



MODEL 406 SERIES CRYSTAL

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 | | | | | | | |
|---------------------------------|---|-------------------------------|------------------------|--------------------------|-----------------|---------------------|-------------------------------|
| MODEL 406 SERIES CRYSTAL | | RoHS/Green Compliant (6/6) | | WEIGHT (mg) 68.0000 | MSL RATING 1 | MAX REFLOW 260°C | e4 |
| 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 | | | | | | | |
| Ceramic | Al ₂ O ₃ (aluminium trioxide) | 1344-28-1 | 0.047600 | 95.05% | 45.2438 | 66.54% | |
| Conductors | W (tungsten) [Base] | 7440-33-7 | | 4.16% | 1.9802 | 2.91% | |
| | Ni (nickel) plate [Barrier] | 7440-02-0 | | 0.44% | 0.2094 | 0.31% | |
| | Au (gold) plate [Finish] | 7440-57-5 | | 0.35% | 0.1666 | 0.25% | |
| | | | | 100.00% | 47.6000 | | |
| Seal Ring | Fe (iron) kovar | 7439-89-6 | 0.008538 | 53.00% | 4.5251 | 6.65% | |
| | Ni (nickel) Kovar | 7440-02-0 | | 29.00% | 2.4760 | 3.64% | |
| | Co (cobalt) Kovar | 7440-48-4 | | 17.00% | 1.4515 | 2.13% | |
| | Au (gold) plate | 7440-57-5 | | 1.00% | 0.0854 | 0.13% | |
| | | | | 100.00% | 8.5380 | | |
| Final Assembly | | | | | | | |
| Crystal Blank | SiO ₂ (silicon dioxide) | 14808-60-7 | 0.000618 | 41.38% | 0.2557 | 0.38% | |
| | Cr plate (chromium) | 7440-47-3 | | 21.98% | 0.1358 | 0.20% | |
| | Ag plate (silver) | 7440-22-4 | | 36.64% | 0.2264 | 0.33% | |
| | | | | 100.00% | 0.6180 | | |
| Blank Adhesive | C ₈ -C ₁₂ (Aromatic Hydrocarbons) | 64742-94-5 | 0.000228 | 20.00% | 0.0456 | 0.07% | |
| | Ag (silver) | 7440-22-4 | | 70.00% | 0.1596 | 0.23% | |
| | Others (proprietary) | | | 10.00% | 0.0228 | 0.03% | |
| | | | | 100.00% | 0.2280 | | |
| Metal Cover | Fe (iron) kovar | 7439-89-6 | 0.011016 | 53.00% | 5.8385 | 8.59% | |
| | Ni (nickel) Kovar | 7440-02-0 | | 29.00% | 3.1946 | 4.70% | |
| | Co (cobalt) Kovar | 7440-48-4 | | 17.00% | 1.8727 | 2.75% | |
| | Ni (nickel) kovar, plate | 7440-02-0 | | 1.00% | 0.1102 | 0.16% | |
| | | | | 100.00% | 11.0160 | | |
| Totals: | | | 0.068000 | | 68.0000 | 100.00% | |

| MATERIALS COMBINED | CAS NUMBER | WEIGHT OF MATERIAL (mg) | % BY WEIGHT OF UNIT |
|---|------------|-------------------------|---------------------|
| Ag (silver) | 7440-22-4 | 0.3860 | 0.57% |
| Al ₂ O ₃ (aluminium trioxide) | 1344-28-1 | 45.2438 | 66.54% |
| Au (gold) | 7440-57-5 | 0.2520 | 0.37% |
| C ₈ -C ₁₂ (Aromatic Hydrocarbons) | 64742-94-5 | 0.0456 | 0.07% |
| Co (cobalt) | 7440-48-4 | 3.3242 | 4.89% |
| Cr (chromium) | 7440-47-3 | 0.1358 | 0.20% |
| Fe (iron) | 7439-89-6 | 10.3636 | 15.24% |
| Ni (nickel) | 7440-02-0 | 5.9903 | 8.81% |
| Others (proprietary) | | 0.0228 | 0.03% |
| SiO ₂ (silicon dioxide) | 14808-60-7 | 0.2557 | 0.38% |
| W (tungsten) | 7440-33-7 | 1.9802 | 2.91% |
| | | 68.0000 | 100.00% |