



## Device Material Content

5555 NE Moore Ct.  
Hillsboro OR 97124  
[custreq@latticesemi.com](mailto:custreq@latticesemi.com)

November, 2020

**Package:** 672 fpBGA  
**Total Device Weight** 3.174 Grams

**Package Code:**

**FN672**

**Products:**

FE2, FE3, XP2

Assembly: ASEM

Size (mm): 23 x 23

Lead pitch (mm): 1.0

MSL: 3

Reflow max (°C): 250

	% of Total Pkg. Wt.	Weight (g)	% of Total Pkg. Wt.	Weight (g)	Substance	CAS #	% of Subst.	Notes / Assumptions:
<b>Die</b>	1.33%	0.0422			Silicon chip	7440-21-3	100.00%	Die size: 8.79 x 8.31 mm
<b>Mold Compound</b>	36.81%	1.1686	2.58% 1.84% 1.84% 0.18% 30.37%	0.0818 0.0584 0.0584 0.0058 0.9641	Epoxy Resin Phenol Novolac Metal Hydroxide Carbon Black Silica Fused	- 9003-35-4 - 1333-86-4 60676-86-0	7.00% 5.00% 5.00% 0.50% 82.50%	Mold Compound: Sumitomo G750SE
<b>D/A Epoxy</b>	0.19%	0.0061	0.15% 0.04%	0.00490 0.00122	Silver Esters & resins	7440-22-4 -	80.00% 20.00%	Die attach epoxy: Henkel (Ablebond) 2100A
<b>Wire</b>	0.23%	0.0074	0.23% 0.00%	0.0073 0.0001	Copper Palladium	7440-50-8 7440-05-3	98.45% 1.55%	0.8 mil diameter; 1 wire per solder ball
<b>Solder Balls</b>	20.54%	0.6520	19.82% 0.62% 0.10%	0.6292 0.0196 0.0033	Tin (Sn) Silver (Ag) Copper (Cu)	7440-31-5 7440-22-4 7440-50-8	96.50% 3.00% 0.50%	SAC305
<b>Substrate</b>	21.91%	0.6953	7.01% 14.90%	0.2225 0.4728	BT Resins Glass fiber	- 65997-17-3	32.00% 68.00%	BT Resin CCL-HL832NX-A
<b>Foil</b>	15.19%	0.4821	13.80% 1.31% 0.07%	0.4381 0.0417 0.0023	Copper Nickel plating Gold plating	7440-50-8 7440-02-0 7440-57-5	90.87% 8.64% 0.48%	
<b>Solder Mask</b>	3.80%	0.1206	2.13% 0.61% 0.84% 0.11% 0.02% 0.09%	0.0678 0.0193 0.0265 0.0036 0.0006 0.0028	Quartz 3-methoxy-3-methylbutylacetate Barium Sulfate Talc Naphthalene Trade secret ingredients	14808-60-7 103429-90-9 7727-43-7 14807-96-6 91-20-3 -	56.20% 16.00% 22.00% 3.00% 0.50% 2.30%	Solder mask PSR4000 AUS 308

Lattice regards this materials information to be correct but makes no guarantee as to its accuracy or completeness, including, but not limited to, with respect to its compliance with applicable environmental laws and regulations. Lattice subcontracts the production, test and assembly of hardware devices to independent third-party vendors and materials suppliers ("Contractors"). All data provided hereunder is based on information received from Contractors. Lattice has not independently verified the accuracy or completeness of this information which is provided solely for your reference in connection with the use of Lattice products.

[www.latticesemi.com](http://www.latticesemi.com)



Rev. L



## Device Material Content

5555 NE Moore Ct.  
Hillsboro OR 97124  
[custreq@latticesemi.com](mailto:custreq@latticesemi.com)

November, 2020

**Package:** 672 fpBGA  
**Total Device Weight** 3.174 Grams

**Package Code:**

FN672

**Products:**

FE2, FE3, XP2

Assembly: ASEK

Size (mm): 23 x 23

Lead pitch (mm): 1.0

MSL: 3

Reflow max (°C): 250

	% of Total Pkg. Wt.	Weight (g)	% of Total Pkg. Wt.	Weight (g)	Substance	CAS #	% of Subst.	Notes / Assumptions:
<b>Die</b>	1.33%	0.0422			Silicon chip	7440-21-3	100.00%	Die size: 8.79 x 8.31 mm
<b>Mold Compound</b>	36.81%	1.1686	1.84%	0.0584	Epoxy Resin	-	5.00%	Mold Compound: Hitachi CEL9750ZHF10AKL-U (ULA)
			1.84%	0.0584	Phenol Resin	-	5.00%	
			0.07%	0.0023	Carbon Black	1333-86-4	0.20%	
			32.32%	1.0260	Silica	60676-86-0	87.80%	
			0.74%	0.0234	Others	-	2.00%	
<b>D/A Epoxy</b>	0.19%	0.0061	0.15%	0.00490	Silver	7440-22-4	80.00%	Die attach epoxy: Henkel (Ablebond) 2100A
			0.04%	0.00122	Esters & resins	-	20.00%	
<b>Wire</b>	0.23%	0.0074	0.23%	0.0073	Copper	7440-50-8	98.45%	0.8 mil diameter; 1 wire per solder ball
			0.00%	0.0001	Palladium	7440-05-3	1.55%	
<b>Solder Balls</b>	20.54%	0.6520	19.82%	0.6292	Tin (Sn)	7440-31-5	96.50%	Ag 3.5
			0.72%	0.0228	Silver (Ag)	7440-22-4	3.50%	
<b>Substrate</b>	21.91%	0.6953	7.01%	0.2225	BT Resins	-	32.00%	BT Resin CCL-HL832NX-A
			14.90%	0.4728	Glass fiber	65997-17-3	68.00%	
<b>Foil</b>	15.19%	0.4821	13.80%	0.4381	Copper	7440-50-8	90.87%	
			1.31%	0.0417	Nickel plating	7440-02-0	8.64%	
			0.07%	0.0023	Gold plating	7440-57-5	0.48%	
<b>Solder Mask</b>	3.80%	0.1206	2.13%	0.0678	Quartz	14808-60-7	56.20%	Solder mask PSR4000 AUS 308
			0.61%	0.0193	3-methoxy-3-methylbutylacetate	103429-90-9	16.00%	
			0.84%	0.0265	Barium Sulfate	7727-43-7	22.00%	
			0.11%	0.0036	Talc	14807-96-6	3.00%	
			0.02%	0.0006	Naphthalene	91-20-3	0.50%	
			0.09%	0.0028	Trade secret ingredients	-	2.30%	

Lattice regards this materials information to be correct but makes no guarantee as to its accuracy or completeness, including, but not limited to, with respect to its compliance with applicable environmental laws and regulations. Lattice subcontracts the production, test and assembly of hardware devices to independent third-party vendors and materials suppliers ("Contractors"). All data provided hereunder is based on information received from Contractors. Lattice has not independently verified the accuracy or completeness of this information which is provided solely for your reference in connection with the use of Lattice products.

[www.latticesemi.com](http://www.latticesemi.com)



Rev. L



## Device Material Content

5555 NE Moore Ct.  
Hillsboro OR 97124  
[custreq@latticesemi.com](mailto:custreq@latticesemi.com)

November, 2020

**Package:** 672 fpBGA  
**Total Device Weight** 3.174 Grams

**Package Code:**

**FN672**

**Products:**

FE2, FE3, XP2

Assembly: ATP

Size (mm): 23 x 23

Lead pitch (mm): 1.0

MSL: 3

Reflow max (°C): 250

	% of Total Pkg. Wt.	Weight (g)	% of Total Pkg. Wt.	Weight (g)	Substance	CAS #	% of Subst.	Notes / Assumptions:
<b>Die</b>	1.33%	0.0422			Silicon chip	7440-21-3	100.00%	Die size: 8.79 x 8.31 mm
<b>Mold Compound</b>	36.81%	1.1686	2.58% 1.84% 31.29% 0.92% 0.18%	0.0818 0.0584 0.9933 0.0292 0.0058	Solid Epoxy Resin Phenol Resin Silica Metal Hydroxide Carbon Black	- - 60676-86-0 - 1333-86-4	7.00% 5.00% 85.00% 2.50% 0.50%	Mold Compound: Hitachi GE-110LS-V (ULA)
<b>D/A Epoxy</b>	0.19%	0.0061	0.15% 0.04%	0.00490 0.00122	Silver Esters & resins	7440-22-4 -	80.00% 20.00%	Die attach epoxy: Henkel (Ablebond) 2100A
<b>Wire</b>	0.23%	0.0074	0.23% 0.00%	0.0073 0.0001	Copper Palladium	7440-50-8 7440-05-3	98.45% 1.55%	0.8 mil diameter; 1 wire per solder ball
<b>Solder Balls</b>	20.54%	0.6520	19.61% 0.82% 0.10%	0.6226 0.0261 0.0033	Tin (Sn) Silver (Ag) Copper (Cu)	7440-31-5 7440-22-4 7440-50-8	95.50% 4.00% 0.50%	SAC405
<b>Substrate</b>	21.91%	0.6953	7.01% 14.90%	0.2225 0.4728	BT Resins Glass fiber	- 65997-17-3	32.00% 68.00%	BT Resin CCL-HL832NX-A
<b>Foil</b>	15.19%	0.4821	13.80% 1.31% 0.07%	0.4381 0.0417 0.0023	Copper Nickel plating Gold plating	7440-50-8 7440-02-0 7440-57-5	90.87% 8.64% 0.48%	
<b>Solder Mask</b>	3.80%	0.1206	2.13% 0.61% 0.84% 0.11% 0.02% 0.09%	0.0678 0.0193 0.0265 0.0036 0.0006 0.0028	Quartz 3-methoxy-3-methylbutylacetate Barium Sulfate Talc Naphthalene Trade secret ingredients	14808-60-7 103429-90-9 7727-43-7 14807-96-6 91-20-3 -	56.20% 16.00% 22.00% 3.00% 0.50% 2.30%	Solder mask PSR4000 AUS 308

Lattice regards this materials information to be correct but makes no guarantee as to its accuracy or completeness, including, but not limited to, with respect to its compliance with applicable environmental laws and regulations. Lattice subcontracts the production, test and assembly of hardware devices to independent third-party vendors and materials suppliers ("Contractors"). All data provided hereunder is based on information received from Contractors. Lattice has not independently verified the accuracy or completeness of this information which is provided solely for your reference in connection with the use of Lattice products.

[www.latticesemi.com](http://www.latticesemi.com)



Rev. L