

Beneficiation of Diamonds in Zimbabwe

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[HTTP://WWW.MMCZ.CO.ZW/BENEFICIATION-OF-DIAMONDS-IN-ZIMBABWE/](http://www.mmcz.co.zw/beneficiation-of-diamonds-in-zimbabwe/)

Run-of-mine diamonds especially alluvial, are generally coated with carbon and other materials. These materials may also penetrate into the diamond cracks as inclusions. When both the coating and the inclusions are removed, the quality of the diamond stones is enhanced and the prices are consequently increased. The demand for cleaner diamonds is greater. Ever since the discovery of diamonds in Zimbabwe, they have been sold and exported in raw form, thus fetching relatively low prices.

Ministry of Mines and Mining Development (MMMD) as a member of the Value Addition and Beneficiation cluster in ZIMASSET is expected to contribute significantly towards empowerment of society. Thus, one of MMMD's priority areas is beneficiation of diamonds. The diamond sector has the potential to significantly contribute to the economic growth and development of the country.

The Zimbabwe Diamond Tender Facility (ZDTF) which is owned and managed by First Element was commissioned in October 2014. At the instance of the Government of Zimbabwe through MMCZ, First element constructed a deep boiling facility, the Zimbabwe Deep Boiling Facility (ZDBF). This was after Government had realised the need for a cleaning facility to reduce loss which had emanated from the sale of unclean diamonds. The facility was fully expensed by First Element under a Build Own and Transfer (BOT) arrangement. The ZDBF was fully commissioned in July 2015. The facility has been up and running for 12 months now.

The ZDBF processes, which are the intellectual property of First Element are centred on deep boiling, acidisation, ultra sound, and steam cleaning. The laboratory consists of three very secure rooms, a reception area, prep room and a deep boiling room which is housed in a bank vault structure, all under the strictest, high technology, remote surveillance equipment. Furthermore, the reception room has biometric controlled access via an aluminium double door cubicle. After receipt the diamonds are weighed using computerised scales and printers to eliminate any risk. If for any reason diamonds are required to remain for long periods in the facility, there is a category five safe for temporary storage. The ZDBF is operated by two local Chemistry honours graduate technicians who are overseen by highly experienced First Element managers.

All processes at the ZDBF are monitored on 32 high definition surveillance cameras and audited by ZCDC auditors and witnessed by CID and ZCDC Security. Losses due to acidisation, of less than 2% of the original weight are normally incurred due to the removal of the iron stained coating and the absorption of non-diamond particles that are totally destroyed by acid. Another diamond cleaning facility, Ke Nako, was commissioned in February 2015, and is a wholly Zimbabwean owned and managed entity. The facility is also housed within the MMCZ premises. The facility has state-of-the-art CCTV and is also protected by a private security firm. When diamonds are brought in for cleaning, Ke Nako employs the service of ZRP's Support Unit to augment the safeguarding this precious resource.

In addition the process of cleaning is overseen by a chemical engineer with over 30 years' experience with the assistance of junior staff. In a bid to improve skills in diamond cleaning, Ke Nako is set to set some of its junior staff for further training in India before the end of the third quarter. Like at ZDBF all processes are audited by ZCDC auditors and witnessed by CID and ZCDC Security

Currently, cleaning of the ZCDC diamonds is shared between the First Element and Ke Nako cleaning facilities on a 50:50 share basis. Since inception ZDBF has cleaned a total of close to 600,000 carats. Ke Nako has cleaned 339,977 carats since it opened its doors. With these facilities in place, the country is set to increase the worth of its diamonds.