The world of metal cutting wouldn't be the same without inserts. The inserts themselves are made of some of the hardest materials in the world. So we went to the production facility in Gimo, Sweden, to see how the inserts are made.

1. The pressed inserts need to be heated in order to harden. For this a sintering oven is used. The oven can take several thousand inserts at a time. The inserts are heated to approximately 1,500 degrees Celsius in a process that takes some 13 hours and fuses the pressed powder into cemented carbide, an extremely hard material. Shrinkage in the sintering process is about 50 percent, so the sintered insert is only about half the size of the pressed piece.

2. After the inserts have been baked, samples are sent to the laboratory for a quality check. The pressed inserts are cut into sub-units and subjected to a series of strict criteria before they are accepted for use. This is also where the inserts are painted.

3. The insert is placed in a mold for the specific insert about to be pressed. The cavity of the press tool is filled with powder. Each insert is pressed with 12 tons of pressure, and it’s weighed by the machine and controlled visually by the operator. At this stage the insert is extremely fragile, breaking easily.

4. The insert is cleaned, and the mold is cleaned. Samples are sent to the laboratory for a quality check. The insert is given a grade in the laboratory, and this grade is printed on the insert.

5. The insert is now finished. Samples are sent to the laboratory for a quality check. The insert is given a grade in the laboratory, and this grade is printed on the insert.

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