Pearl farmers would be delighted if every cultured pearl they harvested was at the top of the scale in all value factors, but of course, that’s rarely the case. All cultured pearls are prepared for market in some way:

- Farmers wash and polish Akoya cultured pearls by tumbling them in a concentrated water and salt solution that’s abrasive enough to remove any mucus or tissue that clings to the cultured pearls’ surfaces. This is usually followed by chemical treatments that bleach the cultured pearls and/or increase their lustre.
- Australian farmers wash marketable South Sea cultured pearls and then lightly polish them.
- Tahitian pearl farmers wash cultured pearls in fresh water, then dry and lightly buff them, usually by tumbling in a mixture of finely ground salt and bamboo chips. Following these procedures, they’re simply sorted into broad categories – usually size, shape, colour and lustre – and offered for sale.

While treatment is a controversial topic, the industry remains divided over what should be called treatments. For many years, Akoya cultured pearls have been subjected to a number of processes before being sent to market.

The first is called maeshori. In Japanese, “mae” means “before,” and “shori” means “treatment.” Originally, maeshori involved dipping Akoyas in a solvent – mainly methyl alcohol – to clean them and remove impurities so they could be bleached more efficiently.

The procedure expanded to include several other techniques that are also applied to most freshwater cultured pearls and some South Sea cultured pearls. The newer techniques which are designed to enhance lustre, while different, are also...
called maeshori and are properly regarded as treatments.

**Lustre enhancement**

Some maeshori treatments enhance lustre with solutions of mineral salts, ammonia, and water, or mineral salts and methyl alcohol. One technique involves immersing the cultured pearls in a treatment solution for 15 days at 86°F (30°C), which is said to maximise the treatment’s effect.

Solution treatments work by swelling the nacre platelets, thereby closing or filling minute spaces and creating a tighter, smoother surface that reflects and refracts light better. The result is better lustre.

Another treatment enhances lustre by exposing the cultured pearls to hot, dry air in equipment that resembles a fruit or nut dryer. That treatment works by drying and tightening surface nacre. Tighter nacre has fewer tiny spaces, so it reflects and refracts light more efficiently. Again, the result is better lustre.

None of these lustre treatments is permanent. The enhanced lustre fades over time. How long the fading takes and how much fading takes place, varies by cultured pearl type, the treatment used and the skill of the pearl farmer. Fading might start in about six months and can progress to dullness in a few years.

**Dyeing**

Some cultured pearls are naturally coloured and others are dyed. To colour cultured pearls, processors might use organic or inorganic dyes. Regardless of dye type, when processors dye bead-nucleated cultured pearls, the beads are almost always unaffected.

Aniline is the general name used for hundreds of organic dyes. Aniline dyes were originally derived from plants, but today are synthesised from benzene, which is a component of petroleum. Shades of blue, green, purple, and brown are among the aniline dye colours used by cultured pearl processors.

Silver nitrate is the most commonly...
used inorganic dye. It’s one of the light-sensitive components of photographic film. If soaked in a silver nitrate solution, many materials, including pearls, turn tones of brown or grey to black when exposed to light.

Several major pearl farms produce naturally coloured golden pearls. Artificially coloured “golden” cultured pearls, however, can be quite realistic. Laboratory research indicates that processors use organic chemicals or dyes, or inorganic chemicals – sometimes preceded by bleaching – to colour Akoya, Chinese freshwater and off-colour South Sea cultured pearls to imitate natural-colour “golden” South Sea cultured pearls. Pearl farmers can achieve a similar result with the use of heat, with or without chemicals or dyes.

**Irradiation**

Processors use gamma rays in a treatment called irradiation to colour cultured pearls in ranges from bluish grey to greenish black, purplish to brownish black, tones of grey to black, and a “bronze” colour. The resulting colour depends on the cultured pearl’s original colour.

When processors irradiate freshwater cultured pearls that are naturally orange or purple, the much darker colours that result are related to the original colours, but look distinctly artificial. The lustre, which also looks artificial, is often extremely high, sometimes iridescent.

Gamma radiation changes cultured pearl colour because of its effect on the chemical element manganese. Gamma rays are most often used to treat freshwater cultured pearls because there is almost always more manganese in them than in saltwater cultured pearls.

Except for Keshi cultured pearls that occur accidentally as a result of the culturing process, most saltwater cultured pearls contain freshwater mussel shell-bead nuclei, which are affected by gamma rays. This allows processors to change the colour of some saltwater cultured pearls by affecting their nuclei. Irradiation often turns a saltwater cultured pearl to tones of grey, including a silvery colour, but seldom deep black. That’s because the nacre itself is not affected by the radiation, but the irradiation-darkened bead nucleus shows through. The thicker the nacre, the less visible the darkened nucleus is.

**Coating**

Silicone polymers are unusually stable compounds composed of the elements silicone and oxygen. When used to coat cultured pearls, they improve surface quality by covering or minimising blemishes, and replacing poor or fair natural lustre with good or excellent artificial lustre.

Thicker silicone polymer coatings sometimes trap dirt and air bubbles, making the coatings obvious. Thinner coatings are sometimes incomplete, or they tend to peel. Either fault makes the coatings obvious.