



Materials Declaration Form

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|------------------------|-------------------------------------|------------------------|----------------------------------|
| IPC Form Type * | 1752 Distribute | Version | 2 |
| Sectionals * | Material Info Manufacturing Info | Subsectionals * | A-D <i>* : Required Field</i> |

| Supplier Information | | | |
|------------------------------------|--|-----------------------------|-----------------------------------|
| Company Name * | STMicroelectronics | Response Date * | 2016-12-06 |
| Contact Name * | Refer to Supplier Comment section | | Refer to Supplier Comment section |
| Authorized Representative * | Floriana San Biagio | Representative Title | AMG MD CHAMPION |
| Representative Phone * | Refer to Supplier Comment section | | 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 |
| | HYWY*0861AR6 | A | ZS1A | 2016-12-06 |
| Amount | UoM | Unit type | ST ECOPACK Grade | |
| 16.38 | mg | Each | ECOPACK® 3 | |
| | Comment | ECOPACK® 3 is STMicroelectronics trade name for ROHS compliant device without use of any ROHS exemption and without Halogen nor Antimony | | |

| Manufacturing information | | | | |
|-------------------------------------|----------------------------------|----------------------|---------|---|
| J-STD-020 MSL Rating | Classification Temp | Nbr of Reflow Cycles | |  life.augmented |
| 1 | 260 | 3 | | |
| bulk Solder Termination | Terminal Plating | Terminal Base Alloy | Comment | |
| tin is used or other bulk terminati | Nickel/Palladium/Gold (Ni/Pd/Au) | Copper Alloy | | |

| Package Designator | Size | Nbr of instances | Shape | |
|--------------------|---|------------------|-----------|--|
| SOT | 2.9x 1.6x 1.05 | 5 | gull wing | |
| Comment | Package: WY SOT 23-5; MDF valid for TS861AILT | | | |

| QueryList : RoHS Directive 2011/65/EU-July 2011 – Annex II amended by Directive 2015/863-April 2015 | |
|--|-------------|
| Query | Response |
| 1 - Product(s) meets EU RoHS requirement without any exemptions | true |
| 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) | false |
| 4 - Product(s) does not meet EU RoHS requirements and is not under exemptions | false |
| Exemption Id. | Description |
| | |

| QueryList : REACH-20th June 2016 | | | | |
|--|-------------------------|------------------------|-------------|----------------|
| Query | | | | Response |
| 1 - Product(s) does not contain REACH Substances Of Very High Concern above the limits per the definition within REACH | | | | true |
| CategoryLevel_Name | CategoryLevel_Threshold | amount in product (mg) | Application | ppm in product |
| | | | | |

| Material Composition Declaration | | | | | | Mfr Item Name | HYWY*0861AR6 | | | | | |
|----------------------------------|---------------------------|-------|-----|----------|--------------------|-------------------------------------|--------------|--------|-------|-----|---|--------------------------------|
| Homogeneous Material | Material Group | Mass | UoM | Level | Substance Category | Substance | CAS | Exempt | Mass | UoM | Concentration in homogeneous material (ppm) | Concentration in product (ppm) |
| Die | Other inorganic materials | 0.829 | mg | supplier | die | Silicon (Si) | 7440-21-3 | | 0.822 | mg | 991556 | 50183 |
| | | | | supplier | metallization | Aluminium (Al) | 7429-90-5 | | 0.003 | mg | 3619 | 183 |
| | | | | supplier | Passivation | Silicon Nitride | 12033-89-5 | | 0.002 | mg | 2413 | 122 |
| | | | | supplier | Passivation | Silicon Oxide | 7631-86-9 | | 0.002 | mg | 2413 | 122 |
| Leadframe | Copper & its alloys | 6.682 | mg | supplier | alloy | Copper (Cu) | 7440-50-8 | | 6.418 | mg | 960491 | 391819 |
| | | | | supplier | alloy | Iron (Fe) | 7439-89-6 | | 0.162 | mg | 24244 | 9890 |
| | | | | supplier | alloy | Iron Phosphide (FeP) | 26508-33-8 | | 0.002 | mg | 299 | 122 |
| | | | | supplier | alloy | Zinc (Zn) | 7440-66-6 | | 0.009 | mg | 1347 | 549 |
| | | | | supplier | metallization | Nickel (Ni) | 7440-02-0 | | 0.083 | mg | 12421 | 5067 |
| | | | | supplier | metallization | Palladium (Pd) | 7440-05-3 | | 0.007 | mg | 1048 | 427 |
| | Precious metals | | | supplier | metallization | Gold (Au) | 7440-57-5 | | 0.001 | mg | 150 | 61 |
| | | | | supplier | metallization | Gold (Au) | 7440-57-5 | | 0.001 | mg | 150 | 61 |
| Die attach | Other Organic Materials | 0.077 | mg | supplier | glue | Silver (Ag) | 7440-22-4 | | 0.055 | mg | 714286 | 3358 |
| | | | | supplier | glue | methylene diacrylate | 42594-17-2 | | 0.013 | mg | 168831 | 794 |
| | | | | supplier | glue | Dicyclopentenloxyethyl methacrylate | 68586-19-6 | | 0.003 | mg | 38961 | 183 |
| | | | | supplier | glue | Bismaleimide resin | Proprietary | | 0.003 | mg | 38961 | 183 |
| | | | | supplier | glue | Palladium (Pd) | 7440-05-3 | | 0.001 | mg | 12987 | 61 |
| | | | | supplier | glue | Dicumyl peroxide | 80-43-3 | | 0.002 | mg | 25974 | 122 |
| Bonding wires | Precious metals | 0.151 | mg | supplier | wire | Gold (Au) | 7440-57-5 | | 0.151 | mg | 1000000 | 9219 |
| Encapsulation | Other Organic Materials | 8.642 | mg | supplier | mold compound | Epoxy Resin | Proprietary | | 0.342 | mg | 39574 | 20879 |
| | | | | supplier | mold compound | Biphenyl epoxy resin | 85954-11-6 | | 0.129 | mg | 14927 | 7875 |
| | | | | supplier | mold compound | Phenol resin | Proprietary | | 0.357 | mg | 41310 | 21795 |
| | | | | supplier | mold compound | Silica | 60676-86-0 | | 6.927 | mg | 801551 | 422894 |
| | | | | supplier | mold compound | Carbon Black | 1333-86-4 | | 0.015 | mg | 1736 | 916 |
| | | | | supplier | mold compound | Zinc hydroxide | 20427-58-1 | | 0.159 | mg | 18399 | 9707 |
| | | | | supplier | mold compound | Magnesium hydroxide | 1309-42-8 | | 0.713 | mg | 82504 | 43529 |