Powder Density Seminar

Skeletal, tap, and envelope density.

Tuesday, May 19, 2026

09:00 a.m. – Welcome & Introduction

- Overview of seminar objectives and learning outcomes
- The role of true, tap, and envelope density in material characterization and performance

09:30 a.m. – Fundamentals of Powder Density

- Key parameters: skeletal (true) density, tap density, and envelope density

Understanding the relationship between density, porosity, packing behavior, and material performance

10:15 a.m. – True (Skeletal) Density: Ultrapyc

- Principles of gas pycnometry
- Determination of true density and calculation of closed porosity

Case studies: impact on formulation, processing, and quality control

11:00 a.m. – Coffee Break

11:15 a.m. – Tap Density: Ultratap

- Principles of bulk and tap density measurement
- Compressibility Index and Hausner Ratio as indicators of packing behavior
- Practical examples linking tap density to flowability, compaction, and handling performance

11:45 a.m. – Envelope Density: MCR XX3 Series

- Principles of envelope density measurement
- Applications where envelope density is critical (e.g., granules, pellets, irregular particles)

12:30 p.m. – Lunch Break

02:00 p.m. – Hands-On Instrument Sessions

Ultrapyc – True (Skeletal) Density

- Perform gas pycnometry measurements
- Determine true density and calculate porosity

Ultratap – Tap Density & Compressibility

- Measure bulk and tap density
- Calculate Compressibility Index and Hausner Ratio
- Evaluate packing and flow implications

MCR XX3 – Envelope Density

- Perform envelope density measurements
- Calculate open porosity and compare with true and tap density
- Interpret differences between density methods

04:00 p.m. – Coffee Break

04:15 p.m. – Group Debrief & Technical Discussion

- Presentation of results from all stations
- Comparative analysis of true, tap, and envelope density
- Linking density data to porosity, packing behavior, and material performance

04:30 p.m. – Closing Remarks

- Summary of key technical takeaways
- Q&A and feedback session