Challenge
An international exporter of valves needed a low-emissions packing that met the International Standards Organization (ISO) 15848-1 test protocol. The API 622 standard measures the packing performance regardless of the valve make and model, and has a temperature limit of 260°C (500°F); whereas the ISO test measures a specific valve’s performance with packing installed and can have a high temperature limit of 400°C (750°F). Both the valve and the packing become qualified as one system. The valve manufacturer wanted to certify their valves to ISO 15848 through an independent test facility with Chesterton 1622 installed and at the higher temperature limit.

Solution
The test protocol selected was:
- An On/Off (block) valve with 1,500 mechanical cycles
- 100 bar g (1450 psig) at ambient temperature
- 70 bar g (1010 psig) at 400°C (750°F)

The manufacturer selected a 4” 600 Class Gate Valve for the performance test.

Results
Leakage measurements exceeded Class B requirement, indicating that this flexible graphite packing outperforms the sealing capabilities of a PTFE packing class.

With readings consistently below Class B requirements, Chesterton 1622 had a maximum static leakage rate of 3.0 x 10^{-6} atm cc/sec. (Average and Maximum Allowable Static Stem Seal Leakage: 5.0E{-5} atm cc/sec.)

ISO 15848-1 Tightness Classes:
- Class B: ≤ 10^{-4} mg/sm: typically achieved with PTFE based packing or elastomeric seal
- Chesterton 1622 qualified at Class B