

# PRODUCT DATA SHEET

# NanoFoil®

## Introduction

As a sacrificial heat source in soldering applications, **NanoFoil®** eliminates the need for an oven or furnace and is able to bond surfaces that have CTE mismatch. After the reaction, **NanoFoil®** becomes a non-functional part of the solder joint.

**NanoFoil®** can also be used as a reaction initiator in standard sheet or powder form. **NanoFoil®** can be produced based on customer specifications, including reaction velocity and output energy.

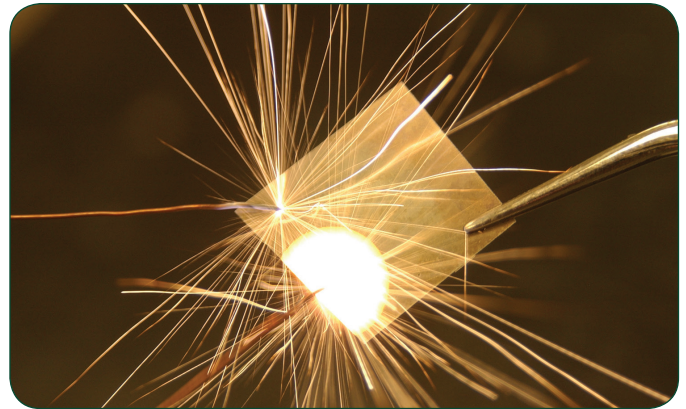
Non-bonding applications can also take advantage of the controlled energy released in the **NanoFoil®** reaction. The metallic reaction does not require an oxidizer and does not generate gas. This allows **NanoFoil®** to be used as a primer to initiate secondary reactions. The controlled reaction rate of **NanoFoil®** can be tailored to a range of design criteria, which is ideal for fuses and delays.

## Features

- Rapid, controlled, locally-applied heat source
- Instantaneous, flux-free soldering and brazing at room temperature
- Suitable for use with high-temperature solders or brazes
- Enables high-strength bonds between most combinations of materials

## Applications

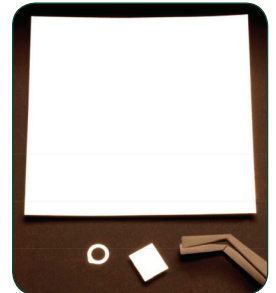
- Reaction initiation
- Reaction delay
- Fuses
- Joining of dissimilar materials in large area formats, such as sputtering targets, armor, and other rigid assemblies
- Soldering or brazing of temperature-sensitive electronics components or assemblies



## Forms of NanoFoil®

**NanoFoil®** is available in a range of thicknesses from 40–100µm in free-standing forms to cover any bonding geometry including:

- Sheets
- Preforms
- Powders



Preform packaging includes tape & reel and waffle packs.

## NanoFoil® Properties

Composition Before Reaction	Alternating layers of Ni and Al
Composition After Reaction	Ni <sub>50</sub> Al <sub>50</sub>
Foil Density	5.6–6.0g/cm <sup>3</sup>
Heat of Reaction	1,050–1,250J/g
Reaction Velocity	6.5–8 meters/second
Maximum Reaction Temperature	1,350°–1,500°C (2,460°–2,730°F)
Thermal Conductivity	35–50W/mK
RoHS Compliant	Pb-free

## Technical Support

Indium Corporation's internationally experienced engineers provide in-depth technical assistance to our customers. Thoroughly knowledgeable in all facets of Material Science as it applies to the electronics and semiconductor sectors, Technical Support Engineers provide expert advice in solder properties, alloy compatibility and selection of solder preforms, wire, ribbon, and paste. Indium Corporation Technical Support engineers provide rapid response to all technical inquiries.

## Safety Data Sheets

The SDS for this product can be found online at <http://www.indium.com/sds>

This product data sheet is provided for general information only. It is not intended, and shall not be construed, to warrant or guarantee the performance of the products described which are sold subject exclusively to written warranties and limitations thereon included in product packaging and invoices. All Indium Corporation's products and solutions are designed to be commercially available unless specifically stated otherwise.

## From One Engineer To Another®

Contact our engineers today: [askus@indium.com](mailto:askus@indium.com)

Learn more: [www.indium.com](http://www.indium.com)

ASIA +65 6268 8678 • CHINA +86 (0) 512 628 34900 • EUROPE +44 (0) 1908 580400 • USA +1 315 853 4900

Form No. 98569 (A4) R3

ISO 9001  
REGISTERED



©2018 Indium Corporation