

# DDM CONCUT

DIAMOND TOOLS



It starts with over 70 years of experience traveling the United States, working with contractors to create proprietary diamond bonds for every application, region, saw, grinder and drilling rig in the United States. Then continued in the manufacturing plant by following stringent guidelines using the Rolls Royce of Diamond Equipment to manufacture.

The following is our manufacturing process for segmented diamond blades and core bits. The aim is to not only give you an understanding of the process but to let you see the care and quality which goes into each DDM-CONCUT diamond.

A. The most important process at the DDM-CONCUT diamond blade plant is quality control. All incoming materials are checked before they enter the plant to make sure that they are exact to the specifications and tolerances. Each work station is also a quality control check point for the previous work steps. Throughout the manufacturing process quality checks are made on blades in production.



B. The manufacturing process starts with diamond segments. The metal powder and diamond crystals are precisely selected, weighted and mixed into batches. The combination of different metals and diamonds make up the bond which is specific to the geographic area of the material to be cut and the type of equipment being used.



C. The metal powders and diamond crystals are measured, mixed (for hours), pressed into individual segments and weighted again on calibrated scales with accuracy to thousandths of a gram.

D. The segments are loaded into molds which are put into furnaces. The molds are heated to 1100-2100 °F and high pressured. Furnace temperatures are closely monitored using calibrated optical instruments. Under heat and pressure the blended mix forms into a solid alloy segment. Each segment is usually made with a backing pad that contains no diamonds. The backing pad provides a compatible surface to bond the steel to the steel core.



E. Segments are removed from the mold, hand measured for tolerance and the inner diameter of the non-diamond backing pad is radius machined to ensure a perfect fit with the steel core. The machining process is performed on every DDM- CONCUT blade.



F. Diamond segments are then attached to the blade cores using the most advanced and the most strongest attachment method in the industry which is laser welding. DDM's state of the art laser-welding process uses a laser beam to fuse the segment directly to the steel core. The laser weld actually becomes as strong as the core itself. DDM's laser welding process is the most advanced in the industry.



G. After the laser-welding process EVERY DDM-CONCUT blade is tested to ensure that the segments are solidly attached to the core using a torque wrench. As you can see by the photo, the segment is tested for snapping or shear strength from the steel core which, for all practical purposes, far exceeds the applicable use of any type of diamond.



H. Blade tensioning is one of the most interesting steps in the entire manufacturing process:

- a - Tension must be put into each blade to ensure that it will run straight and true under tough sawing conditions.
- b - Blades are hammer-tensioned by hand and done so by experienced craftsmen or rolled on a machine.
- c - If you look closely at our blades you will see the hammer marks which are different for each blade, or, you will notice a tension ring from the roll machine.



I. Every DDM-CONCUT blade is carefully measured for roundness (run-out) and for straightness (concentricity).

J. Each DDM-CONCUT blade is "broken in" at the factory by grinding the outer edge and side with an abrasive material. This process ensures that the blade will cut freely the very first time it is used by the customer.

K. The next step is the engraving of a serial number on each blade. Besides documentation for quality control, this step provides the reference point for future and possibly challenging cutting and drilling applications.

L. The last steps, finishing, painting and packaging are all performed with the same amount of care and concern for quality as already explained in the manufacturing process.

If you have any questions or when all else fails in your cutting and drilling applications, call the DDM-CONCUT Boys:

**Ted Segiel, Jr. - Inventor, #412 . 605 . 2992**

**Dan Jozsa - Application Specialist, #412 . 302 . 1784**