LTS Research Laboratories, Inc.

FLUORIDES

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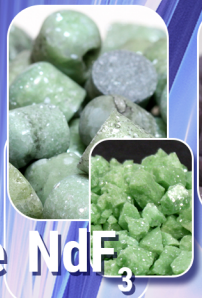

Sputtering Targets

SnO_2-SnF_2 | MgF_2 | CaF_2 | YF_3

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FLUORIDES

DFM FLUORIDES

Since 1992, LTS has been producing mil-spec compliant fluoride materials using the Direct Fluorination Method (DFM).

LTS produces the highest quality fluorides available in the industry:
Our novel DFM process allows for the production of extremely pure compounds with superior deposition properties.

Fluoride compounds produced via hydrofluoric acid (HF) reactions have impurities in the precipitated compound which are not easy to purify out.

The Direct Fluoridation Method (DFM) is a specialized process defined by a high temperature plasma phase reaction of two or three components to increase the purity, viscosity, and consistency of the material. Then, secondary melting in fluorine gas atmosphere compensates for fluorine stoichiometry deficiencies.

The process is costly, cumbersome, and occasionally non-deployable in the cases of scandium fluoride (ScF_3), aluminum fluoride (AlF_3), cryolite (Na_3AlF_6), and a few other Rare Earth solutions of fluorides. LTS employs the DFM process in its production of ultra-high purity fluorides such as LaF_3, GdF_3, NdF_3, $LiScF_4$, CaF_2, and MgF_2 production for DUV-NIR applications, as well as YbF_3, YF_3, BaF_2, CeF_3, and our thorium fluoride (ThF_4)replacement chemicals, solid solutions of YBC fluorides for IR applications.

The process effectively removes contaminants as well as trapped gases. The result is a significantly purer material that undergoes faster, cleaner deposition and ultimately provides a better optical coating.

YBC SPECIALIZED MATERIALS

YBC DFM is a highly preferred category of low-index materials transparent from the NIR to IR regions of the spectrum. YBC DFM materials are recommended for multilayer coatings in AR applications in the 2,000-12,000 nm region, including AR, bandpass, and dichroic filters. They are also suitable for laser coating applications.

YBC-375: The stoichiometry of this material has been optimized for easy deposition onto Ge and ZnSe substrates, making YBC-375 highly suitable for All IR and CO_2 laser component applications.

YBC-905: The stoichiometry of this material has been optimized to form a superior durable coating onto the substrates used in the CO_2 laser applications; however, a high quality deposition is more difficult to achieve than with YBC-375. In addition, YBC-905 cannot be used in high humidity environments or applications around the 3.8 and 5.6 micron range as it has absorption bands in that region of the spectrum.

YBC-907: The stoichiometry of this material has been optimized for extremely low absorption in NIR/IR applications. It is mildly toxic but outperforms radioactive thorium fluoride, making YBC-907 the superior material for use in CO_2 laser component films.