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 no-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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