# An introduction to gem treatments and care

Jewels have been objects of desire from the earliest days of mankind. The enduring value of gems and pearls is largely a result of their beauty, durability and rarity. It is this last aspect that has pushed humans to create less expensive alternatives to the natural product. These include imitations such as glass, fully synthetic counterparts of natural gems and enhancements that modify gems and pearls to make them more valuable.

Certain enhancements have been practised for literally thousands of years. The dying of Agate is one example. Others, such as irradiated blue Topaz, are solely a product of the technological advances of the modern age.

Enhancements often have an impact on the value of precious stones, with the highest prices paid for natural gems of fine quality that have not been enhanced in any way beyond ordinary cutting and polishing. As a gem is modified to a greater and greater degree, the change in value is also greater. The least expensive gems are those fully made by man (synthetics), because the supply is essentially unlimited. Thus they have limited or no rarity. What follows is a comprehensive description and discussion of enhancements.

## Enhancement disclosure

Gem Collector takes enhancement disclosure seriously and, to the best of our ability, provides our clients with complete information on any and all enhancements to which a gem has been subjected. The descriptions we provide below are based upon those of the American Gem Trade Association guidelines (the most stringent in the industry). While many enhancements are currently undetectable, Gem Collector does its best to ensure that clients have full access to information for an informed buying decision.

## Three 'rules of thumb' for Gem Collectors.

1. For most gems today, enhancements are a basic part of the finishing process.

2. The marketplace sets the values of both natural and enhanced gems.

3. Since certain enhancements are undetectable or difficult to detect, the Gem Collector approach is to assume that all items are enhanced unless (There is specific gemological evidence that shows the item has not been enhanced or the item is of a type for which enhancements are not typically used.)

We do our best to describe our gems in a clear, consistent and honest fashion. Our approach is to give our customers the same information we would like if we were purchasing the piece. Our mantra is to be true both to our customers and to the precious stones with which we are privileged to work.

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## Treatment codes

One of the few problems or benefits (depending on your point of view) with the gemstone industry is that there is no single regulating body controlling its development. Cibjo (probably the largest jewellery trade organisations), the American Gem Trade Association (AGTA) and the International Coloured Stone Association (ICA) all got together in February 2010 and compiled a list of tag codes and descriptions for the disclosure of common treatments and enhancements. Although as yet, we haven't seen any other major retailer endorse these codes, as a company we believe it is a step in the right direction and have decided that in the future we will add these tag codes to all of the loose gemstones that we sell.

| Codes | |
|---|---|
| N | No modification (or currently has no known modification process) |
| H | Heating |
| O | Oil/Resin |
| W | Waxing |
| I | Impregnation (with colourless foreign substances other than oil/resin) |
| R | Irradiation |
| U | Diffusion |
| B | Bleaching |
| D | Dyeing |
| F | Filling |
| C | Coating |
| HPHT | High Pressure High Temperature |

In addition to the codes chart above, we have also decided to add three more codes; **Re – for gems that are reconstituted; Db for doublets and Tr for triplets.**
Please note that often it is not possible to guarantee which treatments or enhancements have been applied to some gemstones. Some are very hard to detect and whilst we live in a world where corporations are driving out many small businesses, the gemstone industry remains one which is dominated by small artisanal miners (known in the trade as ASM's – artisanal small scale miners) and with around 80% of the worlds coloured gems supplied by ASM's, combined with the fact that 90% of them are in developing countries, it should be easy to appreciate that signed contracts and full disclosures are not something that is regularly available.

**Note:**
Whenever you see in a product description from any of the Coloured Rocks companies (Gems TV, Rocks TV, Gem Collector, Jewellery Maker) one of the above codes in brackets, then we are 99% sure that this is the treatment the gemstone has undergone. If there is no code in the description please use the following pages to see the most likely treatment that the gemstone has experienced.

## Enhancement codes

The following shows the enhancements and treatments used for popular gemstones, their purpose, frequency and care.

- **N = Natural/No modification**
  Gems that are, according to best available information, untreated.

### Heat

- **H = Heat Only:** Alteration via heat only (or heat + hydrogen). Example: Heated Ruby, heated Sapphire, heated Tanzanite.

- **HD = Heat + Diffusion (aka 'bulk' or 'lattice' diffusion):** Alteration via heat and outside-in diffusion of foreign elements other than hydrogen. Example: Beryllium-diffused Songea Sapphire

- **HF = Heat + Flux: Alteration via heat and flux.** During heating, fluxes dissolve surface-reaching fissure walls and redeposit that dissolved gem material, healing the fissures closed. Example: Flux-healed ruby (particularly that from Mông Hsu, Burma)

- **HP = Heat + Pressure:** Alteration via heat and pressure. Example: HPHT diamond

### Filling

- **F = Filling:** Impregnation with a colourless substance. This is typically done to improve clarity, but also improves colour, as clarity enhancement facilitates longer light paths within the gem. Fillers include but are not limited to glass, plastic, resin, wax and oil. Some fillers remain fluid at room temperature (and thus are less stable), while others are hardened. Note that any gem with the requisite openings can be filled. Example: Oiled Emerald, glass-filled Ruby, stabilised turquoise

- **FD = Filling + Dye:** Impregnation with a coloured filler, typically done to add or improve colour and possibly also clarity. Note that any gem with the requisite openings can be dyed. Example: Dyed green Jadeite

### Irradiation

- **R = Irradiation:** Alteration of colour via the use of neutrons, gamma, ultraviolet and/or electron bombardment. A heating process may follow irradiation. Example: Irradiated blue Topaz

### Coating

- **C = Coating:** Application of an artificial layer to the surface. Example: Coated Diamond, coated Topaz

### Bleaching

- **B = Bleaching:** The use of heat, light and/or chemical agents to lighten or remove colour. Subsequent dying and/or filling often accompany this. Example: Bleached cultured Pearl, bleached/filled Jadeite ('B-Jade')

- **I = Impregnation -** Impregated with colourless foreign substance other thand oil/resin to improve durability and appearance.

**Laser Drilling**

- **L = Laser Drilling:** Use of a laser and chemicals to reach and alter inclusions. Example: Laser-drilled diamond

**Reconstruction**

- **REC = Reconstruction:** Use of heat, pressure and/or solvents to fuse small pieces of a gem together into a larger whole. Example: Reconstructed Turquoise

## Estimated degree of enhancement

In order to give an estimate of the degree of alteration that a gem has undergone via enhancement, we have created an Estimated Degree of Enhancement Scale. This gives the buyer an idea about the quality of rough prior to treatment. Some processes only lightly enhance a gem, while others have a more significant impact. We use the following scale:

- N = None
- L = Light
- M = Moderate
- S = Significant

## Frequency used

This represents a reasonable estimate of how commonly a particular enhancement process is utilised in the trade, based on a consensus of opinion. Gem Collector rates this on the following scale:

- Common
- Occasional
- Rare

## Special advice and caring for your gemstone

Gems are among the most durable of nature's creations, but still require care if they are to retain their beauty. Caring for your gemstone is a matter of common sense and simple precaution:

- Always remove your jewellery when engaging in activities that risk impact or exposure to chemicals or heat such as sports or housework.
- Always put jewellery on after using lotions, cosmetics, hair spray or perfumes, not before.
- Never remove your jewellery by pulling on the gems.
- The best way to store your jewellery is in the compartments of a jewellery box or in pouches.
- Store each piece of gemstone jewellery separately and necklaces flat so that harder stones don't scratch softer ones. Almost every gem is harder than the metal in which it is set. Gems can scratch one another or the finish on your jewellery if stored carelessly.
- Carefully wipe jewellery with a soft lint-free cloth after each wearing to remove oils and salts.
- Clean your jewellery on occasion with a cleaning solution or mechanical cleaner suitable for the gem; use a dish rather than the sink, for if a gem accidentally falls out of the setting, down the drain it goes. When in doubt, just use warm soapy water and a soft toothbrush.
- Think twice before putting gems in an ultrasonic cleaner. Diamonds and rubies and sapphires are generally fine but many other gems may not be. Thus when in doubt, leave it out.
- Opaque gems such as Lapis Lazuli, Turquoise and Malachite can be porous and may absorb chemicals and soap, discolouring them. Thus they require special care. We rarely recommend using ultrasonic cleaners, ammonia or chemical solutions for coloured gemstones. These gem materials should just be wiped clean gently with a moist cloth.
- Opals also require special care. Never use an ultrasonic, never use ammonia, and avoid heat and strong light that can dry out the water in Opals.
- Organic gems like Pearls, Coral and Amber should only be wiped clean with a moist cloth. Due to their organic nature, these gems are both soft and porous. Be careful about chemicals in hairspray, cosmetics, or perfume; over time they can damage Pearls in particular.
- Stones that have a Mohs hardness of 7 or less are subject to scratching; harder stones are less susceptible, but still subject to chipping and fracture.

For complete care instructions on each gem type, please see the chart information entitled 'Gem Enhancement and Care Chart' further on.

## Treatment summary

The term 'enhancement' describes any process other than ordinary cutting and polishing that improves the appearance, durability or value of an otherwise natural gemstone or cultured pearl. In today's gem marketplace, enhanced gems are the rule rather than the exception. Such processes range from simple heating (such as with Tanzanite) to high-tech irradiation (such as with blue Topaz).

Note that an enhancement is, by definition, an artificial process, since it involves human intervention. Thus using a 'natural' cedarwood oil to enhance an Emerald does not make the process more 'natural.'

### Fully natural:

- Stones produced by simply obtaining the raw gem material in nature, cleaning it and then cutting and polishing. With the exception of cleaning and ordinary cutting and polishing, natural gems are fully natural. Examples include natural Garnet and Peridot.

### Natural, but enhanced:

- Stones produced by obtaining the raw gem material in nature, but then processing it in any way beyond normal cleaning, cutting and polishing. Examples include heat-treated Sapphire, Tanzanite and Paraíba Tourmaline.

### Synthetic:

- Man-made analogs of natural gem materials. In order to qualify as a synthetic, the man-made product must have the same appearance, chemical composition and structure as its natural counterpart. Examples include synthetic ruby and synthetic Emerald.

### Imitation:

- A gem that has the same appearance as another gem. There are infinite possibilities, including both natural and man-made imitations. Thus natural iolite might imitate a heated Tanzanite, while man-made glass might also do the same.

## Final notes

The following tables show the enhancements used for both major and minor gems, along with care instructions. This has been compiled based on our own experience, coupled with the expertise of our suppliers, the world's major gemological laboratories, trade associations, regulatory bodies, professional journals, etc. These tables include all currently known enhancements, even those not applied to the gems sold by Gem Collector.

Note that enhancements are constantly being developed and altered. We do our best to provide the latest information, but if there are questions, the best solution is to have the individual gem tested by a major gemological laboratory.