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WORK INSTRUCTION	SUBJECT: Heat sealed Seam Testing of Barrier Materials - Strength Test		

1.0 Purpose:

- 1.1 This document describes the procedures necessary to perform Heat-sealed Seam Testing of Barrier Materials-Strength Test

2.0 Scope:


- 2.1 This Work Instruction defines methods used for the verification of Heat-sealed Seam Testing of Barrier Materials-Strength Test

3.0 Responsibility and Authority:

- 3.1 The responsibility and authority for the administration, implementation and maintenance of this work instruction has been assigned to the Sr. Operations Manager and / or his / her designee(s).

4.0 Forms and References:

- 4.1 MIL-STD-2073-1D
- 4.2 MIL-STD-2073-1E, W/Change 4
- 4.3 MIL-STD-3010C W/Change 1
- 4.4 MIL-PRF-121
- 4.5 MIL-PRF-131
- 4.6 MIL-PRF-22019, Type 1
- 4.7 MIL-PRF-22191
- 4.8 MIL-PRF-81705
- 4.3 ASC-WDL-PFC-4.8-10
- 4.9 ASC-WDL-PFC-4.8-14
- 4.10 ASC-WDL-0080
- 4.11 AAR-WDL-0004.11
- 4.12 PackRite Robot Jaw Sealer Operator's Manual

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5.0 Procedure:

5.1 The Strength Test shall be performed daily.

5.1.1 The daily strength testing will be performed in accordance with MIL-STD-2073-1D or 1E, and MIL-STD-3010C (method 2024) using the two most common bags, MIL- DTL-117H-TII/MIL-PRF-121G-I and MIL-DTL-117H-TI/MIL-PRF-131K-I.

5.1.2 If a contract requires a bag that was not strength tested in the daily test, a strength test must be performed.

5.1.3 AAR Form ASC-WDL-0080 will be used to record Contract number or daily test statement, machine number (M1, M2, M3 or M4) Ambient Temperature, water temperature, before and after testing, and Specimen pass or fail results. See a Lead or Manager for any failed testing results.


5.2 Preparation:

5.2.1 Prepare one 6" x 6" test specimen for each type of barrier material and each heat seal machine that is used for the day as follows:

- a) Seam strength testing shall be in accordance with room temperature testing for fabricated bags and pouches in MIL-STD-3010, Method 2024. Each unit pack sample selected shall yield at least one specimen from each heat sealed side of the pack. Test specimens shall be 1 inch wide with length dependent on the bag size. Static load weights for barrier materials shall be as follows:

36 ± 2 ounces	MIL-PRF-121; MIL-PRF-22019, Type I
50 ± 2 ounces	A-A-3174; MIL-PRF-131; MIL-PRF-22191
56 ± 2 ounces	MIL-PRF-81705

- b) A five percent reduction in static load weight is permitted when the room temperature in the test area exceeds 90 °F. Heat seals shall exhibit no separation for the duration of the 5 minute test
- c) Set proper temperature, dwell, and pressure on heat sealing machines per reference bags attached to the front of the sealing machines and allow time for temperature to be reached.
- d) When proper temperature is reached, heat seal barrier material / bag making sure a minimum of a ¼-wide-heat seal is obtained.
- e) Allow a minimum of 1 hour to pass before testing.

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5.3 Testing:

- 5.3.1 After a minimum of 1 hour has passed since heat-sealing, mark the seal in 1-inch increments, in which test specimens will be cut.
- 5.3.2 Use scissors to cut out three approximately 1-inch-wide by 3-inch-long test specimens from the top of the sealed bag. Avoid areas within 1-inch of any corner or edge of bag.
- 5.3.3 Mark each 1-inch-wide specimen with test date, heat-seal machine number used, and specimen number. Example: 12/8/15, M2, 1. "M" = Machine, "1" = Specimen number
- 5.3.4 Each sealed specimen shall then be laid on a horizontal surface. A beveled (45 ± 5 degrees) plastic straight edge shall be slid between the unsealed ends of the specimen and held against the seal. On the outside of the specimen, the position of the straight edge against the seal shall be marked using a fine ball point pen. Specimens shall be tested using the temperature, weight, and time shown below.

a) TABLE I. Temperature, weight, and time for specimen testing.


- Test A is utilized for Fabricated bags and pouches IAW MIL-STD-3010C w/Change 1, section 5.2.3.4.

Test	Temperature (°F)	Weight (ounces)	Time (minutes)
A	73 ± 3.5	56 ± 0.5	5
B	100 ± 2	32 ± 0.5	60
C	160 ± 2	10 ± 0.5	60

- 5.3.5 Using the pre-drilled holes in clamp handles, hang three, One-inch-wide clamps from hooks at top of test frame and attach one unsealed end of each specimen to each clamp.
- 5.3.6 Attach three more, One-inch-wide clamps to each of the other unsealed ends of each specimen.
- 5.3.7 Remove the appropriate test weights from storage case and gently attach one weight to each lower clamp and let hang freely.


36 ± 2 ounces	MIL-PRF-121; MIL-PRF-22019, Type I
50 ± 2 ounces	A-A-3174; MIL-PRF-131; MIL-PRF-22191
56 ± 2 ounces	MIL-PRF-81705

- 5.3.8 Start Calibrated Timer
- 5.3.9 At 5 minutes, remove weights from lower clamps and return to storage case.
- 5.3.10 The beveled plastic straight edge shall be slid to the seal as before and the position of the straight edge marked.
- 5.3.11 The distance between the two pen lines shall be measured to the nearest $\frac{1}{32}$ of an inch and shall indicate any seam separation.
- 5.3.12 If any specimens fail, review with management before proceeding.

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5.4 **Recording:**

- 5.4.1 On Leak Test & Heat-Sealed Seam Test (Strength Test) & Contract Number Daily Log, accurately record test results for each specimen.
- 5.4.2 Using a new Test Specimen, neatly write the date on the upper half.
- 5.4.3 After test specimens are recorded, put them inside the envelope and file the envelope chronologically on the envelop box.

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6.0 Revision History:

Revision Date:	Revision:	Sections / Page Revised:	Description / Reason for Revision:	Approved by:
15/DEC/2021	Original	All	Complete rewrite and reformatting.	M. Baiz
04/APR/2023	1	5.3.9 / pg. 3	Added MIL-B-121 specification to Note and to chart.	M. Baiz
24/OCT/2023	2	5.1 / pg. 2	Added the Military Standards, the two most common bags to the WI, a requirement to strength test additional bags as applicable, and instruction to record the test on an AAR form.	M. Baiz
		5.2.1 a) & b) / pg. 2	Added Heat Seam strength testing verbiage from MIL-STD-2073-1E w/change 4, appendix G, section G.4.3.2	
		5.3.4 & 5.3.5 / pg. 2	Combined the instruction from 5.3.4 & 5.3.5 into one section, 5.3.4 that is IAW MIL-STD-3010C w/Change 1 section 5.2.3.5 and Table I.	
		5.3.6 / pg. 3	Removed duplicate instruction.	
		5.3.9 / pg. 3	Removed Note from 5.3.9	
		5.3.10 / pg. 3	Added MIL-STD-3010C, section 5.2.3.5, Test Procedure verbiage.	
		5.3.11 / pg. 3	Removed AAR created Instructions and note, and added Mil-STD-3010C Section 5.2.3.5, Test Procedure seam separation 1/32 of an inch tolerance.	
		5.3.13 / pg. 3	Removed AAR instructions.	
		5.3.14 / pg. 3	Removed note from 5.3.14	