commodity exchanges, but are not even rare or suitable for special applications.

Osmium should most likely be the next and last of the eight precious metals starting a positive price development.

Price development

- With the new perspective to obtain crystallized osmium, the demand for osmium is increasing.
- At its launch as crystalline osmium, it was still largely unknown.
- Due to its rarity and its natural occurrence as toxic osmium sponge, the metal had no industrial applications.
- That changed with the possibility of crystallization at the beginning of 2014. The crystallization made osmium non-toxic by altering the atomic arrangement and opening new markets and areas of application.
- The process is comparable in its result with growing conventional diamonds made from carbon at very high temperatures and under extreme pressures.
- At that time osmium was known to less than one percent of jewelers. Thanks to the products from Hublot and the growing jewelry market, this is currently changing.

- Even without the assumption of the Osmium Big Bang happening, osmium is a serious and very exciting precious metal.

Osmium, a fascinating precious metal, and a new asset class!



Picture: Osmium exposed to laser light

Daily price

The price of osmium is determined and published in Switzerland.

The data can be found on the website www.osmium-preis.de.

The price varies predominantly with existing stocks for crystallization operations, crystallization lead times and current reject rates.

The stocking of osmium is only possible to a limited extent since the quantities required for crystallization are even lower than the occurrence of osmium itself.

Osmium is sold plus VAT or stored in a bonded warehouse.

Proof of purchase and authenticity need to be provided when selling. For this reason, the Osmium-Institutes recommend that the specified electronic authenticity documents comprising the Osmium Identification Code, an eight-digit letter-number code, should always be handed over together with the osmium.

When making a private purchase, enter the code via the Internet on www.osmium-identification-code.com or inquire an Osmium-Institute and compare the high-resolution image of the corresponding piece with the real piece. This comparison is possible with the naked eye and always unambiguous.

A new certificate can be issued by an Osmium-Institute or simply printed out via the Internet.

However, during the storage of osmium, the code should be kept separate from the physical osmium to impede theft and retain evidence of possession or ownership.

Osmium can be stored; however, most owners tend to keep osmium in their own homes for ease of access.

Among jewelers, osmium diamonds and osmium stars are very popular.

Osmium-Institutes do not buy osmium, they are exclusively responsible for introducing it to the market. The most effective way to sell osmium is through jewellers who process osmium.



Demand drivers for osmium

The following are specific drivers accelerating demand:

- Osmium is produced as so-called semi-manufactured product, which leaves the use still open.
- New players increasingly enter the jewelry market and make jewelry, watches and **crystalline micro-sculptures** from osmium.
- With the special microstructure of a sphere, even the rarest pieces of jewelry, the so-called **osmium pearls**, can now be produced.
- The number of countries with their own affiliated Osmium-Institute is growing steadily. The objective is to identify osmium locally.

Who are Osmium trading partners?



Get to know the Osmium-Institutes and find out more about them:

www.osmium-institute.com/en

Trading partners are companies that have undergone a registration process and have in-depth knowledge of osmium. This knowledge can be acquired at www.osmium-academy.com/en. Courses are available both as online training and classroom training.

Traders register at: www.osmium-onboarding.com.

The password for access is available at every Osmium-Institute.

Osmium events



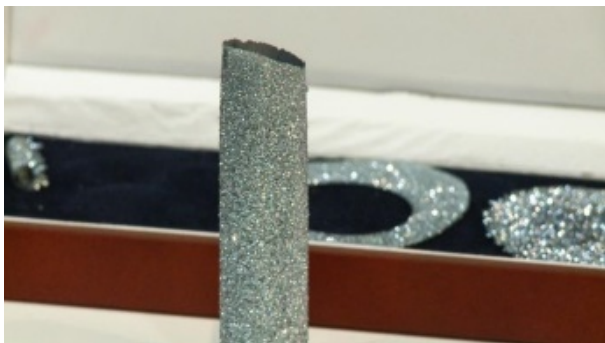
Photo: Ingo Wolf speaks for the broadcaster www.commodity-tv.net at the "Invest" trade fair "Rohstoffnacht" ("Commodity Night") in Stuttgart, Germany.

You are welcome to attend events to gather knowledge about osmium, talk to experts, and get answers to your questions.

Events often take place at trade fairs or in small groups of retail sellers, wholesalers, and customers.

At these events, the osmium market with its global security structures is explained. Participants will also learn more about the origin of the osmium, technical information, fascinating details and examples from the jewellery and watchmaking segment.

Products and reactants



Picture: Semi-manufactured osmium tube for cutting small curved bars

Osmium is currently sold in the following standard products:

Osmium diamond, 3 mm diameter, flat crystal structure, approx. 0.07 to 0.13 g weight.

Osmium star, 4 mm longest diameter, flat crystal structure, approx. 0.07 to 0.13 g weight.

Osmium star-rows, up to 40 mm length, flat crystal structure consisting of several stars, 0.14 g to 0.7 g weight.

Osmium bars, rectangular, 1 g to 15 g, bars have side lengths between one and three centimeters because of their different thickness.

Osmium curved bars, inner diameter variable between approx. 10 and 25 mm, ring shape, weight depending on the diameter.

Osmium disk (wafer), approx. 55 mm diameter, flat and round, approx. 30g weight.



Osmium pearls with a diameter of approx. 5 to 21 mm

Three-dimensional structure

Weight depending on diameter

Applied onto carrier graphite

Usually, pearls have an outer diameter of 11 or 16 mm

Picture: Osmium pearl

The osmium disk (wafer)



Disks, also referred to as wafers, are the largest geometries of crystalline osmium available. Electrical Discharge Machining (EDM) is used to cut osmium.

Being a semi-manufactured product, they can be cut into any desired shape. Especially jewelers arrange cutting specific osmium forms desired by the customer.

A typical example is the cutting into diamonds and stars, which investors often do prior to selling to earn additional profits on processing.

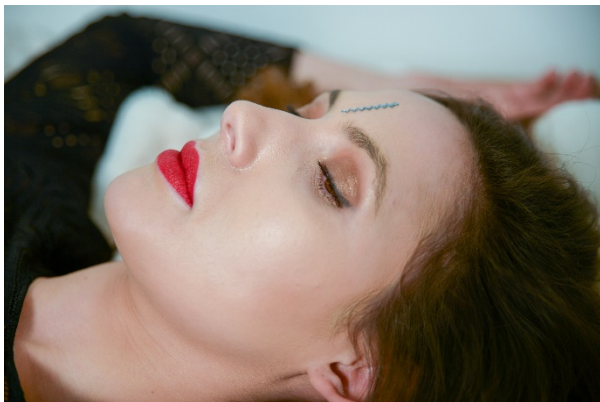
Osmium-Institutes are in direct contact with companies that can cut osmium and arrange the cutting on behalf of the owner.

After successful cutting, the resulting shapes are recertified and entered in the osmium database.



Picture: Osmium bar

This is how new osmium objects are created



Picture: Osmium

Osmium diamonds are manufactured with a diameter of 3 and 4 mm and are the geometric inverse of osmium stars. These two shapes can be cut from a disk or bar with almost no material loss.

Jewelers use these two shapes for jewelry making in the same way as otherwise carbon-based diamonds.

They can be easily set into rings and other jewelry and removed unchanged and undamaged.

Star rows, the “osmium SplitBars”



Picture: Osmium star-rows are used like SplitBars!

Gold has already been sold as SplitBars for several years now. In times of crisis, a 100 g bar can be broken into pieces of 1 g each without having to pay the premium as for individually blistered 1 g bars.

This concept is based on the notion of using small portions of a bar in times of crisis to buy groceries and other necessary things.

Moreover, countries may prohibit the possession of gold in times of crisis. In this case, osmium star-rows can be broken into individual stars as an alternative.

Bespoke shapes and geometries



Picture: Sitting cat as osmium flat shape

Osmium is classically sold in flat geometries. Osmium diamonds and osmium stars are small flat elements in round and star shape. They result in almost no geometric material loss, as they are the perfect geometric inverse of each other.

However, manufacturing bespoke shapes may result in a greater geometric material loss.

The pieces representing material loss are still high-purity crystalline osmium, but with the caveat that the geometry cannot be used to make jewelry. This is inevitable, although of course, as with polishing a gemstone, the area of a disk or bar is used as effectively as possible.

Unfortunately, the processing of these pieces is just as expensive as the osmium itself, so that all cut shapes inevitably have a surcharge

for cutting, manufacturing and material loss that is unavoidable and will not be avoidable in the future.

Because this osmium needs to be granulated and returned to the costly osmium process, it cannot be used to make additional profits. Therefore, the cutting company will not provide reimbursement for it.

Osmium disks and bars are used as semi-manufactured goods when flat shapes are required. However, cutting by means of EDM does not only result in a geometric material loss but the material sticking to the erosion wire will also be lost.

These quantities are negligibly small and it is not worthwhile to recover them from the erosion wire. This material is therefore included in the calculation of the price for processing flat structures.



Picture: Cut hexagonal star with perfect cutting edges

Bespoke shapes in 2D and 3D

To create a bespoke shape, the following steps need to be followed:

For 2D objects, a flat design needs to be submitted. The jeweler then calculates material losses due to geometry and erosion wire. This information may also be enquired from an Osmium-Institute or a company providing cutting services.

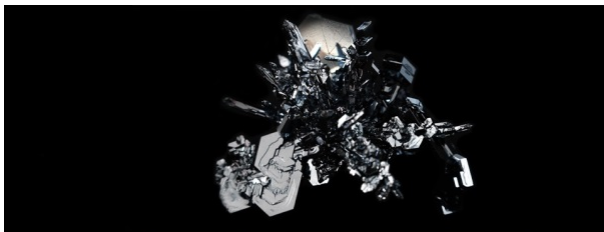
3D objects require submission or creation of a technical drawing. Subsequently, a high-precision carbon object is made on which the osmium is crystallized.

The amount of osmium required in this process is relatively small, but the preparation effort is very high. The carbon base inside the micro-sculpture will remain and stabilize the osmium object.

All shapes can be requested from retailer sellers and wholesalers or specified via the Internet. The price calculation usually requires two business days.

Some customers request simple naturally shaped crystals. These structures are of extraordinary beauty.

However, these can only be used as sculptures and are rarely employed in jewelry manufacture.



Picture: Largest osmium crystal worldwide, approx. 40 g weight

Processing guidelines

Processing osmium is straightforward when setting it like a diamond in a ring or in a piece of jewelry.

However, osmium can also be glued or soldered. When soldering, a maximum temperature of 400 °C must not be exceeded to prevent the formation of osmium tetroxide, which is volatile and thus spreads over the air.

When working with osmium, the solder normally reduces the osmium tetroxide directly back to the element, releasing the oxygen again. If a pungent odor is noticed, the works need to be suspended and the workshop must be aired.

Since an osmium diamond has a smooth bottom surface, it is generally much easier to set and process to jewelry.

Working with osmium as a jewelry manufacturer

Jewelers set osmium in ways similar to carbon-based diamonds. When osmium is subjected to volatilization at the critical temperature, it produces a pungent and unpleasant chlorine-like odor.

Processing instructions can be found at www.osmium-academy.com. Training courses for sales and processing can be attended in a virtual learning environment from anywhere. For jewelers, the guidelines are available in one document. In addition, a safety data sheet is available. The only valid regulations for dealing with osmium are issued by the *“Osmium-Institut zur Inverkehrbringung und Zertifizierung von Osmium GmbH”* in Germany to jewelers and jeweler associations.

Cutting works are performed exclusively by certified companies that are familiar with working with osmium and handle the valuable metal responsibly. The result of this work is beautiful designs:



Osmium small curved bars



Small curved bars look like rings but are in fact bars that can be cut by jewelers into segments.

Small curved bars have a modern, industrial appearance and can be worn like rings.

However, as a so-called semi-manufactured product, they should not be worn as a ring but stored in a safe place instead until their further processing.

Crystalline osmium can be bent to a certain degree. However, it is brittle and may break when falling on hard surfaces.

Osmium small curved bars with protection

Osmium small curved bars should only be worn as jewelry if they are set in a ductile and therefore less brittle material, such as titanium.



Picture: Osmium small curved bar set in titanium

Titanium is one of those metals which are highly suitable for protecting osmium small curved bars and allowing them to be worn. However, you can also work with almost any other metal.

In general, all ductile metals may therefore be used to protect osmium.

Titanium has proven to be particularly suitable as it combines strength and corrosion resistance and is easy to process.

3D objects made of osmium:



Picture: 3D object „sitting cat“

The design of the carbon base determines the shape of the resulting 3D geometry.

Crystalline 3D objects can be manufactured in many different ways. Designs are constrained by the surface layer thickness distribution, which determines whether a specific geometry can be crystallized in osmium.

Osmium cannot attach itself to intricate geometries or undercuts of the carbon base during the crystallization process.

Please inquire the Osmium-Institute to review the feasibility of desired designs.

The „osmium pearl“

- Osmium pearls are crystallized 3D spheres and referred to as osmium balls for the purpose of customs processing.
- Osmium pearls are not hollow. Instead, they contain a hyper-exact carbon sphere with a specially ground surface acting as a substrate for crystallization.
- The sphere has a hole of approx. 2 mm on which it is placed during crystallization. For chains, the hole is extended to a cannulation.
- The common outer diameter of osmium pearls is 11 and 16 mm. In further processing, they are treated similarly to conventional pearls.
- Manufacturing a single pearl requires large amounts of energy, is risky and takes about three months. The success rate may be as low as 10%.
- Paradoxically, the percentage yield of pearls decreases with increasing number of pearls in the crystallization furnace. Therefore, the price of pearls increases with increasing production figures, although they are already expensive as one-off manufactures.
- **For this reason, osmium pearls are the most exclusive pieces of jewelry that exist.**

United States customs designations for osmium

In order to transport osmium across international borders, customs agreements have been established with many countries around the world. Upon import, the national Osmium-Institutes are responsible for compliance with these agreements.

The agreements are based on regulations which the Osmium-Institute Germany and the Osmium-Institute Australia have negotiated with the respective customs authorities.

It was possible to raise the status of osmium to that of gold for several reactants and also products.

The customs designation is a letter prefixed to the osmium code. It is often followed by a number representing a diameter or a product shape. The following eight digits are the OIC, the Osmium Identification Code.

Customs designations may differ from product categories used in online shops. The reason for this is the requirement for an unambiguous customs system which can accommodate new products that have not yet existed at the time at which the agreements have been made.

The following table assigns customs designations to the product categories which are used in the online shop and provides information on cases in which numbers are used, for example, to specify the inner diameter of a ring.

Customs designation	Product name	Shop category
F	Medium edged bar	Bars
K	Big round bar	Bars
D3	Osmium small round bar (3 mm)	Diamonds & Stars
D4	Osmium small round bar (4 mm)	Diamonds & Stars
R10, R11, ..., R25	Small curved bar	Bars
S3	Small edged bar (3 mm)	Diamonds & Stars
S4	Small edged bar (4 mm)	Diamonds & Stars
W2, W3, ..., W8	Star row (2 to 8 stars)	Diamonds & Stars
T10, T11, ..., T25	Small curved bar with titanium setting	Jewelry
A	2D Shapes	2D Shapes
B5, B6, ..., B21	Balls	3D Objects
G	3D objects e.g., cat shape	3D Objects

Each piece of osmium is registered by the "*Osmium-Institut zur Inverkehrbringung und Zertifizierung von Osmium GmbH*."

Each piece is assigned a unique Osmium Identification Code.

The institute is based in Germany and is the global governing body for the certification of osmium.

Certification of osmium in the osmium database

- In general, each osmium piece is scanned after crystallization and, similar to a fingerprint, archived in an international database available on the Internet.
- For the purpose of online identification, a code consisting of three blocks is assigned to the resulting data for each osmium piece: The **Osmium Identification Code (OIC)**.
- The database is freely accessible from anywhere. The code can be entered for identification on the websites of the Osmium-Institutes and hundreds of partners.
- The authenticity of osmium can thus be verified via the Internet by comparing the scanned crystal structure in the database with a high-resolution close-up of the piece to be checked.
- The reliability of detection is approx. 10,000 times higher than that of a fingerprint.
- A blockchain technology is in preparation, making the code even more secure.
- This enables the direct sale to jewelers or jewellery manufacturers, as the authenticity can be confirmed immediately and a certificate can be printed.

- In addition, by entering the OIC in the database search field, any osmium owner can see a current price of his or her osmium in local currency and determine the value of his or her entire osmium portfolio in a single step.

The price displayed in each case corresponds to the price of each piece as it would be placed on the market if sold by an institution on the day the price query was entered, if it had been newly produced.

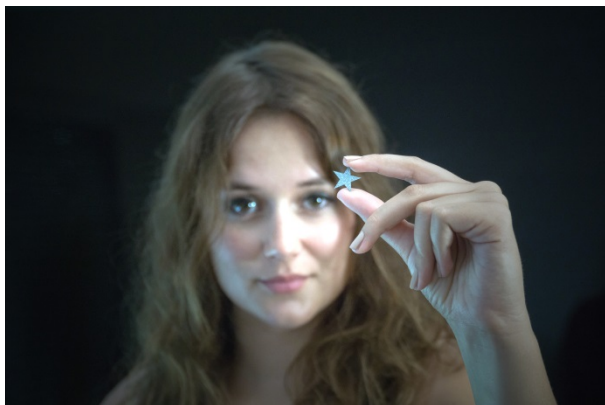


Picture: High-resolution scan of osmium crystal structure

Attention:

A code for a piece cannot be requested again if it gets lost. In this case, the piece must pass through a laboratory process to obtain a completely new code. The process is paid for by the end customer.

We therefore ask you to store the code for a piece of osmium at a safe location.



Owner Change Code

The Owner Change Code is issued with each piece of osmium and serves the purpose of a one-time change of ownership. It can only be changed once by the owner in the International Osmium Database when the osmium is sold.

Control then passes to the new owner, who can also change the Owner Change Code once.

The Owner Change Code is also used to change possessors, e.g. during storage or processing. This can be done multiple times.

OIC – Osmium Identification Code – Example: D3 – D34B – 27A9

The Osmium Identification Code is a letter-number code. Its purpose is to identify each piece of osmium instantly online.

Customs authorities, jewelers, buyers as well as private individuals, e.g. the owners of a piece, need to be able to identify the respective piece when necessary. Identification is only possible if the code for an osmium piece is known to the possessor. Only then, this person can query the identification scan, the associated data, and the current value online.

OIC database entries are based on a high-resolution scan of the crystal structure surface of each osmium piece.

In addition, the piece is weighed to four significant digits, its dimensions are taken, and in some cases, a crystallization quality grade is assigned. Chemical purity is determined over an entire production batch and confirmed in the certificate.

An osmium piece can only be recrystallized with considerable effort and will lose its original structure during the process. For this reason, every piece is clearly assignable and chemical purity cannot be changed by melting.

The database displays the current value of each osmium piece or of an entire osmium account in multiple currencies.

Security through the OIC

The Osmium Identification Code is intended to ensure that the seller achieves an adequate price and to give the buyer the security of being able to identify an osmium piece as real.

In case of theft, osmium can be identified and traced at the time of sale. This helps to prevent theft and mitigates the associated risk of loss.

Syntax of the Osmium Identification Code:

B13 – LM3D – T93G

The first letter refers to the type of the osmium piece and may be multi-digit. In the above case, it refers to an osmium pearl. The following two numbers refer to a geometry or indicate a diameter or a size unit in mm.

The following two number blocks consist of 2x4 digits. Letters such as o or i are excluded because the risk of a faulty detection is too high. The code permits an extremely high number of combinations and therefore a high security level.

The code does not follow a fixed pattern but is randomly generated by the code generator when an osmium piece is certified.

There are numerous platforms where an owner or possessor can enter the Osmium Identification Code.

The Osmium-Identification-Code can be entered at:

www.osmium-identification-code.com

www.osmium-jewelry.com

Partners can build the code checking field into their own websites. This applies above all to jewelers, wholesalers and retail partners. For this purpose, an i-frame is provided, which is connected to the code server.

When the code is entered, the data of the piece appears in a window. The photo is available for viewing and enlarging to check the crystal structure. Weight and dimensions are listed. The current price can be seen in several currencies.

Each certificate can be printed. For this purpose, a small printer icon is displayed in the code line. The certificate can also be downloaded as a PDF file.

If multiple pieces are in possession of a person, several codes can be entered into the field separated by commas.

The pieces are then displayed together in an inventory list issued to the owner.

The owner of each piece may also be named in the list upon his or her express wish.

Osmium – A toxic substance until 2013?

Osmium is extracted as osmium sponge, which is harmful to health. For this reason, only certain specialty chemical companies are allowed to trade.

Osmium sponge is harmful because it forms osmium tetroxide in an oxygen atmosphere and air. The gas has a pungent odor. As already mentioned, osmium also got its name from this characteristic.

In its crystalline form, however, osmium is non-hazardous in analogy to the crystal structure of a diamond and in no way harmful to health.

In its crystalline form, osmium is extremely durable and also resistant to strong acids and caustic solutions. It is particularly important to know that with crystalline osmium, osmium tetroxide can only form at temperatures well above 400 °C.

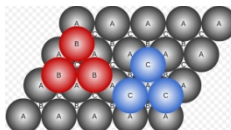
Osmium can be crystallized since 2013 and has been absolutely harmless since then.

The reason for this late point in time is that the process was not considered mature until 2012.

It took nearly 40 years for a team of Russian and Swiss crystallizers to define the process.

Hexagonal close-packed structure

At the level of individual atoms, osmium is packed extremely dense, and this specific crystal structure results in or supports some characteristics:



- Highest density
- Non-compressible
- Highest abrasion resistance



Five Nines Purity

What is counted is the number of nines in the statement of purity. In its crystalline form, osmium shows a unique purity of **99.9995%**, which is unusual even for the precious metal market!

P.O.#
Date of Analysis 21-nov.-2017
Customer ID: Os

Job # F0HH8412
Sample ID: F171115022 - CB

Issued on: 22/11/2017

échantillon d'Osmium

Element	Concentration [ppm wt]	Element	Concentration [ppm wt]
Li	< 0.005	Pd	< 0.01
Be	< 0.005	Ag	< 0.01
B	< 0.005	Cd	< 0.01
C	-	In	< 0.01
N	-	Sn	< 0.005
O	-	Sb	< 0.005
F	< 0.05	Te	< 0.005
Na	< 0.005	I	< 0.005
Mg	< 0.005	Cs	< 0.005
Al	< 0.005	Ba	< 0.005
Si	< 0.005	La	< 0.005
P	< 0.005	Ce	< 0.005
S	< 0.01	Pr	< 0.005
Cl	< 0.01	Nd	< 0.005
K	< 0.05	Sm	< 0.005
Ca	< 0.01	Eu	< 0.005
Se	< 0.005	Gd	< 0.005
Ti	< 0.005	Tb	< 0.005
V	< 0.005	Dy	< 0.005
Cr	< 0.005	Ho	< 0.005
Mn	< 0.005	Er	< 0.005
Fe	< 0.005	Tm	< 0.005
Co	< 0.005	Yb	< 0.005
Ni	< 0.005	Lu	< 0.005
Cu	< 0.005	Hf	< 0.005
Zn	< 0.01	Ta	< 5
Ga	< 0.01	W	< 0.05
Ge	< 0.01	Re	< 0.05
As	< 0.01	Os	Matrix
Se	< 0.01	Ir	< 0.1
Br	< 0.01	Pt	< 0.1
Rb	< 0.005	Au	< 0.5
Sr	< 0.005	Hg	< 0.1
Y	< 0.005	Tl	< 0.5
Zr	< 0.005	Pb	< 0.5
Nb	< 0.005	Bi	< 0.01
Mo	< 0.005	Th	< 0.001
Ru	0.45	U	< 0.001
Rh	< 0.005		

H, C, N, O recommended by Interstitial Gas Analysis (internally equipped)

C.BAZILLE (signature)

ISO 9001:2008 registered

Page 1 of 1

Approved by: _____

The measurement uncertainties are available upon request. The tests results in the report relate only to the test sample submitted to analysis.
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Picture: Original osmium analysis sheet

Counterfeiting osmium? – Impossible!

- Gold can be counterfeited by simply coating tungsten bars as the density of the two elements is very similar. However, since osmium has the highest density of all ele-

ments, no other element or chemical compound can achieve this density.

- For this reason, it is not possible to place a less valuable core inside an osmium bar that reaches density to osmium. A simple density measurement would expose the counterfeit.
- Once a piece of osmium is listed in the International Osmium Database, counterfeiting is impossible anyway because the crystallization can never be repeated in exactly the same way.
- If someone tried to coat a metal core with osmium during crystallization at 3,000 °C, the metal core would melt away before the osmium, making counterfeiting once more impossible.
- **Counterfeiting osmium is therefore simply impossible!**
- **All customs authorities can rely on this database when crossing borders.**

What has already been made of osmium?

Any shape without complex through holes and with bridges of more than 2 mm width can be produced. Price inquiries take about two days until they are answered.



Picture: Osmium shape made on customer request.

How do I order my own shape?

Jewelry manufacturers have many options to choose from since almost any geometry can be implemented. All they have to do after planning their jewelry is to provide the requirements to an Osmium-Institute, which arranges cutting and insurance.

The process of manufacturing of unique pieces takes less than three months.

Bespoke osmium jewelry:

Jewelers who have been working with osmium already for a long time usually have fancy ideas for jewelry and can implement your requirements for creating unique pieces.



This is how sensational artwork is created directly according to customers' requests. Each piece is unique in terms of the final result as well as the specific osmium shape, increasing the value of osmium jewelry even more.



Picture: Studs with osmium diamonds

Osmium information portals

In the jewelry market, osmium is used exclusively in its crystalline form. Find out more on www.osmium-institute.com before buying osmium.

Alternatively, osmium can be ordered on www.buy-osmium.com. There are photographs available of every piece offered.

Crystallized osmium should only be purchased certified.

Osmium is imported into the respective destination country by an Osmium-Institute partner and delivered to the customer by value courier.

Delivery times for available goods can be very short and may only be one day. Goods that have to be shipped across borders or need to be manufactured first may take up to three months to deliver.

Safety information

Crystalline and metallic osmium are safe and absolutely harmless. Allergic reactions are not known.

However, osmium tetroxide is toxic and volatile. Airborne particulates and dust may cause lung irritation with hyperemia and pulmonary edema as well as skin or eye damage.

Since small amounts of osmium tetroxide are always formed if metallic osmium in powder form is exposed to air, care must also be taken with this form of the element.

As a fine powder or dust, metallic osmium is highly flammable. This does not apply to the bulk form.

Metal fire extinguishers (Class D) or suitable extinguishing powder need to be used to extinguish osmium dust fires; water may not be used under any circumstances because of the danger of explosion due to the formation of hydrogen.

Osmium must not be heated above 400 °C to prevent the formation of osmium tetroxide (osmium tetroxide does not form at room temperature and temperatures below 400 °C). For this reason, processing with high-temperature brazing or welding is not possible.

The formation of osmium tetroxide is indicated by a pungent chlorine-like odor.

Osmium data sheet in comparison with other precious metals

Symbol	Ag	Au	Pt	Os
Name	Silver	Gold	Platinum	Osmium
Ordinal number	47	79	78	76
Atomic mass (u)	107.86	196.96	195.08	190.23
Melting point (°C)	961	1064	1772	3027
Boiling point (°C)	2163	2807	3827	5012
Density (g/cm ³)	10.5	19.32	21.45	22.61
Thermal conductivity (W/mK)	429	317	71.6	87.6
Hardness (Mohs)	2,5	2.5	3.5	7
Compressive modulus (GPa)	103.6	171	276	443
Superconductivity (K)				0.66

Data such as the density of osmium are measured and may also be based on the calculation of the crystal structure; the values may differ.

Official osmium websites

1. Osmium.info

The basic information page for the first contact with osmium. All relevant information for retail sellers, wholesalers, and intermediary sales partners to pass the online test.

2. osmium-academy.com

A short explanation of the virtual academy, the online learning tool. Further information about seminars and training.

3. osmium-institute.com

It covers the tasks of the Osmium-Institutes and their employees. All international institutes are listed by region.

4. osmium-onboarding.com

An explanation of how to cooperate with Osmium-Institutes. Sign-in for new partners.

On this website, you can also enter referral codes and generate your own referral code.

We are always looking for partners who want to engage in the osmium market and provide jewelers and end customers access to osmium.

5. Osmium-sales.com

A website for sales partners for accounting and basic information. Explanation of the Earnings and Marketing Plan detailing the earnings possibilities in the osmium market. Password: "bigbang."

6. Osmium-identification-code.com

Verification of the authenticity of osmium based on the comparison of the crystal structure of the actual osmium piece with the crystal structure as documented in the high-resolution photographs stored on the website once the Osmium Identification Code for a specific osmium piece is entered.

7. Buy-osmium.com

An online shop for osmium and osmium jewelry. Access for sales partners. Branded shops for wholesale partners.

8. Osmium-TV.com

The channel reports about osmium, presents new jewelry, and introduces the partners. All new information is prepared and broadcasted as HD contributions and 4k TV.

9. Osmium-dlc.com

A platform providing photographs, texts, flyers, video clips, brochures, posters, interviews. All current press releases and press bundles are available for download.

Passwords are available at the Osmium-Institutes and can be requested there.

10. Osmium-Jewelry.com

This website lists all jewelers trading with osmium internationally. Information on processing, protection, and setting of osmium. Always up to date photographs of new creations and products in the osmium jewelry market.

11. Osmium-Preis.com

This website shows the current daily price of osmium and the corresponding charts. The price per gram is critical for determining the material price for all denominations.

The price can be displayed in different currencies.

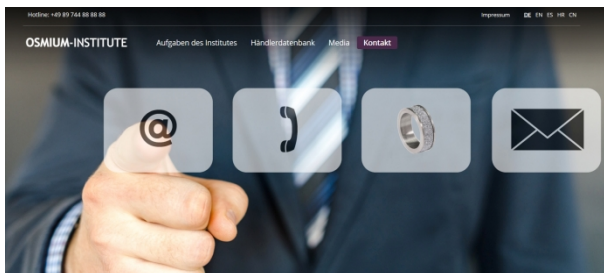
12. Osmium-World-Council.com

The Osmium World Council is the international point of contact for obtaining information about osmium and for shaping the osmium market together with the Osmium-Institutes.

Further online tools:

- Facebook pages with events, news and the opportunity to contact us
- Instagram account with photographs from the world of osmium and our culturally diverse osmium faces
- Branded websites for all partners: Osmium-Institutes, wholesalers, jewelers, faces
- i-frames to determine the value of osmium jewelry via the international osmium database on partner websites





Fast contact and fast information:

www.osmium.info	Main information website
www.osmium-preis.de	Daily price, different currencies
www.osmium-onboarding.com	Retail, wholesale, intermediary sales
www.osmium-jewelry.com	Manufacture of osmium jewelry
www.buy-osmium.com	Online shop
www.osmium-institute.com	Osmium-Institut zur Inverkehrbringung und Zertifizierung von Osmium GmbH
Hotline:	+49 (89) 7 44 88 88 88
Email:	info@Osmium-Institute.com

Monopoly disclosure of crystalline osmium

Osmium is a precious metal and is traded internationally. It occurs in platinum mines associated with platinum. Osmium is often offered there as a so-called compound, for example as osmium tetroxide. Osmium is metallurgically separated from other metals and is only pure enough to be used after several processing steps.

The pure form of the osmium is not poured into ingots, as is usual with other precious metals, but bottled. At this stage it is referred to as so-called osmium sponge. Osmium sponge is the raw form of osmium, which is also used for crystallization. The crystallization process is the process of rearranging atoms in the crystal to produce a new crystal structure. With the change of the crystal structure the chemical and physical properties also change.

This monopoly disclosure relates solely to crystalline osmium.

Crystalline osmium is marketed exclusively by the German “Osmium Institut zur Inverkehrbringung und Zertifizierung von Osmium GmbH”. Osmium in its crystalline form is only available for the German Osmium-Institute mentioned above from a single source in Switzerland.

The German “Osmium-Institut für Inverkehrbringen und Zertifizierung von Osmium GmbH” has concluded an exclusive agreement with the supplier in Switzerland without any time limitations.

The purpose of the agreement is a regulated introduction into the market via the German Osmium-Institute, which was exclusively

commissioned by the Swiss company with the introduction into the market. The employees of the institute have the obligation to act according to strict scientific principles and to provide each piece of osmium with a certificate of authenticity.

In addition, the Osmium-Institute Germany maintains a database in which high-resolution photographs of the osmium pieces in circulation can be searched internationally. The purpose of the database is to compare the crystal structure of a real piece of osmium with its photographs from certification.

Every owner of osmium has the right to retrieve data about his or her osmium from this database at any time if he or she can prove ownership of the osmium. Proof is provided by submitting or entering the Osmium Identification Code, which is supplied with each piece of Osmium. The Osmium Identification Code is an eight-digit letter and number code.

The German Osmium-Institute's sole marketing of osmium results in a monopoly linked to the monopoly for crystallization, i.e. the process of modifying the crystal structure of osmium.

Pricing, which takes place in Switzerland, is also linked to the monopoly. Osmium is currently not traded through a trading system. The price is not represented by a quotation.

However, the supply of raw osmium and the demand for crystalline osmium have a significant influence on the price. The price shall be established and published each day taking into account the following essential aspects:

Supply of raw osmium, supply of crystalline osmium offcuts for re-distillation, option contracts for raw osmium, current stock level of raw osmium, number of crystallization ovens, electricity price, personnel costs, laboratory safety costs, build-up of reserves, certification and packaging costs, cutting prices for crystalline osmium, demand for crystalline osmium, current sales of crystalline osmium and several minor weighted factors.

The most important aspect of daily pricing is the output rate. The output rate is the amount of osmium that can be used after growing the crystals and does not have to be returned to the process.

The resulting waste of unusable crystals must be re-distilled several times and recrystallized with great technical and financial effort.

Notes:

Address and Showroom:

Administration in Munich:

Höllriegelskreuther Weg 3, 82065 Baierbrunn, Germany

Showroom and outlet store in Oberland:

Am Mösl 41, 82418 Murnau, Germany

Osmium Hotline, German and English: +49 (0)89 7 44 88 88 88

