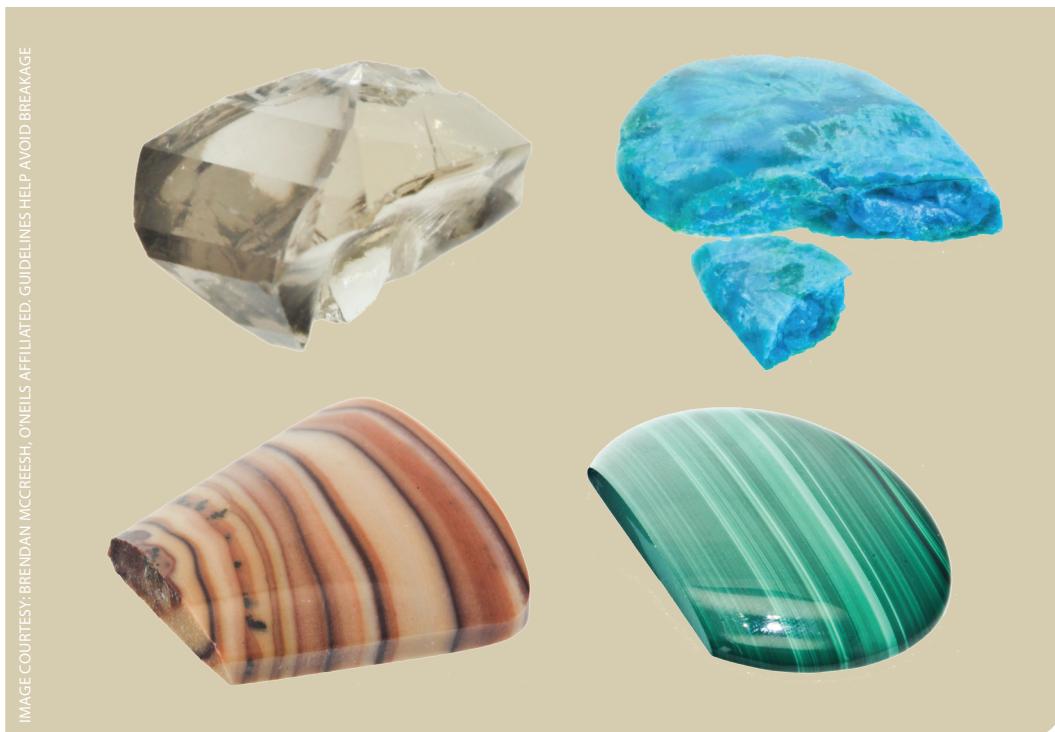


GEMSTONES AND THE ULTRASONIC



The ultrasonic cleaner is an essential piece of equipment in a bench jeweller's workshop. MEGAN AUSTIN lists basic guidelines and discusses the suitability of various gemstones for the cleaner.

Ultrasonic cleaners use a combination of heat, cleaning liquid and high-frequency sound waves to break down dirt particles that have accumulated on the surface of jewellery. Bench jewellers use these machines because cleaning items by hand is time consuming, often produces an inferior result and may not adequately prepare an item for processes such as plating and setting.

There are basic guidelines to follow when using an ultrasonic to ensure best results. Firstly, gemstones need to be identified to determine suitability. Non-gemologists and jewellers unsure of a gemstone's identity should clean gemstone-set jewellery by hand to avoid potential breakages.

Secondly, cleaning solutions such as bleach, harsh acids or chlorine should be avoided as they will harm gemstones, precious metals and plating. Specialised ultrasonic liquids suitable for jewellery use are available from reputable suppliers.

Thirdly, always suspend gemstone-set jewellery on plastic hangers so they don't make contact with each other or the bottom of the cleaner. Otherwise, this can harm and scratch the items and may damage the cleaner itself.

Lastly, ensure the ultrasonic water is at an appropriate temperature. Never use boiling water because some gemstones aren't very resistant to heat and can suffer 'thermal shock', which occurs when a cool gemstone is placed in an ultrasonic bath that is too hot, resulting in cracking and fracturing.

Common gemstones susceptible to extreme heat or thermal shock are tourmaline, peridot

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and the entire beryl family, iolite, smoky quartz, citrine, amethyst, zircon, kunzite, opal, moonstone and tanzanite. Soft or porous, organic gemstones such as pearl, coral, ivory and amber, along with turquoise, malachite, lapis and most collector gemstones, should not be exposed as they are heat sensitive. Jade and items that have been treated with resins should also not be exposed to the ultrasonic but are suitable if untreated.

Natural, untreated diamond, almandine garnet, ruby and sapphire are all suitable for the ultrasonic; however, it's important to note that any gemstone that is heavily fractured should be excluded as heat and vibrations can cause cracking along those fractures.

Many seasoned bench jewellers are not necessarily equipped to determine specific treatments that can alter their reaction to heat. For example, a gemstone that is typically considered an acceptable candidate for the ultrasonic, such as diamond, is unsuitable if subjected to treatment with irradiation because its colour can dull and fade with heat.

Likewise, if you detect traces of oil, resin, dye or glass filler in surface-reaching fractures, the action of heat and ultrasound vibrations can potentially significantly alter the gemstone's appearance by removing the treatment or worsening existing fractures.

This effect is particularly prominent in treated gemstones such as glass-filled ruby, fracture-filled diamond and oiled emerald. Some of these gemstones may develop a 'cracked' appearance after a long dunk in the ultrasonic. Emeralds are easily re-oiled; however, replacing glass filler in a ruby or a diamond requires more specialised technical knowledge. *

Megan Austin FGAA FGA Dip DT BA, is a gemmologist and registered valuer with more than 20 years' industry experience. She operates Megan Austin Valuations. For more information on gemstone best practice, visit: gem.org.au