**Referenced Documents**

TA1041 Precision Cleaning User Guide

TA1051 Cleaning Procedure

TA1061 General Workmanship Cleaning

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1. DEFINITIONS

**ISO7**: ISO class 7 cleanroom (10,000 0.5 µm particles/ft3)

**ISO8**: ISO class 8 cleanroom (100,000 0.5 µm particles/ft3)

**Anteroom:** Gown room; separate area from the cleanroom where technicians put on/take off the appropriate clothing and accessories before entering the cleanroom. The anteroom is considered a clean environment.

**Cleanrooms**: ISO7 and ISO8 rooms

**Workbench**: Any bench where work operations are being performed\

**Laminar Flow Benches:** An enclosed bench designed to prevent contamination of any particle sensitive materials.

**Ionizer:** a device that produces an airflow of ionized particles, which can help reduce static charge on surfaces. Overhead units are typically suspended from the ceiling.

1. ISO8 ROOM RESTRICTED PROCESSES
2. The following processes are not to be performed in the ISO8 or ISO7 cleanrooms:
3. Sanding, filing, grinding, drilling, deburring (except in machining room)
	1. Scraping prior to soldering is acceptable at solder stations.
	2. Scraping excess epoxy where required in assembly process or approved by engineering is acceptable, provided technicians clean area immediately following this process.
	3. Sanding microphone bodies with polishing paper during trim is acceptable at the cal bench (not under laminar flow). Particulate must be cleaned immediately after the operation.
	4. Sanding of resistance welding electrodes is only acceptable when a fume extractor is present and sanding electrodes in place is critical to setup.
4. Pencil etching, except at dedicated benches
5. Applying Emerlon coating
6. No liquids, solvents, chemicals, or aerosols allowed unless approved or called out in process documentation.
7. Soldering, except at designated benches with a solder station and HEPA fume extraction. Fume extractors must be positioned such that all fumes are drawn into the extractor. Soldering must never be performed at a laminar flow bench.
8. Elements must be assembled under a laminar flow bench, never at a soldering bench.
9. ISO7 ROOM AND ISO8 LAMINAR FLOWBENCH RESTRICTED PROCESSES
10. **All ISO8 restrictions apply to the ISO7 cleanroom and ISO8 laminar flow benches.** Additionally, the following processes are forbidden in the ISO7 room and ISO 8 laminar flow benches:
11. Soldering
12. HBN powder application
13. Wire stripping using heat strippers
14. Use of torches (eg. torch braiding FG sleeving or platinum wire)
15. PERSONAL RESTRICTIONS
16. Clothing
17. No clothing, including footwear, which exposes any part of the leg or ankle can be worn in the ISO 7 cleanroom.
	1. Two pairs of scrub bottoms provided upon employee request.
18. Avoid wearing clothing that sheds, such as wool, fur, etc.
19. No soiled footwear can be worn in the anteroom or cleanrooms.
20. Standard blue ESD coats are not allowed in the anteroom or cleanrooms.
21. Personal Hygiene
22. Practice good personal hygiene.
23. Avoid wearing an excess amount of cosmetics.
24. No cosmetics, personal grooming aids, or personal hygiene products can be brought into the anteroom or cleanrooms (e.g. makeup, chapstick, lotion, etc.).
25. No manicuring allowed in the cleanrooms.
26. Belongings
27. Any items that will be used in the room, must be completely wiped down with an alcohol wipe per TA1041 before being brought into the room. This includes phones, music players, approved drink containers, and other personal items.
28. Do not remove items that are not being used in the room (e.g. keys, phones, etc) from pockets or from under cleanroom garments.
29. No facial tissues are allowed in clean rooms; only approved lint-free wipes may be used.
30. Food and Drink
31. Only drinks in spill proof approved mugs provided by PCB are to be brought into cleanrooms.
32. No eating in anteroom or cleanrooms.
33. Chewing gum, hard candy, throat lozenges, etc. may be used if a surgical mask or beard cover is worn.
34. CODE OF CONDUCT
	1. ENTERING ANTEROOM
35. Keep all doors closed, except when passing through. Do not prop doors open. Never open more than one door at a time.
36. Pass through all doors slowly to reduce migration of particles between areas.
	1. BEFORE ENTERING CLEANROOMS
37. Soiled footwear should be cleaned using automatic shoe cleaner.
	1. Excessively soiled footwear should be cleaned using the boot brushes at the entrances to the building.
38. Clean glasses and safety glasses in order to remove contamination.
39. Put on cleanroom (white) coats and zipper all the way to top. White coats are recommended for assembly, and blue coats are recommended for calibration or other jobs where coats may be soiled.
40. All personal clothing articles/accessories (hoods, sleeves, collars) should be covered by cleanroom coats.
41. Cleanroom coats cannot be worn, stored or removed from the anteroom or cleanrooms.
42. Dirty/soiled cleanroom coats cannot be worn and should be sent for cleaning. A coat with a stain(s) which cannot be removed is not considered a dirty/soiled coat.
43. Anything entering the cleanroom that is larger than a credit card should be wiped down per procedure TA1041 to reduce particles brought into the room.
	1. Examples include job boxes, containers, supplies, fixtures, and personal items such as phones, music players, or touchscreen devices.
44. Clean footwear using sticky floor mats.
45. Step on mat minimum of two times in two different places (4 times total).
46. It is recommended to use each mat that you pass during entry.
47. Remove and replace soiled mats as needed.
48. Keep all doors closed, except when passing through. Do not prop open. Never open more than one door at a time.
49. Pass through all doors slowly to reduce migration of particles between areas.
50. Limit trips in and out of the cleanrooms.
	1. BEFORE ENTERING ISO7 ONLY
51. Put on supplied footwear or shoe covers. Supplied footwear cannot be worn, stored or taken outside of the ISO7, ISO8 or anteroom, unless a shoe cover is worn over them. This shoe cover must be discarded before entering the cleanrooms.
52. Put on bouffant hair cover. Ensure all hair is covered and contained.
53. SEE STEPS 2-4 ABOVE IN **SECTION B** **BEFORE ENTERING CLEANROOMS**
54. Remove all jewelry that can puncture garments or gloves.
55. Put on cleanroom gloves before entering to prevent contaminating door handles and items within the room. Gloves must be changed when re-entering the ISO7 room.
56. SEE STEPS 5-8 ABOVE IN **SECTION B BEFORE ENTERING CLEANROOMS**
	1. AFTER ENTERING CLEANROOMS
57. Cleanroom gloves must be worn at all times in the ISO7 room.
58. Any time a glove touches a ‘non-clean’ surface (in any room), it must be removed and replaced. Examples of ‘non-clean’ surfaces include skin, hair, and personal items such as phones, keys, wallets.
59. Never touch anything inside of the ISO7 room without gloves, as the surface will become contaminated. If anything is touched with bare skin, it must be immediately cleaned per procedure TA1041.
60. Cleanroom gloves must be worn in the ISO8 room while assembling product or while calibrating open elements or high impedance parts.
	1. If the parts are small enough to only be handled with tweezers or vacuum tools and gloves interfere with tactile function, gloves would not be required.
61. Never touch exposed skin/hair over work surface or at workstation.
62. Assume gloved hands are dirty. Use tools/tweezers to handle parts whenever possible.
63. Wipe work area before each shift, at minimum, per procedure TA1041.
64. Parts should be blown off with clean, gray line compressed air prior to assembly.
	1. If parts are extremely small such as bare die, do not direct air at parts – to avoid damage or loss.
65. Maintain a neat and clean work area by minimizing clutter.
66. Only keep tools needed for specific job in the work zone (laminar flow).
67. Do not store personal items on workbench.
68. Only cleanroom-approved boxes/pods are allowed to transport job material to and from cleanrooms.
	1. Black ESD boxes are approved for Micro clean room use but must be wiped down prior to entry in the clean room.
69. All parts must be cleaned and enter the ISO7 room through the pass through window.
70. Use clean tools.
71. All tools and fixtures must be cleaned before use per procedure TA1041.
72. Plastic tools and fixtures must be cleaned before use per procedure TA1051 or TA1061.
73. All tools and supplies should be stored in appropriate containers and approved locations.
74. Do not remove tools from the cleanrooms, except to be cleaned.
75. If a tool falls to the ground, it must be cleaned before use per procedure TA1041.
76. If a part falls to the ground, it must be washed, inspected, and dispositioned.
77. Cleanroom paper must be used, unless paper is contained in a pink anti-static bag.
	1. Standard ESD safe sleeves are approved for containing job paperwork in the Micro and microphones clean room.
78. Supplied writing utensils must be used.
79. Supplied writing utensils must remain in the room.
80. No pencils, erasers, or retractable pens.
81. All trash must be placed in appropriate, labeled bins.
82. Movement is to be kept to a minimum in cleanroom to reduce migration of particles. Walk slowing. No running, horseplay or excessive movements.
83. No excessive talking or excessive noise at workbenches.
84. Keep flow benches on at all times.
85. If station is equipped with ionizer, it must be turned on when station is in use.
86. Do not block air return.
87. Do not block HEPA filtered air.
88. Maintain cleanliness of room per appropriate cleaning procedure and schedule.
89. Report all issues to supervisor immediately.