



Semiconductor Device Type: MAQE / CM / CQ (3TX) 048 WFBGA 4x6x0.8mm SAC			Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e1		
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	(mg) Total	Mold Compound	% of Total Weight	50.51		
FUSED SILICA	60676-86-0	Mold Compound	39.144	11.234	391,437	HIGH MOLECULAR EPOXY /	FUSED SILICA	60676-86-0	77.50		
EPOXY RESINS, CURED	Trade Secret	Mold Compound	4.925	1.414	49,252		EPOXY RESINS, CURED	Trade Secret	9.75		
HIGH MOLECULAR EPOXY / EPOXY PHENOL RESIN	Trade Secret	Mold Compound	4.925	1.414	49,252		EPOXY PHENOL RESIN	Trade Secret	9.75		
CRYSTALLINE SILICA	14808-60-7	Mold Compound	1.263	0.363	12,633		CRYSTALLINE SILICA	14808-60-7	2.50		
CARBON BLACK	1333-86-4	Mold Compound	0.253	0.072	2,526		CARBON BLACK	1333-86-4	0.50		
Copper	7440-50-8	Lead Frame	8.616	2.473	86,160		Total 100.00				
Glass fibers	65997-17-3	Lead Frame	5.136	1.474	51,360	6.89	(mg) Total	Lead Frame	% of Total Weight	24	
Phenol, formaldehyde, (chloromethyl)oxirane polymer	9003-36-5	Lead Frame	5.136	1.474	51,360	Phenol, formaldehyde, (chloromethyl)oxirane polymer	Copper	7440-50-8	35.90		
Silica, chemically prepared	7631-86-9	Lead Frame	1.920	0.551	19,200		Glass fibers	65997-17-3	21.40		
Nickel	7440-02-0	Lead Frame	0.936	0.269	9,360		Silica, chemically prepared	7631-86-9	21.40		
Barite	7727-43-7	Lead Frame	0.600	0.172	6,000		Nickel	7440-02-0	3.90		
Magnesium silicate	14807-96-6	Lead Frame	0.480	0.138	4,800		Barite	7727-43-7	2.50		
Araldite GY 250	25068-38-6	Lead Frame	0.480	0.138	4,800		Magnesium silicate	14807-96-6	2.00		
(2-Methoxymethylethoxy)propanol	34590-94-8	Lead Frame	0.192	0.055	1,920		Araldite GY 250	25068-38-6	2.00		
Misc.	system	Lead Frame	0.360	0.103	3,600		(2-Methoxymethylethoxy)propanol	34590-94-8	0.80		
Aluminium-hydroxide-oxide	24623-77-6	Lead Frame	0.120	0.034	1,200		Misc.	system	1.50		
Gold	7440-57-5	Lead Frame	0.024	0.007	240		Aluminium-hydroxide-oxide	24623-77-6	0.50		
Solid Epoxy Resin	Trade Secret	Die Attach	0.020	0.006	195	Gold	7440-57-5	0.10			
Phenol Resin	Trade Secret	Die Attach	0.020	0.006	195	Total 100.00					
Fused Silica	60676-86-0	Die Attach	0.052	0.015	520	0.04	(mg) Total	Die Attach	% of Total Weight	0.13	
Liquid epoxy resin	Trade Secret	Die Attach	0.020	0.006	195	Solid Epoxy Resin	Trade Secret	15.00			
Synthetic Rubber	Trade Secret	Die Attach	0.020	0.006	195		Phenol Resin	Trade Secret	15.00		
Silicon	7440-21-3	Chip (Die)	5.980	1.716	59,800		Fused Silica	60676-86-0	40.00		
Doped Gold	7440-57-5	Wire Bond	1.870	0.537	18,700		Liquid epoxy resin	Trade Secret	15.00		
Tin	7440-31-5	Plating on external leads (pins)	16.722	4.799	167,221		Synthetic Rubber	Trade Secret	15		
Silver	7440-22-4	Plating on external leads (pins)	0.700	0.201	7,004	Total 100.00					
Copper	7440-50-8	Plating on external leads (pins)	0.088	0.025	876	1.72	(mg) Total	Chip (Die)	% of Total Weight	5.98	
0.0287 g Total Mass			TOTALS:	100.000	28.700	1,000,000	0.54	(mg) Total	Wire Bond	% of Total Weight	1.87
							Doped Gold	7440-57-5	100.00		
							Total 100.00				
						5.03	(mg) Total	Plating on external leads (pins)	% of Total Weight	17.51	
						Tin	7440-31-5	95.50			
							Silver	7440-22-4	4.00		
								Copper	7440-50-8	0.50	
						Total 100.00					

This semiconductor device and its homogenous materials comply with EU Directives: 2002/95/EC (27 January 2003) & Directive 2011/65/EU (08 June 2011) and 2015/863/EU (31 March 2015) and 2002/53/EC (End-of-Life Vehicles (ELV) without exemption (zero)

Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.

If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.

Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at <http://ul.com/global/eng/pages/offering/industries/chemicals/plastics/>

The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.

Microchip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.

Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's quotations, sales order acknowledgement, and invoices.

Microchip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or otherwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for semiconductor products.

Assembled package referenced above is EU REACH compliant based on the latest SVHC candidate list of ECHA which can be found at <http://echa.europa.eu/web/guest/candidate-list-table>