

## MASS PRODUCING ICDD PDF® DATABASES ONTO USB FLASH DRIVES

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ICDD is an exceptional company that produces Powder Diffraction File™ databases (PDF-2, PDF-4+, PDF-4/Axiom, PDF-4/Minerals, PDF-4/Organics) specifically designed for material identification and characterization for use by scientists and educators. Everyone at ICDD contributes to creating our product and getting it to our customers. ICDD offers our product in CD (only for existing customers), DVD, and USB format. Here, I am going to provide you with an overview on how ICDD software is produced on USBs. The Engineering and Design department provides the Information Technology department with a “master USB” of one of the PDF® databases along with a Production Checklist. The Production Checklist contains a guideline that the Information Technology department follows. Some of the information on the Production Checklist are the name of the master PDF® database, version number, quantity needed, required media format (CD, DVD or USBs), name of the distributor or workshop requesting the USBs, serial numbers, and the date needed.

To complete a USB Production Checklist, we use either Samsung 32GB or Kanguru ICDD logo 8GB USB flash drives. The number of products and the size of each of those products will dictate which type of flash drive is used. It is more cost effective to use the 32GB flash drives than the ICDD logo engraved USBs.

The Kanguru USB Duplicator replicates the master USB. The Kanguru USB Duplicator is used with either USB type. The very first slot known as the “source” is reserved for the master USB and the remaining 31 slots are for the blank USBs that will contain the replicated master. The Information Technology department runs the Copy and Compare (Full) feature on the Kanguru USB Duplicator. This setting copies the content of the master to the blank USBs. When the replication process is complete, the Kanguru USB Duplicator begins an error checking routine by comparing the master to the copy. The amount of time taken to complete the error checking routine depends on the product size, the number of products on the master, and the quantity needed. After the Kanguru USB Duplicator completes the Copy and Compare (Full) process, the display shows the number passed and failed. The Kangaroo USB Duplicator indicates which USBs passed and which failed by using a green or red light indicator above the USB slot. On the rare occasion, when there is a red indicator light, the USB is removed from the count. The Copy and Compare (Full) process is continued until all the USBs needed for the Production Checklist are complete. When the Copy and Compare (Full) for the Production Checklist is complete, the Production Checklist, along with the USBs, are given to the Graphic Designers for labeling.

After the Graphic Designers return the labeled USBs to the Information Technology department, the error checking routine is run again to ensure that every duplicated USB is identical to the master USB. If any USBs fail this step, they are replaced using the Copy and Compare (Full) and then the Compare (Full) processes. The serial number of the USBs that failed are documented on the Production Checklist.

After the Information Technology Department enters the serial numbers in the Registration Database, additional testing is performed. One percent of the quantity needed is tested for functionality. Therefore, if the Production Checklist is for 300 USBs, then three USBs are tested. The three tested USBs are chosen at random from the beginning, middle, and end of the serial number sequence. The testing consists of installing the software, registering the software, generating five different queries within the software, and documenting the results on a Product Testing Sheet. Once testing is complete, the Production Checklist and USBs are given back to the Graphic Designers for packaging.