



ATS-SM 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>ATS-SM SERIES CRYSTAL</i>		RoHS/Green Compliant (6/6)	WEIGHT (mg) 587.8400	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	0.02%	Machinery's Handbook
	C (carbon) C1010 cold rolled steel	7440-44-0		0.13%	0.2409	0.04%	
	Mn (manganese) C1010 cold rolled steel	7439-96-5		0.60%	1.1118	0.19%	
	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	31.21%	
	Ni plate (nickel) C1010 cold rolled steel	7440-02-0		0.18%	0.3335	0.06%	
				100.00%	185.3000		
Lead Pin	Fe (iron) kovar pin, base material	7439-89-6	0.175000	53.00%	92.7500	15.78%	Kester EM 907 (Sn96.5Ag3.0Cu0.5)
	Ni (nickel) kovar pin, base material	7440-02-0		29.00%	50.7500	8.63%	
	Co (cobalt) kovar pin, base material	7440-48-4		17.00%	29.7500	5.06%	
	Ni plate (nickel) kovar pin, base plating	7440-02-0		0.33%	0.5775	0.10%	
	Sn (tin) kovar pin, finish plating	7440-31-5		0.40%	0.7000	0.12%	
	Ag (silver) kovar pin, finish plating	7440-22-4		0.20%	0.3500	0.06%	
	Cu (copper) kovar pin, finish plating	7440-50-8		0.07%	0.1225	0.02%	
				100.00%	175.0000		
Glass Seal	Al ₂ O ₃ (aluminium trioxide)	1344-28-1	0.025000	9.00%	2.2500	0.38%	
	B ₂ O ₃ (boron trioxide)	1303-86-2		70.00%	17.5000	2.98%	
	SiO ₂ (silicon dioxide)	14808-60-7		21.00%	5.2500	0.89%	
				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	8.51%	
	Sodium Sulfate (Na ₂ S)	1313-82-2					
				100.00%	50.0300		
Final Assembly							
Crystal Blank	SiO ₂ (silicon dioxide)	14808-60-7	0.003560	41.38%	1.4731	0.25%	
	Cr plate (chromium)	7440-47-3		21.98%	0.7825	0.13%	
	Ag plate (silver)	7440-22-4		36.64%	1.3044	0.22%	
				100.00%	3.5600		
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	0.05%	
	Others (proprietary)			10.00%	0.0380	0.01%	
				100.00%	0.3800		
Metal Cover	C (carbon) Type 304 Stainless Steel	7440-44-0	0.148570	0.08%	0.1189	0.02%	
	Cr (chromium) Type 304 Stainless Steel	7440-47-3		20.00%	29.7140	5.05%	
	Mn (manganese) Type 304 Stainless Steel	7439-96-5		2.00%	2.9714	0.51%	
	Ni (nickel) Type 304 Stainless Steel	7440-02-0		10.50%	15.5999	2.65%	
	P (phosphorous) Type 304 Stainless Steel	7723-14-0		0.05%	0.0669	0.01%	
	Si (silicon) Type 304 Stainless Steel	7440-21-3		1.00%	1.4857	0.25%	
	S (sulfur) Type 304 Stainless Steel	7704-34-9		0.03%	0.0446	0.01%	
	Fe (iron) Type 304 Stainless Steel	7439-89-6		66.35%	98.5688	16.77%	
				100.00%	148.5700		
		Totals:	0.587840		587.8400	100.00%	



MATERIALS COMBINED	CAS NUMBER	WEIGHT OF MATERIAL (mg)	% BY WEIGHT OF UNIT
Ag (silver)	7440-22-4	1.9204	0.33%
Al ₂ O ₃ (aluminium trioxide)	1344-28-1	2.2500	0.38%
B ₂ O ₃ (boron trioxide)	1303-86-2	17.5000	2.98%
C (carbon)	7440-44-0	0.3597	0.06%
C ₈ -C ₁₂ (Aromatic Hydrocarbons)	64742-94-5	0.0760	0.01%
Co (cobalt)	7440-48-4	29.7500	5.06%
Cr (chromium)	7440-47-3	30.4965	5.19%
Cu (copper)	7440-50-8	0.1225	0.02%
Fe (iron)	7439-89-6	374.7658	63.75%
Mn (manganese)	7439-96-5	4.0832	0.69%
Ni (nickel)	7440-02-0	67.2609	11.44%
Others (proprietary)		0.0380	0.01%
P (phosphorous)	7723-14-0	0.1410	0.02%
PPS (Poly Phenylene Sulfide, C ₆ H ₄ S)	-		
p-dichlorobenzene (C ₆ H ₄ C ₁₂)	106-46-7	50.0300	8.51%
Sodium Sulfate (Na ₂ S)	1313-82-2		
S (sulfur)	7704-34-9	0.1372	0.02%
Si (silicon)	7440-21-3	1.4857	0.25%
SiO ₂ (silicon dioxide)	14808-60-7	6.7231	1.14%
Sn (tin)	7440-31-5	0.7000	0.12%
		587.8400	100.00%