Rotary and Planar Sputtering Targets
**High Throughput**

Cylindrical, rotatable sputtering targets increase material utilization and system throughput while reducing the total cost of ownership. The cylindrical, rotatable shape offers greater than 70% material utilization with less system downtime and high system throughput.

The targets are made by Indium Corporation’s vertically integrated proprietary process utilizing aerospace powder metallurgy technology. The production process output results in a consistently homogeneous alloy, with low contaminate levels and consistent density throughout the target.

**Copper-Indium-Gallium**

CIG alloy targets have very low levels of impurities, which enable the manufacture of high efficiency solar cells. This is because we can control the impurity levels before and during our manufacturing process.

Targets can be used in reactive or non-reactive modes. Using fully alloyed targets with various Cu/III and Ga/III ratios enable grading of the deposited CIG chemical composition. This replicates the process used for manufacturing high-efficiency solar cells.

**Copper-Gallium**

The targets can be produced in chemistry ranges from 50% to 80% Cu atomic weight, with Ga making up the balance of the alloy. They are produced as a monolithic material, bonded onto the backing tube during Indium Corporation’s unique hybrid consolidation process.
Planar Targets

Custom Solutions
Targets are available in custom shapes, sizes, and alloy composition to suit your unique needs. Consistent, tightly controlled chemistry throughout the target enable better control on the resulting solar cell chemistry and morphology.

Superior Quality
- Capability to analyze and control impurities to the part per billion levels.
- Tightly controlled Fe, Ni, Zn, Cd, and Hg enable higher solar conversion efficiency.
  - Hg=10 ppm max*
  - Fe=25 ppm max*
  - Ni=25 ppm max*
  - Zn=25 ppm max*
- Alloys available with Cu/III ratios 0.1 – 0.99 and Ga/III ratios 0.2 – 0.3.
- The targets are securely packed to avoid contamination and damage during shipment. Custom packaging is available on request.

Rectangular Planar:
- Length: up to 1524mm (60 inches)
- Width: up to 381mm (15 inches)
- Thickness: up to 12.7mm (0.5 inches)

Round Planar:
- Diameter: 50.38 – 254mm (2 – 10 inches)
- Thickness: 9.525mm (0.375 inches)

*Typical values. Higher purities are available upon request.

Oneway (JMP) Analysis of Data By Sample Attribute=GalI

Spec Limits

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Dedicated R&D

Indium Corporation’s R&D includes research scientists and applications engineers with decades of experience in solar, thin film, semiconductor, flat-panel display, and electronics technologies. In addition, our global network of industry experts provides further depth of knowledge and experience. This, together with our customized product development and commitment to confidentiality, is why Indium Corporation is a trusted partner for large and small companies throughout a wide variety of industries.

SOLAR ASSEMBLY MATERIALS: The Complete Package

Sputtering Targets
- The cylindrical, rotatable shape offers greater than 70% material utilization
- Planar targets available for prototyping and high-volume production
- Available in custom shapes, sizes, and alloy composition to suit your unique needs
- Cu/In/Ga, Cu/Ga, In/Sn, ITO, Sn/O, AZO, and custom alloys

Evaporation Sources
- Custom-shaped starter sources
- Low levels of oxygen
- Tear-drop and round shot

Solar Tabbing and Bus Ribbon
- Custom purities and base metals
- Coatings of various solders and thicknesses available
- Unique low temperature alloy coatings

Evaporation Sources
- Custom-shaped starter sources
- Low levels of oxygen
- Tear-drop and round shot

Alloy Powders
- Various particle size distributions and chemistries
- Tightly controlled impurity levels

Metallization Pastes
- Metallization pastes available for both thin film and crystalline silicon solar cells
- Finer line resolution and minimal shadowing effect
- Lower series resistance
- Increased usable life of solar cell

Solders
- 300+ alloys to match your process requirements
- Variety of Pb-free alloys
- Pastes, preforms, wire, ribbon, bar
- Various shapes and sizes to suit your requirements

Fluxes
- Wide range of fluxes to match your needs
- Customized packaging
- Suitable for high and low temperature soldering

NanoFoil® for Sputter Target Bonding
- Low stress room temperature bonding
- Flux-free
- High strength
- Solar sputter target assembly prototyping and bonding available

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