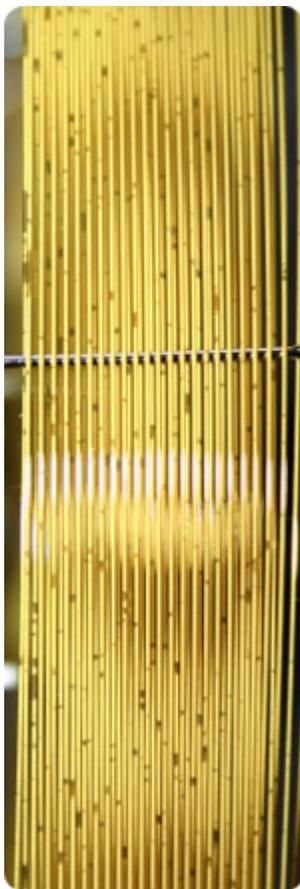


What causes the spots on the PLOT columns? Will it affect the performance of the Column?

The spots you see are caused by small voids in the stationary phase coating inside the tube. These spots are areas where there is an uneven coating or lack of phase. It is normal to find some voids in the phase coating of PLOT columns. Here's why:

The stationary phase in Porous Layer Open Tubular (PLOT) columns is an opaque solid, porous material. In many PLOT columns such as the alumina phases, molecular sieves, porous polymers (Q and U) and the GS-OxyPLOT, the stationary phase is visible as a white powder.

For many PLOT columns, the stationary phase fill solution is a viscous suspension of particles that are less than 10 micron in diameter. The phase is coated using a dynamic process in which a plug of fill solution is pushed through the tubing, and the plug's speed and viscosity determines the thickness of the stationary phase layer. Once the PLOT's stationary phase is deposited, it is held in place by electrostatic charge, chemical interactions between particles, and/or binding agents. In Wall Coated Open Tubular (WCOT) columns, stationary phases such as polysiloxanes or polyethylene glycols are immobilized by chemical bonding to the glass surface and cross-linking between polymer strands. Because this type of bonding and cross-linking is not possible with PLOT phases, the result is a stationary phase layer that is both fundamentally different and inherently less stable in PLOT columns than in WCOT columns. Therefore, some voids in the phase coating of PLOT columns are virtually inevitable. Agilent tests each individual column, and all column performance specifications must be met before any column can be shipped to a customer. PLOT columns receive visual inspections to see that they meet rigorous standards at multiple checkpoints in the manufacturing and testing process. The number of acceptable voids depends on stationary phase and column dimensions. Columns that exhibit an unusual number of voids are scrapped and never shipped to our customers.



After passing the visual examination, columns are tested against the tightest QC performance specifications in the industry for efficiency, retention, selectivity and bleed. Figure shows a recently purchased competitor's PLOT column. Although it passed the competitor's QC testing, this column would have never passed the Agilent inspection and would never have been shipped to our customers.

In summary, some voids in the phase coating of a PLOT columns are acceptable as long as the column is individually tested and verified to exhibit the correct chromatographic performance for that product. Agilent guarantees the reliability and performance of our products with a 90-day warranty for all of our [GC columns](#).

Figure. A competitor PLOT column exhibiting significant voids.

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