

APPLICATION NOTE

Indalloy[®]291



Introduction

Indalloy[®]291 is a direct replacement to the previously patent-protected Sn100C[®]* alloy. **Indalloy[®]291** is commonly used in wave soldering and reworking processes as a low-silver, lead-free alternative to SAC305. **Indalloy[®]291** is available in bar, solder paste, and solid and cored wire.

| Product Name | Melting Point | Tin | Copper | Nickel | Germanium |
|---------------------------|---------------|--------|--------|--------|-----------|
| Indalloy [®] 291 | 227°C | 99.25% | 0.70% | 0.05% | ≤0.01% |

Key Features

- Lower overall cost resulting from the lower silver content compared to other Pb-free alloy families
 - No silver or bismuth
- Eutectic alloy that acts like a SnPb alloy
- **Indalloy[®]291** has a slower copper dissolution rate as compared to SAC305; **Indalloy[®]291** erodes copper from holes and pads on the PCB more slowly than SAC solders
- Shiny, aesthetically pleasing solder joints
- Reduced bridging and icicles
- Works well in selective and dip soldering processes

Indalloy[®]291 Advantages Compared to SAC305

- Lower cost of ownership
- More aesthetically pleasing solder joint
- Slower dross rate

| 260°C | Run Time (hours) | Dross (g) | Dross Rate |
|---------------------------|------------------|-----------|-------------------|
| Indalloy [®] 291 | 25.00 | 1,357.6 | 54.30g dross/hour |
| SAC305 | 19.92 | 1,303.5 | 65.44g dross/hour |

Indalloy[®]291 Limitations Compared to SAC305

- **Indalloy[®]291** will require that the solder pot be 10°C hotter
- SAC305 has shown better thermocycling reliability performance

Effect on the Solder Pot

High-tin, lead-free solders containing higher levels of silver have been shown to be more aggressive toward a key solder pot material—stainless steel. However, the **Indalloy[®]291** alloy has been shown to be less aggressive toward that same material. If a solder pot made of stainless sheet does not show early signs of degradation, then the introduction of the **Indalloy[®]291** alloy is possible.

Introducing Indalloy[®]291 to the Wave Solder Process After Using a SAC Alloy

When introducing **Indalloy[®]291** into the wave soldering process after previously using a SAC alloy, the solder pot must be emptied and refilled with the new alloy.

Indalloy[®]291 and Cored Wire Soldering

Just as **Indalloy[®]291** will show reduced icicles in the wave soldering process, the same benefit is applied to hand and automated soldering.

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