



MODEL 405 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 405 SERIES CRYSTAL		RoHS/Green Compliant (6/6)	WEIGHT (mg) 47.0000	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	0.034781	95.05%	33.0595	70.34%	
Conductors	W (tungsten) [Base]	7440-33-7		4.16%	1.4469	3.08%	
	Ni (nickel) plate [Barrier]	7440-02-0		0.44%	0.1530	0.33%	
	Au (gold) plate [Finish]	7440-57-5		0.35%	0.1217	0.26%	
				100.00%	34.7812		
Seal Ring	Fe (iron) kovar	7439-89-6	0.004835	53.00%	2.5627	5.45%	
	Ni (nickel) Kovar	7440-02-0		29.00%	1.4022	2.98%	
	Co (cobalt) Kovar	7440-48-4		17.00%	0.8220	1.75%	
	Au (gold) plate	7440-57-5		1.00%	0.0484	0.10%	
				100.00%	4.8352		
Final Assembly							
Crystal Blank	SiO ₂ (silicon dioxide)	14808-60-7	0.000474	41.38%	0.1961	0.42%	
	Cr plate (chromium)	7440-47-3		21.98%	0.1041	0.22%	
	Ag plate (silver)	7440-22-4		36.64%	0.1736	0.37%	
				100.00%	0.4738		
Blank Adhesive	C ₈ -C ₁₂ (Aromatic Hydrocarbons)	64742-94-5	0.000175	20.00%	0.0350	0.07%	
	Ag (silver)	7440-22-4		70.00%	0.1224	0.26%	
	Others (proprietary)			10.00%	0.0175	0.04%	
				100.00%	0.1748		
Metal Cover	Fe (iron) kovar	7439-89-6	0.006735	53.00%	3.5696	7.59%	
	Ni (nickel) Kovar	7440-02-0		29.00%	1.9532	4.16%	
	Co (cobalt) Kovar	7440-48-4		17.00%	1.1450	2.44%	
	Ni (nickel) kovar, plate	7440-02-0		1.00%	0.0674	0.14%	
				100.00%	6.7350		
Totals:			0.047000		47.0000	100.00%	

MATERIALS COMBINED	CAS NUMBER	WEIGHT OF MATERIAL (mg)	% BY WEIGHT OF UNIT
Ag (silver)	7440-22-4	0.2960	0.63%
Al ₂ O ₃ (aluminium trioxide)	1344-28-1	33.0595	70.34%
Au (gold)	7440-57-5	0.1701	0.36%
C ₈ -C ₁₂ (Aromatic Hydrocarbons)	64742-94-5	0.0350	0.07%
Co (cobalt)	7440-48-4	1.9669	4.18%
Cr (chromium)	7440-47-3	0.1041	0.22%
Fe (iron)	7439-89-6	6.1322	13.05%
Ni (nickel)	7440-02-0	3.5757	7.61%
Others (proprietary)		0.0175	0.04%
SiO ₂ (silicon dioxide)	14808-60-7	0.1961	0.42%
W (tungsten)	7440-33-7	1.4469	3.08%
		47.0000	100.00%