



Your Total-Value Solution.
Worldwide.



Fort Wayne Wire Die

Product Guide

Single Crystal Natural Diamond Dies

Fort Wayne Wire Die single crystal natural diamond dies provide premium quality and performance. Each diamond is individually inspected to ensure that all diamonds used are free from internal defects. Then each diamond is x-ray oriented to ensure maximum wearability, properly mounted, precisely profiled, highly polished and accurately sized to offer uniform wire reduction, minimum die pull and excellent wire surface quality.



Single Crystal Synthetic Diamond Dies

Single crystal synthetic diamonds are available as an alternative to single crystal natural diamonds. Produced using a high-pressure/high-temperature process, Fort Wayne Wire Die single crystal synthetic diamonds are free from impurities, inclusions and cracks. Like natural diamond dies, synthetic diamond dies from Fort Wayne Wire Die are manufactured to the highest standards, following the same processes used in natural diamond die production.

Hole Sizes

.0003 in (0.0075mm) to .114 in (2.90mm)

Benefits

- Best surface finish of any die material available
- Lowest die pull and friction
- X-ray oriented diamond provides:
 - greater consistency
 - predictable wear
 - more pounds of uniform wire per die
- Excellent recutability

Applications

Used in fine or ultrafine wire sizes or as finish dies when a superior wire surface is required.

Typical Markets

Magnet wire, medical wire, plated copper wire, wet-drawn stainless steel wire, and precious metals such as gold, silver, platinum and palladium.

Hole Sizes

.0003 in (0.0075mm) to .047 in (1.20mm)

Benefits

- Excellent consistency for predictable die life
- Unlimited future availability
- Superior surface finish

Applications

Used in fine or ultrafine wire sizes or as finish dies when a superior wire surface is required.

Typical Markets

Magnet wire, medical wire, plated copper wire, wet-drawn stainless steel wire, and precious metals such as gold, silver, platinum and palladium.

Poly-Di® Polycrystalline Diamond Dies

Get significantly longer die life, excellent wire roundness and highly predictable die wear with Poly-Di® diamond dies. Poly-Di diamond dies are manufactured with polycrystalline diamonds, a long-wearing synthetic material with highly polished surface finishes that minimize friction. You get the longest possible die life and good wire surface finish.

Hole Sizes

.0009 in (0.023mm) to 1.18 in (30mm)

Benefits

- Maximum die life provides highest efficiency with less downtime
- Available in a wide range of grain and blank sizes
- Excellent resistance to die fracture and breakage
- Even, predictable die wear

Applications

Nonferrous wire, especially larger sizes where demanding wear is a problem, but surface finish is less critical.

Ferrous wire, especially low carbon steel wire and plated steel wire, where longer die life is needed.

Typical Markets

Aluminum wire, copper wire, dry-drawn stainless steel wire, welding wire, low-carbon steel wire, tire cord and saw wire.



Tungsten Carbide Dies

Tungsten carbide wire drawing dies from Fort Wayne Wire Die are the result of expert technology and precision craftsmanship. Especially desirable in steel wire applications, tungsten carbide dies are the right choice for applications where the finish and wear resistance of diamond dies are unnecessary and cost-savings are a priority. Fort Wayne Wire Die offers a variety of tungsten carbide dies for your various wire-drawing needs, including shaped wire dies and tube drawing dies.



Matched Elongation Sets of Dies

To optimize the performance of today's high-speed multi-wire drawing machines, Fort Wayne Wire Die manufactures wire drawing die sets that are fully certified to performance specifications, using single crystal diamond and Poly-Di® polycrystalline diamond dies. Using precise manufacturing techniques and performance testing unique to Fort Wayne Wire Die as well as stringent inspections throughout the die production process, Fort Wayne Wire Die produces matched die sets that are precisely engineered to match the elongation of the wire drawing machinery used. Fort Wayne Wire Die sets have been installed in machines that draw up to 40 wires simultaneously and use more than 800 dies.



Hole Sizes

.006 in (0.150mm) to 2.0 in (50mm)

Benefits

- Excellent corrosive wear resistance
- Available in a large range of sizes
- Cost effective

Applications

Ideal for most ferrous wires, large diameters and applications where corrosive wear is the primary cause of die failure.

Typical Markets

Carbon steel wire of all sizes, tire cord and welding wire.

Hole Sizes

Physical elongation is especially important for die series smaller than .016 in (0.40mm)

Benefits

- Reduce machine downtime
- Minimize wire breaks
- Improve wire surface finish
- Reduce wear on capstans

Applications

Recommended for all multiwire drawing machines, and useful for single-wire drawing machines where reducing the amount of slip is advantageous to the drawing process.

Typical Markets

Bare or plated copper wire.

Custom-Made Shaped Wire Drawing Dies

Fort Wayne Wire Die produces dies in a wide variety of shapes from polycrystalline diamond or tungsten carbide material and also manufactures custom, specially shaped dies by request. For unique shaped wire requirements, Fort Wayne Wire Die designers can create a set of dies that will gradually deform the wire to achieve the proper shape.



Poly-Strand™ Stranding, Bunching and Compacting Dies

When stranding and compacting conductor wire, Fort Wayne Wire Die provides the right die materials offering the best combination of economy, wear resistance and wire surface quality to meet your specific needs. These types of dies can be manufactured from:

Polycrystalline diamond

- Yields a good wire surface finish with excellent die life (several orders of magnitude harder than tungsten carbide)
- Reduces fines and shavings generated during production due to low coefficient of friction and wear resistance
- Long die life and minimized wire breakage make for longer, uninterrupted production runs truckload after truckload

Poly-Strand™—Polycrystalline diamond with a tungsten carbide cap

- Cap properly positions incoming strands of the wire array
- Allows for high-speed cable production at significantly lower running temperatures and reduces energy costs
- Vastly improves cable surface finish and reduces wire breakage and start-up problems
- Unique design optimizes price–performance benefits

Nano DCD (Diamond Coated Dies)

- Outlasts tungsten carbide by 10x
- Superior surface finish and low die pull
- Maintains constant hole size throughout its life for huge potential savings in raw material cost

Dimensional Limits

	Tungsten Carbide / Tool Steel	Polycrystalline Diamond
Minimum Height and Width	.020 in / 0.5 mm	.026 in / 0.66 mm
Minimum Corner Radius	.004 in / 0.1 mm	.010 in / 0.25 mm
Minimum Tolerance	.0005 in / 0.0125 mm	.0005 in / 0.0125 mm

**Limits not applicable in all applications.*

Benefits

- Custom-made to your specifications
- Wear characteristics of hard and super-hard materials

Applications

Ferrous or nonferrous wire drawn in the following shapes:

- Square
- Rectangular
- Oval
- Half-Round
- Triangular
- Flat
- Hexagonal
- Trolley Wire
- Inquire about special, custom shapes available

Hole Sizes

Poly-Di® polycrystalline diamond dies (PCD): up to 1.18 in (30mm)

Poly-Strand™ polycrystalline diamond blank with tungsten carbide cap: up to 1.30 in (33mm)

Nano DCD (Diamond Coated Dies) up to 3.9 in (100mm)



Extrusion Tips and Dies

Fort Wayne Wire Die follows the same tradition of expertise and craftsmanship in producing extrusion tips and dies used in extruding plastic insulation onto wire, cable and fiber optic cable. Each tip and die is individually engineered and custom-made to your precise specifications. The 100% concentricity verification test assures proper wire centering to provide consistent and accurate electrical characteristics in the insulated conductor. **Concentricity to .0002 in (0.005 mm)**

T.I.R. is guaranteed on all single crystal diamond and polycrystalline diamond extrusion tips.



Hole Sizes

Single crystal diamond: .012 in (0.30mm) to .036 in (0.90mm)

Polycrystalline diamond: .012 in (0.30mm) to .093 in (2.36mm)

Tungsten carbide: .020 in (0.50mm) to .500 in (12.5mm)

Tool steel: up to 1.0 in (25mm)

Benefits

- Guaranteed ID to OD concentricity to .0002 in (0.005mm)
- Individually packaged with quality inspection certificate
- Custom-made to your specifications
- Standard styles and sizes available for immediate shipment

Applications

Precision insulated wire and cable, including Category 5, 6 and 7 products, where consistent electrical properties are required.

Typical Markets

Telephone, telecommunication and electronic cables.

Shaving Dies

Available in tool steel, tungsten carbide and polycrystalline diamond, shaving dies are an effective means to improve the quality and purity of shaved ferrous and nonferrous rod.

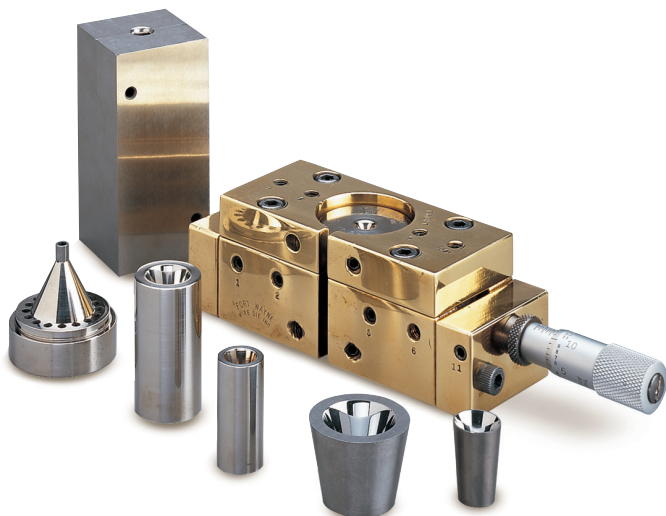


Benefits

- Custom-made to your specifications
- Able to produce with coatings such as titanium nitride (TiN) to increase lubricity for longer die life

Applications

Ferrous and nonferrous rod.



Specialty Wear Parts

When you need a part that can meet precision tolerance requirements and stand up to extreme wear, Fort Wayne Wire Die ultrahard specialty wear parts are the best solution. From tool steel to single crystal diamond, Fort Wayne Wire Die wear parts provide a more durable surface to protect against abrasion, erosion, friction, impact, thermal stress or pressure. Working from a blueprint or a sample part, Fort Wayne Wire Die can custom-design and develop wear products in a wide range of materials:

- Single Crystal Diamond
- Polycrystalline Diamond
- Nano DCD
- Tungsten Carbide
- Tool Steel



Die Recutting Services

Fort Wayne Wire Die recutting services provide like-new performance from your worn single crystal diamond dies, polycrystalline diamond dies and tungsten carbide dies. Expert technology and precision craftsmanship used in the original manufacturing process ensure that the accuracy of die geometry and bearing lengths meets your specifications. Fort Wayne Wire Die inspects each die received to carefully analyze wear and recutting factors. This inspection can reveal abnormal wear or usage that may affect your productivity. Stringent quality controls play a critical role in helping Fort Wayne Wire Die recut your dies to required specifications.

Die Room Equipment and Accessories

Invest in Fort Wayne Wire Die recutting machinery and accessories to ensure your wire drawing dies continue to perform to the specifications you need.

- Di-Pro™ diamond powder and compound is specially formulated for ripping, polishing and sizing wire drawing dies. A 100% virgin diamond compound, Di-Pro is designed for precision repolishing and sizing of both diamond and tungsten carbide dies.
- Die recutting machinery
- Die inspection equipment including microscopes, die cleaning equipment and accessories, such as wire pulling and pointing equipment.

Die Seminars and Training

Wire drawing die seminars/workshops are held on a regular basis to help the individuals responsible for wire drawing dies and the drawing operation gain a better working knowledge of this critical part of the production process. Through hands-on visual die inspection instruction, the knowledge and tools will be developed to understand and inspect wire drawing dies. Knowledgeable speakers from the wire industry will also share their expertise and experience.

On-site training programs are also available to expand and develop the technical skills of die room personnel.



Operating from facilities in the United States, Canada, Mexico, Germany, China and the Philippines and through representative offices located throughout the world, Fort Wayne Wire Die brings global expertise to service its international customer base. Experienced people and innovative ISO 9001-registered processes build quality assurance into every die. When you need great wire, begin with one call to **Fort Wayne Wire Die**—*your source for innovative, global solutions to wire drawing needs.*



Fort Wayne Wire Die



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