



Stress Corrosion Cracking ¹



The Forest Service worked with a contract laboratory to address stress corrosion cracking questions generated by the field. The work focused on stainless steel alloys found onboard airtankers. The design of this testing was based upon field feedback to identify the relevant alloys and grades, applied stress and test temperatures.

The following table is a summary of the findings. Triplicate specimens were exposed to each solution, fully immersed at 120°F for 30 days. All products were tested at their qualified mix ratio listed on the Qualified Products List (QPL). Stress levels were applied using a four-point bend (FPB) test configuration as shown in Figure 1.

Alloys tested (required stress):

- 301 ½ Hard Stainless Steel (15 ksi)
- 15-5PH Stainless Steel (95 ksi)
- A286 Stainless Steel (16.7 ksi)
- 17-4PH Stainless Steel (34.4 ksi)
- Nitronic 40 Steel (18.9 ksi)
- Nitronic 50 Steel (16.7 ksi)
- 431 Stainless Steel (49.2 ksi)
- 301 Stainless Steel (15 ksi)
- 302/304 ½ Hard Stainless Steel (15 ksi)

Product Performance Data on next page

1	This is focused study and not a required test for all long-term retardants.
---	---



Figure 1-Example of loaded FPB specimen. (excerpt from report)



Stress Corrosion Cracking Study ¹ Long-Term Retardant



Product	Fractured	Sub-surface cracking
Phos-Chek MVP-Fx	None	None
Phos-Chek LC-95A-R	None	None
Fortress FR-100	None	None
Fortress FR-200	None	None

Notes:

- | | |
|---|--|
| 1 | This is focused study and not a typical test for all long-term retardants. |
|---|--|