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**TO:** All Parties  
**FROM:** Christopher Keeling  
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**SUBJECT:** AWWA C515 Compliance, gate valves 3"-12"

The American Waterworks Association (AWWA) first covered gate valves in their specifications in 1952, under the Standard C500 for metal seated gate valves. As resilient seated gate valves started to penetrate the market Standard C509 was published in 1985 to cover these valves.

At that point the predominant metal used for valve castings was "Gray Cast Iron", and thus the standard was written around that material. Higher strength Ductile Iron began to be used for valves in the mid 1990's, but standards were slow to adopt this material. Standard C509 was updated to allow higher strength materials but did not reduce the wall thickness, thus producing a valve that exceeded the standard pressure ratings substantially because of the much higher strength and ductility.

Material	Tensile Strength	Yield Strength	Elongation
Gray Cast Iron	31,000 psi	31,000 psi	~0%
Ductile Iron	65,000 psi	45,000 psi	12%

In 1999 AWWA created a separate standard based around the higher strength Ductile Iron material, Standard C515. Because of the increased strength, the wall thickness of the valves didn't need to be near as thick to produce an equally strong valve.

Size (in)	AWWA C509 Minimum Wall Thickness (in)	AWWA C515 Minimum Wall Thickness (in)
3	0.37	0.30
4	0.40	0.31
6	0.43	0.32
8	0.50	0.34
10	0.63	0.36
12	0.68	0.38

AWWA C515 also better defines the rubber materials used for the resilient seat. VSI has been using standards that exceed AWWA C515 for years in order to comply with NSF61 requirements. In addition, the C515 standard allows the use of split thrust collars in addition to shafts with integral collars. VSI utilizes a one-piece stem with integral thrust collar that complies with AWWA C509 and C515 for all valves.

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In summary, any VSI resilient gate valve that is produced in Ductile Iron complies with both AWWA C509 *and* AWWA C515. The valves are designed with:

- Body shell thickness that match the thicker AWWA C509 standard and exceed the AWWA C515 minimum
- Body materials that match the stronger AWWA C515, as well as the older AWWA C509 standard
- Resilient materials that match the stricter AWWA C515 standard
- A one-piece stem with integral thrust collar that meets both AWWA C515 and C509 standards

VSI has completed proof of design testing on our entire line of resilient gate valves to AWWA 509. These requirements are identical to AWWA C515 in sizes 3"-12":

Requirement	AWWA C509	AWWA C515
Hydrostatic body test with gate open	2.5x rated pressure of 200psi	2.5x rated pressure of 200psi
Hydrostatic leak test with gate closed	2x rated pressure of 200psi	2x rated pressure of 200psi
Cycle test	500 cycles	500 cycles

As such, VSI certifies all valves from 3"-12" that are tested to AWWA C509 to have completed testing specified by AWWA C515 and are thus certified to both standards.