United States Department of Agriculture **Forest Service** **Missoula Technology & Development Center** **5785 Highway 10 West Missoula, MT 59808**

File Code: 5162
Date: February 1, 2011

Mr. Rob Rosovich
Gel Tech Solutions, Inc.
1460 Park Lane S. Suite 1
Jupiter, FL 33458

Rob,

The final uniform corrosion tests have been completed on your water enhancer, GelTech FireIce (formulation ID# 00612/2008) in accordance with Forest Service Specification 5100-306a. The results are summarized on the attached tables and discussed below.

Tables 1 and 2 show the results of the tests performed on a solution mixed at 0.12 lb/gal. with fresh water and dry concentrate that was stored outdoors in Missoula, Montana and San Dimas, CA, respectively, for 1 year. All results on aluminum, mild steel and yellow brass are acceptable.

Tables 3 and 4 show the results of the tests performed on a solution mixed at 0.143 lb/gal. with fresh water and dry concentrate that was stored outdoors in Missoula, Montana and San Dimas, CA, respectively, for 1 year. All results on aluminum, mild steel, yellow brass and magnesium are acceptable.

Tables 5 and 6 show the results of the tests performed on a solution mixed at 0.18 lb/gal. with fresh water and dry concentrate that was stored outdoors in Missoula, Montana and San Dimas, CA, respectively, for 1 year. All results on aluminum, mild steel and yellow brass are acceptable.

Based on these results, the next step is to arrange for intergranular corrosion tests on representative aluminum coupons exposed during the uniform corrosion tests. I have attached a description of the procedure to initiate intergranular corrosion testing.

If you have any questions related to this work, please contact me at 406-329-4859, or email at szylstra@fs.fed.us.

Sincerely,

Shirley Zylstra

SHIRLEY ZYLSTRA
Physical Scientist
Wildland Fire Chemical Systems

CC: C. Johnson

Table 1

Uniform corrosion by 90-day Weight Loss Test
of
GelTech FireIce
FID# 00612/2008
0.12 lb/gal
Mixed from Concentrate
Stored 1 Year, Outdoors
Missoula, Montana

	Total Immersion		Partial Immersion	
	70° F	**120° F**	**70° F**	**120° F**
	- - - - - - - - - - - - - - - mils-per-year - - - - - - - - - - - -			
2024 - T3 Aluminum	0.4	0.3	0.3	0.6
	0.5	0.4	0.2	0.7
	0.5	0.6	0.3	0.6
Average	**0.5**	**0.4**	**0.3**	**0.6**
4130 Steel	0.6	1.3	1.3	2.0
	0.6	1.2	1.3	2.1
	0.5	1.3	1.4	2.0
Average	**0.6**	**1.3**	**1.3**	**2.0**
Yellow Brass	-	-	-	0.3
	-	-	-	0.3
	-	-	-	0.3
Average				**0.3**
Az31B Magnesium	6.4	3.2	2.5	1.5
	4.3	5.0	2.3	1.5
	4.6	3.1	2.6	1.6
Average	**5.1**	**3.8**	**2.5**	**1.5**

Table 2

Uniform corrosion by 90-day Weight Loss Test
of
GelTech FireIce
FID# 00612/2008
0.12 lb/gal
Mixed from Concentrate
Stored 1 Year, Outdoors
San Dimas, CA

	Total Immersion		Partial Immersion	
	70° F	**120° F**	**70° F**	**120° F**
	- - - - - - - - - - - - - - - mils-per-year - - - - - - - - - - - -			
2024 - T3 Aluminum	0.5	0.4	0.4	0.6
	0.4	0.4	0.3	0.5
	0.4	0.3	0.4	0.5
Average	**0.4**	**0.4**	**0.4**	**0.5**
4130 Steel	0.6	1.3	1.5	2.0
	0.5	1.3	1.4	2.0
	0.5	1.3	1.3	2.0
Average	**0.5**	**1.3**	**1.4**	**2.0**
Yellow Brass	-	-	-	0.3
	-	-	-	0.3
	-	-	-	0.3
Average				**0.3**
Az31B Magnesium	3.7	3.2	2.0	1.6
	3.9	3.2	2.1	1.6
	3.4	3.3	2.2	1.7
Average	**3.7**	**3.2**	**2.1**	**1.6**

Table 3

Uniform corrosion by 90-day Weight Loss Test
of
GelTech FireIce
FID# 00612/2008
0.143 lb/gal
Mixed from Concentrate
Stored 1 Year, Outdoors
Missoula, Montana

	Total Immersion		Partial Immersion	
	70° F	**120° F**	**70° F**	**120° F**
	- - - - - - - - - - - - - - - mils-per-year - - - - - - - - - - - -			
2024 - T3 Aluminum	0.4	0.3	0.2	0.5
	0.4	0.3	0.2	0.4
	0.5	0.3	0.2	0.4
Average	**0.4**	**0.3**	**0.2**	**0.4**
4130 Steel	0.5	1.3	1.2	2.1
	0.5	1.4	1.2	2.1
	0.5	1.4	1.1	2.0
Average	**0.5**	**1.4**	**1.2**	**2.1**
Yellow Brass	-	-	-	0.3
	-	-	-	0.3
	-	-	-	0.2
Average				**0.3**
Az31B Magnesium	3.3	3.1	1.3	1.5
	3.3	4.9	1.3	1.6
	3.2	3.5	1.3	1.5
Average	**3.3**	**3.8**	**1.3**	**1.5**

Table 4

Uniform corrosion by 90-day Weight Loss Test
of
GelTech FireIce
FID# 00612/2008
0.143 lb/gal
Mixed from Concentrate
Stored 1 Year, Outdoors
San Dimas, CA

	Total Immersion		Partial Immersion	
	70° F	**120° F**	**70° F**	**120° F**
	- - - - - - - - - - - - - - - mils-per-year - - - - - - - - - - - -			
2024 - T3 Aluminum	0.5	0.4	0.3	0.6
	0.5	0.6	0.3	0.7
	0.5	0.7	0.3	0.6
Average	**0.5**	**0.6**	**0.3**	**0.6**
4130 Steel	0.5	2.3	0.4	2.3
	0.5	1.3	1.3	2.0
	0.5	1.4	1.4	2.1
Average	**0.5**	**1.7**	**1.0**	**2.1**
Yellow Brass	-	-	-	0.3
	-	-	-	0.3
	-	-	-	0.3
Average				**0.3**
Az31B Magnesium	3.0	2.9	1.7	1.8
	3.1	3.1	1.7	1.8
	3.1	3.1	1.7	1.8
Average	**3.1**	**3.1**	**1.7**	**1.8**

Table 5

Uniform corrosion by 90-day Weight Loss Test
of
GelTech FireIce
FID# 00612/2008
0.18 lb/gal
Mixed from Concentrate
Stored 1 Year, Outdoors
Missoula, Montana

	Total Immersion		Partial Immersion	
	70° F	**120° F**	**70° F**	**120° F**
	- - - - - - - - - - - - - - - mils-per-year - - - - - - - - - - - -			
2024 - T3 Aluminum	0.4	0.3	0.2	0.5
	0.4	0.4	0.3	0.6
	0.4	0.3	0.2	0.5
Average	**0.4**	**0.3**	**0.2**	**0.5**
4130 Steel	0.6	1.5	1.3	2.5
	0.6	1.4	1.3	2.5
	0.6	1.5	1.2	2.4
Average	**0.6**	**1.5**	**1.3**	**2.5**
Yellow Brass	-	-	-	0.3
	-	-	-	0.3
	-	-	-	0.2
Average				**0.3**
Az31B Magnesium	2.9	2.7	1.4	1.6
	2.6	2.6	1.5	1.7
	2.9	2.6	1.5	1.6
Average	**2.8**	**2.6**	**1.5**	**1.6**

Table 6

Uniform corrosion by 90-day Weight Loss Test
of
GelTech FireIce
FID# 00612/2008
0.18 lb/gal
Mixed from Concentrate
Stored 1 Year, Outdoors
San Dimas, CA

	Total Immersion		Partial Immersion	
	70° F	**120° F**	**70° F**	**120° F**
	- - - - - - - - - - - - - - - mils-per-year - - - - - - - - - - - -			
2024 - T3 Aluminum	0.5	0.3	0.3	0.6
	0.4	0.4	0.2	0.9
	0.5	0.4	0.3	1.0
Average	**0.5**	**0.4**	**0.3**	**0.8**
4130 Steel	0.6	1.4	1.2	2.3
	0.6	1.4	1.2	2.4
	0.6	1.5	1.2	2.6
Average	**0.6**	**1.4**	**1.2**	**2.4**
Yellow Brass	-	-	-	0.3
	-	-	-	0.2
	-	-	-	0.3
Average				**0.3**
Az31B Magnesium	4.3	3.1	1.5	1.7
	4.3	2.7	1.4	1.7
	4.2	2.8	1.4	1.8
Average	**4.3**	**2.9**	**1.4**	**1.7**