OVR
Oxygen Variation Rate

Permeability consistency from closure to closure

OTR How much oxygen gets in?

Oxygen Transmission Rate

Oxygen passing through a closure, in milligrams per year (mg/year), commonly called **permeability**.

OVR How consistent?

Oxygen Variation Rate

Variation in permeability between closures of the same batch (%).

OTR is an average. **OVR** measures how much closure permeability varies around this average.

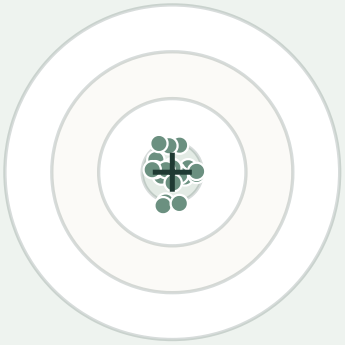
Measurement method

Bottle under nitrogen: 0% O_2 at the start → O_2 measured over 14 days → OTR estimated using a mathematical model → OVR calculated on 20 closures

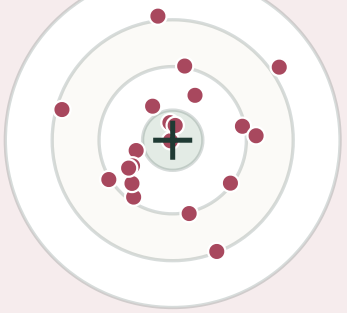
A real-life example

Comparison of OVR values for 2 different closure batches

OVR
12%
Uniform batch



OVR
53%
Variable batch



+ = batch average OTR · ● = OTR of each closure in the batch

The lower the OVR, the more uniform the permeability between closures in the same batch.

Results for the batches studied

Average OVR by closure category: 44 batches measured, i.e. 880 closures

NOMACORC
10 batches · Extrusion



6%
Very consistent

SÜBR
10 batches · Extrusion



11%
Consistent

Micro-agglomerated
19 batches · Molding



39%
Low consistency

Natural one-piece
5 batches · Punching



115%
Very inconsistent

OVR level is linked to the manufacturing method