1. PCD wire die with D15 insert (.150 x .038)
2. Standard casing sizes:
   1 x 1/2
   1 1/8 x 3/8

SECTION A-A
Who We Are

US Synthetic Wire Die is a dedicated business division of US Synthetic – a 30-year industry leader in the development and production of polycrystalline diamond (PCD) cutters for oil and gas exploration.

USS Wire Die is committed to the success of your wire business by lowering your overall operating cost and improving your product offerings. With USS Wire Die, you can be confident that you’ll have the right tools, dedicated service, and technical expertise to be successful in your business.
In the Wire Mill

We understand that drawing wire is a complex process. That’s why, US Synthetic Wire Die is committed to providing you with the right tools to lower operating costs, meet tight lead times, and select the right die for your application.
Why choose PCD Dies?

Wire drawing dies are made of several materials including tungsten carbide, natural diamond, synthetic diamond, and polycrystalline diamond. Selection of a die often depends on the material being drawn and the desired surface finish of the wire.

PCD is a unique material that balances performance, cost, and surface finish. While natural diamonds and tungsten carbide are functional in some applications, PCD is an engineered material that helps diversify product offerings and lower overall die costs.

PCD is formed by bonding (sintering) a mass of small diamond particles into a larger, coherent structure.

PCD increases production by providing:

- Superior toughness than single-crystal diamond due to randomly oriented grains.
- More uniform wear than a single-crystal diamond.
- High thermal conductivity and hardness.
- Extended wear relative to tungsten carbide.
Applications and Grain Sizes

- Tungsten
- Brass Coated Steel
- Specialty Metals

Toughness, Surface Finish

1 Micron

3 Micron

5 Micron
12 Micron 25 Micron 50 Micron

Longer Life

Low Carbon Steel
Welding Wire
Stainless Steel
Aluminium
Copper
Free Standing PCD Dies

- PCD without a tungsten carbide support
- Two varieties include
  - Cobalt between PCD structure
  - Cobalt removed from PCD structure
- Thermally stable PCD allows wire to run at an elevated temperature
- Small dies ranging from .004 to .100 inches (0.1 to 2.54 mm)

<table>
<thead>
<tr>
<th></th>
<th>PCD thickness*</th>
<th>PCD diameter</th>
<th>Carbide diameter</th>
<th>Grain sizes available</th>
</tr>
</thead>
<tbody>
<tr>
<td>D6 fs</td>
<td>.040 (1.0 mm)</td>
<td>.128 (3.3)</td>
<td>no carbide</td>
<td>1, 3, 5, 12 micron</td>
</tr>
<tr>
<td>D12 fs</td>
<td>.060 (1.5)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D15 fs</td>
<td>.100 (2.5)</td>
<td>.204 (5.2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D18 fs</td>
<td>.140 (3.5)</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Range of sizes for each PCD insert
Carbide Supported PCD Dies

- Carbide support reduces cracking
- Wire range of sizes from .020 to .340 inches (0.5 to 8.6 mm)

<table>
<thead>
<tr>
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<th>Carbide diameter</th>
<th>Grain sizes available</th>
</tr>
</thead>
<tbody>
<tr>
<td>D15</td>
<td>.088 (2.2 mm)</td>
<td>.150 (3.8)</td>
<td>.320 (8.1)</td>
<td>5, 12, 25 micron</td>
</tr>
<tr>
<td>D18</td>
<td>.112 (2.8)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>D21</td>
<td>.152 (3.9)</td>
<td>.268 (6.8)</td>
<td>.537 (13.6)</td>
<td></td>
</tr>
<tr>
<td>D24</td>
<td>.202 (5.1)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>D27</td>
<td>.343 (8.7)</td>
<td>.500 (12.7)</td>
<td>.950 (24.1)</td>
<td>12, 25</td>
</tr>
<tr>
<td>D30</td>
<td>.457 (11.6)</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
Why Choose Us?

USS Wire Die is committed to helping you meet your customer needs and lower operating costs by providing prompt customer service, reliable deliveries, and long-lasting die performance. We manufacture the polycrystalline diamond insert as well as the finished die. This allows us to respond to challenges you face more quickly by manipulating the PCD material and the geometry of the die. We are committed to building high-quality products that are delivered on time, every time.

Our customers value our ability to:

- Build each wire die precisely to their specifications.
- Use Lean manufacturing to build high-quality products.
- Deliver consistent products through ISO 9001:2008 Certification.
- Provide dies that last 30-40% longer than other PCD dies.
- Recut and extend the life of worn-out dies.
Our Promise

With each die, you can expect:

- Exceptional long-lasting PCD inserts.
- Responsive customer service throughout the product life cycle.
- Accurate geometry and manufacturing quality.
- On-time delivery.
- A reliable business partner.
For a free consultation please contact us at:

1260 South 1600 West
Orem, Utah 84058

**Phone** 801.235.9001
**Fax** 801.235.9141

www.usswiredie.com