

## APLICACIÓN EN MOTORES GARRET / HONEYWELL

Honeywell recomienda productos P-D-680 Type 3 para algunos de sus motores. Nugear SC no tiene una aprobación directa emitida por Honeywell, pero reúne las especificaciones ASTM F945 lo cual haría que ambos productos sean equivalentes. No obstante es responsabilidad del cliente o taller autorizado verificar su aplicabilidad antes de usar.

A continuación copiamos información que puede ilustrar lo antes mencionado:

### What is MIL-PRF-680 specification?

- **MIL-PRF-680** is a US Department of Defense (DoD) Military Performance Specification for “Degreasing Solvents” used for parts cleaning of weapons, ground vehicles, equipment and aircraft
- Specification involves 5 types of degreasing solvents categorized primarily by their different flash points
- This is the most widely used and recognized military specification for solvent cleaning

## MIL-PRF-680 Properties (partial list)

Characteristics	Type I	Type II	Type III	Type IV	Type V
Flash Point, °C (°F)	<b>*38-60 (100-140)</b>	<b>61-92 (141-198)</b>	<b>93-116 (200-241)</b>	61-92 (141-198)	61-92 (141-198)
KB Value	27 to 45	27 to 45	27 to 45	27 to 45	NR
Odor	Low & non-residual	Low & Non-residual	Low & non-residual	<b>Citrus &amp; non-residual</b>	Low & non-residual
Aromatic Content, vol %, max	1	1	1	1	1
NVR mg/10 mL, Max	8	8	8	8	8
Vapor Pressure, mm Hg @20°C, max	7	2	0.4	2	1
VOC, g/l, max	NR	NR	NR	NR	<b>25</b>

*\*Bold highlight denotes key differences*

## News Release

- Petroferm is pleased to announce we offer 4 types of qualified MIL-PRF-680 Degreasing Solvents
  - Type I            AXAREL 1000 Precision Cleaner
  - Type II            AXAREL 2000 Precision Cleaner
  - Type III            AXAREL 3000 Precision Cleaner
  - Type IV            AXAREL 4000 Precision Cleaner

## History of Specification

- **PD-680** was previous specification (1992) for “Drying Cleaning and Degreasing Solvents”
- Used widely by the US DoD in general cleaning applications
- Classified into three types:
  - Type I Minimum flash point of 100°F (38°C)
  - Type II Minimum flash point of 140°F (60°C)
  - Type III Minimum flash point of 199°F (93°C)

## PD-680 Cancelled

- PD-680 specification cancelled on December 13<sup>th</sup>, 1999
- Replaced by MIL-PRF-680 solvent degreasing specification
- ***US Military states that if a Technical Order has not been updated and continues to reference the use of P-D-680, MIL-PRF-680 is the accepted substitute***

## MIL-PRF-680 Key Conformance

Characteristic	ASTM methods	Other methods
Odor	D 1296	
Non-volatile residue	D 1353	
Copper corrosion	D 130	
Sandwich corrosion	F 1110	
Total immersion corrosion	F 483	
Titanium stress corrosion	F 945	
Total phenol content		EPA 420.1
Total dichlorobenzene content		EPA 3585 and 8260B
Total benzene content		EPA 3585, 8260B
Total trichloroethylene		EPA 3585, 8260B
Total tetrachloroethylene		EPA 3585, 8260B
Soil cleaning test		APPENDIX A

# SCIENTIFIC MATERIAL INTERNATIONAL INC.

REPLY TO P.O. BOX 141787  
CORAL GABLES, FLORIDA 33114  
OFFICE: 7015 S.W. 13TH STREET  
MIAMI, FLORIDA 33144  
PHONE (305) 757-5505  
TELEX 4933347 SMI UI  
FAX (305) - 893-0431

Nuvite Chemical Compound  
213 Freeman Street  
Brooklyn, New York 11222  
Attn: Mr. Clifford Lester

Date: November 10, 1992  
SMI/REF: 9210092

## Report of Test

Submitted: Nu-Gear-SC

Requested: Test to ASTM F-945 Stress Corrosion of Titanium Alloys by  
Aircraft Maintenance Materials.

Paragraph 8.2.1

Alloys 2.2 AMS 4911

Product: Concentration 25% V/V

Immersion temperature: Ambient

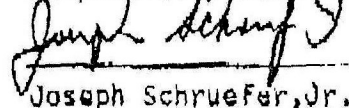
Immersion time: 1 minute

## Result of Test

Three specimens prepared as required in ASTM F-945 using immersion as described above revealed no visible cracking or change more than the control sample when inspected at 500X when mounted for metallographic evaluation.

Result Conform

Respectfully submitted,

  
\_\_\_\_\_  
Joseph Schrufer, Jr.

Client: Nuvite Chemical Compound  
Product: Nu-Gear-SC  
ARP 1755 A

Date: Nov. 19, 1992  
SME/REF: 9210052

Vendor's Name: Nuvite Chemical Compound  
Address: 213 Freeman Street  
Brooklyn, New York 11222  
Telephone No: (718) 383-0008

Name of Laboratory: SMI, Inc.  
Address: 7019 S.W. 13th Street  
Miami, Florida 33144  
Telephone No: (305) 757-5596

Product name or Reference no:	Category (Table 1)	Dilution Operating Limits	Temperature Operating Limits	Recommended Cycle Time in minutes	Date Submitted
Nu-Gear-SC	10	25% V/V with ASTM D1193-Type IV water	140°F	30 minutes	

Engine Mfr. Prelim. OK for service test	Name & location of Recognized overhaul shop & Starting date	This section for Engine Manufacturers use only			AMS number
		Engine Mfr. Field Rep. Report No. & date received	Date Final OK For Service Use	Engine Mfr. designation for this product, if any	

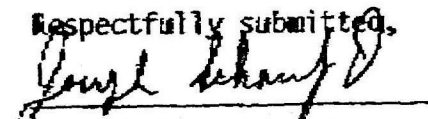
Respectfully submitted,  
  
Joseph Schrufer, Jr.

Figure 1 (Continued)

Vendor name: Nuvite Chemical Compound									
Product name, or Nu-Gear-SC reference number: 9210092	Not Recommended	Panel Serial No.	Loss in Inches	Panel Serial No.	Loss in Inches	Panel Serial No.	Loss in Inches	Average Loss in Inches	
PLASMA COATED PANELS OR BARS: (NOTE <sup>1</sup> )									
AMS 4911/AMS 2437-3		102	.00009	103	.00008	104	.00007	.00008	No effect
AMS 5504/AMS 2437-3		105	.000004	106	.000007	107	.000009	.0000	No effect
AMS 5504/AMS 2437-2		108	.000006	109	.000005	110	.000007	.000006	No effect
AMS 5504/AMS 2437-5		111	.000009	112	.000004	113	.000003	.000005	No effect
AMS 5504/AMS 2437-6		114	.000007	115	.000007	116	.000009	.000008	No effect
AMS 5504/AMS 2437-7		117	.00002	118	.000004	119	.000005	.000004	No effect

Note 1: If bar stock specimens are used, AMS 4928 and AMS 5613 shall be used in place of AMS 4911 and AMS 5504.

The maximum allowable stock loss is 0.000025 in. for alloy panels or electroplated panels.

The maximum allowable stock loss is 0.0001 in for plasma panels.

Result Conform

Respectfully submitted,

Joseph Schrufer, Jr.

Product name, or Nu-Gear SC reference number: 9210092	Not Recommended	Serial No.	in Inches	Serial No.	in Inches	Serial No.	in Inches	Loss in Inches	
UNCOATED PANELS OR DISCS:									
AMS 4037 Aluminum		39	000008	40	000010	41	000006	000008	No effect
AMS 4375 Magnesium		42	000005	43	000009	44	000010	000008	No effect
AMS 4442 Magnesium									
AMS 4507 Copper Alloy		45	000006	46	000005	47	000007	000006	Tarnish
AMS 4544 Nickel Alloy		48	000009	49	000010	50	000007	000009	No effect
AMS 4640 Aluminum Bronze									
AMS 4911 Titanium Alloy		51	000005	52	000007	53	000005	000006	No effect
AMS 5040 Carbon Steel		54	000005	55	000008	56	000007	000006	Rust stain
AMS 5382 Cobalt Alloy		57	000004	58	000003	59	000005	000004	No effect
AMS 5504 Corrosion Resistant Steel		60	000006	61	000005	62	000004	000005	No effect
AMS 5508 Corrosion Resistant Steel		63	000004	64	000007	65	000005	000006	No effect
AMS 5524 Corrosion Resistant Steel		66	000004	67	000007	68	000006	000006	No effect
AMS 5525 Corrosion Resistant Steel		69	000004	70	000007	71	000006	000006	No effect
AMS 5536 Nickel Base Alloy		72	000004	73	000005	74	000005	000007	No effect
AMS 5537 Cobalt Base Alloy		75	000003	76	000005	77	000008	000005	No effect
AMS 5544 Nickel Base Alloy		78	000007	79	000005	80	000009	000007	No effect
AMS 5596 Nickel Base Alloy									
AMS 5661 Nickel Base Alloy									
AMS 6431 Steel									
NAR-M <sup>TM</sup> -002 (60Ni/9Cr/10Co/1.5Ti/ 5.5Al/10W/2.5Ta/1.5HF)									
IMI <sup>TM</sup> 685 (88Ti/6Al/5Zr/0.5Mo/0.25Si)									
ELECTROPLATED PANELS:									
AMS 4037/AMS 2470		81	000014	82	000017	83	000019	000016	Gray color
AMS 5504/AMS 2400		84	000007	85	000005	86	000006	000006	No effect
AMS 5504/AMS 2406		87	000004	88	000007	89	000006	000006	No effect
AMS 5504/AMS 2410		90	000005	91	000005	92	000006	000005	No effect
AMS 5504/AMS 2416		93	000007	94	000009	95	000005	000007	No effect
AMS 5504/AMS 2418		96	000003	97	000005	98	000004	000004	No effect
AMS 5504/AMS 2424		99	000006	100	000005	101	000007	000006	No effect