



MICRO-BLASTER

Black laser **residue remover**

The Blueprint for Quality

Antwerp - Hong Kong - Istanbul - Mumbai - Shanghai

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Introduction

After machining diamond with laser, a black carbon layer covers the lasered surface of the diamond section. This layer makes it difficult to examine the internal features and the colour of the stone. This electrically conductive carbon layer can interfere with the polishing process when using pot contact. The need for a safe and easy way to remove this layer is obvious.

Up till now, various methods have been used to remove these black layers from their diamond substrate such as:

■ Thermal removal

To remove the black layer thermally the stone is heated up to ± 700 °C in an oven. In this way the black layer will burn away. There is however the risk that not only the black layer will burn away, but that also the diamond itself will be damaged. Tension and gletses in the diamond

could even lead to breakage.

■ Boiling and deep boiling

Both methods will remove most of the black layer. The results of deep boiling are generally better than the results of standard boiling in acids. An important disadvantage of these methods is the health risk involved with the use of acids. Also these methods are also not solutions that can be used immediately during production by the polisher himself.

■ Polishing the black surface

The lasered table facet or girdle are polished or girdled till the black has disappeared. A certain loss of weight is obvious and has to be limited as small as possible.

To comply with all the demands and to avoid all the problems and short-comings of the other methods, WTOCD (the Technical and Scientific Research Center for Diamonds) has developed the MICRO-BLASTER.

What is micro blasting?

Micro blasting uses airflow to direct small abrasive particles towards the surface that needs to be cleaned. These small particles impact the surface and, in this way, remove the carbon layer. Micro blasting of diamond can easily be used

during production, but asks for manual manipulation. The operator can handle and clean stones one by one, and for larger batches of stones, he can place them in a gummy holder, lasered surface up, to be able to handle more stones. When used correctly this method is safe for stone and inflicts no health hazard.

The abrasive material

The use of an abrasive with the correct grain size is crucial for 2 reasons.

- The first reason is the safety of the stone. A larger grain size leads to a larger local impact and this can lead to damage.
- The second reason is the quality of the result. Larger grains can not infiltrate as easily as smaller grains into the fine microstructure of the lasered surface and there-

fore they will not remove the black layer sufficiently. Too small grains have a non-sufficient impact that will lead also to an insufficient removed layer.

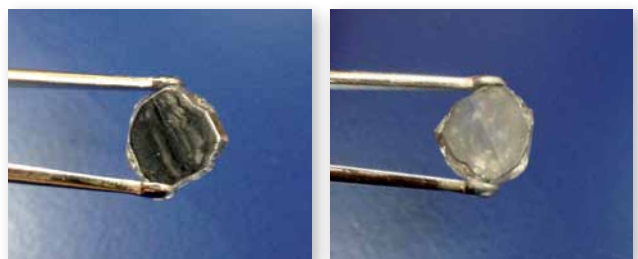
The abrasive material aluminum oxide, with grain sizes of 50 to 75 microns gives good results.

In principle it is possible to recycle the abrasive however this is not advisable: micro diamond particles may reduce the life of the blasting gun, and also increase the risk for damaging the stones.

The Micro-Blaster set-up

A complete Micro-Blasting set-up consists off:

- The micro-blasting cabinet with dust-collection
- The blasting gun, designed for grain size from 50 to 75 μ
- A small container with aluminum oxide, that can be refilled
- A compressor that provides dried compressed air of 4,5 to 7,5 bar
- Dimensions: 150 x 150 x 400 mm
- Weight: 5 kg



For more information, please contact:

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