



National Aeronautics and  
Space Administration

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**George C. Marshall Space Flight Center**  
Marshall Space Flight Center, Alabama 35812

**CLEANER, ORGANIC**

Prepared by  
Materials & Processes Laboratory  
George C. Marshall Space Flight Center



National Aeronautics and  
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|                                 |                     | Spec./Doc. No. <u>MSFC-SPEC-2489</u>   |  | Copy No.: _____ |
| Change<br>No./Date              | SCN/DCN<br>No./Date | CCBD<br>No./Date   | Replacement Page<br>Instructions   |                 |
|                                 |                     |  | BASELINE INITIAL RELEASE   |                 |
| chg 1<br>SCANNED                | SCN<br>001          |  | REPLACE PAGES 7 AND NASA-MSFC-C  |                 |
| chg 2                           | SCN<br>002          | SB3-01-<br>5389<br>SM3-01-<br>5542   | Remove MSFC-QPL-2489 from MSFC-SPEC-2489.<br>The QPL will be baselined as a stand alone doc. |                 |

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| 2/18/03<br>Change 3<br>RELEASE                | SCN 003                | SB3-01-5547 &<br>SM3-01-5742   | Replace page 6 with new page 6.  |                           |

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| 2/18/83<br>Change 3<br>RELEASE                | SCN 003                | SB3-01-5547 &<br>SM3-01-5742   | Replace page 6 with new page 6.  |                           |
| 6/14/04<br>Change 4<br>RELEASE                | SCN 004                | SB3-01-5637<br>SM3-01-5828   | Replace page 7 with new page 7.  |                           |

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July 19, 1995

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**GEORGE C. MARSHALL SPACE FLIGHT CENTER  
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
SPECIFICATION**

**CLEANER, ORGANIC**

This specification has been approved by the George C. Marshall Space Flight Center (MSFC) and is available for use by MSFC and associated contractors.

**1.0 SCOPE**

This specification establishes the requirements for an environmentally compliant hand wipe cleaner. Refer to MSFC-QPL-2489 for a list of qualified materials which conform to these specification requirements.

**2.0 APPLICABLE DOCUMENTS**

**2.1 GOVERNMENT DOCUMENTS**

The following documents form a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposals shall apply.

**SPECIFICATIONS**

**GEORGE C. MARSHALL SPACE FLIGHT CENTER**

|               |   |
|---------------|---|
| MSFC-QPL-2489 | Qualified Products List, Products Qualified Under George C. Marshall Space Flight Center Specification MSFC-SPEC-2489, Cleaner, Organic |
|---------------|---|

**STANDARDS**

**MILITARY**

|             |                                  |
|-------------|----------------------------------|
| MIL-STD-129 | Marking for Shipment and Storage |
|-------------|----------------------------------|

(Copies of specifications, standards, drawings, and publications required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

**2.2 NON-GOVERNMENT DOCUMENTS**

The following documents form a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposals shall apply.

**STANDARDS****AMERICAN SOCIETY FOR TESTING AND MATERIALS  
(ASTM)**

|            |  |
|------------|--|
| ASTM D 56  | Flash Point by Tag Closed Tester, Standard Test Method for   |
| ASTM D 86  | Distillation of Petroleum Products, Standard Test Method for   |
| ASTM D 611 | Aniline Point and Mixed Aniline Point of Petroleum Products and Hydrocarbon Solvents, Test Methods for |

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103.)

**3.0 REQUIREMENTS****3.1 MATERIAL**

The cleaner shall consist of a petroleum distillate meeting the requirements of this specification.

**3.2 PHYSICAL PROPERTIES**

Physical properties of the cleaner shall be in accordance with Table I.

**TABLE I. Cleaner Physical Properties**

| <b>Property</b>    | <b>Requirement</b>                   | <b>Test Paragraph</b> |
|--------------------|--------------------------------------|-----------------------|
| Distillation Range | IBP 330°F min<br>Dry Point 410°F max | 4.7.1.1               |
| Flash Point (TCC)  | 120°F, min                           | 4.7.1.2               |
| Aniline Point      | 182 °F, min                          | 4.7.1.3               |

**3.3 APPEARANCE**

The cleaner shall be visually inspected with the unaided eye (corrective lenses permitted). The cleaner shall be a clear to translucent white liquid, free of foreign material.

**3.4 SHELF LIFE AND STORAGE**

The cleaner shall be stored at 0 to 120°F in the original sealed containers in a closed and vented facility away from direct sun or rain (see 5.3). The storage life under these conditions shall be 24 months from date of manufacture.



**3.5 TOXIC PRODUCTS AND SAFETY**

The vendor shall furnish a Material Safety Data Sheet (MSDS) to the procuring activity.

**3.6 SHELF LIFE EXTENSION REQUIREMENTS  
(APPLICABLE TO THE PROCURING ACTIVITY ONLY)**

Allowable shelf life extension shall be twelve months from the date of test on material taken from the original sealed container provided storage requirements have been met and the material passes all of the specified vendor lot acceptance tests in 4.5.1. Only one twelve month shelf life extension is permitted for this material.

**4.0 QUALITY ASSURANCE PROVISIONS****4.1 IN-PROCESS MATERIAL (APPLICABLE TO USERS)**

When the vendor container is opened at the user's site, the material is regarded as in-process material. In-process material can be used up to its certified shelf life provided that normal precautions are taken for handling and storage, including those precautions cited below.

- A. When in-process material is not in use, the material's container shall be closed immediately in a manner as closely as possible to its original state. Opening of containers for inspection of contents shall be limited to less than ten (10) minutes.
- B. Said container shall be stored in a safety approved location within a vented facility, away from direct sun or rain.
- C. For a given work station, opened containers shall be used to exhaustion before another vendor container of the material is opened for use at the station.
- D. If the integrity of in-process material is at any time suspect (e.g. agglomeration due to moisture absorption, not free-flowing, or failure of visual inspection criteria), then the material in question shall be either recertified per 3.6 or discarded.

**4.2 GENERAL PROVISIONS**

The vendor shall provide and maintain a quality control system in accordance with the requirements of the purchase document. Vendors shall only submit those materials which meet the requirements of this specification.

**4.3      RESPONSIBILITY FOR INSPECTION AND TEST****4.3.1    Vendor**

The vendor is responsible for the performance of all inspection and test requirements as specified herein. Unless otherwise indicated, the vendor may utilize his own or any other inspection facilities and services acceptable to the procuring activity. Records of the examination and tests shall be transported to the procuring activity with the material.

The vendor shall notify the procuring activity of any changes in formulation or procedures used in product manufacture.

**4.3.2    Procuring Activity**

The procuring activity is responsible for verifying acceptability of the vendor test data or vendor certifications of selected acceptance tests.

**4.4      QUALIFICATION TESTS (SEE ALSO 6.3.1)**

Qualification testing shall consist of all examinations and tests specified in Table II and any other tests as deemed necessary by the MSFC Materials and Processes Laboratory. The test data shall be submitted to the procuring activity. The lots subjected to the qualification tests shall be representative of the manufactured lot from the proposed production facility.

**4.5      QUALITY CONFORMANCE TESTS (SEE ALSO 6.3.2)****4.5.1    Vendor Tests**

The following tests specified in Table II are inspection tests for this specification which are to be performed by the vendor and reported to the procuring activity along with certifications of compliance to the requirements below.

**Table II. VENDOR TESTS**

| <b>Examination or Test</b> | <b>Requirement Paragraph</b> | <b>Examination or Test Paragraph</b> |
|----------------------------|------------------------------|--------------------------------------|
| Distillation Range         | 3.2                          | 4.7.1.1                              |
| Flash Point (TCC)          | 3.2                          | 4.7.1.2                              |
| Aniline Point              | 3.2                          | 4.7.1.3                              |
| Appearance *               | 3.3                          | 3.3                                  |

\* Only a certification of compliance is required for this test, vendor test data not required.

**4.6      SAMPLING**

A sample of sufficient size to perform the required tests shall be randomly selected from each lot.

**4.7      TEST METHODS**

The following test methods and procedures shall be used. Unless otherwise specified in the test or procedure description, all weights, volumes, and temperatures shall be measured to the nearest specified unit or decimal. When a referenced document provides the test method description, that document applies only to the extent of specifying the method.

**NOTE:** Unless otherwise specified within this specification, reagent grade chemicals shall be used for chemical reactions in the conduct of all tests defined in this specification. Solvents and indicators may be commercial nonreagent grade materials unless otherwise specified within this specification.

**4.7.1    Properties Tests****4.7.1.1   Distillation Range**

Distillation shall be determined per ASTM D 86.

**4.7.1.2   Flash Point (TCC)**

Flash point shall be determined per ASTM D 56.

**4.7.1.3   Aniline Point**

Aniline point shall be determined per ASTM D 611.

**4.8      REJECTION**

Failure to meet any requirements of this specification is cause for rejection.

**5.0      PREPARATION FOR DELIVERY****5.1      PACKAGING AND PACKING**

Packaging and packing of the cleaner material shall be in accordance with standard commercial practice and in conformance to federal and state regulations applicable to the type of material. Containers in the same shipment shall be of the same size and of such construction and materials that the cleaner material will be adequately protected against loss or contamination.

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**5.2     MARKING**

Marking for shipment shall contain as a minimum:

- a. Product /component Identification
- b. Manufacturer's name
- c. Batch Number or manufacturer Lot number

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**5.3     STORAGE**

After receipt of the material, the procuring activity is responsible for storage.

**6.0     NOTES**

**6.1     INTENDED USE**

The material shall be used as a cleaner for flight or associated hardware.

**6.2     ORDERING DATA**

Purchase documents should specify the following:

- a. Title, number, and revision letter of this specification
- b. Types and quantity of material required

This specification requires procurement from vendors who are listed on the QPL for this specification.

**6.3     DEFINITIONS**

**6.3.1   Qualification Tests**

Qualification tests are those tests necessary to qualify a supplier as an approved source. Once the material is qualified, these tests need not be repeated, provided the formulation or process of manufacturer does not change.

**6.3.2   Quality Conformance Tests**

Quality conformance tests are those tests performed on each lot of material to verify compliance with specification requirements.

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**6.3.3 Lot**

A lot shall consist of all material manufactured in the same production shift, from the same raw materials and by the same manufacturing process and submitted for acceptance at one time.

**6.4 MODIFICATIONS OR CHANGES**

Recommendations for modifications or changes to the requirements specified herein shall be submitted in writing to the Materials and Processes Laboratory at MSFC for consideration.

**6.5 TYPICAL MATERIAL**

Reveille Cleaner (Formula #02191) or Spirit 126 (Formula #04126) manufactured by JohnsonDiversey is typical of the material covered by this specification. | SCN  
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**NOTICE** When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever, and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

CUSTODIAN:

NASA-George C. Marshall  
Space Flight Center

PREPARING ACTIVITY:

NASA-George C. Marshall  
Space Flight Center

FILE NO. MSFC-SPEC-2489

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| DWG<br>SIZE | DRAWING<br>NUMBER | DWG<br>REV | EPL/DRL/DDS<br>NUMBER | DWG<br>REV | EPL<br>DSH | EPL<br>REV | EO DASH<br>NUMBER | EO<br>REV | PART<br>NUMBER |
|-------------|-------------------|------------|-----------------------|------------|------------|------------|-------------------|-----------|----------------|
|             |                   |            | MSFC-STD-2903         |            | 202        | -          |                   |           |                |
|             |                   |            | MSFC-STD-2904         |            | 202        | -          |                   |           |                |
|             |                   |            | MSFC-STD-2905         |            | 202        | -          |                   |           |                |
|             |                   |            | MSFC-STD-2906         |            | 202        | -          |                   |           |                |
|             |                   |            | MSFC-STD-2907         |            | 202        | -          |                   |           |                |
|             |                   |            | MSFC-STD-366          |            | 202        | -          |                   |           |                |
|             |                   |            | MSFC-STD-383          |            | 202        | -          |                   |           |                |
|             |                   |            | MSFC-STD-486          |            | 202        | -          |                   |           |                |
|             |                   |            | MSFC-STD-506          |            | 203        | -          |                   |           |                |
|             |                   |            | MSFC-STD-531          |            | 202        | -          |                   |           |                |
|             |                   |            | MSFC-STD-557          |            | 202        | -          |                   |           |                |
|             |                   |            | MSFC-STD-561          |            | 203        | -          |                   |           |                |
|             |                   |            | MSFC-STD-781          |            | 202        | -          |                   |           |                |

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|--------------------------------|-------|--------|---------|----------|--------|--------|
| EO03                           |       | X      |         | X        | EO03   |        |

PREPARED BY:  
EUGENA GOGGANS  
12/19/06

SUBMITTED BY:

CONCURRENCE:

TRANSMITTAL DATES  
TO RELEASE DESK 02/22/07 10:00  
TO MSFC DOC REP 02/22/07 00:00

REMARKS:

2007 FEB 22 AM 11:22

**DOCUMENT INPUT RECORD****I. TO BE COMPLETED UPON SUBMITTAL OF DATA**

|   |  |  |  |                                  |
|---|--|--|--|----------------------------------|
| 1. APPROVED PROJECT:<br>SRB/RSRM  | 2. DOCUMENT/DRAWING NO.:<br>MSFC-SPEC-2489 | 3. CONTROL NUMBER:<br>DPRS # 9414R         | 4. DOCUMENT RELEASE DATE:<br>11/29/2000                | 5. SUBMITTAL DATE:<br>11/28/2000 |
| 6. DOCUMENT/DRAWING TITLE:<br>Cleaner, Organic                            |  |  | 7. REPORT TYPE:<br>Specification                       |                                  |
| 8. CONTRACT NO./PERFORMING ACTIVITY:                                      |  | 9. DRD NUMBER:                             | 10. DPD / DRL / IDRD NUMBER:                           |                                  |
| 11. DISPOSITION AUTHORITY (official records only):                        |  | 12. SUBMITTAL AUTHORITY:<br>MP41/M. Harris | 13. RELEASING AUTHORITY:<br>ED34/D. DeWeese            |                                  |
| 14. SPECIAL INSTRUCTIONS:<br>Same distribution as Basic release           |  |  |  |                                  |
| 15. CONTRACTOR/SUBMITTING ORGANIZATION, ADDRESS AND PHONE NUMBER:<br>MSFC |  |  | 16. ORIGINATING NASA CENTER:<br>MSFC                   |                                  |
|   |  |  | 17. OFFICE OF PRIMARY RESPONSIBILITY:<br>M&P           |                                  |
| 18. KEYWORDS:   |  | 19. NUMBER OF PAGES:<br>4 CB               | 20. SECURITY CLASSIFICATION OF REPORT:<br>Unclassified |                                  |

**II. TO BE COMPLETED FOR ENGINEERING DRAWINGS**

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| 21. REVISION: | 22. ENG. ORDER: | 23. PARTS LIST: | 24. CCBD: |
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**III. TO BE COMPLETED FOR REPORTS, SPECIFICATIONS, ETC.**

|                        |                  |                 |              |                |              |
|------------------------|------------------|-----------------|--------------|----------------|--------------|
| 25. REVISION:<br>Basic | 26. CHANGE:<br>2 | 27. VOLUME:     | 28. BOOK:    | 29. PART:      | 30. SECTION: |
| 31. ISSUE:             | 32. ANNEX:       | 33. SCN:<br>002 | 34. DCN:     | 35. AMENDMENT: |              |
| 36. APPENDIX:          | 37. ADDENDUM:    | 38. CCBD:       | 39. CODE ID: | 40. IRN:       |              |

**IV. EXPORT AND DISTRIBUTION RESTRICTIONS**

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| <input type="checkbox"/> Privacy Act (see MWI 1382.1) | <input type="checkbox"/> EAR (see MPG 2220.1)  |
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| <input type="checkbox"/> ITAR (see MPG 2220.1)        |  |

**V. ORIGINATING ORGANIZATION APPROVAL**

|                             |                                  |                        |                               |                       |
|-----------------------------|----------------------------------|------------------------|-------------------------------|-----------------------|
| 41. NAME:<br>Marg Jo Harris | 42. SIGNATURE:<br>Marg Jo Harris | 43. ORG. CODE:<br>MP41 | 44. PHONE NUMBER:<br>544-2722 | 45. DATE:<br>11/29/00 |
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| 46. RECEIVED BY:<br>Hope Ruffin | 47. DATE RECEIVED:<br>11-29-00 | 48. WORK ORDER:<br>02-00312 |
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# MSFC DOCUMENTATION REPOSITORY - DOCUMENT INPUT RECORD

## I. GENERAL INFORMATION

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| 1. APPROVED PROJECT:<br>SRB/RSRM   | 2. DOCUMENT/ DRAWING NUMBER:<br>MSFC-SPEC-2489 | 3. CONTROL NUMBER:<br>DPRS-9963R -1 | 4. RELEASE DATE:<br>2-18-03      | 5. SUBMITTAL DATE:<br>2-18-03 |
| 6. DOCUMENT/DRAWING TITLE:<br>Hand Wipe Cleaning, Requirement for  |  |                                     | 7. REPORT TYPE:<br>Specification |                               |
| 8. CONTRACT NUMBER / PERFORMING ACTIVITY:  | 9. DRD NUMBER:                                 | 10. DPD / DRL / IDRD NUMBER:        |                                  |                               |
| 11. DISPOSITION AUTHORITY (Check One):<br><input checked="" type="checkbox"/> Official Record - NRRS 8/5/A/1(C)<br><input type="checkbox"/> Reference Copy - NRRS 8/5/A/3<br><input checked="" type="checkbox"/> (destroy when no longer needed) | 12. SUBMITTAL AUTHORITY:<br>MP41/M. Harris     | 13. RELEASING AUTHORITY:            |                                  |                               |
| 14. SPECIAL INSTRUCTIONS:  |  |                                     |                                  |                               |

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| 15. CONTRACTOR/SUBMITTING ORGANIZATION, ADDRESS AND PHONE NUMBER: | 16. ORIGINATING NASA CENTER:<br>MSFC         |
|   | 17. OFFICE OF PRIMARY RESPONSIBILITY:<br>M&P |
| 18. PROGRAMMATIC CODE (5 DIGITS):                                 | 19. NUMBER OF PAGES: 3                       |

## II. ENGINEERING DRAWINGS

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| 20. REVISION: | 21. ENGINEERING ORDER: | 22. PARTS LIST: | 23. CCBD: |
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## III. REPORTS, SPECIFICATIONS, ETC.

|                        |                    |  |              |                |              |
|------------------------|--------------------|--|--------------|----------------|--------------|
| 24. REVISION:<br>Basic | 25. CHANGE:<br>003 | 26. VOLUME:  | 27. BOOK:    | 28. PART:      | 29. SECTION: |
| 30. ISSUE:             | 31. ANNEX:         | 32. SCN:<br>SCN003                                   | 33. DCN:     | 34. AMENDMENT: |              |
| 35. APPENDIX:          | 36. ADDENDUM:      | 37. CCBD:<br>SB3-01-5547 &<br><del>SM3-01-5742</del> | 38. CODE ID: | 39. IRN:       |              |

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|------------------------|-------------------------------------|---------------------------|--|
| 40. ORG. CODE:<br>MP41 | 41. PHONE NUMBER:<br>(256) 544-2729 | 42. NAME:<br>M. J. Harris | 43. SIGNATURE/DATE:<br><i>M. J. Harris</i> 2/14/03 |
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## I. GENERAL INFORMATION

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| 1. APPROVED PROJECT:<br>Shuttle Reusable Solid Rocket Motor, Solid Rocket Booster  | 2. DOCUMENT/ DRAWING NUMBER:<br>MSFC-SPEC-2489 | 3. CONTROL NUMBER:  | 4. RELEASE DATE:<br>08/15/1995   | 5. SUBMITTAL DATE:<br>08/07/2003 |
| 6. DOCUMENT/DRAWING TITLE:<br>Cleaner, Organic   |  |   | 7. REPORT TYPE:<br>Specification |                                  |
| 8. CONTRACT NUMBER / PERFORMING ACTIVITY:  | 9. DRD NUMBER:                                 | 10. DPD / DRL / IDRD NUMBER:  |                                  |                                  |
| 11. DISPOSITION AUTHORITY (Check One):<br><input checked="" type="checkbox"/> Official Record - NRRS <u>8/12/1A</u><br><input checked="" type="checkbox"/> Reference Copy - NRRS 8/5/A/3 (destroy when no longer needed) | 12. SUBMITTAL AUTHORITY:<br>C. Darrell DeWeese | 13. RELEASING AUTHORITY:<br><i>Gail H. Gordon</i>   |                                  |                                  |
| 14. SPECIAL INSTRUCTIONS:  |  |   |                                  |                                  |
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|  |  | 17. OFFICE OF PRIMARY RESPONSIBILITY:<br>Materials, Processes, and Manufacturing Department |                                  |                                  |
| 18. PROGRAMMATIC CODE (5 DIGITS): 376-50; 376-60   |  |   | 19. NUMBER OF PAGES:             |                                  |

## II. ENGINEERING DRAWINGS

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| 20. REVISION: | 21. ENGINEERING ORDER: | 22. PARTS LIST: | 23. CCBD: |
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## III. REPORTS, SPECIFICATIONS, ETC.

|               |               |             |              |                |              |
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| 24. REVISION: | 25. CHANGE:   | 26. VOLUME: | 27. BOOK:    | 28. PART:      | 29. SECTION: |
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| 30. ISSUE:    | 31. ANNEX:    | 32. SCN:    | 33. DCN:     | 34. AMENDMENT: |              |
|               |               |             |              |                |              |
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## V. ORIGINATING ORGANIZATION APPROVAL

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| 40. ORG. CODE:<br>ED34 | 41. PHONE NUMBER:<br>(256) 544-5120 | 42. NAME:<br>C. Darrell DeWeese | 43. SIGNATURE/DATE:<br><i>C. Darrell DeWeese</i> |
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| 1. APPROVED PROJECT:<br>SRB/RSRM   | 2. DOCUMENT/ DRAWING NUMBER:<br>MSFC-SPEC-2489 | 3. CONTROL NUMBER:<br>DPRS-10155R-1          | 4. RELEASE DATE:<br>6-4-04       | 5. SUBMITTAL DATE:<br>6-4-04 |
| 6. DOCUMENT/DRAWING TITLE:<br>Cleaner, Organic   |  |  | 7. REPORT TYPE:<br>Specification |                              |
| 8. CONTRACT NUMBER / PERFORMING ACTIVITY:  | 9. DRD NUMBER:                                 | 10. DPD / DRL / IDRD NUMBER:                 |                                  |                              |
| 11. DISPOSITION AUTHORITY (Check One):<br><input checked="" type="checkbox"/> Official Record - NRRS 8/5/A/1(C)<br><input type="checkbox"/> Reference Copy - NRRS 8/5/A/3<br>(destroy when no longer needed) | 12. SUBMITTAL AUTHORITY:<br>MP41/J. Mceuen     | 13. RELEASING AUTHORITY:                     |                                  |                              |
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| 18. PROGRAMMATIC CODE (5 DIGITS):<br>3766010   |  |  | 19. NUMBER OF PAGES:<br>13       |                              |

**II. ENGINEERING DRAWINGS**

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**III. REPORTS, SPECIFICATIONS, ETC.**

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| 24. REVISION: | 25. CHANGE:   | 26. VOLUME:                             | 27. BOOK:    | 28. PART:      | 29. SECTION: |
| 30. ISSUE:    | 31. ANNEX:    | 32. SCN:<br>SCN004                      | 33. DCN:     | 34. AMENDMENT: |              |
| 35. APPENDIX: | 36. ADDENDUM: | 37. CCBD:<br>SB3-01-5637<br>SM3-01-XXXX | 38. CODE ID: | 39. IRN:       |              |

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**V. DOCUMENTATION SUBMITTER (NASA OR CONTRACTOR)**

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