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| **Particulate-Free Engineering Specification for Jefferson Lab SRF Institute****Consumables Register** |
| **Document Number:** | SRF-MSRG-PFES-CNSMBLS | **Effective Date:** | 05 Dec 2023 |
| **Revision Number:** | 2 | **Periodic Review Date:** | 04 Dec 2024 |
| **Document Owner:** | T. Ganey, A. Mitchell | **Department Owner:** | SRF Operations |

# Purpose

This document supports SRF Institute by providing lists of supplies that are used in the Cleanroom and Production Chemrooms that have been shown to be effective for particulate-free work.

# Scope

This document is applicable to the sourcing and procurement of consumables used for "particulate-free" work at Jefferson Lab. The items listed in this document are general and are intended to be applicable for use on many materials and items used for particulate-free work at Jefferson Lab. Specific projects may further supplement these guidelines as needed. Cleanliness requirements other than surface particulate load may require consumables of grades other than what is provided in this document.

In general, consumables listed under Cleanroom sub-headers may be used in the Chemrooms; however, consumables listed under Chemrooms sub-headers may only be used in Cleanrooms in limited circumstances as noted in this document.

Special cleaning or assembly, or material compatibility issues may require deviations from the consumables listed in this document; however as best practice, any such deviations should be justified and approved by a Subject Matter Expert, officially documented and referenced in the applicable drawing(s), traveler(s), procedure(s), and/or work instruction(s).

The lists in this document aim to provide a general description of the item, brand name and/or supplier, part number(s), and any other pertinent information that should assist in ordering consumables for Cleanroom and/or Production Chemrooms use. An appendix is included to this document, which lists consumables previously found to not be acceptable for use in the Cleanroom and/or Production Chemrooms.

If a listed item becomes unavailable, the closest equivalent shall be ordered instead from the same or a different vendor after verifying that the item is not already listed in this document's appendix. Consumables not listed in this document purchased for Cleanroom or Production Chemroom use shall be tested in-house for particulate generation prior to use. Consumables that are acceptable for use should be added to the lists in this document. Consumables not acceptable for use should be added to the appendix to avoid the item being reordered.

# Safety

The materials described in this document may have health, safety and environmental impacts. Consult the appropriate Safety Data Sheets (SDS) of the products to be used. SDSs can be found on the JLab Environment, Safety, and Health (ES&H) website. Emergency contact information and/or alarm triggers shall be readily visible and accessible at all times. Appropriate precautions shall be taken when using and disposing of solvents, detergents, and acids in accordance with JLab ES&H policies.

Good industrial hygiene and safety practices shall be employed at all times. The use of Personal Protective Equipment (PPE) is required at all times and is dependent upon the equipment and materials in use. Follow ES&H guidelines and room Operational Safety Procedures (OSPs) for specific PPE requirements.

**Chemicals** – ES&H shall be consulted for work outside the scope of approved OSPs and procedures involving solvent or chemical use.

# Terms and Definitions

This specification applies the following usage: all mandatory actions (i.e., requirements) are denoted by statements containing the term “shall.” The terms: “may” or “can” denote discretionary privilege or permission, “should” denotes a good practice and is recommended, but not required in all circumstances, “will” denotes expected outcome, and “are/is” denotes descriptive material.

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| **Term** | **Definition** |
| Cleanroom | In this document, cleanroom refers to the Main Cleanroom (Building 58 Rooms1051 - 1056, 1058, and 1059), Portable Cleanrooms, and Clean zones |
| Consumable | Resources that are intended to be used up or depleted. These resources may have a limited number of uses in the cleanroom or production Chemroom environments. The number of uses varies based on the resource and the environment in which it is used. Some resources (such as garments and containers) may be able to be cleaned using appropriate techniques and then re-used in the cleaned condition. |
| Particulate-free | The goal of providing surfaces absent of any particulates larger than 0.3 µm. (Surface particulates of even 0.3 µm scale can become electron field emission sources in RF cavities and degrade performance.) |
| Principal Investigator (PI), Project Manager (PM), Tech Rep (TR) | Someone knowledgeable of or responsible for the project or item in question who can provide guidance if questions arise. |
| Production Chemrooms | Building 58 Rooms 1040-1044. Consists of the Acid Chemroom, Water Chemroom, Material Washroom, and Cleanroom Pass-thru. |

# Wipes, Q-Tips, Mop Covers, Floor Mats

## Cleanroom Use

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Description | Supplier/ Brand | Part Number | Comments / Notes | JLab Stockroom # |
| Alpha Wipes, Dry Sealed Border | TexwipeITW | TX1010 | 100% polyester with sealed border; Non-Sterile; ISO Class 2-7;  | 841541021 |
| QuanSat, Pre-Wetted  | TexwipeITW | TX1082 | Isopropyl-soaked Alpha Wipes / Red Bag Wipes; Non-Sterile; ISO Class 3-7; | 841541022 |
| Q-tips, Cleanroom Swab | TexwipeITW | TX710A/ TX754B/ TX714A | Polyurethane foam or double layered polyester knit; low levels of Non-Volatile Residue (NVR) and ions | N/A |
| Alpha Mop Covers | TexwipeITW | TX7118 | 8" x 15", Mop Covers, ISO Class 3-7 | 841546060 |
| Alpha Mop Covers; Pre-wetted | TexwipeITW | TX7026 | 8" x 15" (20 cm x 38 cm), ISO Class 3 - 7 environments | N/A |
| Floor Mats | TexwipeITW | 2UYC6 | 24" x 45", Tacky Floor Mat, 1.5 mil thick | 841545010 |

## Production Chemroom Use

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Description | Supplier/ Brand | Part Number | Comments / Notes | JLab Stockroom # |
| Alpha Wipes, Dry  | Stockroom/ TexwipeITW | TX1013/ TX1009 | 100% polyester without sealed border; Non-Sterile; ISO Class 5 and 6;  | 841546050  |
| Accuwipes | Stockroom/ Grainger | 5MM92 | 3-ply tissue; low lint | 799910025 |
| Beta Wipes; Dry | Stockroom/ TexwipeITW | TX2009 | Polypropylene and cellulose material with a cut edge; ISO Class 6-8 | 841546020 |
| KimWipes | Stockroom/ Kimberly Clark | KCS34721CS | 2 ply; Light Duty | 799910020  |
| Q-tips, Cleanroom Swab | TexwipeITW | TX710A/ TX754B/ TX714A | Polyurethane foam or double layered polyester knit; low levels of Non-Volatile Residue (NVR) and ions | N/A |

# Gloves

## Cleanroom Use

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Description | Size | Supplier/Brand | Part Number | Comments / Notes | JLab Stockroom # |
| Nitrile; Outer glove | X-Small | VWR | 40101-353 | Class 10; Powder-free; Packaged in an ISO-4 cleanroom | 841549001 |
| Small | 40101-352 | 841549000 |
| Medium | 40101-354 | 841549005 |
| Large | 40101-356 | 841549010 |
| X-Large | 40101-358 | 841549015 |
| Latex; Inner glove [Preferred] | Small | VWR / Certiclean | 40101-158 | Natural rubber latex; Class 100; Powder-free; Packaged in an ISO-5 cleanroom | 841549025 |
| Medium | 40101-160 | 841549030 |
| Large | 40101-162 | 841549035 |
| X-Large | 40101-164 | 841549040 |
| Latex; Inner glove [Alternate] | Medium | Correct Touch | N/A | Textured Latex; Class 100; Powder-free | 841549031 |
| Large | N/A | 841549036 |
| X-Large | N/A | 841549041 |
| Nitrile; Inner glove [Latex alternative] | Medium | VWR/ QualaSheerXC | 89040-958 | 100% PVC co-polymer (no latex) for ISO 5 (Class 100) applications. | N/A |

## Production Chemroom Use

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Description | Size | Supplier/Brand | Part Number | Comments / Notes | JLab Stockroom # |
| Nitrile; Outer glove | X-Small | VWR/ Certiclean | 40101-353 | Class 10; Powder-free; Packaged in an ISO-4 cleanroom | 841549001 |
| Small | 40101-352 | 841549000 |
| Medium | 40101-354 | 841549005 |
| Large | 40101-356 | 841549010 |
| X-Large | 40101-358 | 841549015 |
| Acid PPE; Green | 7 | Grainger/ Alphatec | 24L259 | Rubber, Nitrile; Cotton Flocked | 841548130 |
| 8 | 4T423 | 841548135 |
| 9 | 4T424 | 841548140 |
| 10 | 4JF20 | 841548145 |
| Acid PPE; Thick Black | 7/Small | Fisher/ Guardian | 19-321-115 | ASTM F739-05; Rubber, Butyl; 35 mil thick | N/A |
| 8/Medium | 19-321-116 |
| 9/Large | 19-321-117 |
| 10/X-Large | 19-321-118 |
| Acid PPE; Thin Black | 7/Small | Grainger/ Alphatec | 30RM95 | Rubber, Butyl; Unlined | N/A |
| 8/Medium | 25VD73 |
| 9/Large | 25VD74 |
| 10/X-Large | 30RM96 |

# Garments

## Cleanroom Use

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Description | Supplier/ Brand | Part Number | Comments / Notes | JLab Stockroom # |
| Bouffant | Fischer Scientific/ West Chester | 19121622 | 24" diameter; Blue only;Polypropylene | 841543010 |
| Face Mask | Kimberly-Clark/ KimTech | 62465 | Non-sterile; Knitted Ear Loops; Outer layer of polyethylene film; Filtration at 99% at 0.1 µm | 841541020 |
| VWR/ KimTech | 10843-197 |
| Shoe Covers, Blue [Preferred] | Grainger/ Condor | 60EE99 | Polypropylene; Non-sterile; Light duty | 841540016 |
| Shoe Covers, White [Alternate] | Kimberly-Clark/ KleenGuard | 44490 | KleenGuard A40; Vinyl sole | 841540030 |
| VWR/ KleenGuard | 82007-666 |
| Cleanroom Lab Coats, Disposable | Lakeland Industries/ KleenGuard | Medium | Front closure, collared, long sleeve | 841547005 |
| Large | 841547010 |
| Cleanroom Coveralls | Prudential Cleanroom Services | By size  | HD ESD Non-sterile Laundered/Reusable  | N/A |
| Cleanroom Boots | Prudential Cleanroom Services | By size | HD ESD Non-sterile Laundered/Reusable | N/A |
| Cleanroom Hoods | Prudential Cleanroom Services | By size | HD ESD Non-sterile Laundered/Reusable | N/A |

## Production Chemroom Use

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Description | Supplier/ Brand | Part Number | Comments / Notes | JLab Stockroom # |
| Bouffant | Fischer Scientific/ West Chester | 19121622 | 24" diameter; Blue only;Polypropylene | 841543010 |
| Face Mask | Kimberly-Clark/ KimTech | 62465 | Non-sterile; Knitted Ear Loops; Outer layer of polyethylene film; Filtration at 99% at 0.1 µm | 841541020 |
| VWR/ KimTech | 10843-197 |
| Shoe Covers, Blue [Preferred] | Grainger/ Condor | 60EE99 | Polypropylene; Non-sterile; Light duty | 841540016 |
| Shoe Covers, White [Alternate] | Kimberly-Clark/ KleenGuard | 44490 | KleenGuard A40; Vinyl sole | 841540030 |
| VWR/ KleenGuard | 82007-666 |
| Cleanroom Lab Coats | Grainger/ Dupont | M/ 4LUN3 | Polyethylene; Protection from liquid and particulate; non-sterile | N/A |
| L/ 4LUN4 |
| XL/ 4LUN5 |
| 2XL/ 4LUN6 |
| Yellow smock | Grainger/ Condor | S/ 11G029 | Neoprene; Protection from liquid and particulate; Chemical resistant sleeve apron  | N/A |
| M/ 11G030 |
| L/ 11G031 |
| XL/ 11G032 |
| Acid Boots | Grainger/ Dunlop | 7/ 2LME4 | PVC; Defined Heel; Electrical Hazard (EH); Oil-Resistant Sole; Puncture-Resistant (PR); Steel Toe; Waterproof; ASTM F2413-11; CSA Z195 | N/A |
| 8/ 2LME5 |
| 9/ 2LME6 |
| 10/ 2LME7 |
| Acid PPE Bib Overall | Grainger/ TINGLEY | S/8UNP6 | PVC, Polyester Lined; Defies punctures and tears | N/A |
| M/9WF58 |
| L/8AMV5 |
| XL/8RHJ7 |

**Production Chemroom Use Continued**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Description | Supplier/ Brand | Part Number | Comments / Notes | JLab Stockroom # |
| Black Framed Safety Glasses | Grainger/ MCR Safety | 3WMJ5 | Anti-Fog /Anti-Scratch, No Foam Lining, Wraparound Frame, Half-Frame, Gel; Meets ANSI Z87.1+ Standards | 841553022 |
| Clear Over Glasses Safety Glasses | MSC Industrial Supplies/ PRO-SAFE | 06529127 | Uncoated, Polycarbonate, Clear Lenses, Frameless, UV Protection, Clear Frame; Meets ANSI Z87.1+ Standards | 841553000 |
| Googles | Grainger/ Honeywell | 6T362 | PVC/Neoprene; Chemical Splash/Impact Resistant Goggles: Anti-Fog /Anti-Scratch; ANSI Z87.1-2010; CSA Z94.3 | 841551000 |
| Face Shield | Grainger/ Sellstrom | 23X909 | Nylon/acetate; 19in visor width; reusable; ANSI Z87.1-2015; CSA Z94.3-2015 |  N/A |

# Detergents

## Cleanroom Use

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Description | Supplier/ Brand | Part Number | Container Size | Spec Rating |
| Nova Clean Floor Cleaner | VWR / Micronova | 68400-011 | 1 Gallon Container | Cleanroom Quality |

## Production Chemroom Use

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Description | Supplier/ Brand | Part Number | Container Size | Spec Rating |
| Micro90 | VWR | 21830-422 | 55 Gallon Drum | NSF-registered as an A1 |
| Citranox | VWR/ Alconox | 21835-356 | 55 Gallon Drum |  |
| Liquinox | VWR/ Alconox | 21837-065 | 55 Gallon Drum |  |
| Micro90 | Grainger | 42X089 | 5 Gallon Cont. | NSF-registered as an A1 |
| Citranox | VWR | 21835-353 | 15 Gallon Cont. |  |

# Acids

## Production Chemroom Use

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Description | Supplier / Brand | Part Number | Concentration | Spec Rating |
| Phosphoric | VWR/ J.T. Baker; Fisher scientific | JT0264-5 | 85% | CMOS or electronics grade |
| Hydrofluoric | VWR/ J.T. Baker; Honeywell; Spectrum | JT9564-6 | 49% | CMOS or electronics grade |
| Nitric | VWR/ J.T Baker; | JT9606-3 | 69-70% | CMOS Grade |
| Acetic | VWR/ J.T. Baker | JT9511-5 OR SIG320099 | >99.7% | ACS Grade |
| Sulfuric | VWR/ J.T. Baker; | JT96843 | >96% | CMOS Grade |
| Hydrochloric | VWR/ | BDH3032-3.8LP | 36.5 – 38% | ACS Grade |

# Solvents

## Cleanroom Use

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Description | Supplier/ Brand | Part Number | Concentration | Spec Rating |
| Acetone | Stockroom/ J.T. Baker | 681010010 | 100% | Electronics grade |
| Isopropyl | Stockroom/ Doe Ingalls | 681010020 | 100% | Electronics Grade |
| Decon CiDehol(Double bagged Isopropyl) | Fisher Scientific | 04-355-71 | 70% | Filtered to 0.2μmEnvironmentally Friendly: Item contains environmental attributes or features (e.g. water conserving, lead-free, etc.) |
| Methanol | Stockroom/ J.T. Baker | 681010000 | 100% | High purity |

## Production Chemroom Use

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Description | Supplier/ Brand | Part Number | Comments / Notes | Spec Rating |
| Acetone | Stockroom/ J.T. Baker | 681010010 | 100% | Electronics grade |
| Isopropyl | Stockroom/ Doe Ingalls | 681010020 | 100% | Electronics Grade |
| Methanol | Stockroom/ J.T. Baker | 681010000 | 100% | High purity |

# Containers

## Production Chemroom Use

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Description | Supplier / Brand | Part Number | Comments / Notes | Used In Cleanroom? |
| Isopropanol squirt bottle | Stockroom/ Grainger | 664030020 | Vented to avoid pressure build up; Translucent | Yes |
| Acetone squirt bottle | Stockroom/ Grainger | 664030030 | Vented to avoid pressure build up; Translucent | Yes |
| Methanol squirt bottle | Stockroom/ Grainger | 664030010 | Vented to avoid pressure build up; Translucent | Yes |
| HDPE Basket | VWR | 13197-334 | Polyethylene plastic | No: Parts cleaning; Use of acid on components |
| HDPE Bucket | Grainger/ Rubbermaid | FG350900WHT; FG369000WHT | Polyethylene plastic | Yes: Parts transport; Parts and component storage; Use of acid and solvents on components |
| 4L  | Fisher Scientific/ Nalgene | 2123-0010/ 16130-010 | HDPE | No: Chemical mixture/waste storage |
| 9L Carboy | Fisher Scientific/ Nalgene | 2211-0020 | HDPE | No: Chemical mixture/waste storage |
| 500 mL | Fisher Scientific/ Nalgene | 03-313-15E | HDPE | No: Chemical mixture/waste storage |
| 2000 mL | Fisher Scientific/ Nalgene | 11-815-11A | HDPE | No: Chemical mixture/waste storage |
| Snap Container | McMaster/ Snapware | 6840A26  | Polypropylene plastic (PP) with rubber seal; Various sizes from 9.7 fl oz to 1.8 gallon  | Yes: Parts Cleaning, Transport, and storage |

# Bagging Material

## Production Chemroom Use

#### Bagging material used in the Chemistry Room for cleaned parts is supplied by Midwest Production Supply based on the CFB5100 "Orange Antistatic Nylon" specification.

|  |  |  |
| --- | --- | --- |
| Description | Part Number | Manufacturer |
| Tubing, 4" x 500' x .002 Level 50 Anti-Static Nylon | CPANT4.500.2 | Midwest Production Supply |
| Tubing, 8" x 500' x .002 Level 50 Anti-Static Nylon | CPANT8.500.2 | Midwest Production Supply |
| Tubing, 10" x 500' x .002 Level 50 Anti-Static Nylon | CPANT10.500.2 | Midwest Production Supply |
| Tubing, 18" x 500' x .002 Level 50 Anti-Static Nylon | CPANT18.500.2 | Midwest Production Supply |
| Tubing, 24" x 500' x .002 Level 50 Anti-Static Nylon | CPANT24.500.2 | Midwest Production Supply |



# Surface Finishing Materials

|  |  |  |  |
| --- | --- | --- | --- |
| Description | Supplier/ Brand | Part Number | JLab Stockroom # |
| White Scotch Brite - non-abrasive | Grainger/ ScotchBrite | 4LL44 | N/A |
| White Scotch Brite – abrasive | Grainger/ ScotchBrite | 3WB48 | N/A |
| Light Gray Scotch Brite - Ultra (micro) Fine | Grainger; Stockroom/ ScotchBrite | 4LL49 OR 4ZR94 | 535013000 |
| Maroon Scotch Brite - Very Fine | Grainger; Stockroom/ ScotchBrite | 4ZR10 | 535013010 |
| Gray Scotch Brite - Medium | Grainger; Stockroom/ ScotchBrite | 4ZR12 | 535013000 |

# Lapping Paper

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Description/ Color | Supplier/ Brand | Micron  | Part Number/ Product Number | Finishing? Yes or No |
| 3M Wet or Dry Polishing Paper/ Pink Sheet | 3M/ 3M | 3u | 7000044800/ 281Q | No |
| 3M Wet or Dry Polishing Paper/ Blue Sheet | 3M/ 3M | 9u | 7000021269/ 281Q | No |
| 3M Wet or Dry TRI-M-ITE Polishing Paper/ Grey Sheet | 3M/ 3M | 15u | 7000148115/ 481Q | No |
| 3M 268L Microfinishing Film/ Green Sheet | 3M/ 3M | 30u | 7100047231/ 268L | Yes |
| 3M Microfinishing Film Type D/ Blue Sheet | 3M/ 3M | 40u | 7100047218/ 268L | Yes |
| 3M 266x Lapping Film PSA/ Blue Sheet | 3M/ 3M | 40u | 7000044803/ 266x | No |
| 3M 268L Microfinishing Film/ Brown-Brown Sheet | 3M/ 3M | 60u | 7100115655/ 268L | Yes |
| 3M 268L Microfinishing Film/ Brown-Grey Sheet | 3M/ 3M | 100u | 7100115762/ 268L | Yes |
| 3M 268L Microfinishing Film 12in diameter/ Brown-Brown Disk | 3M/ 3M | 60u | 7010294652/ 268L | Yes |
| 3M 268L Microfinishing Film 8in diameter/ Grey | 3M/ 3M | 80u | 7010325353/ 268L | Yes |
| 3M 268L Microfinishing Film 8in diameter/ Grey | 3M/ 3M | 100u | 7010328322/ 268L | Yes |

# Appendix A: Consumables Not Approved For Use

|  |  |  |  |
| --- | --- | --- | --- |
| Description | Supplier | Part Number | Reason not to use / Comments / Notes  |
| Clean Room Wipers  | TexWipe | TX409 | Sheds/ transfers particles. |

# References

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| --- | --- |
| **Document No.** | **Title** |
| SRF-01-ML-001 | SRF Quality Manual |
| ES&H Website, MSDS | https://www.jlab.org/esh/msds |
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# Release and Revision History

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| --- | --- | --- |
| **Rev #** | **Major Changes** | **Effective Date:** |
| 1 | Initial version | 26 June 2023 |
| 2 | Updated Section 12 Bagging Material to reflect new supplier and part numbers | 05 December 2023 |
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# Approvals

|  |  |  |  |
| --- | --- | --- | --- |
| **Approved by:** | **Name:** | **Signature:** | **Date:** |
| Document Owner | <First Last Name> | In Docushare |
| Subject Matter Expert | <First Last Name> | In Docushare |
| Work Center Lead  | <First Last Name> | In Docushare |
| Project Leader  | <First Last Name> | In Docushare |