

TOOLMAKER SOLUTIONS

Versirion™ and Versimax™ Die Blanks



The best of polycrystalline
diamond and tungsten
carbide combined in one
revolutionary composite
material



HYPERION

Materials & Technologies

VERSIRION™

Hyperion Materials & Technologies is introducing the Versirion™ series, a revolutionary silicon carbide and polycrystalline diamond (PCD) composite with increased wear property and thermal stability. Versirion™ is made by a state-of-the-art high-pressure high-temperature process and is based on the Versimax™ composite developed for wire drawing and wear applications.

VERSIRION™ AND VERSIMAX™

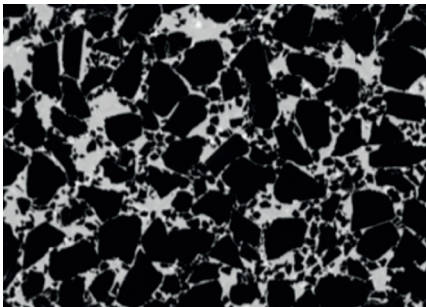
Versirion and Versimax exhibit superior wear resistance, high temperature performance, and high strength approaching that of Co-sintered PCD, with the addition of superior thermal stability. Versirion exhibits the most superior corrosion resistance.

MAIN APPLICATIONS FOR FERROUS AND NON-FERROUS WIRES

- Bunching
- Compacting
- Drawing
- Extrusion
- Stranding
- Wear applications

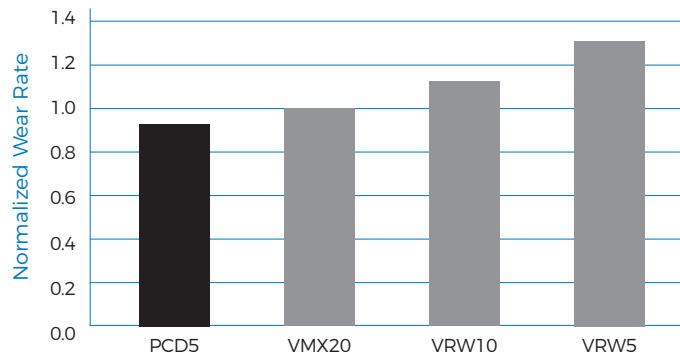
MAIN ADVANTAGES

- Superior thermal stability compared to that of PCD
- Significantly reduced coefficient of thermal expansion (CTE) mismatch
- Thermally stable up to 1400°C, which creates less risk of failures during application
- Easy to process:
 - Electrically conductive: EDM processability allows flexibility in cutting various geometries
 - Sizes larger than those of unsupported PCD: diameter - 35 mm, height - 35 mm
 - Does not require polishing of the bore to achieve the surface finish of the wire
 - Ability to be easily brazed or shrink fitted into casing
- Versatility: ferrous and non-ferrous wires
- Wear resistance comparable to that of PCD and corrosion resistance slightly better than that of PCD.



Microstructure

WEAR RESISTANCE TEST RESULTS



VERSIRION™ AND VERSIMAX™ PRODUCT OFFERING

GRADE	APPLICATIONS	AVERAGE GRAIN SIZE	
Versirion™ (VRW5)	<ul style="list-style-type: none"> - Low carbon steel - Tire cord - Aluminum - Copper with higher surface finish requirement 	Fine Grain Average 5 μm	
Versirion™ (VRW10)	<ul style="list-style-type: none"> - Low carbon steel - Coated steel - Aluminum - Copper with lower surface finish requirement 	Medium Grain Average 10 μm	
Versimax™	<ul style="list-style-type: none"> - Bunching - Stranding - Wear application - Compacting - High pressure - High temperature 	Coarse Grain Average 20 μm	

VERSIRION™ AND VERSIMAX™ BLANK SIZES

Versirion and Versimax wire die blanks are self-supported and do not have carbide support rings. Both are available in custom sizes and shapes and are prepared according to customer specifications.

Simple shapes (cylinders, rectangular, or triangular prisms, etc.) and more complicated geometries (conical shapes, hollow cylinders, negative features, etc.) can be produced.

Versimax can be attached to tungsten carbide or steel by furnace brazing. Tools can also be produced by press fitting, heat shrink fitting, adhesive bonding, or mechanical fixturing.

Contact your Hyperion account manager to review your application and determine the best fabrication method for your needs.

ADDMA No.	DIAMETER (mm)	THICKNESS (mm)	PARALLELISM 	PERPENDICULARITY 	ROUNDNESS
D6	3.1	1.0	0.08	0.13	0.05
D12	3.1	1.5	0.08	0.13	0.05
D15	5.2	2.5	0.08	0.25	0.05
D18	5.2	3.5	0.08	0.25	0.05
D21	7.0	4.0	0.08	0.25	0.05
D24	13.0	7.0	0.10	0.3	0.05
D27	13.0	8.7	0.10	0.3	0.05
D30	18.6	13.5	0.10	0.4	0.05
D33	18.6	15.5	0.10	0.5	0.05
D36	18.6	18.5	0.10	0.6	0.05
TM	23.0	15.0	0.10	0.38	0.05
TM	25.0	20.0	0.10	0.51	0.05
TM	30.0	22.0	0.10	0.56	7.6
TM	35.0	25.0	0.10	0.64	11.2

ADDMA = American Diamond Die Manufacturers Association

TM = Tailor-made

Unless otherwise specified all parts are cut with an EDM external hook for ADDMA ≤ D18 and with an internal hook for sizes ≥ D21.

