ONEIDA RECHERCHE SERVICES
www.orslabs.fr

MATERIAL OUTGASSING CHARACTERIZATION

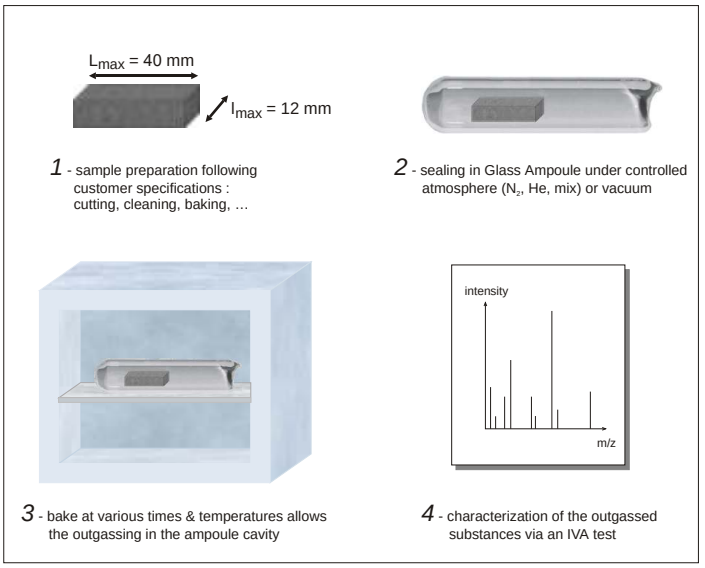
The Material Outgassing Characterization test developed at ORS is a qualitative and quantitative analysis of the gaseous substances desorbed from a material after thermal stress. The analysis measures the relative volumetric concentrations of volatile organics and other substances at the vapor state.

Materials used in electronic components manufacturing may severely influence device reliability. The stability of these materials over time may also affect the short and long term device efficiency. To overcome this concern, ORS developed the glass ampoule sealing technique to trap the substances outgassed from a large range of materials.

The test material is sealed in a glass ampoule, back filled with dry nitrogen, helium, hydrogen, other gas mixtures or a vacuum atmosphere.

The ampoule containing the material is then subjected to thermal stress. Under the effect of temperature, the material outgasses and substances are trapped inside the ampoule's cavity. Specialized IVA and/or GC/MS methods may then be utilized for identification of evolved substances.

Through the combination of various time and temperature conditions, the outgassing profile of materials may be plotted and modeled for standard conditions of use and long term aging.



1 - sample preparation following customer specifications : cutting, cleaning, baking, ...

2 - sealing in Glass Ampoule under controlled atmosphere (N_2, He, mix) or vacuum

3 - bake at various times & temperatures allows the outgassing in the ampoule cavity

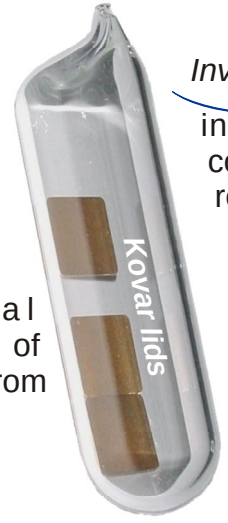
4 - characterization of the outgassed substances via an IVA test

The Material Outgassing Characterization test was initially developed to assist the microelectronic and optoelectronic component manufacturers. Its broad scope of application, however, makes it a powerfull tool to address the needs of a larger community.

The study and prevention of problems that may occur during product life are of utmost interest and each element may require a detailled evaluation such as: getter efficiency, epoxy cure cycle, adhesive moisture content, hydrogen desorption from Kovar packages, raw material outgassing, chemical reaction by-products, bake out studies, etc...

Compare materials and suppliers of different product elements to meet final specification requirements

Validate suppliers material specifications such as cure cycle of adhesives or hydrogen permeation from Kovar and Ni/Au plating



Investigate failure sources by looking at individual materials utilized in the components assembly to evaluate their respective contributions to the failure

Characterize the stability of materials after burn-in, thermal cycling and environmental testing