

# SMI, Inc.

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Date: 14-Nov-2005

SMI/REF: 05XCT991

Product: **VPCI-422** (VPCI-416 as the neutralizer)  
(received 10-Oct-2005) (VPCI-416 received 19-Oct-2005)

Dilution: Ready to use

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**ASTM F 519 - 05**  
**Mechanical Hydrogen Embrittlement Evaluation of**  
**Plating/Coating Processes and Service Environments**  
**(Aggressive Chemicals)**

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Specimens: Type 1c, unplated AISI 4340 steel  
Load (Table A5.1): 45 % of notched fracture strength  
Exposure: Notched areas of stressed specimens were completely immersed in the test chemical for 15 minutes, neutralized per manufacturer's instructions, rinsed and dried with compressed air. The load of the test specimen was then increased to 75% NFS for 200 hours.  
Temperature: Room temperature  
Dilution: Ready to use

*An aggressive chemical shall be considered non-embrittling if none of the exposed specimens fracture within 200 hours after being stressed to 75% NFS for Type I specimens.*

**Results:** Specimen #1: No failures occurred within 200 hours.  
Specimen #2: No failures occurred within 200 hours.  
Specimen #3: No failures occurred within 200 hours.  
Specimen #4: No failures occurred within 200 hours.

Result Conforms

Respectfully submitted,



Patricia D. Viani, SMI Inc.