

GLASS AS A MATERIAL FOR BODY JEWELRY

DEFECTS IN GLASS

DEVITRIFICATION is the process whereby glass becomes partly crystallized as it cools (usually too slowly) from the molten state, and shows as texture or wrinkles on the surface of the glass. Devitrification may also occur on the surface as the result of unsuccessful annealing or accidental heating to a high temperature.

AIR BUBBLES- bubbles of air can be entrapped in the glass during manufacturing. Sometimes an air bubble will be stretched, appearing as a thread through the middle of the glass. This is sometimes confused as a fracture, when it is actually just an air bubble.

SEEDS- an extremely small gaseous inclusion of glass.

STONES- usually pieces of thermal insulating ceramic material from the glass furnace that have accidentally been mixed into the glass.

SCUFFS- broad abrasions on the glass surface.

SCRATCHES- act as crack initiation sites and greatly reduce the strength of the glass.

THERMAL STRESS- the flaw most difficult to detect in glass because it is invisible. Thermal stress is caused by uneven cooling in a piece of hot glass. Glass actually expands microscopically when it softens, and shrinks as it cools. If the glass surface cools faster than the core, then thermal stress will develop within the object as the glass on the surface is shrinking more rapidly, putting it into tension. Glass needs to be annealed in special ovens to equalize the temperatures within the glass as it cools. The rate of expansion and contraction in glass is called the Coefficient of Expansion (COE). Glasses with different COE cannot be combined in the same piece or cracking will occur. One advantage with body jewelry is that the pieces are relatively small, therefore there is less problems with temperature differentials within the glass. The larger or more complicated the piece, the greater the chance for thermal stress to develop. Although thermal stress is normally invisible to the human eye, stresses can be seen in transparent glass using a special lens called a polariscope.

THE MYTH OF FLAWLESS GLASS

While the goal for any glass company is to produce flawless jewelry, the reality is very different. Due to the nature of glass manufacture, there is almost always an air-bubble, a scratch, or a seed hidden somewhere within the jewelry. It would not be cost-effective (or necessary) to discard all jewelry with a minor flaw. Easily eighty percent of the glass would be rejected and the cost of glass jewelry would be greatly inflated (imagine paying \$120.00 for a flawless pair of glass spirals instead of \$14.00 for a pair with a small air-bubble). Moreover glass accumulates flaws during its lifespan in the course of wear and handling. By careful storage and handling, the accumulation of new flaws can be greatly reduced.

Quality glass jewelry manufacturers examine the finished products to see what kinds of flaws are in the jewelry, where they are located, and analyze what kind of risk they present to the integrity of the piece. Generally a minor air-bubble or seed imbedded in the body of the jewelry can be ignored if it is not an aesthetic concern. A deep scratch or sharp edge caused by a seed on the surface of the glass would be immediately rejected. Some guidelines to what is unacceptable in glass jewelry are:

NO BURS OR SHARP EDGES

NO DEVITRIFICATION

NO POLISHING COMPOUNDS

NO FRAX RESIDUE FROM ANNHEALING OVENS

NO COATINGS THAT CAN BE SCRATCHED OR WIPED OFF

NO SCRATCHES OR NICKS

NO LEADED GLASS

GLASS JEWELRY MUST BE PROPERLY ANNHEALED