



Materials Declaration Form

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|---------------------|---|------------------------|------------|
| IPC | 1752 | Version | 2 |
| Form Type * | Distribute | | |
| Sectionals * | Material Info Manufacturing Info | Subsectionals * | A-D |

*: Required Field

| Supplier Information | | | |
|------------------------------------|--|------------------------------------|-----------------------------------|
| Company Name * | STMicroelectronics | Response Date * | 2018-08-13 |
| Contact Name * | Refer to Supplier Comment section | Contact Email * | Refer to Supplier Comment section |
| Contact Phone * | Refer to Supplier Comment section | Authorized Representative * | Refer to Supplier Comment section |
| Authorized Representative * | Rossana Bonaccorso | Representative Title | ADG MD Champion |
| Representative Phone * | Refer to Supplier Comment section | Representative Email * | Refer to Supplier Comment section |
| Supplier Comment | Online Technical Support - STMicroelectronics : http://www.st.com/web/en/support/support.html | | |

Uncertainty Statement

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Legal Statement

| | | | |
|------------------------------|-------------|----------------------------|-----------------|
| Supplier Acceptance * | true | Legal Declaration * | Standard |
|------------------------------|-------------|----------------------------|-----------------|

Legal Statement

Supplier certifies that it gathered the provided information and such information is true and correct to the best of its knowledge and belief, as of the date that Supplier completes this form. Supplier acknowledges that Company will rely on this certification in determining the compliance of its products. Company acknowledges that Supplier may have relied on information provided by others in completing this form, and that Supplier may not have independently verified such information. However, in situations where Supplier has not independently verified information provided by others, Supplier agrees that, at a minimum, its suppliers have provided certifications regarding their contributions to the part(s), and those certifications are at least as comprehensive as the certification in this paragraph. If the Company and the Supplier enter into a written agreement with respect to the identified part(s), the terms and conditions of that agreement, including any warranty rights and/or remedies provided as part of that agreement, will be the sole and exclusive source of the Supplier's liability and the Company's remedies for issues that arise regarding information the Supplier provides in this form.

| Product | | | | |
|-----------------|---------------|---|------------------|------------|
| Mfr Item Number | Mfr Item Name | Version | Mfr Site | Date |
| STPS40L45CT | H8DZ*Z02Q02Y | A | 9945 | 2018-08-13 |
| Amount | UoM | Unit type | ST ECOPACK Grade | |
| 1900.00 | mg | Each | ECOPACK2 | |
| | Comment | ECOPACK® 2 is STMicroelectronics trade name for ROHS compliant device without Brominated and Chlorinated compound (900ppm) and without Antimony oxide flame retardant (in each organic material) | | |

| Manufacturing information | | | | |
|---------------------------|---------------------|----------------------|---------|---|
| J-STD-020 MSL Rating | Classification Temp | Nbr of Reflow Cycles | |  life.augmented |
| NA | NA | NA | | |
| bulk Solder Termination | Terminal Plating | Terminal Base Alloy | Comment | |
| NA | Tin (Sn), matte | Copper Alloy | | |

| Package Designator | Size | Nbr of instances | Shape | |
|--------------------|--------------------|------------------|--------------|--|
| SIP | 10-9.1-4.5 | 3 | THROUGH HOLE | |
| Comment | TO 220 AB NON ISOL | | | |

| QueryList : RoHS Directive 2011/65/EU-July 2011 – Annex II amended by Directive 2015/863-March 2015 | |
|--|--|
| Query | Response |
| 1 - Product(s) meets EU RoHS requirement without any exemptions | FALSE |
| 2 - Product(s) meets EU RoHS requirements except lead in solder and this usage may qualify under the lead in solder '7b' exemption (other selected exemptions may apply) | FALSE |
| 3 - Product(s) meets EU RoHS requirements by application of the selected exemption(s) | TRUE |
| 4 - Product(s) does not meet EU RoHS requirements and is not under exemptions | FALSE |
| Exemption Id. | Description |
| 7a | Lead in high melting temperature type solders (i.e. lead- based alloys containing 85 % by weight or more lead) |

| QueryList : ELV directive : 2000/53/EC amended 2017/2096 _November 2017 | |
|---|---|
| Query | Response |
| 1 - Product(s) meets EU ELV requirements without any exemptions | FALSE |
| 2 - Product(s) meets EU RoHS requirements by application of the selected exemption(s) | TRUE |
| Exemption Id. | Description |
| 8e | Lead in high melting temperature type solders (i.e. lead-based alloys containing 85 % by weight or more lead) |

| QueryList : California Prop65 list, dated 25th May 2018 | | | |
|--|------------------------|-----------------|----------------|
| Query | | | Response |
| 1 - The product does not contain identified substance from California Prop 65 List, no exposure to consumers is foreseen | | | FALSE |
| 2 - The product is containing below substance(s) from California Prop 65 List, no exposure to consumers is foreseen | | | TRUE |
| Substance | amount in product (mg) | Application | ppm in product |
| Nickel | 0.65 | Die - Leadframe | 340 |
| Lead | 12.01 | Soft solder | 6319 |
| | | | |

| QueryList : REACH-27th June 2018 | | | | |
|---|-------------------------|--|--|--------------------------------------|
| Query | | | | Response |
| 1 - Product(s) does not contain REACH Substances Of Very High Concern above the limits per the definition within REACH | | | | FALSE |
| CategoryLevel_Name | CategoryLevel_Threshold | amount in product (mg) | Application | ppm in product |
| Lead | 1000 ppm | 12.007 | Soft solder | 6319 |
| 2 - Product(s) does not contain REACH Substances Of Very High Concern in any Embedded article nor Homogeneous Material above the limits per the definition within REACH | | | | FALSE |
| CategoryLevel_Name | CategoryLevel_Threshold | Amount in Embedded Article / Homogeneous Material (mg) | Application - Article / Homogeneous Material | ppm in Article /Homogeneous Material |
| Lead | 1000 ppm | 12.01 | Soft solder | 954983 |
| | | | | |

| Material Composition Declaration : note : Substance present with less 0.001mg will not be declared in this document | | | | | | Mfr Item Name | H8D2*Z02Q02Y | | | | | |
|--|---------------------------------|----------------------|------------|-----------|-----------------------------|------------------|--------------|---------------------|---------|-------------|---|--------------------------------|
| Homogeneous Material | Material Group | Mass | UoM | Level | Substance Category | Substance | CAS | Exempt | Mass | UoM | Concentration in homogeneous material (ppm) | Concentration in product (ppm) |
| Die | M-011 Other inorganic materials | 14.615 | mg | supplier | die | Silicon (Si) | 7440-21-3 | | 13.746 | mg | 940541 | 7235 |
| | | | | supplier | metallization | Aluminium (Al) | 7429-90-5 | | 0.569 | mg | 38933 | 299 |
| | | | | supplier | metallization | Nickel (Ni) | 7440-02-0 | | 0.062 | mg | 4242 | 33 |
| | | | | supplier | metallization | Titanium (Ti) | 7440-32-6 | | 0.013 | mg | 889 | 7 |
| | | | | supplier | metallization | Tungsten (W) | 7440-33-7 | | 0.020 | mg | 1368 | 11 |
| | | | | supplier | Passivation | Silicon Oxide | 7631-86-9 | | 0.084 | mg | 5748 | 44 |
| | | | | supplier | back side metallization | Titanium (Ti) | 7440-32-6 | | 0.007 | mg | 479 | 4 |
| | | | | supplier | back side metallization | Gold (Au) | 7440-57-5 | | 0.020 | mg | 1368 | 11 |
| | | | | supplier | back side metallization | Nickel (Ni) | 7440-02-0 | | 0.094 | mg | 6432 | 49 |
| | | | | Leadframe | M-004 Copper and its alloys | 1253.534 | mg | supplier | alloy | Copper (Cu) | 7440-50-8 | |
| supplier | alloy | Iron (Fe) | 7439-89-6 | | | | | | 1.253 | mg | 1000 | 659 |
| supplier | alloy | Iron Phosphide (FeP) | 26508-33-8 | | | | | | 0.376 | mg | 300 | 198 |
| supplier | metallization | Nickel (Ni) | 7440-02-0 | | | | | | 0.490 | mg | 391 | 258 |
| supplier | metallization | Phosphorus (P) | 7723-14-0 | | | | | | 0.040 | mg | 31 | 22 |
| Soft solder | Solder | 12.573 | mg | JIG - R | solder | Lead (Pb) | 7439-92-1 | 7a-Lead in high met | 12.007 | mg | 954983 | 6319 |
| | | | | supplier | solder | Silver (Ag) | 7440-22-4 | | 0.314 | mg | 24974 | 165 |
| | | | | supplier | solder | Tin (Sn) | 7440-31-5 | | 0.252 | mg | 20043 | 133 |
| Bonding wires | M-011 Other inorganic materials | 10.589 | mg | supplier | wire | Aluminium (Al) | 7429-90-5 | | 10.589 | mg | 1000000 | 5573 |
| Encapsulation | M-011 Other inorganic materials | 602.327 | mg | supplier | mold compound | Silica, vitreous | 60676-86-0 | | 524.024 | mg | 869999 | 275802 |
| | | | | supplier | mold compound | Epoxy resin | 25068-38-6 | | 60.233 | mg | 100000 | 31702 |
| | | | | supplier | mold compound | Phenol resin | 29690-82-2 | | 15.058 | mg | 25000 | 7925 |
| | | | | supplier | mold compound | Carbon Black | 1333-86-4 | | 3.012 | mg | 5001 | 1585 |
| Connections coating | Solder | 6.362 | mg | supplier | solder alloy | Tin (Sn) | 7440-31-5 | | 6.362 | mg | 1000000 | 3348 |