



## MXO45 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 <sup>1</sup>	N		
Cadmium/Cadmium compounds <sup>2</sup>	N		
Hexavalent Chromium / Hexavalent Chromium Compounds <sup>2</sup>	N		
Lead / Lead Compounds <sup>2</sup>	N		
Mercury / Mercury Compounds <sup>2</sup>	N		
Ozone Depleting Substances (CFCs, HCFCs, HBFCs, carbon tetrachloride, etc)	N		
Polybrominated Biphenyls (PBBs) <sup>2</sup>	N		
Polybrominated Diphenylethers (PBDEs) <sup>2</sup>	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							
<b>MXO45 SERIES OSCILLATOR</b>		RoHS/Green Compliant (6/6)		WEIGHT (mg) 3,774.5370	MSL RATING 1	MAX REFLOW 260°C	<b>e1</b>
PRODUCT BREAKDOWN	MATERIAL	CAS NUMBER	WEIGHT OF BOM ITEM (g)	% BY WEIGHT (Comp. Item)	mg/UNIT	% BY WEIGHT OF UNIT	REMARKS/SOURCE OF INFORMATION
<b>Thick Film Network</b>							
Ceramic Substrate	Al <sub>2</sub> O <sub>3</sub> (aluminium trioxide)	1344-28-1	0.400000	95.37%	381.4800	10.11%	
Thick Film Ink	Ag (silver)	7440-22-4		3.00%	12.0000	0.32%	
Thick Film Ink	Pd (palladium)	7440-05-3		1.00%	4.0000	0.11%	
Thick Film Ink	Au (gold)	7440-57-5		0.39%	1.5600	0.04%	
Thick Film Ink	Others (proprietary)			0.24%	0.9600	0.03%	
				<b>100.00%</b>	<b>400.0000</b>		
<b>Sub-Assembly</b>							
Metal Base	S (sulphur) C1010 cold rolled steel	7704-34-9	2.117100	0.05%	1.0586	0.03%	Machinery's Handbook
	C (carbon) C1010 cold rolled steel	7440-44-0		0.13%	2.7522	0.07%	
	Mn (manganese) C1010 cold rolled steel	7439-96-5		0.60%	12.7026	0.34%	
	P (phosphorus) C1010 cold rolled steel	7723-14-0		0.04%	0.8468	0.02%	
	Fe (iron) C1010 cold rolled steel	7439-89-6		99.00%	2095.9290	55.53%	
	Ni plate (nickel) C1010 cold rolled steel	7440-02-0		0.18%	3.8108	0.10%	
				<b>100.00%</b>	<b>2117.1000</b>		
Lead Pin	Fe (iron) kovar pin, base material	7439-89-6	0.4000	53.00%	212.0000	5.62%	
	Ni (nickel) kovar pin, base material	7440-02-0		29.00%	116.0000	3.07%	
	Co (cobalt) kovar pin, base material	7440-48-4		17.00%	68.0000	1.80%	
	Ni plate (nickel) kovar pin, base plating	7440-02-0		0.33%	1.3200	0.03%	
	Sn (tin) kovar pin, finish plating	7440-31-5		0.40%	1.6000	0.04%	
	Ag (silver) kovar pin, finish plating	7440-22-4		0.20%	0.8000	0.02%	
	Cu (copper) kovar pin, finish plating	7440-50-8		0.07%	0.2800	0.01%	
				<b>100.00%</b>	<b>400.0000</b>		
Glass Seal	Al <sub>2</sub> O <sub>3</sub> (aluminium trioxide)	1344-28-1	0.05000	9.00%	4.5000	0.12%	
	B <sub>2</sub> O <sub>3</sub> (boron trioxide)	1303-86-2		70.00%	35.0000	0.93%	
	SiO <sub>2</sub> (silicon dioxide)	14808-60-7		21.00%	10.5000	0.28%	
				<b>100.00%</b>	<b>50.0000</b>		
Silicon Die (IC)	Si (silicon)	7440-21-3	0.00108	98.50%	1.0638	0.03%	
	Al (aluminium)	7429-90-5		1.50%	0.0162	0.00%	
				<b>100.00%</b>	<b>1.0800</b>		
Die Adhesive	Epoxy Resin (proprietary)		0.00096	21.00%	0.2016	0.01%	
	Aromatic Amine (proprietary)			2.00%	0.0192	0.00%	
	Ag (silver)	7440-22-4		77.00%	0.7392	0.02%	
				<b>100.00%</b>	<b>0.9600</b>		
Die Bond Wire	Au (gold)	7440-57-5	0.000182	100.00%	0.1820	0.00%	
				<b>100.00%</b>	<b>0.1820</b>		
Ceramic Capacitor	BaTiO <sub>3</sub> (barium titanate)	12047-27-7	0.00085	75.00%	0.6375	0.02%	
	Sn (tin)	7440-31-5		2.60%	0.0221	0.00%	
	Ag (silver)	7440-22-4		9.90%	0.0842	0.00%	
	Ni (nickel)	7440-02-0		2.60%	0.0221	0.00%	
	Others (proprietary)			9.90%	0.0842	0.00%	
				<b>100.00%</b>	<b>0.8500</b>		
Spring Mount (x2)	Cu (copper)	7440-50-8	0.000425	94.00%	0.3995	0.01%	
	Sn (tin)	7440-31-5		4.00%	0.0170	0.00%	
	Au plate (gold)	7440-57-5		2.00%	0.0085	0.00%	
				<b>100.00%</b>	<b>0.4250</b>		
<b>Final Assembly</b>							
Crystal Blank	SiO <sub>2</sub> (silicon dioxide)	14808-60-7	0.003560	41.38%	1.4731	0.04%	
	Cr plate (chromium)	7440-47-3		21.98%	0.7825	0.02%	
	Ag plate (silver)	7440-22-4		36.64%	1.3044	0.03%	
				<b>100.00%</b>	<b>3.5600</b>		
Blank Adhesive	C <sub>8</sub> -C <sub>12</sub> (Aromatic Hydrocarbons)	64742-94-5	0.000380	20.00%	0.0760	0.00%	
	Ag (silver)	7440-22-4		70.00%	0.2660	0.01%	
	Others (proprietary)			10.00%	0.0380	0.00%	
				<b>100.00%</b>	<b>0.3800</b>		
Metal Cover	C (carbon) Type 304 Stainless Steel	7440-44-0	0.8000	0.08%	0.6400	0.02%	
	Cr (chromium) Type 304 Stainless Steel	7440-47-3		20.00%	160.0000	4.24%	
	Mn (manganese) Type 304 Stainless Steel	7439-96-5		2.00%	16.0000	0.42%	
	Ni (nickel) Type 304 Stainless Steel	7440-02-0		10.50%	84.0000	2.23%	
	P (phosphorous) Type 304 Stainless Steel	7723-14-0		0.05%	0.3600	0.01%	
	Si (silicon) Type 304 Stainless Steel	7440-21-3		1.00%	8.0000	0.21%	
	S (sulfur) Type 304 Stainless Steel	7704-34-9		0.03%	0.2400	0.01%	
	Fe (iron) Type 304 Stainless Steel	7439-89-6		66.35%	530.7600	14.06%	
				<b>100.00%</b>	<b>800.0000</b>		
	<b>Totals:</b>		<b>3.774537</b>		<b>3,774.5370</b>	<b>100.00%</b>	



MATERIALS COMBINED	CAS NUMBER	WEIGHT OF MATERIAL (mg)	% BY WEIGHT OF UNIT
Ag (silver)	7440-22-4	15.1937	0.40%
Al (aluminum)	7429-90-5	0.0162	0.00%
Al <sub>2</sub> O <sub>3</sub> (aluminium trioxide)	1344-28-1	385.9800	10.23%
Aromatic Amine (proprietary)		0.0192	0.00%
Au (gold)	7440-57-5	1.7505	0.05%
B <sub>2</sub> O <sub>3</sub> (boron trioxide)	1303-86-2	35.0000	0.93%
BaTiO <sub>3</sub> (barium titanate)	12047-27-7	0.6375	0.02%
C (carbon)	7440-44-0	3.3922	0.09%
C <sub>8</sub> -C <sub>12</sub> (Aromatic Hydrocarbons)	64742-94-5	0.0760	0.00%
Co (cobalt)	7440-48-4	68.0000	1.80%
Cr (chromium )	7440-47-3	160.7825	4.26%
Cu (copper)	7440-50-8	0.6795	0.02%
Epoxy Resin (proprietary)		0.2016	0.01%
Fe (iron)	7439-89-6	2838.6890	75.21%
Mn (manganese)	7439-96-5	28.7026	0.76%
Ni (nickel)	7440-02-0	205.1529	5.44%
Others (proprietary)		1.0822	0.03%
P (phosphorous)	7723-14-0	1.2068	0.03%
Pd (palladium)	7740-05-3	4.0000	0.11%
S (sulfur)	7704-34-9	1.2986	0.03%
Si (silicon)	7440-21-3	9.0638	0.24%
SiO <sub>2</sub> (silicon dioxide)	14808-60-7	11.9731	0.32%
Sn (tin)	7440-31-5	1.6391	0.04%
		3774.5370	100.00%