Qualitek International, Inc. has developed a new patented alloy, Ecolloy™ that has higher tensile strength and temperature cycling than SnCu alloys. Melting range of this new alloy is lower than SnCu alloys so it has better wettability during the reflow process. Presence of a much thinner IMC (Cu₃Sn) layer of Ecolloy™ facilitates higher drop performance in comparison.

**ECOLLOY™** is available in Solder Paste, Bar & Wire Forms
New! **ECOLLOY™**

Advantages In Wave Soldering

- Low Dross
- Low Copper Dissolution Rate
- Excellent Wettability
- Higher Temperature Cycling than SnCu alloys and low silver SAC alloys
- Low Voids
New! **ECOLLOY™**

**Solder Bar Alloy Comparison**

<table>
<thead>
<tr>
<th>Properties</th>
<th>Unit</th>
<th>Ecolloy™</th>
<th>SAC305</th>
<th>SACX0307</th>
<th>Sn99.3/Cu0.7</th>
<th>Sn100C</th>
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</thead>
<tbody>
<tr>
<td>Melting Point</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Solidus</td>
<td>°C</td>
<td>221</td>
<td>217</td>
<td>218</td>
<td>226</td>
<td>227</td>
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<tr>
<td>Liquidus</td>
<td>°C</td>
<td>227</td>
<td>221</td>
<td>228</td>
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<tr>
<td>Density</td>
<td>g/cm³</td>
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<td>7.3</td>
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<tr>
<td>Hardness</td>
<td>HV</td>
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<td>14.1</td>
<td>13.9</td>
<td>12.5</td>
<td>11.3</td>
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<tr>
<td>Tensile Strength @ RT</td>
<td>MPA</td>
<td>63</td>
<td>49</td>
<td>36</td>
<td>34</td>
<td>35</td>
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<tr>
<td>Elongation @ RT</td>
<td>%</td>
<td>50</td>
<td>63</td>
<td>64</td>
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<tr>
<td>Coefficient of Thermal Expansion</td>
<td>ppm/°C</td>
<td>23</td>
<td>23</td>
<td>22</td>
<td>23</td>
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<tr>
<td>Specific Heat</td>
<td>J/g-K</td>
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<td>Electrical Resistivity</td>
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<td>Electrical Conductivity</td>
<td>MS/m</td>
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<td>7.7</td>
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</table>
Intermetallic compounds (IMC) layer (Cu$_3$Sn) in Ecolloy™ is thinner than IMC layer in SAC305 that potentially leads to a higher drop performance. Ecolloy also has a higher tensile strength than SAC alloys.
Differential scanning calorimetry or DSC is a thermo analytical technique in which the difference in the amount of heat required to increase the temperature of a sample and reference is measured as a function of temperature.

DSC results show that Ecolloy™ has a lower melting point than SnCu alloys. This indicates that Ecolloy has better performance than SnCu during reflow. Spreadability of Ecolloy is better than SAC105, so Ecolloy has better wettability during reflow process than low silver SAC alloy.
SAC305 has shown to have the best TCT performance vs. SACX0307, SAC105 and SnCu alloys. However, TCT performance of Ecolloy™ has significant improvement than low silver containing SAC alloys.
New! **ECOLLOY™**

SAC 305 vs Ecolloy Solder Paste

**Appearance & Reflow**

*Solder Paste Appearance*

- **Ecolloy™**

- **DSP825HF SAC 305**

*REFLOW 825HF Solder Paste*

- **Ecolloy™ Type 4 89%**

- **SAC305 Type 4 89%**

*Standard Metal Loading*
88% No-Clean
89% for Water-Soluble
New! ECOLLOY™

SAC 305 vs Ecolloy Solder Paste

Hot Slump – Solder Ball
New! ECOLLOY™
Available In Following Forms:

Solder Paste:
• No-Clean
• Water-Soluble

Paste Particle Size:
• Type 3
  Mesh -325+500
  Micron 45-25
• Type 4
  Mesh -400+635
  Micron 38-20

Bar Solder:
• 2 lbs. each bar
• 20lb. box

Wire Solder:
• 1lb. Spool
• 5lb. Spool
• 25lb. box