

Date: ct. 21, 2008

Test Report:

Customer: Material: Zirconia (12% Ytria)

Material condition: The zirconia material is a flour like powder with a particulate size <10 micron with a large percentage of fines (Particles <5 micron) down to <1 micron.

Bulk density (chart) is 1.4 gm/cc

Dose requirements: The customer requires 100% cavity fill. Overfilling the cavity is acceptable.

Pipette: A trial Pipette .500 diameter with a capacity of 9 – 12 gm was fabricated to aspirate and dispense the powder. The finest mesh, 5 micron, piston filter available was used.

Test Results:

Sample repeatability: Customer did not specify the sample repeatability requirement. No repeatability data was taken as the criteria was to fill the cavity with some overflow allowed.

No issues filling the analog mold cavity. Very low air pressure was used to prevent powder "blowback" aerosol. The cavity was overfilled by about 5%. It would be difficult to fill to just flush due to the angle of repose of the powder.

Suggest funnel tip to reduce the chance of voids in the cavity caused by entrained air as the sample is discharged onto the cavity. This will allow displaced air an adequate path to escape as the powder fills the cavity.

Recommendation(s): Due to the very fine particle size, a 1 or 2 micron mesh filter would be required to minimize premature clogging of the disposable in-line filter. Would also recommend a larger capacity (volume) filter between the pipette and pump.

Howard Bossert