

Properties and chemical composition of Mica Grade V1

Grade Classification of Muscovite Mica

| PHYSICAL PROPERTIES OF MICA GRADE V1 | | |
|---|--|--|
| | Unit | |
| Characteristic Colour | | Muscovite Ruby / Green |
| Density | gm/cm ³ lb/in ³ | 2.6 - 3.2 0.095-0.116 |
| Specific Heat | | 0.21 |
| Hardness | Moh Scale Shore Test | 2.8 - 3.2 80 - 105 |
| Optic Axial Angle | | 55 - 75 |
| Tensile Strength | kgf/cm ² lbf/in ² | about 1750 about 25000 |
| Shear Strength | kgf/cm ² lbf/in ² | 2200 - 2700 31000 - 38000 |
| Compression Strength | kgf/cm ² lbf/in ² | 1900 - 2850 27000 - 32000 |
| Modulus of Elasticity | kgf/cm ² x 10 ⁻³ lbf/in ² X 10 ⁻⁶ | 1400 - 2100 20 - 30 |
| Coefficient of expansion per °C perpendicular to cleavage plane | | 9 X 10 ⁻⁶ - 36 X 10 ⁻⁶ |
| Calcining Temperature | C F | 700 - 800 1290 - 1470 |
| Maximum operating temperature | C F | 500 - 600 930 - 1110 |
| Thermal conductivity | | |
| Perpendicular to cleavage planes | Gm.cal/sec/cm ² /C/cm BTU/hr/ft ² /Of/ft | about 0.0013 about 0.31 |
| Parallel to cleavage planes | Gm.cal/sec/cm ² /C/cm BTU/hr/ft ² /Of/ft | |
| Water of constitution % | | 4.5 |
| Moisture absorption | | Very low |
| Apparent electric strength | 0.001" to 0.003" KV/mm thick Volts per 0.001" | 120 - 200 3000 - 5000 |
| R.M.S. at 15° C (60°F) | 0.01" to 0.05" KV/mm thick Volts per 0.001" | 40 - 80 1000 - 2000 |
| Permittivity at 15°C(60°F) | | 7-Jun |
| Power Factor (loss tangent) | @ 15° C (60° F) | 0.0001 - 0.0004 |
| Volume Resistivity | 25° C (77° F) ohm cm | 40 x 10 ¹³ -2 x 10 ¹⁷ |
| Acid reaction | | Affected by Hydrofluoric Acid |

CHEMICAL COMPOSITION OF MICA V1

| | |
|--|--------|
| Silica (SiO ₂) | 45.57% |
| Alumina (Al ₂ O ₃) | 33.10% |
| Potassium Oxide (K ₂ O) | 9.87% |
| Ferric Oxide (Fe ₂ O ₃) | 2.48% |
| Sodium Oxide (Na ₂ O) | 0.62% |
| Titanium Oxide (TiO ₂) | Traces |
| Calcium Oxide (CaO) | 0.21% |
| Magnesia (MgO) | 0.38% |
| Moisture at 100°C | 0.25% |
| Phosphorus (P) | 0.03% |
| Sulphur (S) | 0.01% |
| Graphite Carbon (C) | 0.44% |
| Loss on Ignition (H ₂ O) | 2.74% |

QUALITY CLASSIFICATION OF MUSCOVITE MICA BASED ON VISUAL PROPERTIES

| | V-1 Clear Highest Quality | V-2 Clear and Slightly Stained | V-3 Fair Stained | V-4 Good Stained | V-5 Stained A Quality | V-6 Stained B Quality | V-7 Heavy Stained | V-7A Densely Stained | V-8 Black Dotted | V-9 Black spotted | V-10 Black Stained | V-10A Densely Black & Red Stained |
|---------------------------------------|------------------------------------|---|------------------------|------------------------|-----------------------------|-----------------------------|-------------------------|----------------------------|------------------------|-------------------------|--------------------------|--|
| Crystallographic Discoloration | X | *d | *d | *d | * | * | * | * | * | * | * | * |
| Very Slight | X | * | * | * | * | * | * | * | * | * | * | * |
| Slight | X | X | * | * | * | * | * | * | * | * | * | * |
| Medium | X | X | X | *e | *f | * | * | * | * | * | * | * |
| Heavy | X | X | X | X | X | * | * | * | * | * | * | * |
| Cloudy Stains | X | X | X | X | X | X | *g | *h | * | * | * | * |
| Light Black and Red Dots (Mineral) | X | X | X | X | X | *d | *d | *h | * | * | * | * |
| Black Stains (Mineral) | X | X | X | X | X | X | X | *g | X | *d | *g | *h |
| Red Stains (Mineral) | X | X | X | X | X | X | X | *g | X | X | *d | * |
| Black and Red Stains (Mineral) | X | X | X | X | X | X | X | X | X | X | X | * |
| Green Stains (Vegetable Type) | X | X | X | X | *d | *g | *g | * | * | * | * | * |
| Clay Stains | X | X | X | X | X | *d | *g | * | X | X | *d | *d |
| Nearly Flat | * | * | * | * | * | * | * | * | * | * | * | * |
| Slight | X | X | * | * | * | * | * | * | * | * | * | * |
| Medium | X | X | X | * | * | * | * | * | * | * | * | * |
| Heavy | X | X | X | X | X | * | * | * | X | X | X | * |
| Hard | * | * | * | * | * | * | * | * | * | * | * | * |
| Soft | X | X | X | X | X | X | X | * | X | X | X | S |
| Stones and Holes | X | X | X | X | X | X | X | X | X | X | X | X |
| Buckles | X | X | X | X | X | X | S | *g | X | X | X | X |
| Reeves | X | X | X | X | X | X | X | X | X | X | X | X |
| Ridges | X | X | X | X | X | X | S | *g | X | X | X | X |
| Tears | X | X | X | X | X | X | X | X | X | X | X | X |
| Cracks | X | X | X | X | X | X | X | X | X | X | X | X |
| Hairline Cracks | X | X | X | X | X | X | X | X | X | X | X | X |
| Wedge | X | X | X | X | X | X | X | X | X | X | X | X |
| Tangle Sheet | X | X | X | X | X | X | X | X | X | X | X | X |
| Herringbones | X | X | X | X | X | X | X | * | X | X | X | X |
| Sand Blast | X | X | X | X | X | X | S | * | X | * | * | * |

Symbols

| | |
|------------------------------------|---|
| Permissable | * |
| Not Permissable | X |
| Permissable Only If Specified | S |
| Few And Tiny In 1/4 Of Usable Area | a |
| In 1/2 Of Usable Area | b |
| Very Dense | c |
| Slight | d |
| In 2/3 Of Usable Area | e |
| Uniformly Distributed | f |
| Medium | g |
| Heavy | h |