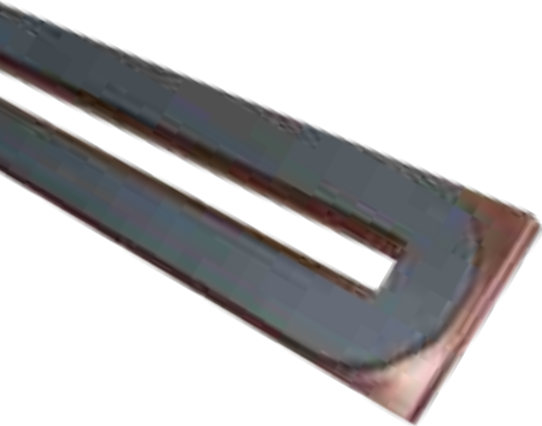


## Target Bonding



### Introduction

Many sputtering targets need to be bonded to a backing plate or a magnetron body. When it comes to high power sputtering with low target cracking and good mechanical stability, the bonding procedure is crucial.

Our engineers and bonding staff can look back on many years of experience in providing joining techniques to correlate with different material combinations and applications. The right choice of adherence coating, diffusion barriers and the adequate bonding method is a prerequisite for obtaining perfect results.

### Bonding Technologies

robeko bonding processes ensure the thermal integrity of the interface between the system's cooling assembly and the target surface which suffers most of heat exposure. In cooperation with our customer we select the best joining technique for assembling the target/backing plate from one of the following bonding methods:

-  Indium bonding
-  Elastomer bonding
-  Nanobond
-  Epoxy bonding (conductive)

The two main methods are described in the following.



### Indium Bonding

Sputtered intermediate layers and Indium or Indium-based solders are used in the prevailing technology. Backing plates and targets are wetted with Indium, placed onto each other and aligned at about 160 °C. After fixation the assembly is allowed to cool down to room temperature.

# Target Bonding

## Nanobond

Nanobond can be performed at room temperature. Using a reactive foil as a heat source between target and backing plate, this method causes low thermal stress, creates high bonding coverage and allows higher sputtering power densities effected by solders with higher melting points. Nanobond is a superior method of bonding materials with dissimilar expansion coefficients.








## Backing Plates and Tubes

Planar backing plates and cathode bodies are manufactured mainly from high purity copper which boasts the best thermal properties. The backing plates can also be composed of different materials such as titanium, molybdenum and stainless steel if required.

For rotatable magnetrons we supply backing tubes made of stainless steel and titanium. We can provide any length up to 4000 mm. Our backing tubes, 133 x 4 mm in thickness, are manufactured from cold drawn seamless pipes according to the industry standard OD. Other dimensions like 160 mm OD are available at request.



## Workshop Equipment

-  Sputter system for backside metallization
-  Ultrasonic wetting system
-  Four bonding tables, maximum length 3800 mm
-  Remelting furnace for solder
-  Hydraulic press for Nanobond

