

DIAMOND POWDER

Products Guide

TOMEI DIAMOND

Products Guide

<http://www.tomeidiamond.co.jp>

TOMEI DIAMOND CO., LTD.

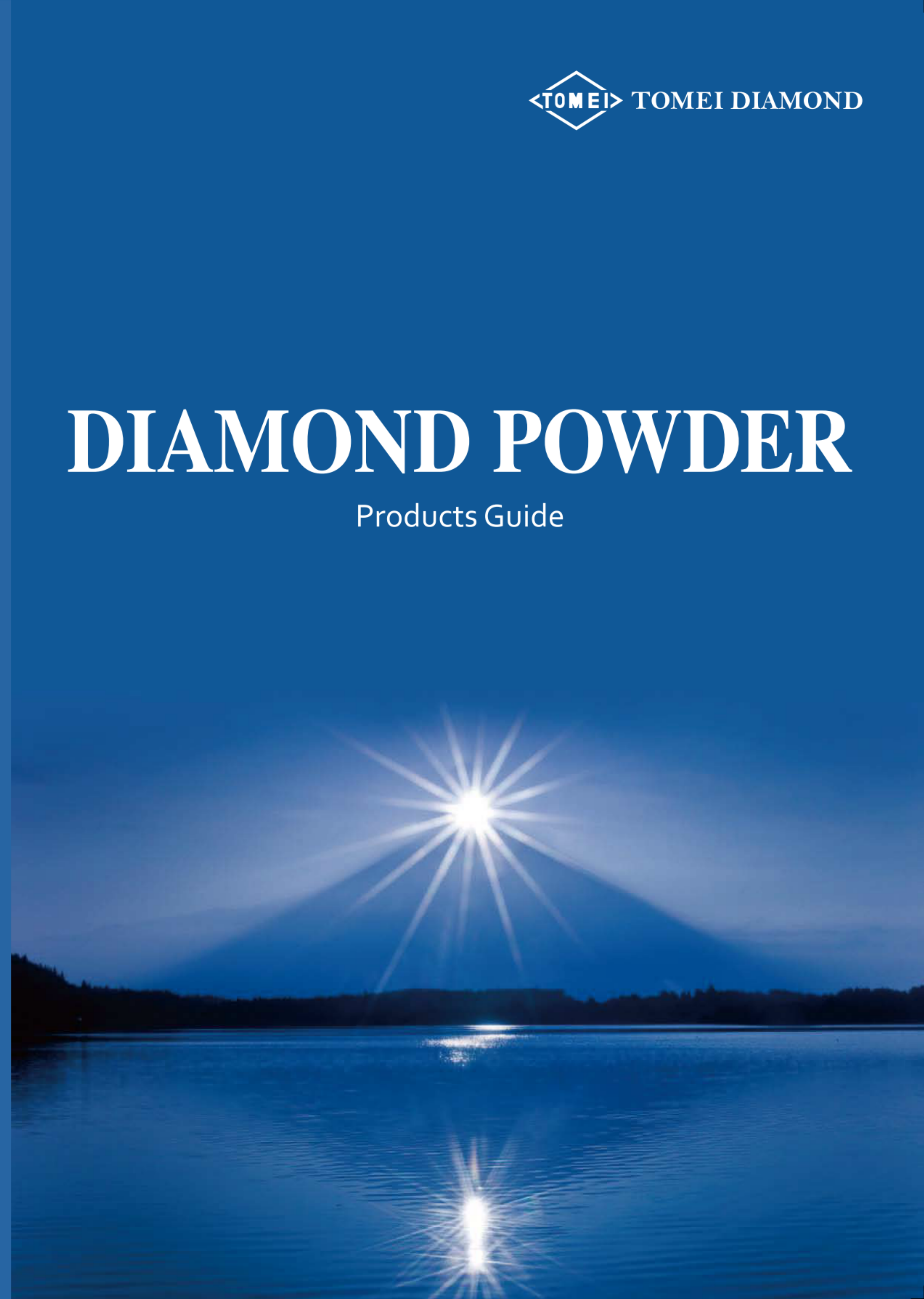
Sales department

Tel.(+81)3-3585-7981 Fax.(+81)3-3585-3282

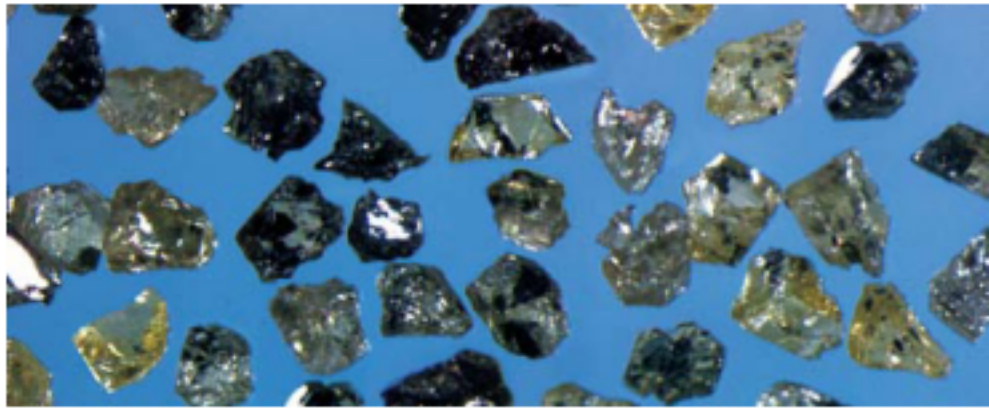
tomeidiamond@nifty.com

Oyama plant

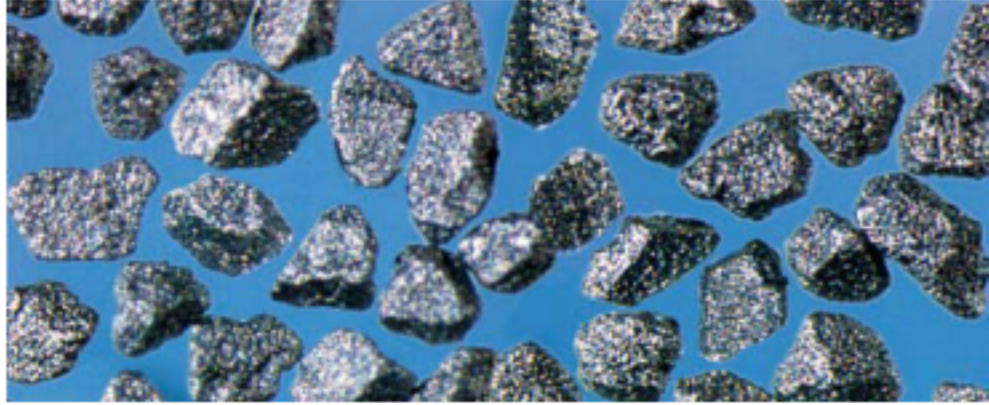
Tel.(+81)285-22-5821 Fax.(+81)285-22-5827



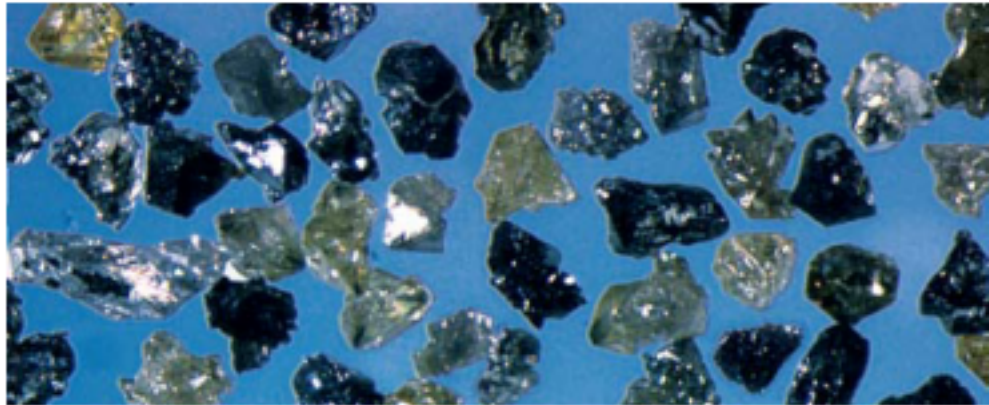
| | |
|----------|--|
| IRV | A diamond abrasive for resin bond uses, with specifically controlled physical properties. The unique surface irregularity with minute projections and the optimized friability secure both good bond retention and long wheel life, enabling an easy cutting process. Suitable for the grinding of carbide alloys and other hard non-ferrous metals. |
| IRV-NP | An IRV-based abrasive, coated with 55% nickel by weight. |
| IRV-NEP | An IRV-based abrasive coated with 55 % nickel by weight. The coating has a unique surface with enhanced irregularity by a special technique, so as to achieve an outstanding retention to the bond. Suitable for wheels with either wet-grinding or heat-resistant resin bond. |
| IRV-CPS | An IRV-based abrasive, coated with 50% copper base alloy by weight. The coating efficiently dissipates the heat and reduces the heat load to the bond and diamond, and secures good grit retention during the grinding. Suitable for uses in dry grinding with resin bonded wheels. |
| IRV-3 | The porous grit structure with high specific surface area of this abrasive increases the friability over IRV and enhances continual generation of sharp edges. Suitable for grinding of carbide alloys, cermet and other tough work materials. Also characterized with moderate grinding force and very fine surface finish. |
| IRV-3NP | An IRV-3 based abrasive, coated with 56% nickel by weight. The coating has a special surface irregularity for securing an outstanding retention to the bond. |
| IRV-3NEP | An IRV-3 based abrasive, coated with 56% nickel by weight. The coating has a unique surface irregularity for securing good retention to the bond. |
| IRV-3CPS | An IRV-3 based abrasive, coated with 50% copper base alloy by weight. The coating has a unique surface irregularity for securing good retention to the bond. |
| IDS-NP | An abrasive best adapted to the grinding of combined carbide/steel works. Characterized with an outstanding retention to the bond and a friability specifically adjusted for steel grinding. This abrasive is also available for grinding sole carbide alloys, with least wheel consumption. |



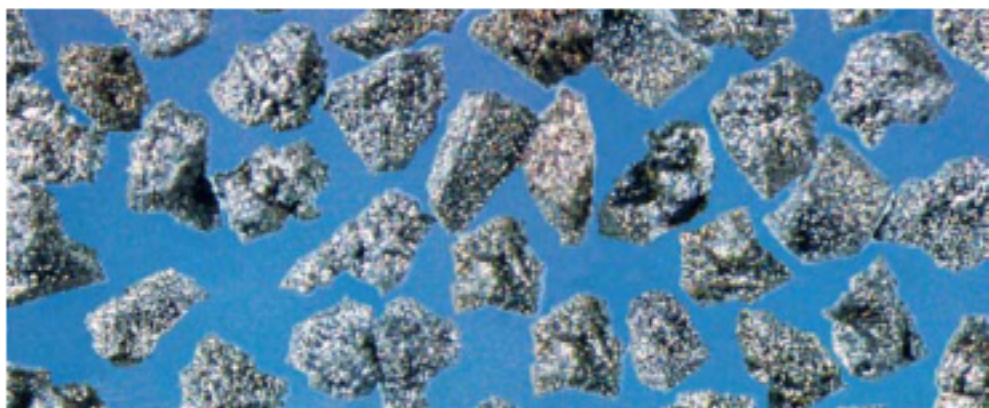
IRV



IRV-NP



IRV-3

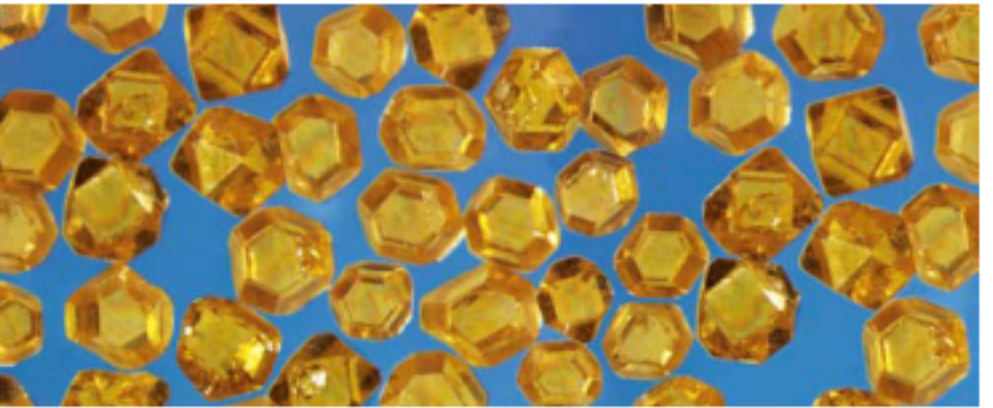


IRV-3NEP

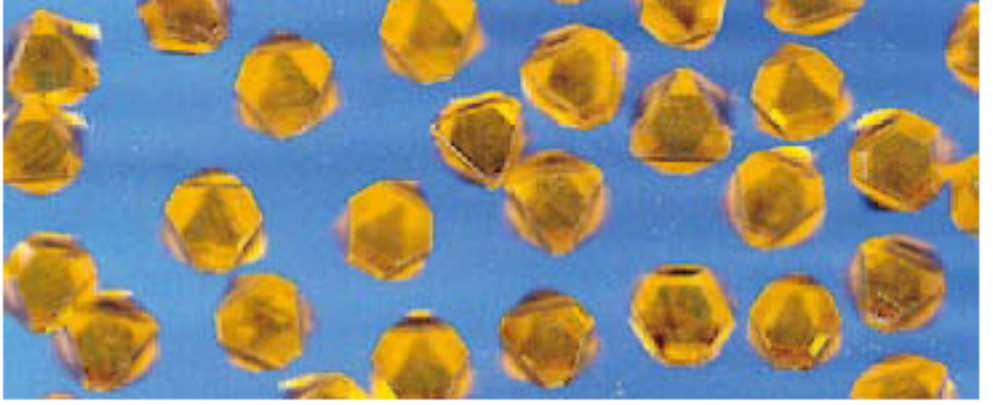


IRV-3CPS

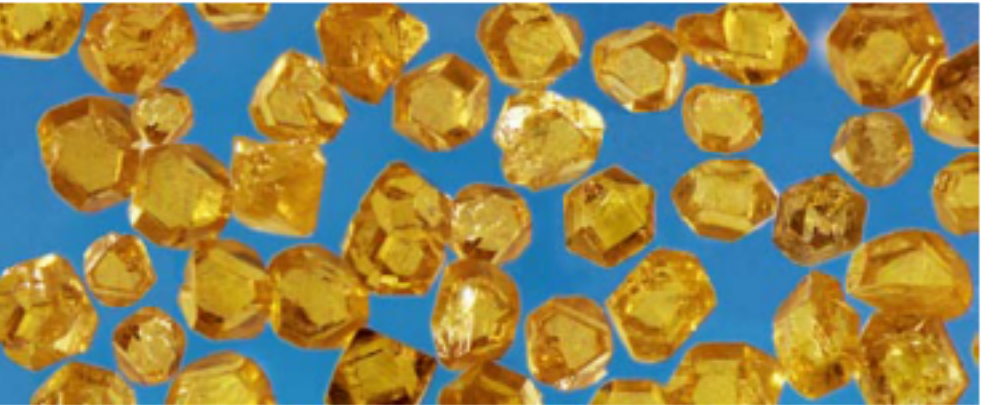
| | |
|--------------------------------------|--|
| IMS-10 IMS-15 IMS-20 IMS-25 | Consisting of mainly cubo-octahedral single diamond crystals, the four grades have a strength that is the highest in all IMS abrasives and well persists at elevated temperatures. Suitable for wire saws, large blades, core drills etc. for the cutting or drilling of reinforced concrete, asphalt, granite and other hard works. |
| IMS-H | Moderate friability among the IMS series abrasives. This is suitable for cutting a wide range of works, including stones and various construction materials. |
| IMS | An abrasive with somewhat increased friability over IMS-H. This is suitable for dry cutting of works such as bricks and ceramic tiles. |
| TMS | An abrasive with both high toughness and heat resistance. Sizes are available from 30/40 down to 325/400 mesh/in. |
| TED-2 | An abrasive, specifically adapted to electroplated tool applications, with optimized friability and grit shape, further surface-modified so as to suppress nodule occurrence and improve wettability to molten metal. |
| TED-S | A TED-2 variation, with a blockier shape to give a less fluctuation in protrusion height of the grits as electroplated. Also surface-modified and demagnetized so as to suppress nodule occurrence. |
| IMS-E | An IMS-based abrasive with increased strength and toughness, specifically adapted to electroplated tool applications. Having highly blocky shapes this grit is suitable for uses that require a large grit projection height over the bond surface. |
| TMS-E | A TMS-based abrasive, surface treated so as to add to the basic characteristics adaptability to electroplating. |
| IMG | An abrasive with a coordination of rather blocky grit shape and moderate friability. Suitable, either metal or vitrified bonded, to a wide range of uses from glass and ceramic grinding to masonry polishing. |



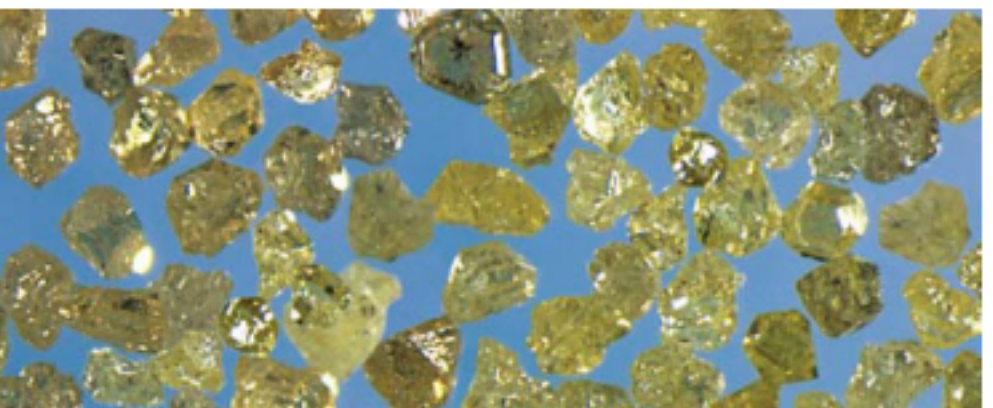
IMS-15



TMS



IMS



TED-2



IMG

*Note: We are also offering titanium coated mesh size products.
Please contact us for the sizes available and more information.*

| Vitrified Bond Application | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------|-----|--------|---------|---------|-------|---------|----------|----------|--------|---------|--|-----|-----|--------|--------|--------|--------|-------|-----|-------|-------|-------|---------|
| Resin Bond Application | | | | | | | | | | | | | | | | | | | | | | | |
| Size | IRV | IRV-NP | IRV-NEP | IRV-CPS | IRV-3 | IRV-3NP | IRV-3NEP | IRV-3CPS | IDS-NP | Size | | IMG | TMS | IMS-10 | IMS-15 | IMS-20 | IMS-25 | IMS-H | IMS | IMS-E | TED-2 | TED-S | Size |
| 30/40 | | | | | | | | | | 30/40 | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 30/40 |
| 35/40 | | | | | | | | | | 35/40 | | | ○ | ○ | ○ | | ○ | ○ | ○ | ○ | | | 35/40 |
| 35/45 | | | | | | | | | | 35/45 | | | ○ | ○ | ○ | | ○ | ○ | ○ | ○ | | | 35/45 |
| 40/50 | | | | | | | | | | 40/50 | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 40/50 |
| 50/60 | | | | | | | | | | 50/60 | | ○ | ○ | ○ | ○ | ○ | | ○ | ○ | ○ | ○ | ○ | 50/60 |
| 60/70 | | | | | ○ | ○ | | ○ | | 60/70 | | ○ | ○ | | | | ○ | ○ | ○ | ○ | ○ | ○ | 60/70 |
| 60/80 | | | | | ○ | ○ | ○ | ○ | ○ | 60/80 | | ○ | ○ | ○ | | | ○ | ○ | ○ | ○ | ○ | ○ | 60/80 |
| 70/80 | | | | | ○ | ○ | | ○ | | 70/80 | | ○ | ○ | | | | ○ | ○ | ○ | ○ | | ○ | 70/80 |
| 80/100 | | | | | ○ | ○ | ○ | ○ | ○ | 80/100 | | ○ | ○ | | | | | ○ | ○ | ○ | ○ | ○ | 80/100 |
| 100/120 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | 100/120 | | ○ | ○ | | | | | ○ | ○ | ○ | ○ | ○ | 100/120 |
| 120/140 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | 120/140 | | ○ | ○ | | | | | | ○ | ○ | ○ | ○ | 120/140 |
| 140/170 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | 140/170 | | ○ | ○ | | | | | | ○ | ○ | ○ | ○ | 140/170 |
| 170/200 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | 170/200 | | ○ | ○ | | | | | | ○ | ○ | ○ | ○ | 170/200 |
| 200/230 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | 200/230 | | ○ | ○ | | | | | | ○ | ○ | ○ | ○ | 200/230 |
| 230/270 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | 230/270 | | ○ | ○ | | | | | | ○ | ○ | ○ | ○ | 230/270 |
| 270/325 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | 270/325 | | ○ | ○ | | | | | | ○ | ○ | ○ | ○ | 270/325 |
| 325/400 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | 325/400 | | ○ | ○ | | | | | | ○ | ○ | ○ | ○ | 325/400 |
| 400/500 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | 400/500 | | ○ | | | | | | | ○ | ○ | ○ | ○ | 400/500 |

Micron Sizes

As world’s pioneer in the production of micrometer size abrasives, Tomei Diamond has established standardized and consistent process and techniques for the production.

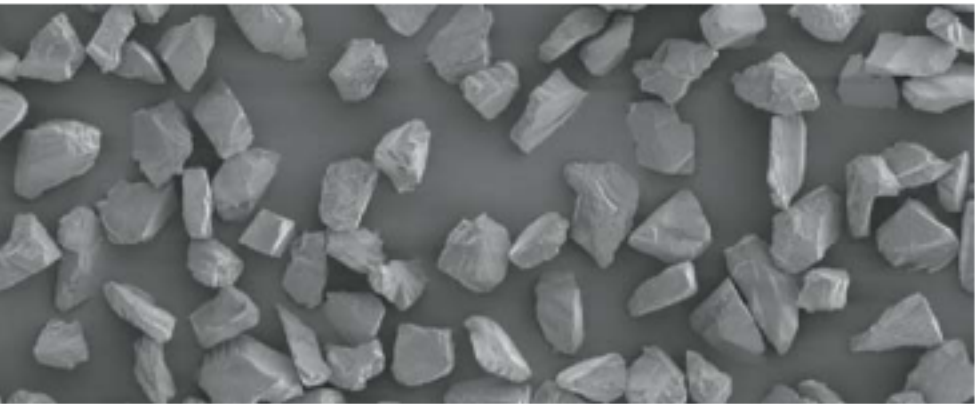
The grits are characterized with uniform grit shapes, closely controlled particle size distribution, good heat resistance, and consistent and stable quality with minimized fluctuation over the lots.

The micron sizes are abrasives adapted for the precision polishing of a wide range of work materials, including gem stones such as ruby and sapphire, dies of carbide alloy, optical lenses etc. There are also new applications that include high precision cutting and polishing of ferrite, fine ceramics, and many others, as contained in a dicing saw or in diamond slurry.

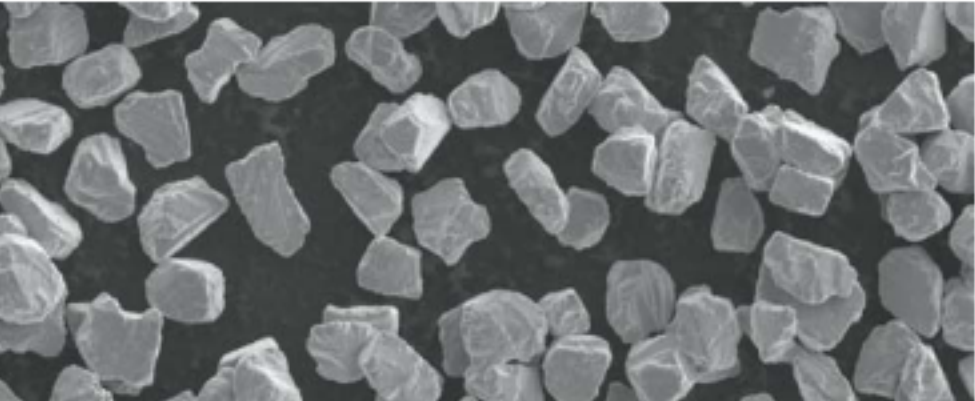
MICRON SIZE DIAMOND POWDER (Highly size-defined minute products)

| Designation | Guideline Particle Size (μm) | IRM | IMM-H | IRM-F | IRM-NP | | IMM-HNP | | IRM-CPS | TED-M2 | IMM-HE |
|-------------|------------------------------|-----|-------|-------|--------|-----|---------|-----|---------|--------|--------|
| | | | | | 30% | 55% | 30% | 55% | 50% | | |
| 0-1/4 | 0.2 | ○ | | | | | | | | | |
| 0-1/2 | 0.4 | ○ | | | | | | | | | |
| 0-1 | 0.6 | ○ | | | | | | | | | |
| 0-1.5 | 0.8 | ○ | | | | | | | | | |
| 0-2 | 0.9 | ○ | | | | | | | | | |
| 1/2-1.5 | 1.0 | ○ | | | | | | | | | |
| 1/2-2 | 1.2 | ○ | | | | | | | | | |
| 0-3 | 1.4 | ○ | | | | | | | | | |
| 1-2 | 1.5 | ○ | | | | | | | | | |
| 1/2-3 | 1.6 | ○ | | | | | | | | | |
| 2-3 | 1.9 | ○ | ○ | | | | | | | | |
| 2-4 | 2.4 | ○ | ○ | ○ | | | | | | | |
| 2-6 | 2.8 | ○ | ○ | ○ | | | | | | | |
| 4-6 | 3.5 | ○ | ○ | ○ | | | | | | | |
| 3-8 | 4.3 | ○ | ○ | ○ | | | | | | | |
| 4-8 | 4.9 | ○ | ○ | ○ | | | | | | | |
| 5-10 | 5.6 | ○ | ○ | ○ | | | | | | | |
| 5-12 | 6.5 | ○ | ○ | ○ | ○ | | ○ | | | | ○ |
| 6-12 | 7.5 | ○ | ○ | ○ | ○ | | ○ | | | ○ | ○ |
| 8-16 | 9.2 | ○ | ○ | ○ | ○ | | ○ | | | ○ | ○ |
| 8-20 | 11.6 | ○ | ○ | ○ | ○ | | ○ | | | ○ | ○ |
| 10-20 | 13.4 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | ○ | ○ |
| 12-25 | 16.0 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 20-30 | 20.6 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 20-40 | 24.6 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 30-40 | 26.8 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 40-60 | 34.4 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 50-70 | 40.0 | | ○ | | | | ○ | ○ | | | ○ |

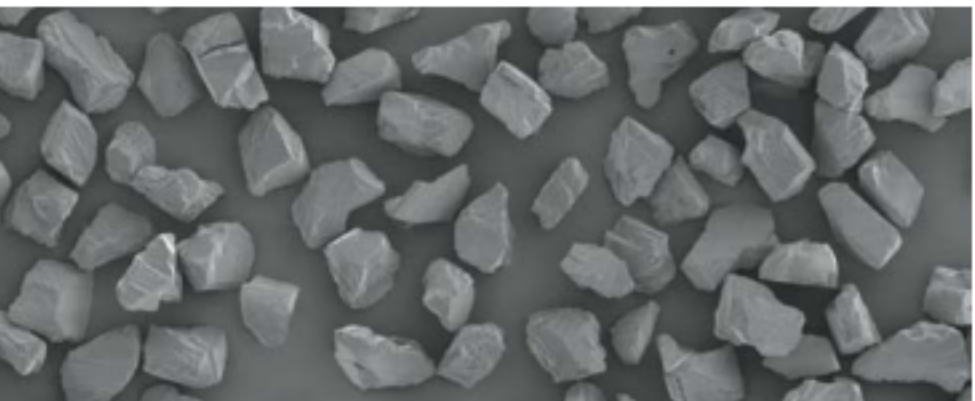
| | |
|---------|---|
| IRM | With characteristics adapted to various uses as a loose powder, paste or slurry, or in a pellet, dicing saw, etc., this abrasive has established a long tradition of customer satisfaction. The use with a resin bond further improves its performance in diamond wheel applications. |
| IRM-NP | An IRM-based abrasive, with a coating of either 30 or 55 % nickel by weight; suitable for wet grinding or polishing. |
| IRM-CPS | An IRM-based abrasive, with a coating of 50 % copper base alloy by weight; suitable for dry grinding or polishing. |
| IMM-H | An abrasive identical to IRM in grit shape and particle size distribution, but higher in strength. As used in a wheel, this abrasive performs better with metal bond. |
| IMM-HNP | An IMM-H-based abrasive, with a coating of 30 % nickel by weight; suitable for dry grinding or polishing. |
| IMM-HE | An IMM-H-based abrasive, surface treated so as to add to the basic characteristics adaptability to electroplating. |
| IRM-F | An abrasives identical to IRM in grit shape and particle size distribution, but size-sorted at a higher precision. Suitable for precision polishing of electronic and optical part materials. |
| TED-M2 | A micron-sized abrasive for electroplated applications, with properties identical to TED-2. |
| HM | An IRM-based and surface-treated abrasive, with characteristic good capability of self-sharpening by micro-cracking. High cutting performance maintains with least deep scratches left. |



IRM



IRM-NP



IMM-H

Note:
Some products with certain particle sizes will be manufactured after receiving the order.
We are also offering titanium coated micron size products. Please contact us for the sizes available and more information.

Nanometer size diamonds

MD series are a nanometer size single crystalline diamond that is produced by the well-established size grading technique of Tomei's own. The sizes are available in steps at a D50 median difference of 50 nm.

PM series are a surface treated MD modification that is especially adapted to uses as diamond slurry for various precision machining of HDD disks, GMR, TMR and PMR heads for example.

*MD sizes are available on order basis from MD 1000, with a D50 median particle size of 1000 nm.
*PM series size designations refer to that of corresponding base MD sizes. So "PM 50" is an MD product as PM-treated for example.

MD and PM series specification

| Designation | D50 median size (nm) |
|-------------|----------------------|
| MD, PM50 | 40~64 |
| MD, PM80 | 65~89 |
| MD, PM100 | 90~129 |
| MD, PM150 | 130~179 |
| MD, PM200 | 180~229 |
| MD, PM250 | 230~279 |
| MD, PM300 | 280~329 |
| MD, PM350 | 330~379 |
| MD, PM400 | 380~429 |
| MD, PM450 | 430~479 |
| MD, PM500 | 480~529 |

Correlation of TOMEI Particle Size Designations to Size Numbers

