

Jamesbury Sealing Technologies

Fugitive Emissions: An ever-present danger

Today's headlines continue to draw increasing attention to the importance of safeguarding the environment. But this environmental focus is nothing new to process industries.

Refining, chemical production and other process industries have always insisted on stringent measures to prevent the emission of toxic media into the atmosphere – not only for environmental safety, but also for cost concerns. One proven way to adhere to tightening emissions standards is to specify process valve assemblies that are engineered with the prevention of fugitive emissions in mind.

For over 50 years, Metso's JAMESBURY valves have been the pioneering force behind a range of advanced rotary valve seat and stem sealing technologies developed to contain fugitive emissions. From ball valves with patented stem and seat sealing technology, to butterfly valves with live-loaded stem seals, JAMESBURY's design expertise, testing processes and field proven products keep emissions in check at all times.

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JAMESBURY valves: Putting the lockdown on fugitive emissions

The potential danger of fugitive emissions in process pipelines never sleeps. Your valve solutions shouldn't either. JAMESBURY ball and butterfly valves are far more effective at containing emissions than linear or multi-turn gate valves. They are specifically engineered, constructed, and rigorously tested to meet or exceed EPA fugitive emission requirements and to help you realize your environmental goals.

The JAMESBURY Advantage

All JAMESBURY process ball valves and high-performance butterfly valves are tested using EPA Method 21 of the Clean Air Act to ensure emissions of no more than 100 ppm. Comparable valves on the market frequently test to up to 500 ppm. For even more stringent control of fugitive emissions, our live-loaded ball valves with patented stem seal design, and our high-performance butterfly valves with live-loaded shaft seals, have undergone strict testing to consistently provide sealing performance to ISO 15848 Class BH (see chart). This ensures tight sealing for increased process quality, improved process uptime, a safer work environment, and conformance to regulatory mandates.

JAMESBURY Products Enhance our Leadership Position Around the Globe

Our mission at Metso is clear: to continually expand the performance boundaries of process automation, flow control and measurement technology – and to do so across geographic boundaries. The goal is to provide customers around the world with a meaningful competitive advantage through improvements in process efficiency, quality and cost control. JAMESBURY products are key to this effort.



JAMESBURY WAFER-SPHERE® high-performance butterfly valves with live-loaded stem seals undergo strict thermal and ambient cycle testing to meet ISO 15848 Class BH standards. Standard WAFER-SPHERE valves conform to EPA Method 21 requirements.



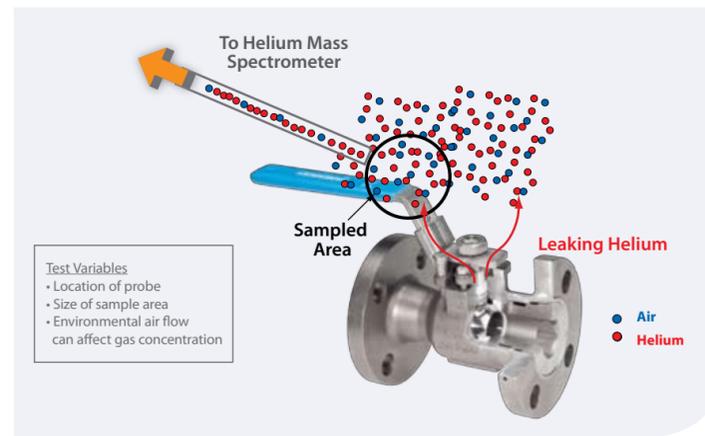
JAMESBURY Series 4000, 7000, 9000 and Eliminator and "A" Style ball valves are qualified to ISO-15848 Class BH.

Comparison of test methods

EPA Method 21

Sniffing out emissions

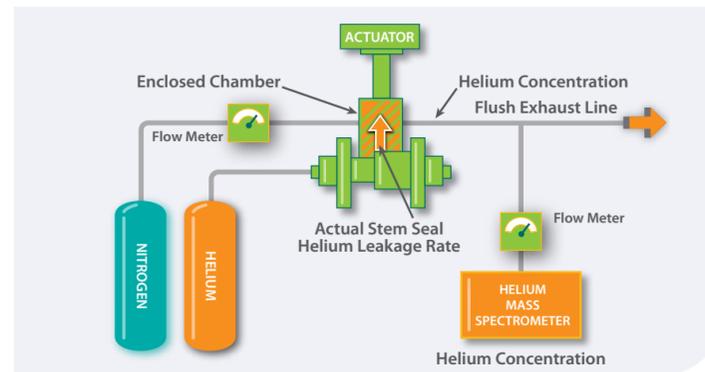
The EPA Method 21 test for fugitive emissions is conducted for all process valves and high performance butterfly valves. Media leakage that exceeds 100 ppm is not acceptable. Adjustable stem bolts can be tightened up to 5 times to compress packing on these valves in order to meet acceptable leakage levels. However, test variables such as location of the probe, the size of the sample area, and environmental air flow can lead to results that are reliable but somewhat less precise compared to more stringent testing methods.



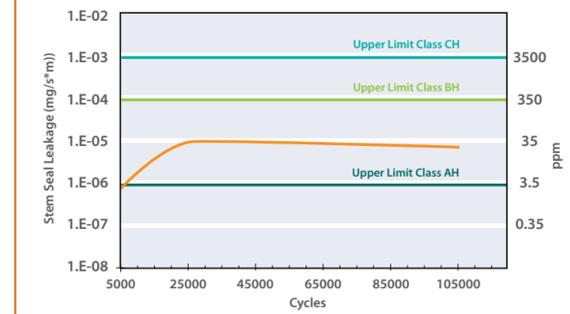
ISO 15848

Concentrating on maximum emission control

Using the ISO 15848 test method, fugitive gas – in this case, helium – is trapped in an enclosed chamber surrounding the stem. Concentrations of this gas are then measured by a Glow Discharge Mass Spectrometer. Results are more reliable since there is no interference with ambient air, no hit-or-miss concentration measurement, and it is based on realistic valve performance data gathered after 100,000 cycles.



Ahead of the Class



JAMESBURY employs the ISO 15848 test method to ensure emissions performance to very low Class BH stem seal flow rates.



The EMISSION-PAK® assembly

The EMISSION-PAK assembly is available on JAMESBURY Series 7000 ball valves from ½" to 8", and on Series 9000 flanged ball valves from ½" to 6". Their graphite/TFE body seal and gasket conform to API 607 fire-test standards. Designed for severe service or hazardous applications, the E-PAK's double packing and live-loaded stem seals provide consistent packing force over a wide range of thermal and pressure cycles. JAMESBURY high-performance butterfly valves are available in either single or double-packed design. Single packing can be retro-fit to standard valves. All double packed valves offer an optional monitoring port to detect leakage before it is released into the atmosphere.

Fugitive emissions testing of EMISSION-PAK ball valves

Fugitive emissions testing for JAMESBURY ball valves, including those equipped with the Emission-Pak assembly, take place in Metso Automation's advanced emissions testing lab. The testing setup mirrors that of the ISO 15848 emissions testing method where concentrations of leaking gas accumulate in an enclosed chamber to provide the most definitive test results. EMISSION-PAK valves undergo an ambient cycle test, which is not included in ISO 15848, but has been adopted as part of Metso's standard testing procedure. The valve cycles at ambient temperature until the stem seal leakage exceeds Class CH.

A second, thermal cycle test is conducted as part of ISO 15848 and requires a minimum of 500 cycles at full rated pressure for each of 2 thermal settings. The procedure allows for one stem seal adjustment and leakage must not exceed Class CH rating.



Learn more and save more

Elimination or reduction of fugitive emissions allow process industries to save many millions of dollars – not to mention our valuable natural resources. To learn more about Metso's JAMESBURY valves and technologies for preventing fugitive emissions, visit the JAMESBURY website at www.metso.com/automation/jamesbury.



7000 Series ball valve with EMISSION-PAK assembly.