 <b>CARDINAL IG</b> <b>Product</b> <b>Development Group</b>	<b>TITLE:</b> Thermal Cycling of Eagon VIG	<b>ID#:</b> 18-205
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<b>KEY WORDS:</b> VIG, Eagon, ESPEC, Thermal Cycling		

**Objective**

The objective of this testing is to determine the effect of thermal cycling on and the seal integrity of Eagon’s VIG units.

**Test Method**

6 test units of the following makeup were tested:

- VIG – (4mm HS – 0.2mm Vacuum Space – 4mm HS)

The ESPEC cycle is shown below. In its most basic form the ESPEC cycles 4.5 times a day from -22(-30°C) to +160°F(71°C). The full cycle is shown below (Figure 1).

The samples were monitored for loss of vacuum seal integrity (pillars moving or moisture infiltration) and seal anomalies. Samples were exposed for a total 1200 cycles. After exposure they were visually inspected.

**Results**

After the first cycle period, one unit was removed when it was noted that the spacer pillars had moved, indicating seal breach. Upon closer inspection, the unit was found to have a small single line break originating at the port seal hole and running out to the corner of the glass. It is suspected that there was some small defect or damage at the edge of the port seal hole and that the break was a result of thermal stress.

The remaining units performed to expectations throughout the entirety of the test. No abnormalities or issues were noted.

**Conclusions**

The VIG units tested positively throughout the entirety of testing. The edge seals handled the temperature stress well. Due to the lack of an airspace, it is suspected that the typical IG concerns are not seen along the perimeter seal since the VIG unit does not “breathe”. Overall, the only potential concern was edge quality of the port hole in one unit, while all the remain units tested well.

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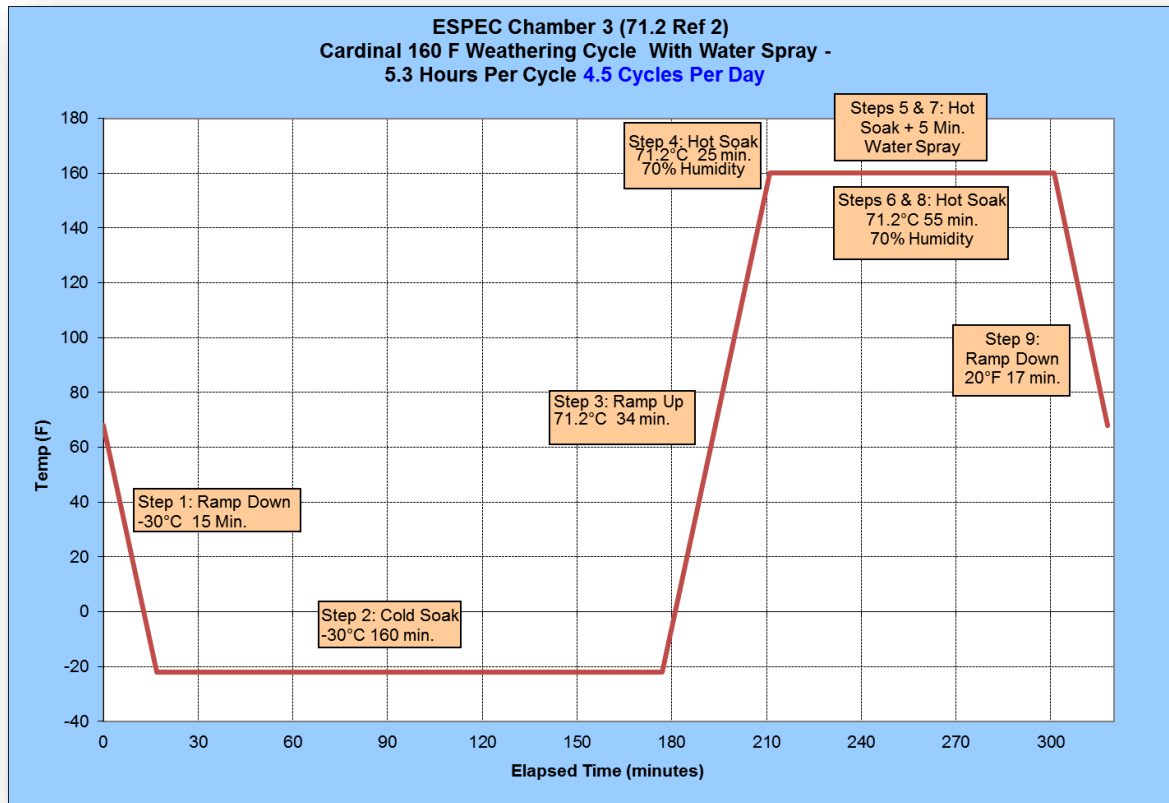


FIGURE 1, Typical ESPEC Cycle

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