

To:Collins Aerospace

Product number	Product name	Finalization date
AQV453AX	PhotoMOS	

Product mass(g)	Total Amounts of Material	Material mass Concentration within Product mass (%)
0.453	0.453	100

Consolidated version	Tool version
2.04.00	chemSHERPA-A2

Total Amounts of Component mass	Concentration
0.154	34.0944

Name (level)	Quantity (level)	Name (component)	Quantity (component)	Mass(component)	Unit(component)	Usage (material)	Classification symbol(material)	Name(material)	Mass(material)	Unit(material)	Material code of public standard (material)	Comment (material)	Substance	CAS No.	Maximum content rate(%)	Mass(Substance)	Unit(Substance)
		Frame	1	144.6	mg	1.base material	R312	Copper alloys	143.942	mg			Copper (Cu)	7440-50-8	99.28	142.9056176	mg
													Tin	7440-31-5	0.25	0.359855	mg
													Chromium	7440-47-3	0.26	0.3742492	mg
													Zinc	7440-66-6	0.21	0.3022782	mg
						6.plating	S012	Silver plating	0.658	mg			Silver (Ag)	7440-22-4	69.46	0.4570468	mg
													Copper (Cu)	7440-50-8	30.54	0.2009532	mg
		Plating	1	3	mg	6.plating	S005	Tin plating	3.0	mg			Sn	7440-31-5	98	2.94	mg
													Bismuth	7440-69-9	2	0.06	mg
		LED	1	0.1316	mg	1.base material	P399	Other nonferrous metals	0.1316	mg			Gallium arsenide	1303-00-0	82.666	0.108788456	mg
													Aluminum gallium arsenide ((Al,Ga)As)	37382-15-3	16.7656	0.0220635296	mg
													Nickel	7440-02-0	0.0008	0.0000010528	mg
													gold	7440-57-5	0.5668	0.0007459088	mg
													Beryllium	7440-41-7	0.0001	0.0000001316	mg
													Germanium	7440-56-4	0.0006	0.0000007896	mg
													others		0.0001	0.0000001316	mg
		MOSFET	2	3.0877	mg	1.base material	P399	Other nonferrous metals	3.0877	mg			Silicon	7440-21-3	97.756	3.018412012	mg
													Aluminum	7429-90-5	0.4913	0.0151698701	mg
													Chromium	7440-47-3	0.3732	0.0115232964	mg
													Nickel	7440-02-0	0.6594	0.0203602938	mg
													Silver (Ag)	7440-22-4	0.4403	0.0135951431	mg
													Polyimide		0.2798	0.0086393846	mg
		IC	1	0.5365	mg	1.base material	P399	Other nonferrous metals	0.5365	mg			Silicon	7440-21-3	99.907	0.536001055	mg
													Aluminum	7429-90-5	0.093	0.000498945	mg
		Wire	1	0.1	mg	1.base material	V421	Gold	0.1	mg			Gold	7440-57-5	99.99	0.09999	mg
													others		0.01	0.00001	mg
		Adhesive	1	0.004	mg	1.base material	V412	Other special metals	0.004	mg			Silver (Ag)	7440-22-4	75	0.003	mg
													Epoxy resin	-	25	0.001	mg
		Junction coating	1	1.0	mg	1.base material	N544	Others (Rubber/non-thermoplastic Elastomer)	1.0	mg			Octamethylcyclotetrasiloxane (D4)	556-67-2	0.99	0.0099	mg
													Decamethylcyclopentasiloxane (D5)	541-02-6	0.99	0.0099	mg
													Dodecamethylcyclohexasiloxane; D6	540-97-6	0.99	0.0099	mg
													others		97.03	0.9703	mg
		Mold resin	1	297.4525	mg	1.base material	N551	EP (Epoxy resin)	297.4525	mg			Brominated flame retardants(BFRs)	SN0015	3.54	10.5298185	mg
													Antimonytrioxide (Diantimonytrioxide)	1309-64-4	1.46	4.3428065	mg
													Silica, crystalline	14808-60-7	5	14.872625	mg
													others		90	267.70725	mg

Total Amounts of Material

Classification num	Material name	Mass(g)
R312	Copper alloys	0.143942
S012	Silver plating	0.000658
S005	Tin plating	0.0030
P399	Other nonferrou	0.0068435
V421	Gold	0.0001
V412	Other special me	0.000004
N544	Others (Rubber/	0.0010
N551	EP (Epoxy resin)	0.2974525

November 30,2021
 Engineering Administration Section
 Industrial Relay Engineering Department
 Relay Business Unit,Electromechanical Control Business Division
 Industrial Solutions Company, Panasonic Corporation
 Ryuji Nishihara