

Advanced Metal Oxide Sputtering Targets

Kurt J. Lesker
Company

MATERIALS
DIVISION

Applications

- Transparent conductive oxides (TCOs) for thin film transistor liquid crystal display (TFT-LCD)
- Thin film battery
- High temperature superconductor (Tc)
- Ferroelectrics, Piezoelectrics, Photovoltaic
- Sputtered metal oxide films for R&D applications

Features

- High purity
- Unique customized stoichiometry
- High phase purity

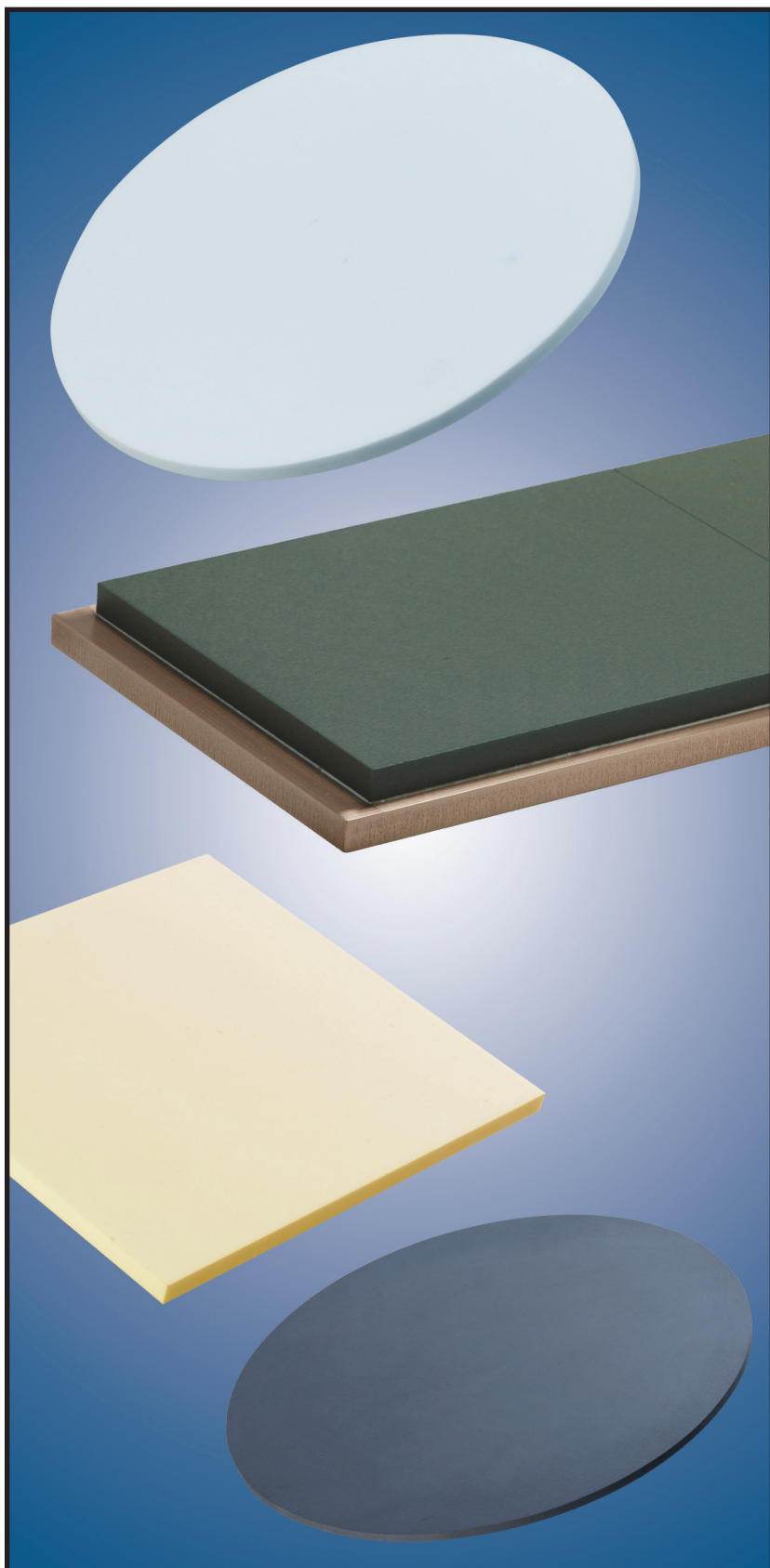
Manufacturing Process

- Powder preparation
 - Precision mixing
 - Calcination to achieve phase pure raw materials
 - Phase purity analysis via x-ray diffraction (XRD)
 - Powder particle sizing and analysis (PSA)
- Proprietary pressing of "green" parts
- High density sintering
- Final grinding and/or machining
- Vacuum Cleaning and final packaging
 - Protection from environmental contaminants
 - Protection during shipment

Options

- Target sizes
 - Circular targets up to 8" (200mm) D; 12.0" (300mm) D
 - Planar tiles up to 8" (200mm) x 7" (175mm)
- TCOs for TFT-LCD - IZO, ZnO/SnO₂
- Thin film battery - LiCoO₂, Li₃PO₄
- High temperature superconductor (Tc)
 - CeO₂, MgO, LaAlO₃, LaMnO₂, SrTiO₃
- Ferroelectrics and piezoelectrics - Al₂O₃, BaFe₁₂O₁₉, BaTiO₃, Ba(1-x)Sr(x)TiO₃, La(1-x)Ca(x), MnO₃, La(1-x)Sr(x)MnO₃, MgO, PbZr(1-x)Ti(x)O₃, Pr(1-x)Ca(x)MnO₃, SrTiO₃, SrRuO₃, TiO₂
- Photovoltaic - ITO, ZnO, ZnO/X, IZO, GIZO
- Customized mixed oxides for R&D or production
- Sputtering target bonding service

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Advanced Metal Oxides Program

Purity

Most thin film applications are sensitive to impurities. We have partnered with high-end chemical and powder suppliers to ensure high purity, high quality precursor materials. Cleanliness of equipment and facilities is also a very high priority ensuring that your research materials are not contaminated during processing.

Particle size analysis

After powders are processed, a sample is analyzed to determine the particle size distribution. If the desired distribution is not achieved, the powder is then re-processed and checked again. Powder sizing is very important for achieving high density sintered ceramic parts. This in-process quality check capability helps to ensure a consistent, high quality sputtering target.

Inventory

Lead times can be distressing for customers when they are under time constraints to produce results for a project. Oxides and other ceramic materials can be time consuming to produce. Therefore, KJLC stocks a large number of standard size target materials in many common compositions for immediate order and shipment. Use our e-commerce website or call our sales department during business hours to determine if we keep the material you require in stock.

Customized Stoichiometries

Our in-house powder manufacturing capabilities allow us to provide an endless list of compositions and custom stoichiometries for your mixed metal oxide sputtering target requirements. Our manufacturing operation is set up to cater to research users and production customers alike. We understand that today's research is tomorrow's industry. Therefore we have invested in the proper staff and equipment to be able to grow with an R&D user through pilot production to full out production.

XRD

X-ray diffraction is used to verify proper phase composition of the manufactured powder after calcination, before pressing and sintering. X-Ray diffraction can also be performed on sintered samples upon request, in the case that a customer requires this data to accompany their sputtering target order.

Density

The proprietary method used to cold-form the green parts before sintering allows for a homogeneous green density that further translates to the density distribution of the final part. In-process power quality verification combined with the ability to produce a homogeneous green part results in high density, high quality oxide ceramic sputtering targets.

Machining and Finishing

Highly experienced machinists will handle your high density, sintered sputtering target with care as they perform the necessary machining operations to ensure that the dimensional requirements are met. Cleanliness is high priority during this time. Immediately afterwards the target is cleaned and packaged ready for installation in a vacuum system when it is received by the customer.

Bonding

Copper backing plates are used to provide stability for and improve cooling for many sputtering target materials. Almost all oxide materials benefit from bonding. Our in-house bonding operation will save time and will help ensure that you get the most use out of your sputtering target. Bonding is recommended for these target materials but will not be performed unless it is requested by the customer.

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Kurt J. Lesker
Company

www.lesker.com

Kurt J. Lesker Company
United States
412.387.9200
800.245.1656
salesus@lesker.com

Kurt J. Lesker Canada Inc.
Canada
416.588.2610
800.465.2476
salescan@lesker.com

Kurt J. Lesker Company Ltd.
Europe
+44 (0) 1424 458100
saleseu@lesker.com

Kurt Lesker (Shanghai) Trading Company
科特·莱思科(上海)商贸有限公司
Asia
+86 21 50115900
saleschina@lesker.com

