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Drilling Into Glass & Stone

Introduction

When you need to create holes in glass, stone or other fragile material for stringing or for attaching bails or jump rings, one slip could mean the irreparable damage to the material. Follow these guidelines to help ensure repeatedly good results.

Before You Begin

The best drilling tool for this task is a mini-drill press or a Foredom drill press holding a Foredom® SR 30 handpiece. The Foredom® SR operates in forward and reverse at speeds of up to 18,000 RPM. The #30 handpiece has an adjustable chuck to accept 0– $\frac{5}{32}$ " or 0–4mm drills. The drill press helps prevent the drill from skipping or chattering against the glass or stone when you begin drilling. A vise or other holding device is strongly recommended to hold your work securely in place as you drill. If a drill press isn't an option, press a piece of masking tape onto the glass or stone item and use the tape as a guide to drill a pilot hole. You may use a ball bur for this step.

1. Use a diamond drill bit when drilling glass or stone; do not use carbide or high-speed steel drills.
2. Use a diamond twist drill or a diamond round-end bur to drill holes up to $\frac{1}{4}$ " in diameter or smaller.
3. Use a diamond core drill to create holes $\frac{1}{4}$ " or larger or to drill holes into thick glass or stone.
4. Use plenty of lubrication, water or other coolant like Bur-Life® to keep your drill tip cool and the hole clean
5. Use a gentle touch when drilling. Be patient and apply pressure lightly, letting the drill do the cutting.
6. Keep a slow and steady pace when drilling. High speed generates friction, friction causes heat, and heat damages both your drill bit and the material you're working on. A heat-damaged drill bit will exhibit color changes at the tip.
7. When the drill is close to breaking through the back side of your material, stop! Turn the piece and complete the hole drilling from the back. This will prevent chipping the edges of the hole and will minimize the risk of a blow-out fracture.

More About Speed

Begin very slowly and gradually increase the drill speed up to a recommended speed of 5,000–30,000rpm for small holes. Please Note: The larger your drill bit is, the slower the speed should be as you begin. Increase only up to 700–800rpm. Lubrication helps reduce the heat caused by friction and allows you to safely use faster speeds.

As you drill, use an occasional quick up-and-down motion to discharge debris from the hole and clear your drill flutes.

More About Pressure

Excessive pressure can fracture the material being cut and, when cutting fragile material such as glass or stone, "excessive" can be far less pressure than you might think. Increasing pressure increases the friction and generates enough heat to burn the diamond surface of the drill bit.

Lubrication

Some form of lubrication should be used to cool and lubricate the tip of diamond bits and to reduce heat build-up. Use water if no better lubricant is available. Cover the surface of the glass or stone. This keeps the dust down and keeps the drill and the hole lubricated. If possible, use a drip system.

Other Factors To Consider

Hardness, abrasiveness, type of material being drilled, tool speed and pressure all affect the life span of diamond drill bits. When drilling thin or soft materials, a single bit may create as many as 50 holes or more, while thick or very hard materials may require new bits after only a few holes.