

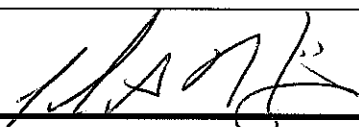




1. PROJECT CODE SA-AMS		2. JPIC CODE AMS		TASK PERFORMANCE SHEET NASA - LYNDON B. JOHNSON SPACE CENTER			
T Y P E	3. A CONFIGURATION CHANGE <input checked="" type="checkbox"/>		4. TPS NO. 2A0720 192		5. PAGE 1 OF 2		
	PERMANENT <input checked="" type="checkbox"/> TEMPORARY <input type="checkbox"/>		6. MOD SHEET(S) NUMBER(S)		7. ORG. EA1	8. SYSTEM AMS	
	B NONCONFIGURATION CHANGE <input type="checkbox"/>				9. NEED DATE 8/15/2007		
10. PART NAME Lower Payload / USS-02 Ass'y			11. PART NO./DRAWING NO. SEG39135758-302		12. SERIAL/LOT NO. N/A	13. TIME/CYCLE/SHELF LIFE <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
14. APPLICABLE DOCUMENTS CGS Silver Teflon Intrallation Process Document			15. CONTRACT NO./JOB NO. NNJ05HI05C		16. HAZ. TEST <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	17. ENG. EVAL. <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
18. SHORT TITLE OF TPS AMS-02 Lower Unique Support Structure - Silver Teflon Tape Installation					19. ADP UPDATE <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
20. OPER SEQ. NO.	21. OPERATIONS (Print, Type, or Write Legibly)  8-9-07				VERIFICATION		
					22. TECH	23. QA/DV	
	<p>The purpose of this TPS is to give the installation steps for the Silver Teflon Tape on the Lower USS.</p> <p>1. Open this TPS.</p> <p style="text-align: center;"><i>WARNING: Critical Lift of the Lower USS into the cleanroom is required during the ATS activities. Special care must be taken to ensure the safety of personnel and hardware.</i></p> <p>The Jacobs Project Engineer on site has the option to reorder steps in order to facilitate the logistics of moving around this large hardware.</p> <p>2. Clean the LUSS and install the Silver Teflon Tape per AMS-02 Task Sheet TCS-PR-CGS-001 (ATS) MITM070807-4_{CSG} Procedure start date <u>8-29-07</u>.</p> <p>ESCG Designated Verifier (DV) <u>Craig S. Clark</u></p> <p>Note: Contact AMS Thermal Engineering as required.</p> <p>Note: ESCG Designated Verifiers (DV) shall witness and verify all torque applications, confirm the Running (or Run-in) and Final torques, and proper documentation of these torques relative to this procedure and any other sub-process relative to this task. Designated Verifier (DV) shall coordinate with</p>					 8-29-07	
24. ORIGINATOR John Heilig 		DATE 8.9.07		25. FINAL ACCEPTANCE STAMP AND DATE			
APPROVALS (Printed or Typed and Signed)							
26. PROJECT ENGINEER John Heilig 		DATE 8.9.07	27. QUALITY ENGINEER Steve Caldwell 		DATE 8-9-07		
28.		29.	ORIGINAL				
30.		31.	Return to Bldg. <u>10</u>				
			Rm. <u>114</u> QARC				

TASK PERFORMANCE SHEET
 CONTINUATION PAGE
 NASA - LYNDON B. JOHNSON SPACE CENTER

4. TPS NO.

2A0720192

6. MOD NO.

20. OPER
SEQ. NO.

21. OPERATIONS
(Print, Type, or Write Legibly)

VERIFICATION

22. TECH

23. QA/DV


ESCG quality personnel for any additional verification of steps that would normally require a Mandatory Inspection Point or (MIP). ESCG Designated Verifier shall insure compliance with NASA/JSC NT-CWI-001 work instruction.

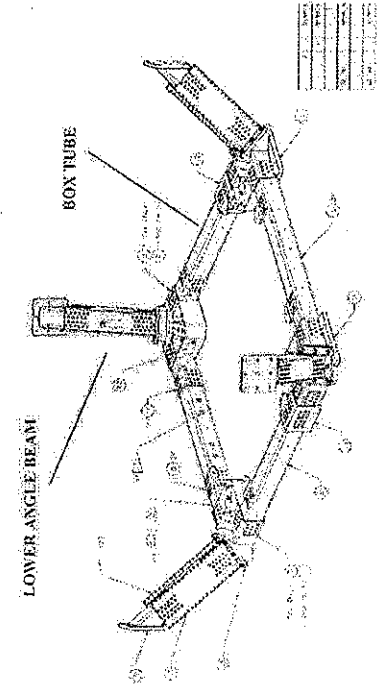
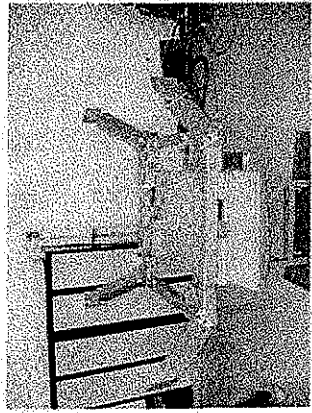
3. Indicate procedure end date for the Silver Teflon Tape Application, AMS-02 Task Sheet

CSC
8-31-07

(ATS) TCS-PR-CGS-001 Procedure end date 8-31-07


4. Close this TPS

 CARLO GAVAZZI SPACE SpA	<h1>AMS02 - TCS</h1>		N° Doc: TCS-PR-CGS-001 Doc N°: Ediz.: 1 Data: 20/08/2007 Issue: Date: Pagina 24 di 34 Page of PROCEDURE REFERENCE	
	USS TAPE APPLICATION REPORT		N° Doc: TCS-RP-CGS-001 Doc N°: Ediz.: 1 Data: 05/09/2007 Issue: Date: Pagina 24 di 34 Page of REPORT REFERENCE	

UUT DATA:	Model	Item	C.I.	S/I	
STEP n°	TAPE APPLICATION SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS
1	Lower USS tape application PRELIMINARY OPERATIONS Identify the surfaces of the LUSS where the tape is to be applied according to the following scheme: <ul style="list-style-type: none"> 4 lower angle beams (all the sides at the maximum extent) Box tubes (all the sides but the detector brackets) 		Parts to be covered identified	Parts identified.	The Lower USS to Upper USS joints are NOT to be covered. The center body box joints are NOT to be covered. Holes and areas which were alodined for bonding purposes (see AD[2]) are NOT to be covered. Final tape configuration on Lower USS:
1.1					

DATE: 30/08/07	TEST CONDUCTOR: <i>Ren. Sordano</i>	QA	CUSTOMER
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PROCEDURE REFERENCE				
REPORT REFERENCE				

UUT DATA: Model	Item	C.I.	S/N
TAPE APPLICATION SEQUENCE			

STEP n°	EXPECTED VALUE	MEASURED VALUE	REMARKS
2			
2.1	Clean performed	Surfaces clean	
2.2	OK	OK	TAPE Part number : 146415-002 (G401905) Lay-up (5 mils thick) : Teflon/AG/Inc/966 adhesive Perforated
2.3	Strip perforated.	OK	See Tab. 8-1 for weight considerations Do not adapt the tape to the LUSS riveted surfaces. The riveted parts are NOT to be covered by the tape.
2.4	Strip applied.	OK	
2.5	No overlap of strips.	OK	
2.6	All the sides of the angle beam #1 are covered.	OK	See Fig. 7-5 , angle beam final configuration.

DATE: 30/08/07	TEST CONDUCTOR: <i>Carlo Gavazzi</i>	QA	CUSTOMER
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	USS TAPE APPLICATION REPORT		REPORT REFERENCE	

UUT DATA: Model Item S/I N	TAPES APPLICATION SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
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2.7	Repeat steps from 2.1 to 2.6 for Lower angle beam #2.	All the sides of the angle beam #2 are covered.	OK	
2.8	Repeat steps from 2.1 to 2.6 for Lower angle beam #3	All the sides of the angle beam #3 are covered.	OK	
2.9	Repeat steps from 2.1 to 2.6 for Lower angle beam #4	All the sides of the angle beam #4 are covered.	OK	
3	Lower USS tape application - Box tubes			
3.1	Clean the 4 surfaces sides of Box tube of the LUSS where the tape is to be applied with Isopropyl Alcohol	Clean performed	Surfaces clean	
3.2	Cut the VDM, G4019, CVLY, Teflon tape 2" into stripes (not longer than 15" or 38,1cm) according to the surface side to be covered (in order to keep the tape area less than 31 square inch =200cm2). LEAVE the orange protective cover on the tape. Record the stripes length (for weight considerations).	OK	OK	TAPE Part number : 146415-002 (G401905) Lay-up (5 mils thick) : Teflon/AG/Inc/966 adhesive Perforated
3.3	If the surface where the tape is to be applied is equipped with holes and areas which have been alidined for bonding purposes (see AD[2]), adjust the tape with the suitable tools. (LEAVE the orange protective cover on the tape). For edge holes leave the complete row on the part uncovered. For the centred holes leave a squared area 1" x 1" uncovered. For the areas which have been alidined for bonding purposes (see AD[2]), adjust the tape over the part accordingly.	Strip perforated ready for application.	OK	See Tab. 8-1 for weight considerations

DATE: 31/08/07	TEST CONDUCTOR: <i>[Signature]</i>	OA	CUSTOMER
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	USS TAPE APPLICATION REPORT		PROCEDURE REFERENCE	

UNIT DATA	Model	Item	C.I.	EXPECTED VALUE	MEASURED VALUE	REMARKS
STEP n°	TAPE APPLICATION SEQUENCE					

UNIT DATA	Model	Item	C.I.	EXPECTED VALUE	MEASURED VALUE	REMARKS
3.4		Once the tape stripe is ready, remove gradually the liner "rolling" the tape down on the surface. Apply finger pressure to the tape in the direction parallel to the stripe length and perpendicularly from the center to the external edges in a manner that will squeeze out any air bubble.		Strip applied.	OK	
3.5		In case additional tape is needed to cover the same box tube side, do NOT overlap with the previous tape stripe.		No overlap of strips.	OK	
3.6		Repeat steps from 3.2 to 3.5 until all the four sides of the box tube are covered.		All the sides of the box tube #1 are covered	OK	See Fig. 7-8 and Fig. 7-10, box tubes final configuration.
3.7		Repeat steps from 3.1 to 3.6 for Box tube #2.		All the sides of the box tube #2 are covered	OK	
3.8		Repeat steps from 3.1 to 3.6 for Box tube #3		All the sides of the box tube #3 are covered	OK	
3.9		Repeat steps from 3.1 to 3.6 for Box tube #4		All the sides of the box tube #4 are covered	OK	
4		Upper USS tape application PRELIMINARY OPERATIONS				
4.1		Identify the parts of the Upper USS, where the tape is to be applied according to the following scheme: - 2 lower trunnion bridge beams at WAKE side. All the four sides of the Lower Trunnion bridge beam - Port side - are completely covered by tape. All the four sides of the Lower Trunnion bridge beam - Starboard side (CAB side) are completely covered by tape, but the beam side pointing to Starboard		Parts to be covered identified	Parts identified	Final tape configuration on Upper USS:


DATE: 31/08/07

TEST CONDUCTOR: *[Signature]*

QA: *[Signature]*

CUSTOMER

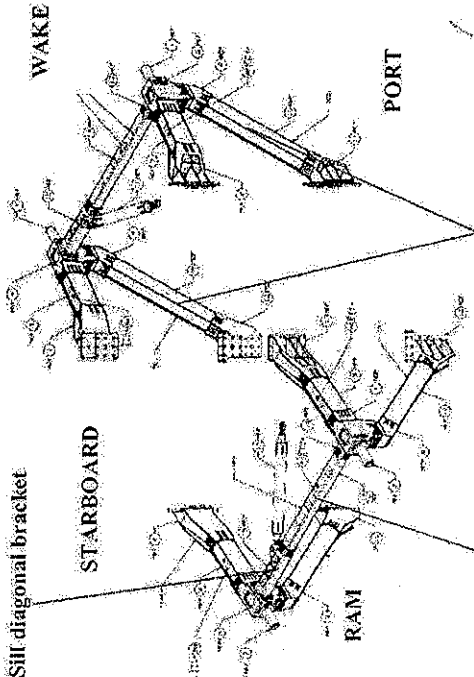
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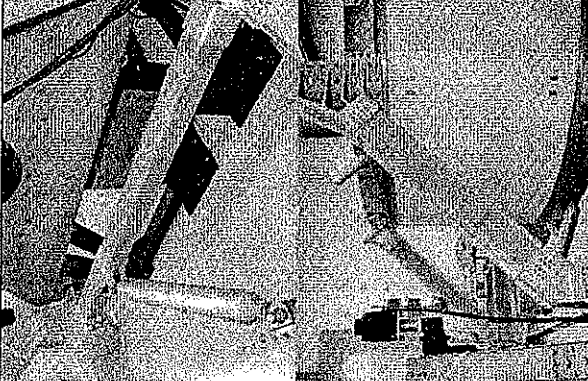
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UNIT DATA	Model	Item	C.I.	S/N
STEP n°	TAFE APPLICATION SEQUENCE		EXPECTED VALUE	MEASURED VALUE
			REMARKS	

direction.


- Sill diagonal bracket - RAM side. All four sides of the bracket, are completely covered.
- Sill tube - RAM side. All four sides of the bracket, are completely covered.





DATE: 28/08/07	TEST CONDUCTOR: <i>Ma. Gordinis</i>	QA: <i>[Signature]</i>	CUSTOMER
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	USS TAPE APPLICATION REPORT		REPORT REFERENCE	

UNIT DATA	Model	Item	C.I.	EXPECTED VALUE	MEASURED VALUE	REMARKS
STEP n°	TAPE APPLICATION SEQUENCE					

STEP n°	Model	Item	C.I.	EXPECTED VALUE	MEASURED VALUE	REMARKS
5		Upper USS tape application – Lower trunnion bridge beams – WAKE side				
5.1		Clean the 4 surfaces sides of the Lower trunnion bridge beam – PORT side where the tape is to be applied with Isopropyl Alcohol.		Clean performed.	Surfaces clean	
5.2		Cut the VDM, G4019, CVLY, Teflon tape 2" into stripes (not longer than 15" or 38,1 cm) according to the surface side to be covered (in order to keep the tape area less than 31 square inch =200cm2). LEAVE the orange protective cover on the tape. Record the stripes length (for weight considerations).		OK	OK	TAPE Part number : 146415-002 (G401905) Lay-up (5 mils thick) : Teflon/AG/Inc/966 adhesive Perforated
5.3		If the surface where the tape is to be applied is equipped with holes and areas which have been alidined for bonding purposes (see AD[2]), adjust the tape with the suitable tools (LEAVE the orange protective cover on the tape). For edge holes leave the complete row on the part uncovered. For the centred holes leave a squared area 1" x 1" uncovered. For the areas which have been alidined for bonding purposes (see AD[2]), adjust the tape over the part accordingly.		Strip perforated ready for application.	OK	See Tab. 8-1 for weight considerations
5.4		Once the tape stripe is ready, remove gradually the liner "rolling" the tape down on the surface. Apply finger pressure to the tape in the direction parallel to the stripe length and perpendicularly from the center to the external edges in a manner that will squeeze out any air bubble.		Strip applied.	OK	
5.5		In case additional tape is needed to cover the same side of the beam, do NOT overlap with the previous tape stripe.		No overlap of strips.	OK	
5.6		Repeat steps from 5.2 to 5.5 until all the four sides of the beam are covered.		All the sides of the trunnion	OK	See Fig. 7-14, PORT Trunnion bridge final configuration.

DATE: 29/08/07	TEST CONDUCTOR: 	OA	CUSTOMER
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UIT DATA:	Model	Item	C.I.	SIN
STEP n°	TAPPE APPLICATION SEQUENCE			
			EXPECTED VALUE	MEASURED VALUE
				REMARKS

STEP n°	Model	Item	C.I.	SIN
5.7		Clean only 3 surfaces sides of the Lower trunnion bridge beam - STARBOARD side where the tape is to be applied with Isopropyl Alcohol. The beam side pointing to STARBOARD direction is not to be covered by tape. Cut the VDM, G4019, CVLY, Teflon tape 2" into stripes (not longer than 15" or 38.1cm) according to the surface side to be covered (in order to keep the tape area less than 31 square inch = 200cm2). LEAVE the orange protective cover on the tape. Record the stripes length (for weight considerations).	bridge + PORT side- are covered. Clean performed OK	Surfaces clean OK
5.8		If the surface where the tape is to be applied is equipped with holes and areas which have been alodined for bonding purposes (see AD[2]), adjust the tape with the suitable tools (LEAVE the orange protective cover on the tape). For edge holes leave the complete row on the part uncovered. For the centred holes leave a squared area 1" x 1" uncovered. For the areas which have been alodined for bonding purposes (see AD[2]), adjust the tape over the part accordingly.	OK	OK TAPPE Part number : 146415-002 (G401905) Lay-up (5 mils thick) : Teflon/AG/Inc/966 adhesive Perforated See Tab. 8-1 for weight considerations
5.9		Once the tape stripe is ready, remove gradually the liner "rolling" the tape down on the surface. Apply finger pressure to the tape in the direction parallel to the stripe length and perpendicularly from the center to the external edges in a manner that will squeeze out any air bubble.	Strip perforated ready for application. OK	OK
5.10		In case additional tape is needed to cover the same side of the beam, do NOT overlap with the previous tape stripe.	No overlap of strips. OK	OK
5.11		Repeat steps from 5.8 to 5.11 until all the three sides of the beam are covered.	All the three strips. OK	OK
5.12				See Fig. 7-15, STBD Trunnion bridge CUSTOMER

DATE: 25/08/07
 TEST CONDUCTOR: *[Signature]*
 QA: *[Signature]*

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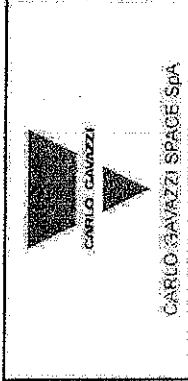
 CARLO GAVAZZI SPACE SPA	AMS02 - TCS USS TAPE APPLICATION REPORT		N° Doc: TCS-PR-CGS-001 Ediz.: 1 Pagina: 31	Data: 20/08/2007 Date: 20/08/2007 di: 34 of: 34	N° Doc: TCS-RP-CGS-001 Ediz.: Pagina: 31	Data: 05/09/2007 Date: 05/09/2007 di: 34 of: 34
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UNIT DATA:	Model	Item	C.I.			
STEP n°	TAPE APPLICATION SEQUENCE		EXPECTED VALUE	MEASURED VALUE	REMARKS	

6	Upper USS tape application – Sill tube and diagonal bracket – RAM side		final configuration.		
6.1	Clean all the 4 surfaces sides of the Sill tube – RAM side where the tape is to be applied with Isopropyl Alcohol.	Clean performed.	Surfaces clean		
6.2	Cut the VDM, G4019, CVLY, Teflon tape 2" into stripes (not longer than 15" or 38,1cm) according to the surface side to be covered (in order to keep the tape area less than 31 square inch = 200cm ²). LEAVE the orange protective cover on the tape. Record the stripes length (for weight considerations).	OK	OK	TAPE Part number : 146415-002 (G401905) Lay-up (5 mils thick) : Teflon/AG/Inc/966 adhesive Perforated.	
6.3	If the surface where the tape is to be applied is equipped with holes and areas which have been alodined for bonding purposes (see AD[2]), adjust the tape with the suitable tools (LEAVE the orange protective cover on the tape). For edge holes leave the complete row on the part uncovered. For the centred holes leave a squared area 1" x 1" uncovered. For the areas which have been alodined for bonding purposes (see AD[2]), adjust the tape over the part accordingly.	Strip perforated ready for application.	OK	See Tab. 8-1 for weight considerations	
6.4	Once the tape stripe is ready, remove gradually the liner "rolling" the tape down on the surface. Apply finger pressure to the tape in the direction parallel to the stripe length and perpendicularly from the center to the external edges in a	Strip applied.	OK		

DATE: 23/08/07	TEST CONDUCTOR: <i>via Gavazzi</i>	QA	<i>GA</i>	CUSTOMER
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AMS02 - TCS

USS TAPE APPLICATION REPORT

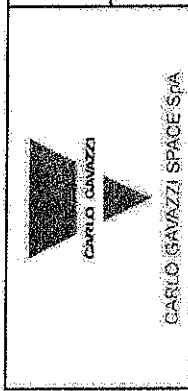
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UNIT DATA	Model	Item	C.I.	S/N
STEP n°	TAPE APPLICATION SEQUENCE			

STEP n°	EXPECTED VALUE	MEASURED VALUE	REMARKS
6.5	No overlap of strips.	OK	
6.6	All the four sides of the sill tube - RAM side - are covered	OK	See Fig. 7-19, Sill Tube final configuration.
6.7	Clean performed.	OK	
6.8	OK	OK	TAPE Part number : 146415-002 (G401905) Lay-up (5 mils thick) : Teflon/AG/inc/966 adhesive Perforated
6.9	Strip perforated ready for application.	OK	See Tab. 8-1 for weight considerations
6.10	Strip applied.	OK	
DATE: 30/08/07	TEST CONDUCTOR: <i>Van Corbous</i>	QA	CUSTOMER

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USS TAPE APPLICATION REPORT

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UNIT DATA:	Model	Item	C.I.	S/N
STEP n°	TAPE APPLICATION SEQUENCE			
	REMARKS			

STEP n°	TAPE APPLICATION SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
6.11	stripe length and, perpendicularly from the center to the external edges, in a manner that will squeeze out any air bubble. In case additional tape is needed to cover the same side of the bracket, do NOT overlap with the previous tape stripe. Repeat steps from 6.8 to 6.11 until all four sides of the bracket are covered.	No overlap of strips.	OK	
6.12		All the four sides of the sill bracket - RAM side- are covered	OK	See Fig. 7-13, Sill diagonal bracket final configuration.

DATE: 30/08/07

TEST CONDUCTOR *Alan Conadino*

QA

[Signature]

CUSTOMER

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ANNEX 1



SPECIALTY MATERIALS CERTIFICATE OF CONFORMANCE

MASSACHUSETTS INSTITUTE
 CUSTOMER NAME OF TECHNOLOGY
 CUSTOMER P.O. # 450890979
 SALES ORDER 1434430
 CAGE CODE 07953

MATERIAL DESCRIPTION: C.V.L.Y; TER: 5.0 MIL; AG/INC; 966; PERF: 2" x 108" ROLL

SHELD AHL LINE ITEM NO(e), 1
 QTY, 8
 U/M ROLLS

Shealdahl Item No. 146415-002
 Shealdahl Spec No. G401905

This is to certify that materials furnished against this purchase order are in conformance with specifications required by subject order, also with material, manufacturing, and test specifications as determined by Shealdahl. Some physical values (i.e., density, thickness, tensile strength, etc.) may be based on our vendor's published values. It is noted that the materials shipped under this purchase order may be patented under a United States Patent, or may have been made on an apparatus which may be patented under a United States Patent. Details are available from the Marketing Department, Shealdahl, Northfield Minnesota 55057.

The product shall meet specified values for a minimum of 12 months after date of shipment when stored in the original unopened container at 50 - 80°F.

TEST DATA

CHARACTERISTIC	Absorbance	Emittance	Metal Adhesion	Adhesive Strength		Certification Date/DOM	Warranty Expiration Date
TEST METHOD	Q-189	Q-341	Q-84	ASTM-D-1000			
IP 421682	0.07	0.84	NO REMOVAL	63 OZIN OF WIDTH	2 ROLLS	June 12, 2007	June 25, 2008
IP 421683	0.07	0.84	NO REMOVAL	67 OZIN OF WIDTH	2 ROLLS	June 12, 2007	June 25, 2008
IP 421684	0.06	0.84	NO REMOVAL	67 OZIN OF WIDTH	2 ROLLS	June 12, 2007	June 25, 2008
MFG. LOT NO. (IP #)							

1150 Shealdahl Road
 Northfield, MN 55057
 507/663-8000

Pat Schneider-George - QC
 Pat Schneider-George - QC

Date 6/25/2007

