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Pure Performance

STATEMENT OF PERFORMANCE

Furon® UP Products - Metal Extraction Testing with 37% HCl Acid

Furon UP product lines, such as the **UPX** and **UPM Valves**, **UPRM, UPBM and UPRP Pressure Regulators** are manufactured from the same high-performance materials to ensure excellent chemical resistance and compatibility with aggressive chemical applications. The wetted flow paths are constructed from various combinations of PFA and modified PTFE for enhanced durability and reliability. All share the same physical properties.

The UPRP, UPBM and UPRM pressure regulators perform the same core function, but each model is optimized for different pressure ranges, allowing selection based on specific application requirements. Similarly, the UPX valve is an upgraded version of the UPM valve, though both serve the same fundamental functions.

UPM 3-way pneumatic valves were tested by an independent lab[1] for surface contamination of process chemicals with metallic elements. The FSI DyconE$^{x\,SM}$ dynamic extraction technique was used to determine the type and rate of metal contamination.

TESTING METHOD

Six pneumatic 3-way UPM valves were assembled in a series set in a dynamic extraction apparatus under constant flow of 37% hydrochloric acid (HCl) over a 10-day period. Flow through three valves was from common to normally open, whereas flow through the other three was common to normally closed with and alternating sequence for all the valves. The flow rate was approximately 250 ml/min. Samples were taken after the first 40 mins to serve as an evaluation baseline, then at 0.03, 0.42, 2.3 and 11 days to estimate surface contamination. Concentrations of 20 metallic elements were measured. The raw data was used to calculate the total metal extracted, normalized to the UPM valves' internal wetted surface area.

RESULTS

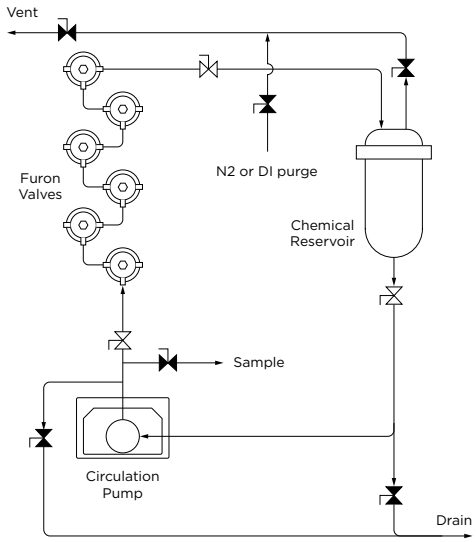
The study shows a very low extraction of metals from the valves at each time point in the dynamic extraction. The present specification for parts used by FSI International requires the rate of extraction of metallic constituents from a component be below 0.5 ng/cm^2 -day within 7 days[2]. The Furon UPM easily met this specification for each individual metal and the sum of all the metals tested.

SUMMARY

Six pneumatic Furon UPM Valves were subjected to the FSI DyconE$^{x\,SM}$ dynamic extraction procedure to evaluate the extraction of metallic elements using high-purity, 37% HCl. The valves easily met the specification for all metals tested.

Furon UPX valves have also been tested for performance and durability in 37% HCl and 49% hydrofluoric acid (HF), further demonstrating the strong chemical compatibility and overall reliability of the UP product line.

Figure 1. Dynamic Extraction Apparatus



REFERENCES & ACKNOWLEDGEMENTS

1 CT Associates, Inc., 10777 Hampshire Ave. S., Bloomington, MN 55438

2 Grant, Lemke and Carrieri, 1997, "Specification and Verification of Metallic Extractables in Fluid Handling Components"

DyconE$^{x\,SM}$ is a procedure patented by FSI International.

The data provided here were obtained under defined test conditions. The tests were designed to mimic use or worst-case conditions. However, Saint-Gobain Performance Plastics makes no specific claims about the performance of the components in other chemicals or systems.

See more information on following page

Click here to see test results on the Furon UPX Valve reliability in HCl and HF

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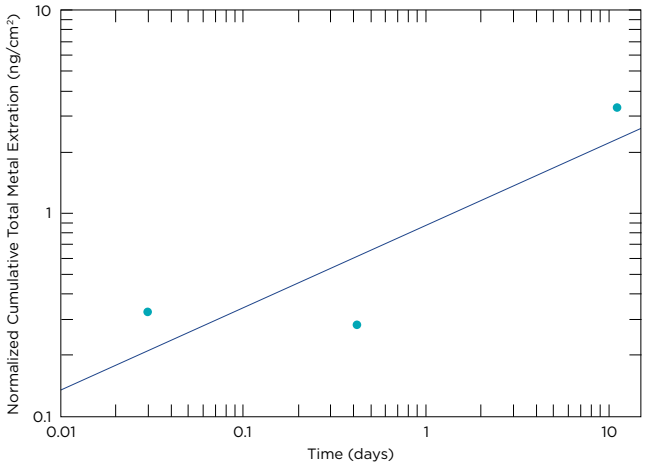
Figure 2. Extraction Data - Totals of All Metals



Data representing the normalized cumulative mass extracted from the valves as a function of time for total metals are plotted in Figure 2.

Click on product below to learn more

UPX VALVE

Pneumatic Version

UPBM PRESSURE REGULATOR

Manual and Pneumatic

UPRM PRESSURE REGULATOR

Pneumatic Version

UPM VALVE

Pneumatic Version

UPRP PRECISION PRESSURE REGULATOR

Pneumatic Version
1/4" Orifice

Pneumatic Version
1" Orifice

Manual versions available for UPX Valves, UPM Valves, and all Pressure Regulators

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