

# Material properties



|                                      | Units             | ALUMINA                              |                                       |                             |                            |                            |                         | ZIRCONIA                      |                               |                  |                  |
|--------------------------------------|-------------------|--------------------------------------|---------------------------------------|-----------------------------|----------------------------|----------------------------|-------------------------|-------------------------------|-------------------------------|------------------|------------------|
|                                      |                   | Al <sub>2</sub> O <sub>3</sub> 99.7% | Al <sub>2</sub> O <sub>3</sub> 99.99% | Polycrystalline Ruby        | Zirconia Toughened Alumina | Zirconia Toughened Alumina | Zirconia Toughened Ruby | Zirconia ZrO <sub>2</sub> -3Y | Zirconia ZrO <sub>2</sub> -3Y | Zirconia Alumina | Zirconia Alumina |
| SPT Denomination                     |                   | A                                    | C                                     | R                           | CT                         | AZ                         | AZR                     | Z                             | ZBL                           | ZF               | AZO              |
| Density                              | g/cm <sup>3</sup> | 3.9                                  | 3.98                                  | 3.9                         | 4.0                        | 4.25                       | 4.25                    | 6.0                           | 6.0                           | 6.0              | 5.5              |
| Color                                |                   | Ivory                                | White (translucent available)         | Red (translucent available) | White                      | White                      | Pink                    | Ivory                         | Black                         | White            | White            |
| Flexural Strength Typical (4 Points) | MPa               | 310                                  | 710 1021 (3 Points)                   | 710                         | 750                        | 930                        | 930                     | 1'350                         | 1'350                         | 1'400            | 2'000            |
| Hardness                             | HV 1              | 1'800                                | 2'180                                 | 2'200                       | 2'150                      | 2'060                      | 2'100                   | 1'300                         | 1'300                         | 1'300            | 1'500            |
| Grain Size                           | µm                | < 3                                  | < 1                                   | < 2                         | < 1.5                      | < 0.9                      | < 0.9                   | < 0.6                         | < 0.6                         | < 0.6            | < 0.5            |
| Thermal Conductivity                 | W/mK              | 30                                   | 30                                    | 30                          | 30                         | 27                         | 27                      | 2                             | 2                             | 2                | 6                |

SPT makes no guarantees regarding outcomes and does not warrant that materials are suitable for any specific purpose. It is the user's responsibility to select and test materials for their intended use.

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