

Matched Elongation Wire Drawing Die Sets

To optimize the performance of today's high speed multi-wire drawing machinery, Fort Wayne Wire Die, Inc. manufactures wire drawing die sets that are accurately matched to the elongation of the wire drawing machinery used.

First, using computer-aided software, each die size in the set is calculated within the correct tolerance to precisely match the machine elongation and to minimize the amount of slip on the capstans. Next, the dies are manufactured as a set within the tolerances specified.

Finally, each die in the set is performance tested to check for the correct wire elongation and die pull (force needed to pull the wire through the die). These dies are then shipped to the customer in a separate shipping container as a set. They should be used as a set since each die has been *matched* one to the other.

WHY MATCHED SETS ?

- **Reduced Downtime**
Matched sets are recommended for multi-wire machines to minimize the high cost of downtime. *Lost production.*
- **Eliminate Wire Breaks**
Properly matched die sets minimizes the possibility for wire breaks caused by the die not elongating enough wire to feed the capstan ahead of it.
- **Improved Wire Surface Finishes**
Minimizing wire slip on the capstan can reduce wire surface damage and improve wire surface finish.
- **Reduced Wear on Capstans**
Minimized slip reduces friction and wear on the machine capstans.

TYPE OF DIES USED ?

- **Polycrystalline VS Natural Diamond**
Either Single Crystal Natural Diamond (SCND) dies or Polycrystalline Diamond (PCD) dies or a combination of both may be used in most multi-wire drawing machines.

■ Die Life VS Wire Surface Finish

There is a tradeoff between die life and wire surface condition. SCND dies will produce the best wire surface finish while PCD dies provide maximum die life.

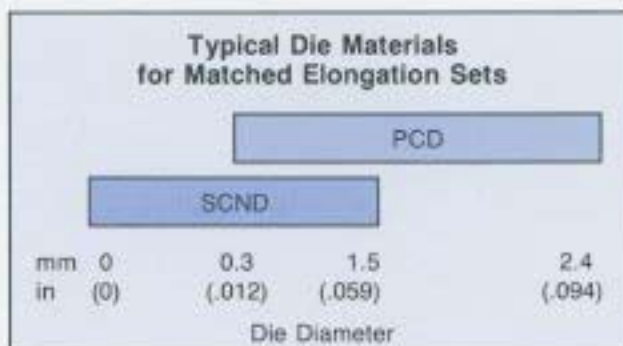


Figure 1

■ Plated Copper VS Bare Wire

For tinned and plated copper wire it is recommended that SCND dies be used in the final four or five die sizes for optimum surface finishes. Some companies use only SCND for drawing plated wire depending on the finish wire diameter. For drawing bare copper wire some companies use all PCD dies in the series.

■ Finished Hole Size

Generally for the smaller and finish hole sizes SCND dies are recommended and for the larger sizes PCD dies are preferred. Typically below 0.3 mm SCND dies only are used. Above 1.5 mm PCD are typically used. See figure 1.

■ PCD - Fine Grain VS Coarse Grain

Typically a coarse grain PCD product is used because fine grain PCD dies are subject to scratching during the performance test unless they are lubricated. Greater care must be taken when matching fine grain dies to be certain that the lubricant has been applied evenly from one die to the next.

Let us calculate the optimum die sequence for your multi-wire machine. Just give us your machine model number, the start and finish wire diameter, the percent of wire elongation, the number of dies in the set and the type of wire being drawn. Contact Fort Wayne Wire Die at the address below for further information.