

# Durafuse<sup>®</sup> HR



## A high-reliability alloy that can achieve voiding levels lower than SAC305

- Drop-in compatibility with most SAC reflow profiles (air reflow)
- No need for a vacuum reflow oven
- Continuously meets voiding specs, reduces waste, and increases throughput



## Durafuse<sup>®</sup> HR is designed to withstand 3,000+ thermal cycles at -40°C/+125°C across different PCB finishes and component types

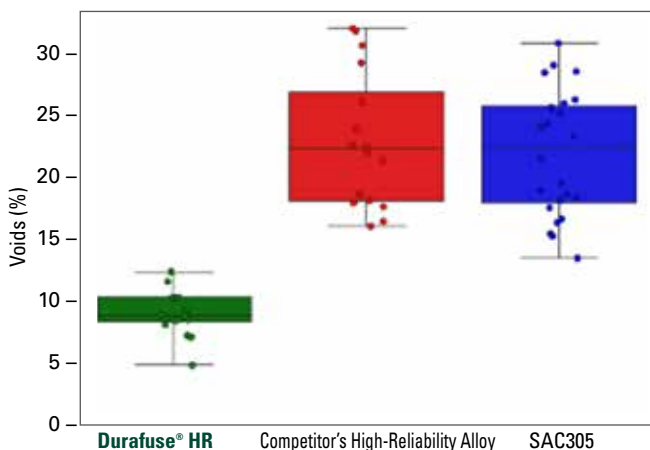
- Superior solder joint crack resistance
- Increased shear strength over time
- Longer characteristic lifetime compared to SAC305 and the competitor's high-reliability alloy

Durafuse<sup>®</sup> HR uses a novel, mixed-alloy technology to create homogeneous solder joints with intermetallic compounds that enhance its high-reliability properties. This alloy was designed for automotive applications that are looking to extend the mission profiles of their electronics.

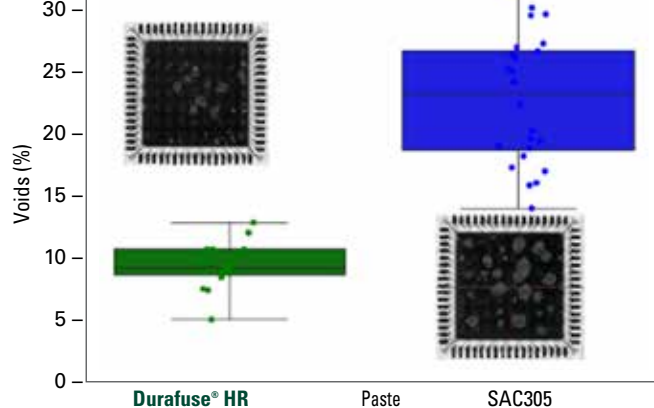
## QFN Voiding Results

Durafuse<sup>®</sup> HR outperforms SAC305 and the competitor's high-reliability alloy on Immersion Tin Surface Finish

5mm QFN with full print coverage, 5mil stencil



10mm QFN with 3x3 window pane, 5mil stencil  
Large Pad QFN on ImSn Surface Finish



Profile:  
• 240°C Tpeak  
• 0.7°C/s  
• 65s TAL

[indium.com/durafuse](http://indium.com/durafuse)



Contact our engineer: [info@indium.com](mailto:info@indium.com)

**From One Engineer To Another<sup>®</sup>**

All of Indium Corporation's solder paste and preform manufacturing facilities are IATF 16949:2016 certified. Indium Corporation is an ISO 9001:2015 registered company.

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Form No. 100269 (A4) R0



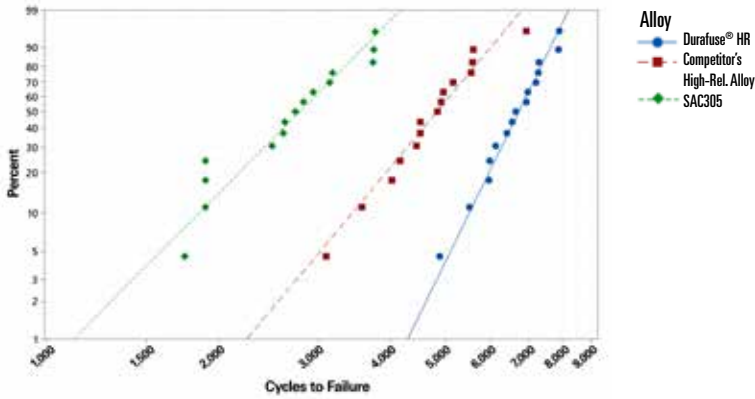
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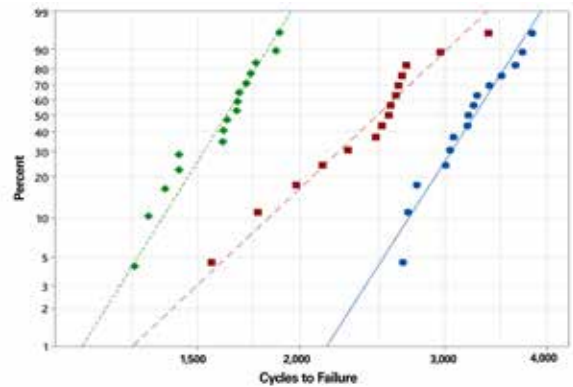
Durafuse<sup>®</sup> HR Outperforms SAC305 and the Competitor's High-Reliability Alloy

## QFN TCT Results (-40°C/+125°C & -40°C/+150°C)

-40°C/125°C – QFN – ImSn Surface Finish

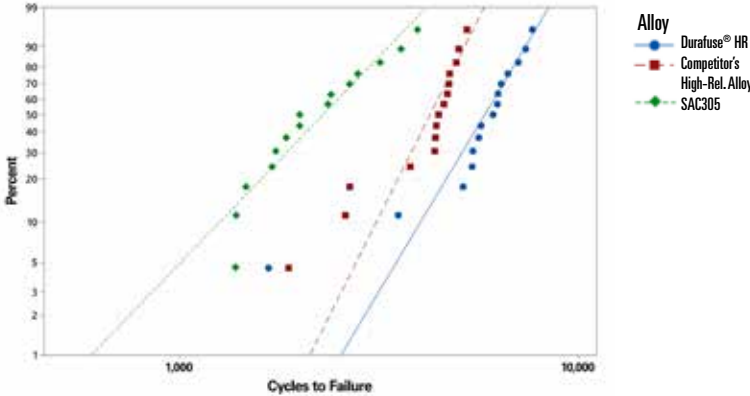


-40°C/150°C – QFN – ImSn Surface Finish

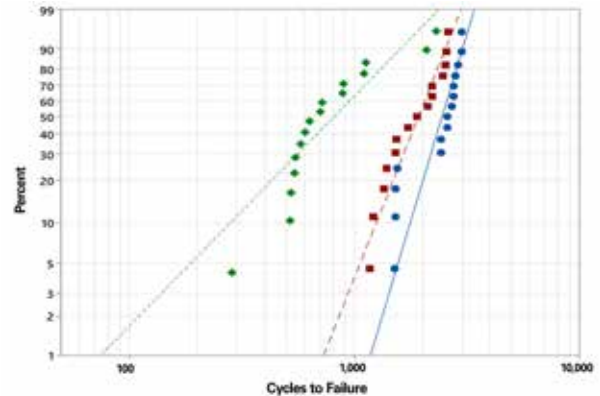


## BGA TCT Results (-40°C/+125°C & -40°C/+150°C)

-40°C/125°C – BGA192 – ImSn Surface Finish

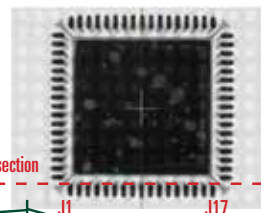


-40°C/150°C – BGA192 – ImSn Surface Finish



## QFN Thermal Cycling -40°C/+125°C TCT QFN on ImSn Surface Finish 3,000 Cycles

Cracking visible primarily on component side



Representative cross sections J1-J3 shown below



Massive cracking and complete failure on most joints at 3,000 cycles



Inconsistent performance with some complete failures around 3,000 cycles



Minor cracking with zero failures up to 4,000 cycles



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