



MP SERIES CRYSTAL w/ SPACER

MATERIAL CONTENT DECLARATION REPORT

CTS Electronic Components follows the Joint Industry Guidelines (JIG) industry consortia recommendations as defined in controlling document JIG-101 for “Green Compliance” Level A and Level B material content restrictions and standardized reporting.

RoHS COMPLIANT YES
 RoHS EXEMPTIONS NO

| Level A – Restricted Material/Substance | Material/Substance Category intentionally added or present (Y/N) above threshold level | If Yes, Material Substance Mass (g/PPM) | If Yes, Detailed Material Substance Information |
|--|--|---|---|
| Asbestos | N | | |
| Azo colorants ¹ | N | | |
| Cadmium/Cadmium compounds ² | N | | |
| Hexavalent Chromium / Hexavalent Chromium Compounds ² | N | | |
| Lead / Lead Compounds ² | N | | |
| Mercury / Mercury Compounds ² | N | | |
| Ozone Depleting Substances (CFCs, HCFCs, HBFCs, carbon tetrachloride, etc) | N | | |
| Polybrominated Biphenyls (PBBs) ² | N | | |
| Polybrominated Diphenylethers (PBDEs) ² | N | | |
| Polychlorinated Biphenyls (PCBs) | N | | |
| Polychlorinated Naphthalenes (more than 3 chlorine atoms) | N | | |
| Radioactive Substances | N | | |
| Shortchain Chlorinated Paraffins | N | | |
| Tributyl Tin (TBT) and Triphenyl Tin (TPT) | N | | |
| Tributyl Tin Oxide (TBTO) | N | | |

(1) Applicable to products and subparts that may come into direct contact with human skin.
 (2) Reported substances per EU RoHS Directive 2002/95/EC.

| Level B – Reported Material/Substance | Material/Substance Category intentionally added or present (Y/N) above threshold level | If Yes, Material Substance Mass (g/PPM) | If Yes, Detailed Material Substance Information |
|--|--|---|---|
| Antimony/Antimony Compounds | N | | |
| Arsenic/Arsenic Compounds | N | | |
| Beryllium/Beryllium Compounds | N | | |
| Bismuth/ Bismuth Compounds | N | | |
| Brominated Flame Retardants (other than PBBs or PBDEs) | N | | |
| Nickel/Nickel Compounds (external applications only) | N | | |
| Phthalates | N | | |
| Selenium/Selenium Compounds | N | | |
| Polyvinyl Chloride (PVC) | N | | |



| ELEMENTAL ANALYSIS | | | | | | | | |
|--|--|--------------------------------------|------------------------------|--------------------------------|-----------------|------------------------|-------------------------------------|--|
| MP SERIES CRYSTAL w/ SPACER | | RoHS/Green Compliant (6/6) | | WEIGHT (mg) 997.9600 | | MSL RATING 1 | MAX REFLOW 260°C | e1 |
| PRODUCT BREAKDOWN | MATERIAL | CAS NUMBER | WEIGHT OF BOM ITEM (g) | % BY WEIGHT (Comp. Item) | mg/UNIT | % BY WEIGHT OF UNIT | REMARKS/SOURCE OF INFORMATION | |
| Package | | | | | | | | |
| Metal Base | S (sulphur) C1010 cold rolled steel | 7704-34-9 | 0.185300 | 0.05% | 0.0927 | 0.01% | Machinery's Handbook | |
| | C (carbon) C1010 cold rolled steel | 7440-44-0 | | 0.13% | 0.2409 | 0.02% | | |
| | Mn (manganese) C1010 cold rolled steel | 7439-96-5 | | 0.60% | 1.1118 | 0.11% | | |
| | P (phosphorus) C1010 cold rolled steel | 7723-14-0 | | 0.04% | 0.0741 | 0.01% | | |
| | Fe (iron) C1010 cold rolled steel | 7439-89-6 | | 99.00% | 183.4470 | 18.38% | | |
| | Ni plate (nickel) C1010 cold rolled steel | 7440-02-0 | | 0.18% | 0.3335 | 0.03% | | |
| | | | | 100.00% | 185.3000 | | | |
| Lead Pin | Fe (iron) kovar pin, base material | 7439-89-6 | 0.200000 | 53.00% | 106.0000 | 10.62% | Kester EM 907 (Sn96.5Ag3.0Cu0.5) | |
| | Ni (nickel) kovar pin, base material | 7440-02-0 | | 29.00% | 58.0000 | 5.81% | | |
| | Co (cobalt) kovar pin, base material | 7440-48-4 | | 17.00% | 34.0000 | 3.41% | | |
| | Ni plate (nickel) kovar pin, base plating | 7440-02-0 | | 0.33% | 0.6600 | 0.07% | | |
| | Sn (tin) kovar pin, finish plating | 7440-31-5 | | 0.40% | 0.8000 | 0.08% | | |
| | Ag (silver) kovar pin, finish plating | 7440-22-4 | | 0.20% | 0.4000 | 0.04% | | |
| | Cu (copper) kovar pin, finish plating | 7440-50-8 | | 0.07% | 0.1400 | 0.01% | | |
| | | | | 100.00% | 200.0000 | | | |
| Glass Seal | Al ₂ O ₃ (aluminium trioxide) | 1344-28-1 | 0.025000 | 9.00% | 2.2500 | 0.23% | | |
| | B ₂ O ₃ (boron trioxide) | 1303-86-2 | | 70.00% | 17.5000 | 1.75% | | |
| | SiO ₂ (silicon dioxide) | 14808-60-7 | | 21.00% | 5.2500 | 0.53% | | |
| | | | | 100.00% | 25.0000 | | | |
| Spacer | PPS (Poly Phenylene Sulfide, C ₆ H ₄ S) | - | | | | | | |
| | p-dichlorobenzene (C ₆ H ₄ Cl ₂) | 106-46-7 | 0.05003 | 100.00% | 50.0300 | 5.01% | | |
| | Sodium Sulfate (Na ₂ S) | 1313-82-2 | | | | | | |
| | | | | 100.00% | 50.0300 | | | |
| Final Assembly | | | | | | | | |
| Crystal Blank | SiO ₂ (silicon dioxide) | 14808-60-7 | 0.017250 | 41.38% | 7.1381 | 0.72% | | |
| | Cr plate (chromium) | 7440-47-3 | | 21.98% | 3.7916 | 0.38% | | |
| | Ag plate (silver) | 7440-22-4 | | 36.64% | 6.3204 | 0.63% | | |
| | | | | 100.00% | 17.2500 | | | |
| Blank Adhesive | C ₈ -C ₁₂ (Aromatic Hydrocarbons) | 64742-94-5 | 0.000380 | 20.00% | 0.0760 | 0.01% | | |
| | Ag (silver) | 7440-22-4 | | 70.00% | 0.2660 | 0.03% | | |
| | Others (proprietary) | | | 10.00% | 0.0380 | 0.00% | | |
| | | | | 100.00% | 0.3800 | | | |
| Metal Cover | C (carbon) Type 304 Stainless Steel | 7440-44-0 | 0.520000 | 0.08% | 0.4160 | 0.04% | | |
| | Cr (chromium) Type 304 Stainless Steel | 7440-47-3 | | 20.00% | 104.0000 | 10.42% | | |
| | Mn (manganese) Type 304 Stainless Steel | 7439-96-5 | | 2.00% | 10.4000 | 1.04% | | |
| | Ni (nickel) Type 304 Stainless Steel | 7440-02-0 | | 10.50% | 54.6000 | 5.47% | | |
| | P (phosphorous) Type 304 Stainless Steel | 7723-14-0 | | 0.05% | 0.2340 | 0.02% | | |
| | Si (silicon) Type 304 Stainless Steel | 7440-21-3 | | 1.00% | 5.2000 | 0.52% | | |
| | S (sulfur) Type 304 Stainless Steel | 7704-34-9 | | 0.03% | 0.1560 | 0.02% | | |
| Fe (iron) Type 304 Stainless Steel | 7439-89-6 | | 66.35% | 344.9940 | 34.57% | | | |
| | | | | 100.00% | 520.0000 | | | |
| Totals: | | | 0.997960 | | 997.9600 | 100.00% | | |



| MATERIALS COMBINED | CAS NUMBER | WEIGHT OF MATERIAL (mg) | % BY WEIGHT OF UNIT |
|--|------------|-------------------------|---------------------|
| Ag (silver) | 7440-22-4 | 6.9864 | 0.70% |
| Al ₂ O ₃ (aluminium trioxide) | 1344-28-1 | 2.2500 | 0.23% |
| B ₂ O ₃ (boron trioxide) | 1303-86-2 | 17.5000 | 1.75% |
| C (carbon) | 7440-44-0 | 0.6569 | 0.07% |
| C ₈ -C ₁₂ (<i>Aromatic Hydrocarbons</i>) | 64742-94-5 | 0.0760 | 0.01% |
| Co (cobalt) | 7440-48-4 | 34.0000 | 3.41% |
| Cr (chromium) | 7440-47-3 | 107.7916 | 10.80% |
| Cu (copper) | 7440-50-8 | 0.1400 | 0.01% |
| Fe (iron) | 7439-89-6 | 634.4410 | 63.57% |
| Mn (manganese) | 7439-96-5 | 11.5118 | 1.15% |
| Ni (nickel) | 7440-02-0 | 113.5935 | 11.38% |
| Others (proprietary) | | 0.0380 | 0.00% |
| P (phosphorous) | 7723-14-0 | 0.3081 | 0.03% |
| PPS (Poly Phenylene Sulfide, C ₆ H ₄ S) | - | | |
| p-dichlorobenzene (C ₆ H ₄ C ₁₂) | 106-46-7 | 50.0300 | 5.01% |
| Sodium Sulfate (Na ₂ S) | 1313-82-2 | | |
| S (sulfur) | 7704-34-9 | 0.2487 | 0.02% |
| Si (silicon) | 7440-21-3 | 5.2000 | 0.52% |
| SiO ₂ (silicon dioxide) | 14808-60-7 | 12.3881 | 1.24% |
| Sn (tin) | 7440-31-5 | 0.8000 | 0.08% |
| | | 997.9600 | 100.00% |