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Date: 17-May-2006
SMI/REF: 0603-495

Product: **SW-6LF SELECT METAL DEGREASING SOLUTION**
(received 30-Mar-2006)

Dilution: Ready to Use

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Pratt & Whitney
PWA 36604 Revision C
Compatibility with Non-Metallic Materials

3.2.3.3 Compatibility with Non-Metallic Materials: Hardness and volume changes shall not exceed the limits of Table 2 when determined in accordance with Appendix E.

Table 2 - Hardness and Volume Change				
MATERIAL	ALLOWABLE HARDNESS CHANGE	RESULTS	ALLOWABLE VOLUME CHANGE	RESULTS
AMS 7267	-10 to + 5	1	15 % maximum	< 1 %
AMS 7271	0 to +15	0	15 % maximum	< 1 %
AMS 7273	-10 to 0	-1	20 % maximum	< 1 %
AMS 7276	-5 to +15	0	5 % maximum	< 1 %
PWA 407	-5 to + 5	0	5 % maximum	< 1 %

Result Conforms

Respectfully submitted,



Patricia D. Viani, SMI Inc.

Client:	ChemFree Corporation	Date:	17-May-2006
Product:	SW-6LF SELECT METAL DEGREASING SOLUTION		
Dilution:	Ready to use	SMI/REF:	0603-495
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MATERIALS TESTED:

- AMS 7267 Rings, Sealing, Silicon Rubber**
- AMS 7271 Rings, Sealing, Butadiene-Acrylonitrile Rubber**
- AMS 7273 Rings, Sealing, Fluorosilicone Rubber**
- AMS 7276 Rings, Sealing, Fluorocarbon Rubber**
- PWA 407 Rubber**

Procedure: (taken from Pratt & Whitney guidelines)

- a. Measure hardness of material on the Durometer A scale and record as "Hardness Reading A".
- b. Weigh test material in air and record as "Weight A".
- c. Weigh test material in DI water and record as "Weight B".
- d. Expose test material to solution for 2 hours at room temperature.
- e. Rinse thoroughly using DI water.
- f. Weigh test material in DI water and record as "Weight C".
- g. Dry and measure hardness of test material using the Durometer A scale and record as "Hardness Reading B".

$$\text{Density (D}_1\text{)} = \frac{\text{Wgt in air}}{\text{Wgt in air} - \text{Wgt in water}} = \frac{A}{A - B}$$

$$\text{Density (D}_2\text{)} = \frac{\text{Wgt in air}}{\text{Wgt in air} - \text{Wgt in water (post exposure)}} = \frac{A}{A - C}$$

$$\text{Volume Change} = \frac{\text{Density before exposure} - \text{Density after exposure}}{\text{Density after exposure}} = \frac{(D_1 - D_2)}{D_2} 100$$

$$\text{Hardness Change} = \text{Hardness Reading A} - \text{Hardness Reading B}$$

DUROMETER DATA (HARDNESS READINGS)			
	A (initial)	B (final)	A - B (hardness change)
AMS 7267	81	80	1
AMS 7271	77	77	0
AMS 7273	74	75	-1
AMS 7276	84	84	0
PWA 407	54	54	0

DENSITY DATA						
MATERIAL	Wgt A (g)	Wgt B (g)	Wgt C (g)	Density D ₁ (initial)	Density D ₂ (final)	% Density Change
AMS 7267	1.7014	0.3936	0.3968	1.301	1.304	< 1 %
AMS 7271	4.8623	0.9343	0.9326	1.238	1.237	< 1 %
AMS 7273	6.8791	1.6070	1.6146	1.305	1.307	< 1 %
AMS 7276	7.2014	3.2556	3.2621	1.825	1.828	< 1 %
PWA 407	22.0714	3.8546	4.0196	1.212	1.223	< 1 %

"Wgt A": Weight of test material in air
"Wgt B": Weight of test material in water
"Wgt C": Weight of test material in water after 2 hours exposure

VOLUME DATA (ASTM D 471)					
MATERIAL	M ₁	M ₂	M ₃	M ₄	% VOLUME CHANGE
AMS 7267	1.7014	0.3936	1.7066	0.3968	< 1 %
AMS 7271	4.8623	0.9343	4.8618	0.9326	< 1 %
AMS 7273	6.8791	1.6070	6.8929	1.6146	< 1 %
AMS 7276	7.2014	3.2556	7.2024	3.2621	< 1 %
PWA 407	22.0714	3.8546	22.1131	4.0196	< 1 %

M₁ = Mass of test material in air (grams), initial
M₂ = Mass of test material in water (grams), initial
M₃ = Mass of test material in air (grams), final
M₄ = Mass of test material in water (grams), final

$$\text{Change in Volume, \%} = \frac{(M_3 - M_4) - (M_1 - M_2)}{(M_1 - M_2)} \times 100$$