

TOOLMAKER SOLUTIONS

Compounds & Slurries



Superior diamond
slurries, suspensions,
and compounds

 **HYPERION**
Materials & Technologies

HYPERION COMPOUNDS, SLURRIES, AND SUSPENSIONS

QUALITY STARTS WITH THE DIAMOND IN THE FORMULATION

Hyperion Materials & Technologies is the leader in the manufacturing of diamond micron powders. Hyperion invented the process to make synthetic diamonds over 60 years ago, and we continue to develop new micron powders, compounds, slurries, and suspensions to solve our customers' needs.

Hyperion's micron powders (diamond and cubic boron nitride (CBN)) can be formulated into compounds, slurries, and suspensions. The information contained in this brochure will allow you to choose the best solution for your polishing needs. Hyperion defines our offerings as shown below:

COMPOUND = Powder (diamond or CBN) + Carrier (paste)

SLURRY = Powder (diamond or CBN) + Carrier (liquid)

SUSPENSION = Powder (diamond or CBN) + Carrier with Stabilizer (liquid)



HYPERION COMPOUND OVERVIEW

COMPOUND FORMULATIONS

COMPOUND IDENTIFICATION	COMPOUND FORMULATIONS (SOLUBILITIES)		RECOMMENDED USES
K700	Water soluble (WS products)	For use where exceptional cleaning is required and where petroleum contamination is prohibited. Specimen prep applications command this product.	Used in specimen preparation and cross section analysis
K210	Oil soluble (OS products)	Recommended for controlled lapping of carbide drawing dies, cold heading dies, and other polishing applications.	Primarily used in mold and die polishing
G400	Water/Oil soluble (WOS Products)	Complements the use of oil as well as water for achieving more productive results and facilitating cleaning.	Used where corrosion must be minimized but where oil cannot be tolerated

COMPOUND CONCENTRATIONS

LIGHT CONCENTRATION

MEDIUM CONCENTRATION

HEAVY CONCENTRATION

Finishing



Removal

COMPOUND DIAMOND SIZE



COMPOUND PACKAGING

SYRINGE/TUBE SIZES

5 gram

10 gram

18 gram

25 gram

50 gram

JAR SIZES

5 gram

25 gram

50 gram

100 gram

200 gram

Standard diamond sizes from 1/4 to 60 µm | Color coded for easy size recognition

HYPERION SLURRY/SUSPENSION OVERVIEW

SLURRY AND SUSPENSION FORMULATIONS

SLURRY/SUSPENSION IDENTIFICATION	SLURRY/SUSPENSION FORMULATIONS		SLURRY	SUSPENSION
K400	Oil-Based	Straight oil with petroleum base and additives	✓	
K285T	Water-Based	Straight water, for use where exceptional cleaning is required and where petroleum contamination is prohibited	✓	
K450, K1500	Water-/Oil-Based	Compliments the use of oil as well as water for achieving more productive results	✓	✓
LDP	Water-/Oil-Based	Diamond is dispersed in ultra-pure deionized water to eliminate agglomerates that can occur in submicron powders	✓	✓

DIAMOND POWDERS

DIAMOND POWDER GRADE	DESCRIPTION	SUGGESTED APPLICATION	INDUSTRY
SJK-5	Monocrystal diamond powder - used in slurries and suspensions	Lapping	- Aerospace - Ceramics
RJK-1	Multi-crystal diamond powder - more friable than a monocrystal	Lapping/Polishing	- Glass - Lenses - Optics
POLY	Polycrystalline diamond powder - available in sizes <10 microns (µm)	Polishing	- Sapphire - Semi-conductor
NATURAL	Natural diamond powder - available in a variety of sizes	Gem Polishing	- Silicon carbide - Tungsten carbide

SLURRY/SUSPENSION CONCENTRATIONS

LIGHT CONCENTRATION

MEDIUM CONCENTRATION

HEAVY CONCENTRATION



HYPERION SLURRY/SUSPENSION OVERVIEW

SLURRY/SUSPENSION DIAMOND SIZE



SLURRY/SUSPENSION PACKAGING

BOTTLE/BUCKET SIZES

125 mL

250 mL

500 mL

1,000 mL

1 gallon

5 gallon bucket

PUMP BOTTLE OR SPRAY BOTTLE SIZES

4 oz. pump bottle

8 oz. spray bottle

CUSTOM FORMULATIONS
AVAILABLE TO MEET
YOUR REQUIREMENTS

HOW TO SELECT THE SOLUTION FOR YOUR NEED - 5 CRITERIA MUST BE KNOWN

When selecting a Hyperion compound, slurry, or suspension, 5 criteria must be known:

1 - DIAMOND TYPE

Determine what type of diamond is needed in the application:

- SJK-5 (most popular diamond type used in compounds)
- RJK-1
- NAT
- Also available in cubic boron nitride (CBN) grades

2 - DIAMOND SIZE

Example: 8-16 microns

3 - DIAMOND CONCENTRATION (how much diamond is needed in the formulation?)

- L = Light concentration
- M = Medium concentration
- H = Heavy concentration (used for maximum stock removal)

4 - FORMULATION

COMPOUND

OS = oil-based formula (K210)

WS = water-based formula (K700)

WOS = water-/oil-based (also called universal, G400)

SLURRY/SUSPENSION

K400 = oil-based formula

K285T = water-based formula

K450, K1500 = water-/oil-based

LDP = liquid diamond powder

5 - CONTAINER TYPE AND SIZE

COMPOUND

- | Syringe: | Jar: |
|----------|----------|
| • 5 gm | • 5 gm |
| • 10 gm | • 25 gm |
| • 18 gm | • 50 gm |
| • 25 gm | • 100 gm |
| • 50 gm | • 200 gm |

SLURRY/SUSPENSION

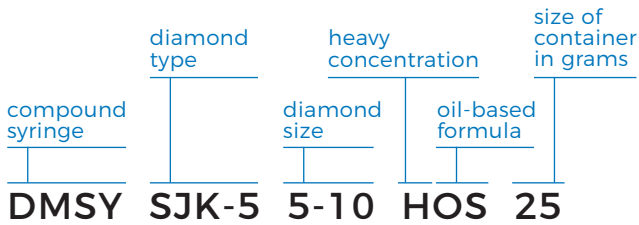
- | DMS: | DMT: |
|-------------------|----------------------|
| • 125 mL | • 4 oz. pump bottle |
| • 250 mL | • 8 oz. spray bottle |
| • 500 mL | |
| • 1,000 mL | |
| • 1 gallon | |
| • 5 gallon bucket | |



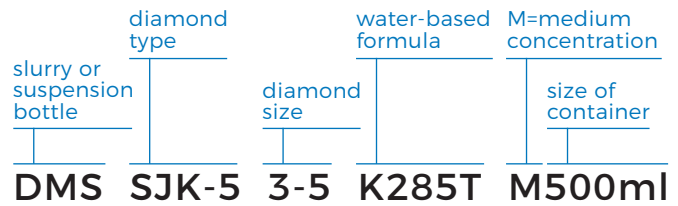
OTHER SIZES ARE AVAILABLE TO MEET YOUR NEEDS

HOW TO DECODE HYPERION'S NOMENCLATURE

COMPOUND SAMPLE



SLURRY SAMPLE



APPLICATIONS FOR COMPOUNDS, SLURRIES, AND SUSPENSIONS

Hyperion Materials & Technologies' compounds, slurries, and suspensions are used to lap, polish, and super-finish:

- Ceramics
- Electro-optics
- Semiconductors
- Metalwork
- Hard disk drives
- Metallurgical

Our compounds, slurries, and suspensions are also used in the following:

MOLD AND DIE POLISHING

- Mold and die shops
- Polishing houses
- Injection molding facilities

SPECIMEN PREPARATION

- Metallurgical manufacturers
- Universities
- R&D laboratories

GENERAL POLISHING

- Ball valves
- Wire dies
- Stone polishers

POLISHING IS AN ART

There are many ways to achieve the desired results. Although techniques vary, using a consistent, high quality diamond paste ensures consistent results.

FUNDAMENTAL RULES OF POLISHING

- 1 - Keep polishing area clean.
- 2 - Dedicate a polishing tool for **each** grade size. Each tool should be stored in a separate container.
- 3 - Polishing tools gradually become impregnated and **improve** with use.
- 4 - Clean hands and workpiece carefully **between** grades.
- 5 - Apply diamond paste to tool when manual polishing. Apply paste to workpiece when machine polishing.
- 6 - Polish existing scratch marks at a **90-degree angle**. This helps increase stock removal and shows when old marks are gone.
- 7 - High material removal requires high pressure and coarse grits. Finish polishing requires low pressure and finest grits.

TROUBLESHOOTING TIPS

SCRATCHING

- Contamination in tooling
- Work area and/or workpiece not thoroughly cleaned from previous grade size (grit)

WAVINESS

- Too big of a jump between grade sizes (grit)
- Uneven pressure on polishing tool

PITTING

- Slag inclusions in steel
- Pressure too high on polishing tool

ORANGE PEEL

- Over polishing with machine results in overheating a small area
- Reduce pressure for softer steels.

