



Uniform & Intergranular Corrosion ¹



Uniform corrosion is the destruction of a metal, relatively uniformly over the entire surface. Intergranular corrosion is the destruction of metal at the grain boundaries, usually on a microscopic scale.

Both types of corrosion can result in loss of structural integrity of the affected metal and potential loss of the use of the metal item. In the case of corrosion to aircraft, the loss can result in catastrophic failure.

The Forest Service requires corrosion tests throughout the evaluation period to minimize the risk of corrosion-caused equipment failure in the field.

Proper maintenance and cleaning of the equipment will also help to minimize these potential failures.

▶▶ Product Performance Data on next page ▶▶

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Standard Test Procedure 5.1, instructions for the uniform corrosion test, is available at http://www.fs.fed.us/rm/fire/wfcs/tests/stp05_1.htm
Standard Test Procedure 5.2, instructions for the intergranular corrosion test, is available at http://www.fs.fed.us/rm/fire/wfcs/tests/stp05_2.htm



Uniform Corrosion ¹ Chemdal Aqua Shield 100



Temperature: °F	2024-T3 Aluminum				4130 Steel				Yellow Brass	Az31B Magnesium			
	Total		Partial		Total		Partial		Partial	Total		Partial	
	70	120	70	120	70	120	70	120	120	70	120	70	120
-----mils-per-year-----													
Concentrate ³													
Fresh	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
0.6-Percent Dilution													
Fresh ⁵	0.5	1.9	0.3	0.9	0.6	1.6	1.7	2.0	0.5	5.5	4.5	3.4	2.6
1 Year - Missoula ⁴													
1 Year - San Dimas ⁴													
Notes:													
1	Uniform corrosion rates (expressed in mils-per-year) were determined by 90-day weight loss tests. Values shown are the average of all replicates.												
2	Results up to 0.1 mils-per-year are recorded as 0.1 mils-per-year.												
3	Uniform corrosion tests are performed on wet concentrates. Uniform corrosion tests are not performed on dry concentrates.												
4	Products for use only at portable or temporary bases do not require 1-year stability and corrosion tests.												
5	Meets the intergranular corrosion requirements for aluminum.												
6	Meets the intergranular corrosion requirements for magnesium.												



Uniform Corrosion ¹ Barricade II



Temperature: °F	2024-T3 Aluminum				4130 Steel				Yellow Brass	Az31B Magnesium			
	Total		Partial		Total		Partial		Partial	Total		Partial	
	70	120	70	120	70	120	70	120	120	70	120	70	120
-----mils-per-year-----													
Concentrate ³													
Fresh	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
1.0-Percent Dilution													
Fresh ⁵	0.1	0.1	0.1	0.1	0.1	0.3	0.4	0.5	0.1	3.3	3.5	2.2	2.2
1 Year - Missoula ⁵	0.1	0.1	0.1	0.1	0.1	0.4	0.4	0.6	0.1	N/A	N/A	N/A	N/A
1 Year - San Dimas ⁵	0.1	0.1	0.1	0.1	0.1	0.4	0.3	0.6	0.1	N/A	N/A	N/A	N/A
3.0-Percent Dilution													
Fresh	0.1	0.1	0.1	0.1	0.1	0.2	0.5	1.0	0.1	2.9	3.9	1.8	2.0
1 Year - Missoula	0.1	0.1	0.1	0.1	0.1	0.2	0.4	0.7	0.1	N/A	N/A	N/A	N/A
1 Year - San Dimas	0.1	0.1	0.1	0.1	0.1	0.2	0.5	0.6	0.1	N/A	N/A	N/A	N/A
5.0-Percent Dilution													
Fresh	0.1	0.1	0.1	0.1	0.2	0.5	0.8	1.5	0.2	3.5	4.5	2.3	2.5
1 Year - Missoula	0.1	0.1	0.1	0.1	0.2	0.3	0.7	1.2	0.1	N/A	N/A	N/A	N/A
1 Year - San Dimas	0.1	0.1	0.1	0.1	0.1	0.3	0.6	1.6	0.1	N/A	N/A	N/A	N/A

Notes:

1	Uniform corrosion rates (expressed in mils-per-year) were determined by 90-day weight loss tests. Values shown are the average of all replicates.
2	Results up to 0.1 mils-per-year are recorded as 0.1 mils-per-year.
3	Uniform corrosion tests are performed on wet concentrates. Uniform corrosion tests are not performed on dry concentrates.
4	Products for use only at portable or temporary bases do not require 1-year stability and corrosion tests.
5	Meets the intergranular corrosion requirements for aluminum.
6	Meets the intergranular corrosion requirements for magnesium.



Uniform Corrosion ¹ Thermo-Gel 200L



Temperature: °F	2024-T3 Aluminum				4130 Steel				Yellow Brass	Az31B Magnesium			
	Total		Partial		Total		Partial		Partial	Total		Partial	
	70	120	70	120	70	120	70	120	120	70	120	70	120
-----mils-per-year-----													
Concentrate ³													
Fresh	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5	9.8	14.1	3.9	5.9
<u>0.5-Percent Dilution</u>													
Fresh ⁵	0.2	0.4	0.2	0.2	0.1	0.1	0.6	0.2	0.1	1.9	1.5	1.9	1.0
1 Year - Missoula ⁵	0.5	0.9	0.4	0.4	0.4	0.1	0.7	0.5	0.1	1.8	2.4	1.8	1.5
1 Year - San Dimas ⁵	0.5	0.9	0.4	0.3	0.1	0.4	0.8	0.4	0.1	2.6	3.0	2.3	1.9
<u>1.5-Percent Dilution</u>													
Fresh ⁵	0.2	0.4	0.1	0.3	0.1	0.2	0.8	0.5	0.3	3.8	2.6	2.7	1.7
1 Year - Missoula ⁵	0.2	0.3	0.2	0.3	0.1	0.3	0.7	0.6	0.1	2.5	2.0	2.2	1.2
1 Year - San Dimas ⁵	0.2	0.4	0.2	0.3	0.1	0.4	0.7	0.7	0.1	3.3	2.3	2.0	1.3
<u>3.0-Percent Dilution</u>													
Fresh ⁵	0.1	0.4	0.1	0.3	0.1	0.3	0.8	0.6	0.3	3.6	3.8	2.3	2.0
1 Year - Missoula ⁵	0.2	0.3	0.2	0.3	0.1	0.3	0.8	1.0	0.2	3.3	3.6	2.0	1.8
1 Year - San Dimas ⁵	0.2	0.4	0.2	0.3	0.2	0.3	0.7	0.9	0.2	3.3	3.5	2.2	1.9

Notes:

- 1 Uniform corrosion rates (expressed in mils-per-year) were determined by 90-day weight loss tests. Values shown are the average of all replicates.
- 2 Results up to 0.1 mils-per-year are recorded as 0.1 mils-per-year.
- 3 Uniform corrosion tests are performed on wet concentrates. Uniform corrosion tests are not performed on dry concentrates.
- 4 Products for use only at portable or temporary bases do not require 1-year stability and corrosion tests.
- 5 Meets the intergranular corrosion requirements for aluminum.
- 6 Meets the intergranular corrosion requirements for magnesium.



Uniform Corrosion ¹ Thermo-Gel 500P



Temperature: °F	2024-T3 Aluminum				4130 Steel				Yellow Brass	Az31B Magnesium			
	Total		Partial		Total		Partial		Partial	Total		Partial	
	70	120	70	120	70	120	70	120	120	70	120	70	120
-----mils-per-year-----													
Concentrate ³													
Fresh	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
0.4-Percent Solution													
Fresh ^{5,6}	0.6	1.1	0.4	0.3	0.7	1.1	1.6	1.6	0.4	3.3	3.3	2.0	2.1
1 Year - Missoula ^{5,6}	0.5	1.2	0.4	0.3	0.7	1.4	1.7	1.6	0.4	3.3	3.5	2.1	2.1
1 Year - San Dimas ^{5,6}	0.6	1.1	0.3	0.3	0.4	1.0	1.5	1.6	0.4	3.3	3.6	2.0	2.1
0.5-Percent Solution													
Fresh ^{5,6}	0.7	1.3	0.4	0.5	0.6	1.4	1.4	1.3	0.4	4.0	3.9	2.3	2.6
1 Year - Missoula ^{5,6}	0.7	1.4	0.4	0.5	0.6	1.3	1.5	1.3	0.4	3.8	3.8	2.7	2.0
1 Year - San Dimas ^{5,6}	0.7	1.5	0.4	0.6	0.6	1.4	1.4	1.6	0.4	3.8	3.8	2.2	2.2
1.2-Percent Solution													
Fresh ⁵	0.6	1.9	0.3	1.1	0.9	2.3	1.4	2.8	0.4	3.7	7.5	2.3	4.7
1 Year - Missoula ⁵	0.6	2.0	0.5	0.8	1.4	2.3	1.4	2.5	0.4	4.0	6.8	2.1	3.1
1 Year - San Dimas ⁵	0.6	1.7	0.4	0.9	1.1	1.8	1.3	2.4	0.3	4.0	11.2	1.9	3.2
Notes:													
1	Uniform corrosion rates (expressed in mils-per-year) were determined by 90-day weight loss tests. Values shown are the average of all replicates.												
2	Results up to 0.1 mils-per-year are recorded as 0.1 mils-per-year.												
3	Uniform corrosion tests are performed on wet concentrates. Uniform corrosion tests are not performed on dry concentrates.												
4	Products for use only at portable or temporary bases do not require 1-year stability and corrosion tests.												
5	Aluminum intergranular results are acceptable.												
6	Magnesium intergranular results are acceptable.												



Uniform Corrosion ¹ Wildfire AFG Firewall II



Temperature: °F	2024-T3 Aluminum				4130 Steel				Yellow Brass	Az31B Magnesium				
	Total		Partial		Total		Partial		Partial	Total		Partial		
	70	120	70	120	70	120	70	120	120	70	120	70	120	
<i>mils-per-year</i>														
<u>Concentrate</u>														
Fresh	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.5	3.8	0.3	2.1
<u>0.25-Percent Solution</u>														
Fresh ^{5,6}	0.2	0.5	0.1	0.2	0.4	1.2	0.3	1.0	0.1	2.0	1.6	1.3	1.1	1.1
1 Year – Missoula ^{5,6}	0.2	0.5	0.1	0.3	0.3	0.8	0.3	0.7	0.1	1.1	2.0	0.6	1.5	1.5
1 Year - San Dimas ^{5,6}	0.1	0.6	0.1	0.2	0.2	0.7	0.3	0.5	0.1	0.9	1.8	0.9	1.1	1.1
<u>1.5-Percent Solution</u>														
Fresh ^{5,6}	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.2	1.6	3.1	1.3	1.8	1.8
1 Year – Missoula ^{5,6}	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	1.6	3.3	1.2	1.6	1.6
1 Year - San Dimas ^{5,6}	0.1	0.2	0.1	0.2	0.1	0.3	0.4	0.2	0.2	2.1	2.9	1.4	1.4	1.4
<u>3.0-Percent Solution</u>														
Fresh ^{5,6}	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.3	2.0	3.7	1.3	2.3	2.3
1 Year – Missoula ^{5,6}	0.1	0.1	0.1	0.1	0.1	0.1	0.4	0.2	0.3	1.7	3.5	1.3	2.2	2.2
1 Year - San Dimas ^{5,6}	0.1	0.1	0.1	0.1	0.1	0.1	0.4	0.3	0.3	2.3	3.5	1.4	1.7	1.7

Notes:

1	Uniform corrosion rates (expressed in mils-per-year) were determined by 90-day weight loss tests. Values shown are the average of all replicates.
2	Results up to 0.1 mils-per-year are recorded as 0.1 mils-per-year.
3	Uniform corrosion tests are performed on wet concentrates. Uniform corrosion tests are not performed on dry concentrates.
4	Products for use only at portable or temporary bases do not require 1-year stability and corrosion tests.
5	Meets the intergranular corrosion requirements for aluminum.
6	Meets the intergranular corrosion requirements for magnesium.



Uniform Corrosion ¹ BioCentral Blazetamer 380



	2024-T3 Aluminum				4130 Steel				Yellow Brass	Az31B Magnesium			
	Total		Partial		Total		Partial		Partial	Total		Partial	
	70	120	70	120	70	120	70	120	120	70	120	70	120
Temperature: °F	-----mils-per-year-----												
<u>Concentrate</u>													
Fresh	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	1.7	4.0	0.7	1.9
<u>0.65-Percent Solution</u>													
Fresh ^{5,6}	0.1	0.3	0.1	0.1	0.2	0.6	0.2	0.4	0.1	1.6	2.0	1.0	1.4
1 Year – Missoula ^{5,6}	0.1	0.3	0.1	0.1	0.1	1.0	0.2	0.9	0.1	2.0	1.8	1.5	1.0
1 Year - San Dimas ^{5,6}	0.1	0.3	0.1	0.1	0.1	0.9	0.2	0.6	0.1	1.6	2.0	1.0	1.1
Notes:													
1	Uniform corrosion rates (expressed in mils-per-year) were determined by 90-day weight loss tests. Values shown are the average of all replicates.												
2	Results up to 0.1 mils-per-year are recorded as 0.1 mils-per-year.												
3	Uniform corrosion tests are performed on wet concentrates. Uniform corrosion tests are not performed on dry concentrates.												
4	Products for use only at portable or temporary bases do not require 1-year stability and corrosion tests.												
5	Meets the intergranular corrosion requirements for aluminum.												
6	Meets the intergranular corrosion requirements for magnesium.												



Uniform Corrosion ¹ GelTech Firelce



Temperature: °F	2024-T3 Aluminum				4130 Steel				Yellow Brass	Az31B Magnesium			
	Total		Partial		Total		Partial		Partial	Total		Partial	
	70	120	70	120	70	120	70	120	120	70	120	70	120
-----mils-per-year-----													

Concentrate

Fresh ³

1.4-Percent Solution

Fresh ⁵	0.4	0.9	0.3	0.4	0.7	1.0	1.3	2.1	0.4	4.8	3.3	2.9	1.8
1 Year - Missoula ⁵	0.5	0.4	0.3	0.6	0.6	1.3	1.3	2.0	0.3	5.1	3.8	2.5	1.5
1 Year - San Dimas ⁵	0.4	0.4	0.4	0.5	0.5	1.3	1.4	2.0	0.3	3.7	3.2	2.1	1.6

2.1-Percent Solution

Fresh ⁵	0.6	1.1	0.3	0.9	0.6	1.3	1.4	2.5	0.3	5.2	3.1	3.1	1.9
1 Year - Missoula ⁵	0.4	0.3	0.2	0.5	0.6	1.5	1.3	2.5	0.3	2.8	2.6	1.5	1.6
1 Year - San Dimas ⁵	0.5	0.4	0.3	0.8	0.6	1.4	1.2	2.4	0.3	4.3	2.9	1.4	1.7

Notes:

1	Uniform corrosion rates (expressed in mils-per-year) were determined by 90-day weight loss tests. Values shown are the average of all replicates.
2	Results up to 0.1 mils-per-year are recorded as 0.1 mils-per-year.
3	Uniform corrosion tests are performed on wet concentrates. Uniform corrosion tests are not performed on dry concentrates.
4	Products for use only at portable or temporary bases do not require 1-year stability and corrosion tests.
5	Meets the intergranular corrosion requirements for aluminum.
6	Meets the intergranular corrosion requirements for magnesium.



Uniform Corrosion ¹ Phos-Chek Insul-8



Temperature: °F	2024-T3 Aluminum				4130 Steel				Yellow Brass	Az31B Magnesium			
	Total		Partial		Total		Partial		Partial	Total		Partial	
	70	120	70	120	70	120	70	120	120	70	120	70	120
-----mils-per-year-----													
Concentrate													
Fresh	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1
0.37-Percent Solution													
Fresh ^{5,6}	0.2.	1.0	0.3	0.8	0.5	1.3	0.5	0.9	0.4	3.8	3.1	2.2	1.9
1 Year - Missoula ^{5,6}	0.1	0.5	0.2	0.3	0.5	1.5	0.4	1.2	0.4	3.1	3.0	1.8	2.1
1 Year - San Dimas ^{5,6}	0.1	0.8	0.3	0.6	0.3	1.0	0.4	0.7	0.4	3.5	3.4	2.0	2.3
1.0-Percent Solution													
Fresh ⁵	0.2	0.4	0.3	0.4	0.8	1.4	0.5	1.2	0.1	6.2	5.9	3.7	3.8
1 Year - Missoula ⁵	0.2	0.4	0.3	0.5	0.8	1.4	0.6	1.2	0.1	5.9	5.9	3.7	3.5
1 Year - San Dimas ⁵	0.2	0.5	0.2	0.3	1.0	1.6	0.6	1.1	0.1	6.0	6.1	3.3	3.5
3.0-Percent Solution													
Fresh	0.5	1.3	0.4	1.0	2.2	1.5	1.4	1.9	0.2	8.6	11.1	3.3	5.4
1 Year - Missoula	0.5	1.3	0.4	1.0	1.8	2.4	1.4	2.1	0.2	8.0	10.0	2.7	3.3
1 Year - San Dimas	0.5	0.5	0.4	0.3	2.0	1.6	1.0	1.9	0.3	7.3	9.5	3.3	4.0
Notes:													
1	Uniform corrosion rates (expressed in mils-per-year) were determined by 90-day weight loss tests. Values shown are the average of all replicates.												
2	Results up to 0.1 mils-per-year are recorded as 0.1 mils-per-year.												
3	Uniform corrosion tests are performed on wet concentrates. Uniform corrosion tests are not performed on dry concentrates.												
4	Products for use only at portable or temporary bases do not require 1-year stability and corrosion tests.												
5	Meets the intergranular corrosion requirements for aluminum.												
6	Meets the intergranular corrosion requirements for magnesium.												