



MODEL 658 SERIES OSCILLATOR

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 658 SERIES OSCILLATOR

RoHS/Green
Compliant

(6/6)

WEIGHT
(mg)

178.4620

MSL
RATING

1

MAX
REFLOW

260°C



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	0.137020	95.05%	130.2375	72.98%	
Conductors	W (tungsten) [Base]	7440-33-7		4.16%	5.7000	3.19%	
	Ni (nickel) plate [Barrier]	7440-02-0		0.44%	0.6029	0.34%	
	Au (gold) plate [Finish]	7440-57-5		0.35%	0.4796	0.27%	
				100.00%	137.0200		
Seal Ring	Fe (iron) kovar	7439-89-6	0.016060	53.00%	8.5118	4.77%	
	Ni (nickel) Kovar	7440-02-0		29.00%	4.6574	2.61%	
	Co (cobalt) Kovar	7440-48-4		17.00%	2.7302	1.53%	
	Au (gold) plate	7440-57-5		1.00%	0.1606	0.09%	
				100.00%	16.0600		
Sub-Assembly							
Silicon Die (IC)	Si (silicon)	7440-21-3	0.002640	98.50%	2.6004	1.46%	
	Al (aluminium)	7429-90-5		1.50%	0.0396	0.02%	
				100.00%	2.6400		
Die Adhesive	Epoxy Resin (proprietary)		0.001740	21.00%	0.3654	0.20%	
	Aromatic Amine (proprietary)			2.00%	0.0348	0.02%	
	Ag (silver)	7440-22-4		77.00%	1.3398	0.75%	
				100.00%	1.7400		
Die Bond Wire	Au (gold)	7440-57-5	0.000962	100.00%	0.9620	0.54%	
				100.00%	0.9620		
Final Assembly							
Crystal Blank	SiO ₂ (silicon dioxide)	14808-60-7	0.004150	41.38%	1.7173	0.96%	
	Cr plate (chromium)	7440-47-3		21.98%	0.9122	0.51%	
	Ag plate (silver)	7440-22-4		36.64%	1.5206	0.85%	
				100.00%	4.1500		
Blank Adhesive	C ₈ -C ₁₂ (Aromatic Hydrocarbons)	64742-94-5	0.000380	20.00%	0.0760	0.04%	
	Ag (silver)	7440-22-4		70.00%	0.2660	0.15%	
	Others (proprietary)			10.00%	0.0380	0.02%	
				100.00%	0.3800		
Metal Cover	Fe (iron) kovar	7439-89-6	0.015510	53.00%	8.2203	4.61%	
	Ni (nickel) Kovar	7440-02-0		29.00%	4.4979	2.52%	
	Co (cobalt) Kovar	7440-48-4		17.00%	2.6367	1.48%	
	Ni (nickel) kovar, plate	7440-02-0		1.00%	0.1551	0.09%	
				100.00%	15.5100		
		Totals:	0.178462		178.4620	100.00%	

MATERIALS COMBINED	CAS NUMBER	WEIGHT OF MATERIAL (mg)	% BY WEIGHT OF UNIT
Ag (silver)	7440-22-4	3.1264	1.75%
Al (aluminum)	7429-90-5	0.0396	0.02%
Al ₂ O ₃ (aluminium trioxide)	1344-28-1	130.2375	72.98%
Aromatic Amine (proprietary)		0.0348	0.02%
Au (gold)	7440-57-5	1.6022	0.90%
C ₈ -C ₁₂ (Aromatic Hydrocarbons)	64742-94-5	0.0760	0.04%
Co (cobalt)	7440-48-4	5.3669	3.01%
Cr (chromium)	7440-47-3	0.9122	0.51%
Epoxy Resin (proprietary)		0.3654	0.20%
Fe (iron)	7439-89-6	16.7321	9.38%
Ni (nickel)	7440-02-0	9.9133	5.55%
Others (proprietary)		0.0380	0.02%
Si (silicon)	7440-21-3	2.6004	1.46%
SiO ₂ (silicon dioxide)	14808-60-7	1.7173	0.96%
W (tungsten)	7440-33-7	5.7000	3.19%

178.4620 100.00%