



Corrosion Testing Laboratories, Inc.

October 22, 2020

CTL REF #37390-7

Testing of Red-White Valve Corp. Products for Stress Corrosion Cracking and Dezincification Corrosion

Laboratory testing was conducted at the request of Red-White Valve Corp. on the valve models shown in **Table 1** according to ISO 6957:1988 (Copper alloys - Ammonia test for stress corrosion resistance) and ISO 6509-1:2014 (Corrosion of metals and alloys - Determination of dezincification resistance of copper alloys with zinc - Part 1: Test method).

The ISO 6957:1988 tests were performed at a test solution pH of 9.5 at Red-White Valve Corp.'s request. After exposure, slight deformation was applied to the samples before the inspection in order to reveal fine cracks, in accordance with the above-referenced testing methodology.

The results for ISO 6509-1: 2014 (**Table 2**) were evaluated according to the assessment criteria of ISO 6509-2:2017 (Corrosion of metals and alloys - Determination of dezincification resistance of copper alloys with zinc - Part 2: Assessment criteria). After testing, a metallographic cross-section was prepared of the exposed surface of each test specimen. The ground and polished cross-sections were examined using an inverted metallographic microscope at up to 500X for indications of dezincification.

Table 1
Valve Description

Model	Description	Materials
9517AB	Fixed Orifice Static Balancing Valve	Valve body (forging) and valve bonnet manufactured from dezincification resistant (DZR) lead-free brass (ASTM B927, Alloy C27453).
5020AB	EzPress Full Port Ball Valve	Valve body and valve end piece (forgings) manufactured from dezincification resistant (DZR) lead-free brass (ASTM B927, Alloy C27453).

Table 2
Test Results

Model	Test Result	
	ISO 6957:1988 (Test Solution pH = 9.5)	ISO 6509-1:2014 and ISO 6509-2:2017
9517AB	No cracks <i>CTL REF #37390-1R to 3R</i>	No dezincification in body and end piece (0 µm depth) <i>CTL REF #37078-4R</i>
5020AB	No cracks <i>CTL REF #37390-4R to 6R</i>	No dezincification in body and end piece (0 µm depth) <i>CTL REF #35508-3R</i>

CONCLUSION

All samples PASSED the above testing standards for both stress corrosion cracking and dezincification corrosion.

Very truly yours,
Corrosion Testing Laboratories, Inc.

Fred M. Sherman
Senior Materials Analyst

Approved:

Bradley D. Krantz
Vice President of Laboratory Services
NACE Materials Selection/Design Specialist
Certificate #4195