

# Diamond Drilling

## Ground disturbing technique

In mineral exploration, drilling is used to obtain detailed information about rock types, mineral content and the relationship between the rock layers close to the surface and at depth.

There are two basic methods of drilling that are commonly used in mineral exploration - percussion and rotary drilling.

Diamond drilling is a type of rotary drilling that uses a diamond studded drill bit to drill through and collect samples of sub-surface rock.

The drill bit is attached to a core barrel which consists of an inner and outer barrel and a core lifter. The core barrel is then attached to a 6m drill rod (together called the "drill string") which is connected to a rotary / diamond drill rig (Figure 1).

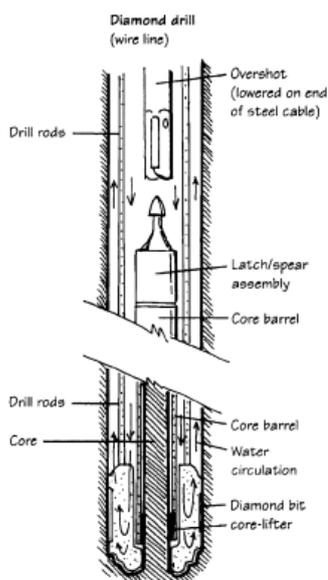


Figure 1: Diamond drill string

During drilling the inner barrel remains stationary while the outer barrel rotates with the drill bit.

Water and other drilling fluids are injected into the drill string to prevent overheating. The drill bit cuts through the rock as it rotates and the opening at the end of the drill bit allows a solid column of rock (known as "drill core") to move up into the core barrel.

When 6m has been drilled, a steel cable is used to latch the inner barrel and winch the drill core to the surface.

The core lifter prevents the drill core from slipping out through the opening at the end of the drill bit while this is happening (Figure 2).



Figure 2: Diamond drill core laid out in core tray

Once at the surface, the drill core is removed from the inner barrel, washed, cracked into shorter lengths and placed in a core tray with markers inserted to track depth (Figure 2).

Another 6m drill rod is attached to the top of the drill string and it is lowered back into the drill hole to continue drilling until the desired depth is reached.

At least once a shift, core trays are transported to a separate core processing area to be marked up, photographed and logged by a qualified geologist.

Once the geologist has finished with the drill core, it is cut in half longitudinally, so that half can be sent to a laboratory for analysis and half stored for future reference / use.

Upon completion of drilling, it is a requirement that rehabilitation is undertaken to ensure that all areas impacted by drilling are restored to the condition that existed prior to undertaking the drilling, and no hazards are left behind that would impact the surrounding environment or land use.



Figure 3: Diamond rig drilling on cropped land