Swagelok

DL and DS Series Diaphragm Valve Technical Report

Scope

This technical report provides data on Swagelok® DL and DS series diaphragm valves. The report covers:

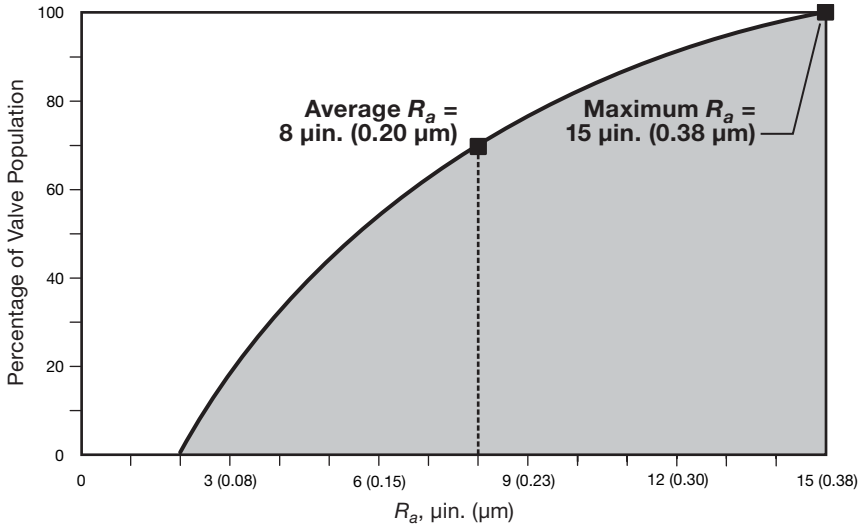
- P surface finish specifications
- static particle counting
- moisture analysis
- hydrocarbon analysis
- ionic cleanliness.

Particle counting, moisture and hydrocarbon analysis, and ionic cleanliness data show test results from valves cleaned with deionized (DI) water according to the techniques described in the Swagelok *Ultrahigh-Purity Process Specification (SC-01),* MS-06-61.

Surface Finish

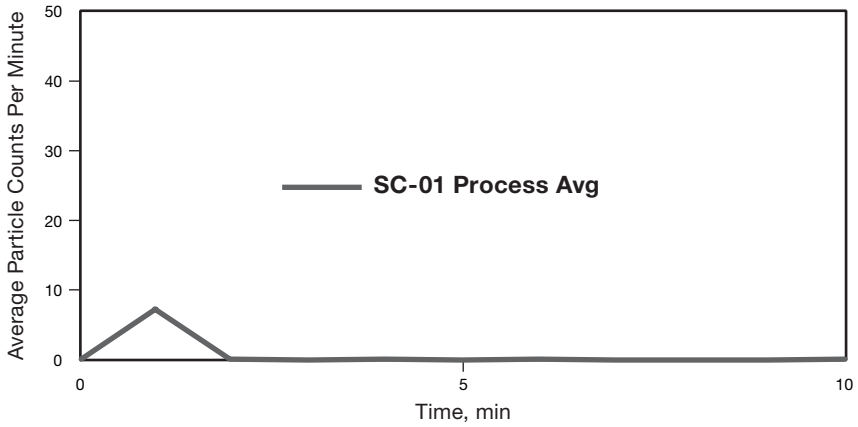
Statistical process control (SPC) allows Swagelok to provide consistent surface finishes, as described in SC-01. The surface finish distribution at right illustrates the roughness average (R_a) specifications we have established for the wetted surfaces of DL and DS series valves manufactured with the P finish:

- Surface roughness is 8 µin. (0.20 µm) R_a on average
- Surface roughness will not exceed 15 µin. (0.38 µm) R_a.



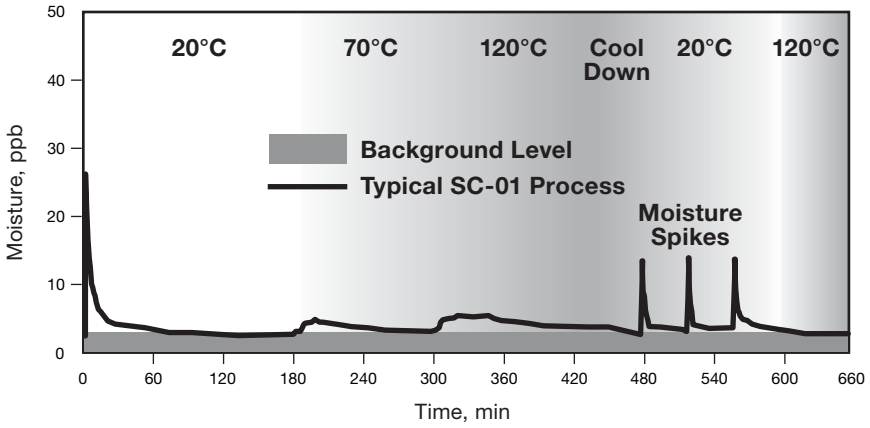
Particle Counting

Static particle counts from SC-01 processed DL and DS series valves are very low. Particles greater than 0.014 µm in size are detected.



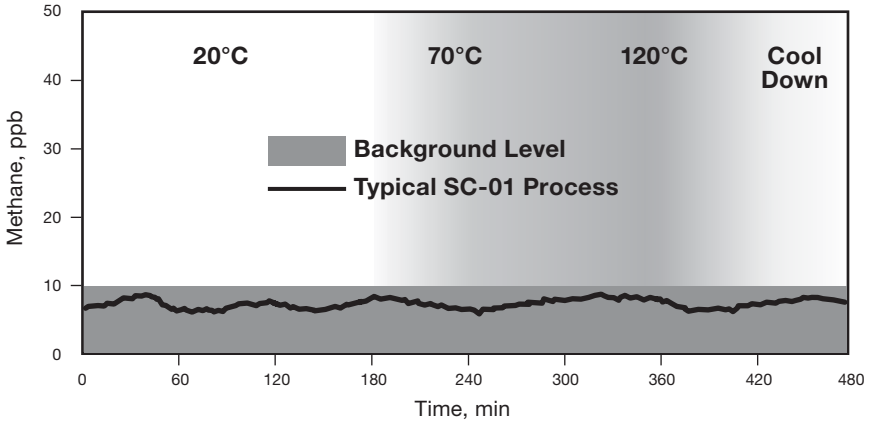
Moisture Analysis

SC-01 processed valves dry down very quickly to the background level produced by the test instrument. The valves also recover quickly following the introduction of moisture spikes.



Hydrocarbon Analysis

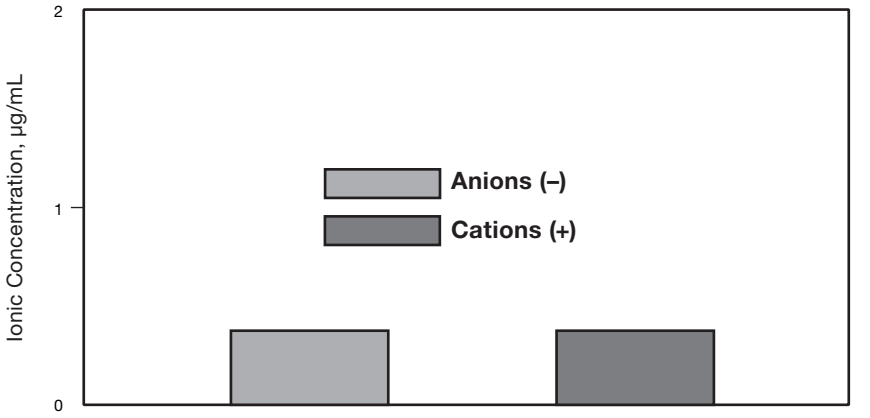
Test results for hydrocarbon residues in SC-01 processed valves fall entirely within the background level produced by the test instrument



Ionic Cleanliness

Residual ionic contamination is very low for SC-01 processed valves.

Anions (–)	Cations (+)
Fluoride	Lithium
Chloride	Sodium
Nitrate	Ammonium
Phosphate	Potassium
Sulfate	Magnesium
	Calcium



Referenced Documents

Swagelok Specification

Ultrahigh-Purity Process Specification (SC-01), MS-06-61

Safe Product Selection
When selecting products, the total system design must be considered to ensure safe, trouble-free performance. Function, material compatibility, adequate ratings, proper installation, operation, and maintenance are the responsibilities of the system designer and user.

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