Why Is My Body Jewellery So Expensive?

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The price you pay for body jewellery may seem high compared to more traditional styles of jewellery. This is because there are a lot of factors involved in body jewellery that don't apply to traditional jewellery. The aim of this article is to explain why.

Material

It all begins with the material your jewellery is made from. The most common materials used for body piercing are Titanium, Steel and Gold. Body jewellery passes through the body so must meet implant grade standards. These standards were laid out by the medical field for use on implanted products such as false knees, pace makers, implanted hearing aids, silicone implants etc. It is important to ask about Mill Certificates when selecting jewellery. This will prove that the jewellery is the grade being claimed as it will show the chemical composition of the metal.

All metals are a finite resource that are mined out of the Earth. For this reason the price of jewellery will only ever go up. Depending on the metal it may have to go through several stages of refinement until you get to a metal ready to begin the journey to body jewellery.

The mining process is a huge operation requiring millions of dollars of investment before anything comes out the other side. I will leave the mine production chain for a future article. As mining is expensive this price will be reflected in the cost of raw materials that go into body jewellery.

Titanium

Implant grade Titanium must meet the standards laid out in ASTM F136. This standard is basically a recipe of metals to be alloyed together to create ASTM F136 and the environment the alloys must be made in. This states the ASTM F136 Titanium contains 90% Titanium, 6% Aluminium and 4% Vanadium. This also states then when the metals are melted to create the alloy they must be melted in an environment free from air and other contaminants. This is achieved by flushing an inert gas, such as Nitrogen, over the top of the metal as it melts.

Non-implant grade titanium can contain inclusions (unexpected elements) such as copper. This is fine for industrial work but when used within the body this can lead to irritations.

Steel

Implant grade Steel is a very complex alloy comprising of many different metals. Piercing initial piercings with Steel is not allowed in Europe but it is suitable for healed piercings. The standard for implant grade steel is ASTM F138 and the recipe is 67.5% Steel (Steel is already an alloy of Iron and Carbon), 18% Chromium, 14% Nickel and 2.5% Molybdenum. Nickel sensitivity is quite common in the UK so Steel is not recommended for jewellery for anyone with a Nickel

sensitivity.

Gold

Gold doesn't have an implant grade designation but it is inert in its pure form. Gold also has a long history of being used safely in body piercing that dates back thousands of years. For body piercing gold in 14 carat or 18 carat should be used as any higher carat would be too soft and be easily damaged or allow scratches where bacteria could grow, and lower carats would contain more filler metal than gold and would lead to other sensitivity issues (also any lower would be more filler than gold which in the authors opinion should no longer be called gold). To understand the use of these the carat system must be explained. Gold is measure in fractions of 24. 24 carat = 100% gold, 18 carat = 75% gold, 25% filler metal, 14 Carat = 58% Gold, 42% filler metal. Filler metals are added to give the gold other properties such as hardness, toughness, ductility etc. The filler metal is the part that can cause issues in body piercing. If a filler metal that isn't safe is used then your piercing may have reactions and become irritated and sore. The primary filler metal choice for body jewellery companies is Palladium whereas in traditional jewellery it is Nickel.

Other materials and grades are available and information about them can be found at http://www.safepiercing.org/learn/piercing/jewelry-standards/

Production

To manufacture body jewellery requires a lot of specialist skill sets. These vary from designers, machinists, stone setters, polishers, quality control and all the admin required to run a successful manufacturing operation. We will start at the beginning with jewellery deign and go all the way through to a finished product.

Jewellery Design

Body jewellery design is very different to traditional jewellery as the jewellery must not damage the body in anyway. We will discuss the basic designs of body jewellery as this applies to every piece.

The profile of each piece of jewellery needs to be smooth, contain no steps or sharp edge and be the same shape for the whole section that passes through the body. This prevents the jewellery snagging, tearing or stretching any piercing that it passes through. If any of these actions occur the piercing will become irritated and sore and potentially lead to scar tissue build up and infection.

All joins in the jewellery should be hidden. This is why the internal threaded/threadless vs. external threaded argument comes from. Internally threaded jewellery hides all joins inside the jewellery so that there are no seams or excess threads protruding that could damage a piercing. This also means that there is nowhere that blood or bacteria can build up therefore reducing the risk of infection. Externally threaded jewellery can have screw threads exposed and also ill fitting balls.

Internally threaded jewellery is more difficult to make as it requires specialist machinery and much smaller tools. This leads to a higher jewellery cost.

Manufacture

Manufacture is a huge category that I could write about for days as processes will vary for each individual type of jewellery. I will cover the basic style of processes required here.

Materials Handling

Unsurprisingly large quantities of metal are heavy. This means that manual handling equipment is required. This ranges from small items such as pallet trucks all the way up to fork lift trucks, hoists and cranes. All of this has a cost and must be purchased before any manufacture can even begin.

Annealing

Metals can be treated in different ways using heat to make them more suitable to manufacture. For example Titanium is a hard metal that gets harder as it is machined and this can lead to broken tools and a poor finish on jewellery. To be able to make manufacture easier they are heated and then cooled at different speeds using a forge. This effects the crystal structure of metals and 'softens' them. Annealing is an expensive process as it requires specialist equipment and large quantities of fuel to achieve the heats required. Once the metal has been annealed it can then go onto machining.

Machining

Machining is a specialist skill that requires years of training and knowledge to achieve a high standard. This means a specialist will need to be employed to operate the machines and this incurs a specialist price tag for their wages.

For most designs a lathe is the machine of choice. Lathes can be used to produce straight bars (such as barbells and labrets), balls, discs, bezel sets etc. A lathe will spin material at various speeds so that tools can be used to cut the metal into different profiles. Once the correct profile has been achieved then the threads will be manufactured. For internally threaded and threadless options this involves drilling into the bar and then to use several stages of taps for threaded options. For external threads this involves using stages of dies to achieve threads. The internally threaded options will require more stages and more precision, this means more time and equipment is required and there for a higher cost.

For more intricate designs such as claw set ends a milling machine would be required. A milling machine mounts the metal in a vice and then uses a spinning tool to cut into the jewellery. These machines can be VERY expensive as they can work on anywhere from 2 to 9 axes (3-5 axes are

common for body jewellery).

For items such as rings a wire bender would be required. This will bend metal wires into ring shapes and cut them all in one machine.

For any of the machines listed above a decision would need to be made as to whether to have manual or CNC (Computer Numerically Controlled) machines. A manual machine will require an operator to constantly monitor and measure each piece of jewellery as it is made. A CNC machine would require a specialist operator to write the computer code the machine reads but once the machine is running it can continuously produce products. CNC is more expensive to set up but has much less cost to run as one machinist can operate many machines.

Normalising

A process that is often forgot about when discussing body jewellery is normalising. This process basically returns the metal from its annealed state to its standard state. This again is a heat treatment process that involves heating the metal to a high temperature and then cooling to adjust the crystalline structure. In Europe the majority of body jewellery is sold in a normalised state.

Polishing

Polishing is a very important part of body jewellery manufacture. Without polishing the jewellery would be rough which would impede healing and lead to sore and irritated piercings. There are two basic stages to polishing; machine polishing and hand polishing.

Machine Polishing

Machine polishing is the first stage of polishing after manufacture. Machine polishing generally involves placing jewellery into a polishing machine (such as a barrel polisher) along with a polishing media (these can range from stone, synthetic materials, coconut shell and many more). The polishing machine will then move the jewellery around inside the media which will remove rough edges and machining marks from the jewellery. Different stages of polishing will be required using various grades of polishing media. The vast majority of body jewellery on the market is only machine polished.

Hand Polishing

This is the polishing stage that gives us the beautiful mirror finish that us piercers love. A high polish is more than just a look. Smoother jewellery means faster healing and happier piercings over the lifetime of the piercing.

Hand polishing involves an operator handling each piece of jewellery individually and using a polishing machine with various mops (polishing wheels) and soaps (polishing compound). Hand polishing is a process that is very messy and requires air extraction and filtering for the safety

of the operator. I cannot stress enough the importance of a correctly polished piece of jewellery.

As hand polishing is a time consuming process it will increase the cost of jewellery but believe me your body will thank you for it.

Gems

For those of you who like something other than just plain metals in your piercings a gem will be required. These range from cheap foil backed plastic all the way up to the illustrious diamond.

Gem Choice

Choosing the type of gem to set into jewellery is an important decision. Plastic gems are not recommended for body jewellery as they tend to discolour over time and be held in place with glues that can be toxic to humans. Cut glass such as Swarovski is a great cheaper alternative for those on tighter budgets. For those of you who love genuine stones (me!) it is important to select a gem that can survive the sterilisation process. Genuine Opals are a prime example of a stone which will not survive an autoclave. This is because Opals contain water which when heated expands and becomes steam. This expansion will lead to the explosion of the Opal. Thankfully some geniuses came up with synthetic opals which can survive the harsh conditions of an autoclave.

Obviously genuine stones are going to be more expensive than a synthetic option as they are finite resource that has to be mined. Genuine stones are also not found in their respective cuts so a stone cutter will have to be employed tot urn raw stones into light catching pieces of awe and wonder.

Gem Setting

Mechanical setting (using the design to hold the gem without glue) is the preferred method of holding gems. The two basic types of gem setting are bezel set and claw set. A bezel set is basically a cup that the gem is dropped into and then the edge is deformed to hold the gem. Claw set are claws that hold onto the edge of the gem. Claw sets will allow more light to pass through the gem which means more sparkle. Sadly not all claw sets are made equal so it is best to view the jewellery first to make sure you like the look.

Gem setting is another specialist skill that requires training and experience to be able to produce jewellery with securely set gems that will not be lost during the life of the jewellery. Gems can be set mechanically or by hand. Mechanical settings can be great and have a lower cost but are more prone to loose gems.

Passivation

Passivating is the process of removing any chemicals or compounds from the jewellery. This is important as a lot of the chemicals and compound used in manufacture are not safe for the body. By

removing these chemicals we are leaving the jewellery ready to be sterilised and used for a piercing. Not every body jewellery company offers passivation of their jewellery so it is important to ask. A lot of companies closely guard their passivation methods so this information is very difficult to find.

Optional Extras

Welding

For fancy clusters, to attach push fit pins or to 'lock' items in certain directions (e.g. navel bar lower balls) a welding process is normally used. This is most commonly spot welding or laser welding.

Spot welding involves holding the two pieces to be joined firmly between two copper electrodes. A high amp current is then put through the pieces and on the join the metal will melt and then bond. Spot welds can be weak if a shielding gas is not used to remove air from the area, much like casting ASTM F136 Titanium.

Laser welding is a process where a laser is used to heat metal to the point where it melts and then creates a join. Laser welding can allow different metals to be joined e.g. steel push pins onto gold jewellery.

Each of these methods requires specialist equipment and a specialist operator to setup the process. Again all of this is a cost that must be added to the jewellery.

Anodising

Anodising is a process that is specific to the family of reactive metals (Titanium, Niobium etc). Anodising is also possible on aluminium but as aluminium isn't used for body jewellery and the process is different (dyes are required) I will not discuss aluminium anodising here.

Anodising requires an anodising bath, a substrate, a power supply able to supply various voltages and an anode and a cathode. Most body jewellery companies will supply jewellery anodised if requested. A large number of body piercing studios now also offer in house anodising.

The anodising process is great at removing contaminants such as polishing compound for the jewellery, giving a more uniform and smoother jewellery finish and changing jewellery colour.

Shipping and Handling

The jewellery is now ready to be packaged and sent out into the world. The packing jewellery is sent in is really important to the condition it arrives in at our studios. If body jewellery is just thrown together in a bag and then posted the polish will be destroyed by the jewellery bumping into each other. Well packaged jewellery will be in individual pouches to prevent this. These pouches will then be protected by a soft material such as bubble wrap or polystyrene and then placed into a hard container.

All of the packing should take place in a clean environment to reduce risk of contamination after passivation has taken place. All of the packing materials, clean environment and staff to pack will incur a cost which will be reflected in the cost of jewellery.

The package will then be collected by a courier and begin it's journey across the planet to a piercing shop. Sometimes the shipping fees can seem abnormally high ($90 to ship on piece from US to UK!?) but when the prices are broken down it all starts to make sense. Firstly you definitely want that parcel insured. Have a $5000 gold order go missing with no insurance and you have no-one to complain too. Shipping is a huge supply chain all of its own which covers everything from the person who collects the parcel, the people who sort where the parcels go, the robots that move parcels around faster (to make the process more efficient and reduce cost), the van driver who drives the parcel to the airport or docks, the worker who loads the parcel into a ship or plane, the captain to pilot the ship or plane (and all other staff that make transport possible) and then the reverse chain until it arrives at your door with everyones favourite import tax and duty added (we have to pay for our schools, hospitals and public services somehow!).

If orders are bulked together to spread the cost of shipping over several pieces of jewellery and you think about the amount of people involved in getting the jewellery to you suddenly $90 doesn't seem that expensive. I know I couldn't get to America for $90!

Piercing Shop

So the jewellery has finally arrived. It now needs to be unpacked, sorted, potentially cleaned if it wasn't at the factory and displayed. Each piece of jewellery will have a markup applied that will allow the shop to make money to pay for all of it's own bills. This is everything from staff wages, the next piece of jewellery, power, water, tax and all of the other costs involved in running a business. The process of sterilisation using an autoclave and any consumables associated (sterilising pouches, distilled water etc) will also need to be be undertaken. This is VITAL to your health when being pierced.

The very last person in that whole chain is the end user. They get to wear that amazing piece of jewellery with pride and a reputable company will have made a piece of jewellery that will last a lifetime and if it doesn't they will stand by their work and replace it.

Authors Final Thoughts

This only scratches the surface of the detail required to make body jewellery. My history before piercing lies in mechanical engineering and materials testing for 7 years. If anyone would like more information about anything I have mentioned here feel free to contact me at aiden@adorn-studio.co.uk. I didn't even touch on the ethics of where jewellery is made, where raw materials and

gems are mined or the running of a shop. All I ask is that next time you look at that super cheap piece of body jewellery on the internet, stop. Think about how it got to you. For it to be that cheap someone is losing out. Whether that is the child miner, the sweatshop worker or your body.

Quality might seem expensive but "It's not expensive if it's worth it".

Glossary

ASTM	A standards development organization that serves as an open forum for the development of international standards
Axis/Axes	A directional plane e.g. X, Y, Z
Alloy	A mixture of different materials (predominantly metals)
Die	A tool used to create external/male threads
External Thread	1. Threading placed on the outside of a bar 2. A low price type of body jewellery
Hardness	In metallurgy *hardness* is defined as the ability of a material to resist plastic deformation.
Inert	Chemically inactive
Internal Thread	1. Threading placed on the inside of an item
Mill Certificate	A document produced by the mill where a metal was produced that states the chemical composition of the meta**l.**
Tap	A tool used to make internal/female threads
Toughness	In materials science and metallurgy, *toughness* is the ability of a material to absorb energy and plastically deform without fracturing