

# FOAMSCOPE™

## Polyurethane Foam Analysis

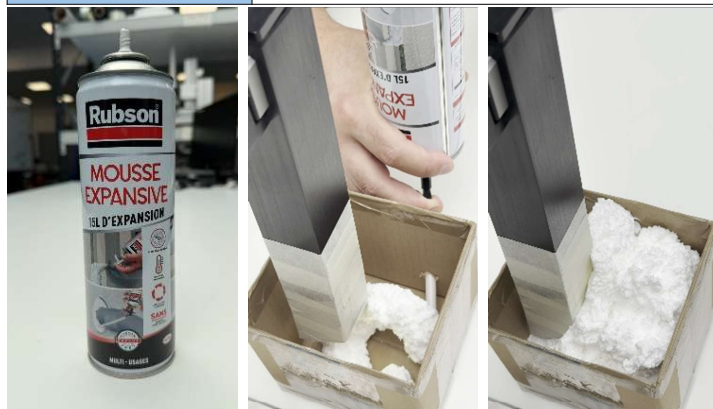
### Objective

Characterize the evolution of the cellular structure during polyurethane foam expansion, directly within the growing foam.

### Measurement

FOAMSCOPE™ continuously captures bubble images during expansion, enabling the evolution of the foam structure to be quantified over time.

|                  |                               |
|------------------|-------------------------------|
| Sample           | Can of expanding foam         |
| Camera settings  | Exposure: 4.30ms - Gain: 2dB  |
| Capture settings | Frequency: 3fps - Time: 60sec |



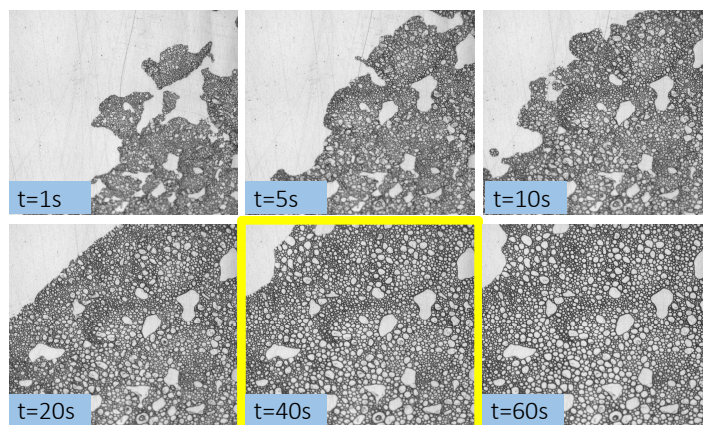
### Key analysis parameters

| FOAMSCOPE metric     | Information provided                                        |
|----------------------|-------------------------------------------------------------|
| D50 Equiv.Diameter   | Characteristic cell size and its evolution during expansion |
| Span = (D90-D10)/D50 | Width and homogeneity of the cell-size distribution         |
| Elliptical Ratio     | Bubble shape deformation and with foam growth               |
| Bubble Density       | Evolution of the number of bubbles per unit area            |

- How large? → D50
- How homogeneous? → Span
- What shape? → Elliptical Ratio
- How densely populated? → Bubble Density

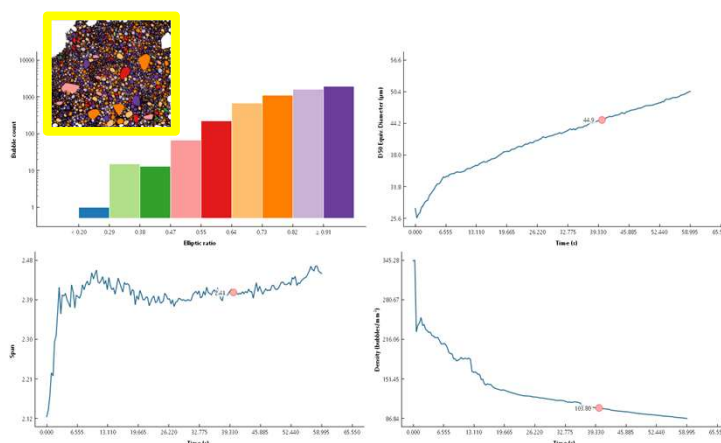
*Note: this sheet is designed as an application illustration, not as a scientific validation study.*

### Foam structure images capture



1. Early stage: First observable cellular structure with a rapidly developing cell population.
2. Growth stage: Foam expansion is accompanied by increasing cell size and a broader size distribution.
3. 3. Stabilization stage: The cellular structure becomes more homogeneous and its evolution progressively slows down.

### Foam structure analysis



### D50 ↑ + Bubble Density ↓

Increasing cell size associated with a less densely populated cellular structure.

### Span + Elliptical Ratio

Complementary characterization of cell size distribution and shape.

FOAMSCOPE™ provides a quantitative fingerprint of cellular structure development, enabling formulations and processing conditions to be compared from the early expansion stage to structural stabilization.