



MODEL 403 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							
<i>MODEL 403 SERIES CRYSTAL</i>		RoHS/Green Compliant (6/6)	WEIGHT (mg) 18.0001	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	0.015557	95.05%	14.7872	82.15%	
Conductors	W (tungsten) [Base]	7440-33-7		4.16%	0.6472	3.60%	
	Ni (nickel) plate [Barrier]	7440-02-0		0.44%	0.0685	0.38%	
	Au (gold) plate [Finish]	7440-57-5		0.35%	0.0545	0.30%	
				100.00%	15.5573		
Seal Ring	Fe (iron) kovar	7439-89-6	0.000584	53.00%	0.3097	1.72%	
	Ni (nickel) Kovar	7440-02-0		29.00%	0.1694	0.94%	
	Co (cobalt) Kovar	7440-48-4		17.00%	0.0993	0.55%	
	Au (gold) plate	7440-57-5		1.00%	0.0058	0.03%	
				100.00%	0.5843		
Final Assembly							
Crystal Blank	SiO ₂ (silicon dioxide)	14808-60-7	0.000237	41.38%	0.0980	0.54%	
	Cr plate (chromium)	7440-47-3		21.98%	0.0521	0.29%	
	Ag plate (silver)	7440-22-4		36.64%	0.0868	0.48%	
				100.00%	0.2369		
Blank Adhesive	C ₈ -C ₁₂ (Aromatic Hydrocarbons)	64742-94-5	0.000087	20.00%	0.0175	0.10%	
	Ag (silver)	7440-22-4		70.00%	0.0612	0.34%	
	Others (proprietary)			10.00%	0.0087	0.05%	
				100.00%	0.0874		
Metal Cover	Fe (iron) kovar	7439-89-6	0.001534	53.00%	0.8131	4.52%	
	Ni (nickel) Kovar	7440-02-0		29.00%	0.4449	2.47%	
	Co (cobalt) Kovar	7440-48-4		17.00%	0.2608	1.45%	
	Ni (nickel) kovar, plate	7440-02-0		1.00%	0.0153	0.09%	
				100.00%	1.5342		
		Totals:	0.0180001		18.0001	100.00%	

MATERIALS COMBINED	CAS NUMBER	WEIGHT OF MATERIAL (mg)	% BY WEIGHT OF UNIT
Ag (silver)	7440-22-4	0.1480	0.82%
Al ₂ O ₃ (aluminium trioxide)	1344-28-1	14.7872	82.15%
Au (gold)	7440-57-5	0.0603	0.33%
C ₈ -C ₁₂ (Aromatic Hydrocarbons)	64742-94-5	0.0175	0.10%
Co (cobalt)	7440-48-4	0.3601	2.00%
Cr (chromium)	7440-47-3	0.0521	0.29%
Fe (iron)	7439-89-6	1.1228	6.24%
Ni (nickel)	7440-02-0	0.6982	3.88%
Others (proprietary)		0.0087	0.05%
SiO ₂ (silicon dioxide)	14808-60-7	0.0980	0.54%
W (tungsten)	7440-33-7	0.6472	3.60%
		18.0001	100.00%