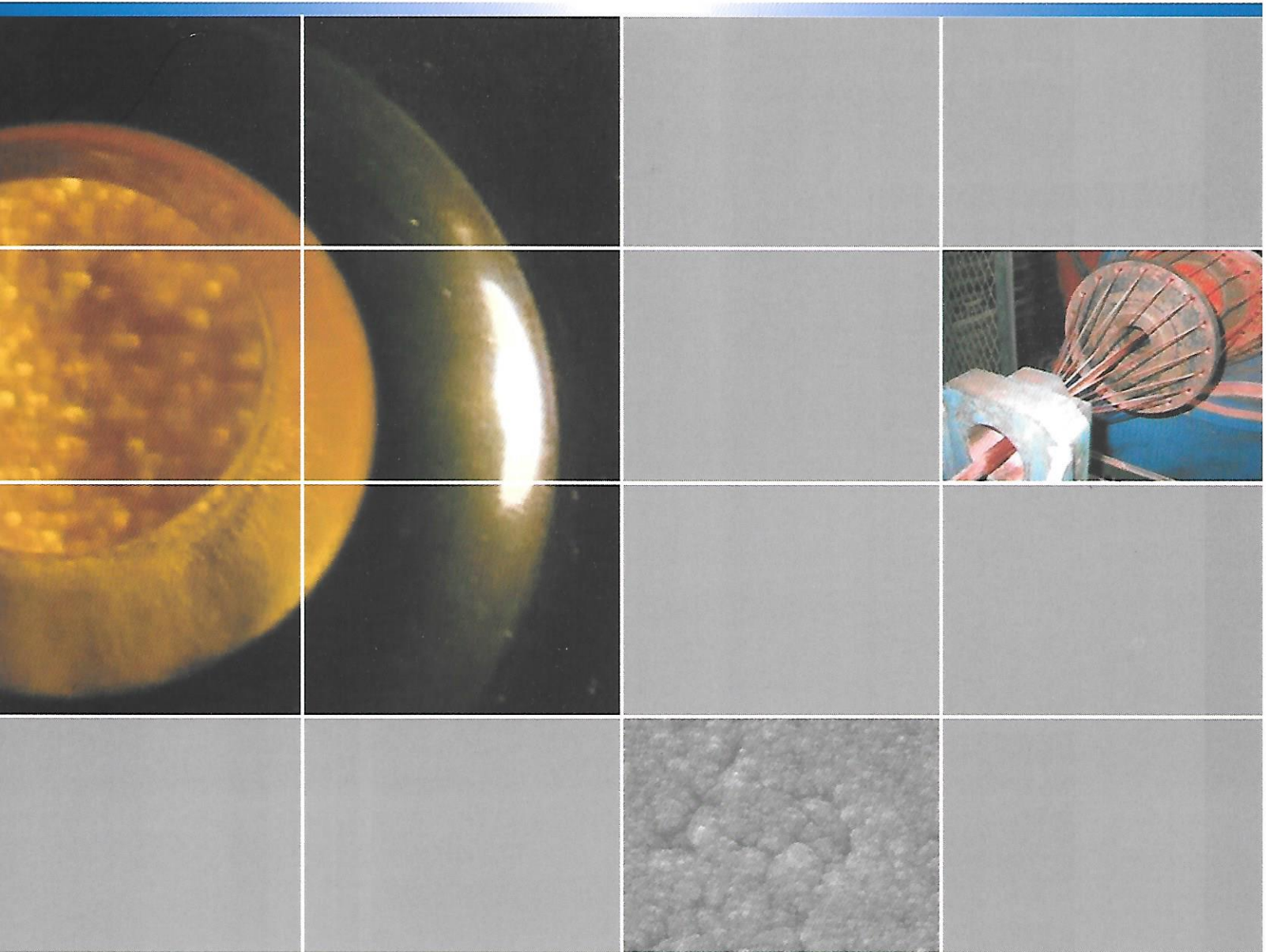


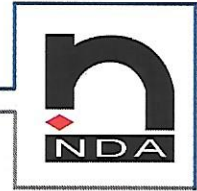


Nano-Diamond America, Inc.

# Nano-Dies<sup>®</sup>



**Big Diamond Dies that  
Work Better and Cost Less!**



## The measures of goodness of a die

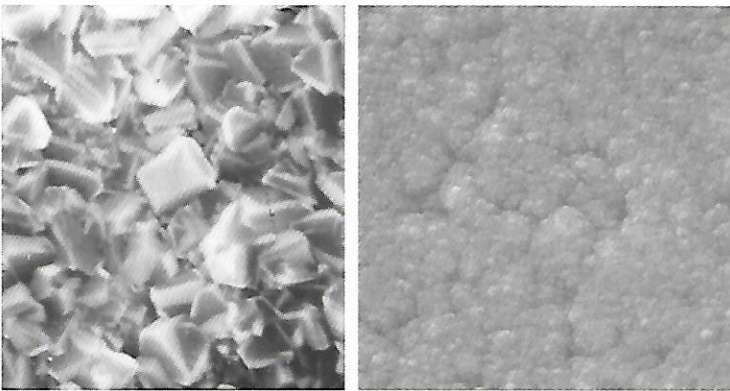
### Hardness

There is no substance harder than diamond. But not every diamond die has a surface as hard as a Nano-Die. For example, the surface of a polycrystalline diamond (PCD) die is hard, but the particles of PCD material are all of different shapes and sizes and they are not arranged in any order or direction.

The surface of a Nano-Die is comprised of millions of nanocrystalline diamond particles, all the same size and locked together in a pattern. This provides a surface which is harder than the surface of a PCD die.

### Low Friction

A smooth surface provides potential for low friction. This is extremely important when the surface finish of your product needs to be perfect. It is also of tremendous importance in certain applications such as cable compacting and stranding, where friction causes damage which increases electrical resistance. More damage means more Copper or Aluminium is required to meet the electrical resistance standards for the cable being manufactured. Using Nano-Dies can save a cable manufacturer millions of dollars worth of Copper and Aluminium every year.



Contrasting the surface of a Fine Grain PCD die (left) and a Nano-Die (right). The Nano-Die creates much less friction force.

### Price/Performance

A traditional diamond or PCD die uses a solid mass of diamond at its core. So the price increases, on average, eight times for every doubling of the bore diameter. Not so with a Nano-Die. Only the working surface of a die needs to be diamond. And the Nano-Die's diamond surface is manufactured in a chemical vapor deposition (CVD) process, as part of the process of making the die. This leads to tremendous economies. A Nano-Die costs roughly three to six times less than a PCD die of the same diameter. But Nano-Dies are available up to Ø60mm (>2.3 inches), far exceeding the maximum possible diameter for a PCD die.



## Nano-Dies for Cable Compacting and Stranding



There is a huge amount of raw material and money to be saved or lost in the stranding and compacting operations of energy cable manufacture.

Using Nano-Dies equates to maximum savings and best practice.

Many cable manufacturers replaced tungsten-carbide dies with PCD dies when they became available for compacting and stranding. Reason: Raw Material Savings.

Nano technology has now delivered dramatic improvements. Nano-Dies enable an additional 2% of total raw material to be saved. Nano-Dies are available up to Ø60mm. Nano-Dies cost 3 to 6 times less than PCD dies.

## Nano-Dies for Wire and Tube Drawing



Low Carbon and Stainless Steel  
Wire and Tube

Low friction and long life combines with excellent value (3 to 6 times less expensive than PCD dies) to make Nano-Dies a natural choice for many wire and tube applications:

- Low Carbon and Stainless Steel
- Non-Ferrous Metals
- Copper , Aluminium and Al Alloys, especially where mechanical and electrical properties must be optimised



Copper / Aluminium  
Rod Breakdown



Copper/Brass Tube etc.



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