

## Material Declaration Data Sheet (MDDS)



Customer	NORDIC
Device Name	nRF52820-QDAA
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Material Type	Material Name	Supplier Name	Material Weight(g)	Material Weight(mg)	Material % in Product	Substance Name	CAS#	Substance % in Material	Substance Weight(g)	Substance Weight(mg)	PPM in Product
Die	Silicon Die	Customer Consigned	0.003100	3.10	4.3724%	Silicon (Si)	7440-21-3	100.00%	0.0031000	3.1000	43723.55
Leadframe	C194 Ag	HDS	0.032800	32.80	46.2623%	Iron (Fe)	7439-89-6	2.31%	0.0007567	0.7567	10672.72
						Phosphorus (P)	7723-14-0	0.03%	0.0000098	0.0098	138.79
						Zinc (Zn)	7440-66-6	0.12%	0.0000387	0.0387	545.90
						Copper (Cu)	7440-50-8	95.72%	0.0313948	31.3948	442804.63
						Silver (Ag)	7440-22-4	1.83%	0.0005999	0.5999	8461.38
Die Attach	CRM-1085A	Sumitomo	0.000400	0.40	0.5642%	Silver	7440-22-4	85.00%	0.0003400	0.3400	4795.49
						Formaldehyde polymer with (chloromethyl)oxirane and phenol	9003-36-5	5.50%	0.0000220	0.0220	310.30
						Epoxy resin	Proprietary	5.50%	0.0000220	0.0220	310.30
						[[4-(1,1-Dimethylethyl)phenoxy]methyl]oxirane; p-tert-Butylphenyl 1-(2,3-epoxy)propyl ether	3101-60-8	3.00%	0.0000120	0.0120	169.25
						1-cyanoguanidine	461-58-5	0.50%	0.0000020	0.0020	28.21
Wire Bonding	AuPCC	MKE	0.000200	0.20	0.2821%	Amine type hardener	Proprietary	0.50%	0.0000020	0.0020	28.21
						Copper (Cu)	7440-50-8	97.05%	0.0001941	0.1941	2737.66
						Palladium (Pd)	7440-05-3	2.80%	0.0000056	0.0056	78.98
						Gold (Au)	7440-57-5	0.15%	0.0000003	0.0003	4.23
						Epoxy Resin A	Proprietary	4.00%	0.0013000	1.3000	18335.68
Molding Compound	G6318Q Type F	Sumitomo	0.032500	32.50	45.8392%	Epoxy Resin B	Proprietary	4.00%	0.0013000	1.3000	18335.68
						Phenol Resin	Proprietary	7.50%	0.0024375	2.4375	34379.41
						Silica, vitreous	60676-86-0	73.00%	0.0237250	23.7250	334626.23
						Silicon dioxide	7631-86-9	8.00%	0.0026000	2.6000	36671.37
						Aluminium and its compounds	Proprietary	3.00%	0.0009750	0.9750	13751.76
External Plating	Matte Sn Plating	Sytron	0.001900	1.90	2.6798%	Carbon Black	1333-86-4	0.50%	0.0001625	0.1625	2291.96
						Tin (Sn)	7440-31-5	100.00%	0.0019000	1.9000	26798.31
			0.070900	70.90	100.0000%	600.00%			0.070900	70.9000	1000000.00
			Calculated						Calculated		

### Disclaimer

The calculators identified in this report are used solely for determining package and weight composition and not for any other purpose, including but not limited to RoHS compliance. These calculators are used at the request of Customer in accordance with Amkor's current Terms and Conditions. Customer acknowledges that certain data used to generate the package and weight composition are provided by third parties and may not be validated and as such, the associated calculations performed herein are unproven and may produce inconclusive results.

All information generated by the use of these calculators is provided "As Is." Amkor makes no warranty or representation, whatsoever, as to the sufficiency or accuracy of any such information it has disclosed hereunder or as to the results to be obtained therefrom and assumes no responsibility arising from any use or misuse thereof.

Note: Data is published based on the "Calculated Weight"