



PK1214(v1.0) February 26, 2025

100% Material Declaration Data Sheet for Virtex/Virtex UltraScale+ FSGA2577 ENEPIG

Average Weight : 31.9758 g

Component	Substance Description	CAS # or Description	% of component	Use in product	Component weight / substance weight (in grams)	Component % of total	
Silicon die	Silicon	7440-21-3	100.00	basis	2.206827	6.902%	
					2.206827		
Micro-bump	Copper	7440-50-8	54.80	metal	0.025652	0.080%	
	Nickel	7440-02-0	22.69	metal	0.014057		
	Tin	7440-31-5	21.87	metal	0.005819		
	Silver	7440-22-4	0.64	metal	0.000610		
Micro-bump underfill					0.000185	0.158%	
	Amorphous silica	trade secret	46.87	Filler	0.059617		
	Amine compound	trade secret	20.84	Glue	0.023723		
	Epoxy resin compound-A	trade secret	15.63	Glue	0.010547		
	Epoxy resin compound-B	trade secret	15.63	Glue	0.007910		
	Epoxy resin compound-C	trade secret	1.04	Glue	0.007910		
Molding compound					0.000527		
	Silica filler (SiO2)	trade secret	86.02	Filler	0.109181	0.341%	
	Epoxy resin	trade secret	8.60	Glue	0.039320		
Interposer die					0.005870		
	Hardener resin	trade secret	5.38	Glue	0.005870		
C4 Bump	Silicon	7440-21-3	100.00	basis	0.512320	1.602%	
					0.512320		
Solder Paste					0.109317	0.342%	
	Copper	7440-50-8	70.73	metal	0.077322		
	Tin	7440-31-5	28.53	metal	0.031186		
	Silver	7440-22-4	0.74	metal	0.000809		
Solder Paste					0.077540	0.242%	
	Tin	7440-31-5	96.50	metal	0.074826		
	Silver	7440-22-4	3.00	metal	0.002326		
Underfill					0.000388		
	Copper	7440-50-8	0.50	metal	0.000388	0.657%	
	Bisphenol F type liquid epoxy resin	9003-36-5	20.00	basis	0.042000		
	1,6-Bis(2,3-epoxypropoxy)naphthalene	27610-48-6	5.00	basis	0.010500		
	Amine type hardener	trade secret	7.50	basis	0.015750		
	Silicon dioxide	1333-86-4	61.50	filler	0.129150		
Solder paste	Carbon black	60676-86-0	1.00	color agent	0.002100		
	Additives	trade secret	5.00	additives	0.010500		
					0.025972	0.081%	
	Tin	7440-31-5	86.35	metal	0.022427		
Solder paste	Silver	7440-22-4	2.70	metal	0.000701		
	Copper	7440-50-8	0.45	metal	0.000117		
	Polymer	trade secret	1.40		0.000364		
	Organic amine	trade secret	3.00	flux	0.000779		
	solvent	trade secret	4.90		0.001273		
	Diglycolic acid	trade secret	1.20		0.000312		
					0.087600	0.305%	
	Barium oxide, obtained by calcining witherite	1304-28-5	7.53	Ceramic	0.007349		
Capacitor 1	Titanium dioxide	13463-67-7	3.77	-	0.003680		
	Misc	-	1.26	-	0.001230		
	Inner electrode			Internal Electrode	0.000000		
	Nickel	7440-02-0	83.38	Outer electrode	0.081379		
	Copper	7440-50-8	2.98				
	Silicon dioxide	7631-86-9	0.26				
	diboron trioxide; boric oxide	1303-86-2	0.07				
	Nickel Plating Layer			-	0.000000		
	Nickel	7440-02-0	0.19	-	0.000185		
	Tin Plating Layer			Plating	0.000000		
	Tin	7440-31-5	0.56	Plating	0.000547		
					1.000000	3.127%	
	Capacitor 2	Barium oxide, obtained by calcining witherite	1304-28-5	34.00	Ceramic	0.340000	
		Nickel	7440-02-0	18.10		0.181000	
Copper		7440-50-8	41.10		0.411000		
Nickel Plating Layer		7440-02-0	3.40	Plating	0.034000		
Tin		7440-31-5	3.40	Plating	0.034000		
Heat sink					10.010000	31.305%	
	Carbon	7440-44-0	0.12	Main material	0.012012		
	Silicon	7440-21-3	0.75	Main material	0.075075		
	Manganese	7439-96-5	5.00	Main material	0.500500		
	Phosphorus	7723-14-0	0.04	Main material	0.004004		
	Sulfur	7704-34-9	0.03	Main material	0.003003		
	Chromium	7440-47-3	18.00	Main material	1.801800		
	Nickel	7440-02-0	11.00	Main material	1.101100		
	Iron	7439-89-6	65.06	Main material	6.512506		
					0.060000	0.188%	
Heat sink Adhesive	Treated Aluminium Oxide	None	80.00	Main material	0.048000		
	Dimethyl siloxane, dimethylvinyl-terminated	68083-19-2	20.00	Main material	0.012000		
Solder ball					2.551869	7.981%	
	Tin	7440-31-5	96.50	Main material	2.462554		
	Silver	7440-22-4	3.00	Main material	0.076556		
Substrate	Copper	7440-50-8	0.50	Main material	0.012759		
					14.928943	46.688%	
	coppper	7440-50-8	35.77	metal	5.338913		
	Tin	7440-31-5	0.15	metal	0.022719		
	Core (E705G)	trade secret	46.49	Glue	6.940960		
	Plugging (PHP900-IR10F)	trade secret	0.88	Glue	0.131589		
	ABF (G241)	trade secret	15.51	Glue	2.315250		
	Solder Mask (SR7300GR-B)	trade secret	0.99	Glue	0.148162		
	Nickel	7440-02-0	0.20	metal	0.030353		
	Palladium	7440-05-3	0.00	metal	0.000005		
Gold	7440-57-5	0.00	metal	0.000012			

Revision History

Date	Version	Description of Revisions
2/26/2025	1.0	Initial AMD Release per XCN23002 & XCN23007.

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