Standard Operating Procedure

to bring additional chemicals/materials in to the clean room

Facility: ERC Clean Room
C17 Engineering Research Complex
Electrical and Computer Engineering

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Scope: This SOP details appropriate procedures that need to be followed in order to have chemicals/materials brought into the clean room outside the list of approved items.

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BRINGING CHEMICALS/MATERIALS INTO THE ERC CLEAN ROOM

A clean room staff member must first approve any chemicals/materials (other than the allowed stock chemicals) before they are brought into the clean room. MSDSs must be supplied at the time of the request. Upon approval, a staff member will use the chemical information from the MSDS as well as additional information obtained from the user to label the container with the date purchase, date expired, and the researcher. The staff member will then place the chemical in the proper storage area in the clean room. Special appointments to bring in approved chemicals/materials can be made with a clean room staff member.

Items allowed and supplied in the clean room area:

- Cleanroom approved logbooks
- Computers and approved peripherals. (Subject to conditions,laptop computers are the preferred choice)
- Specialized/dedicated tooling (Subject to conditions)
- Micro 90 cleaning detergent
- Kapton tape with Y966 acrylic adhesive
- Blue PCX polyethylene tape with Y966 acrylic adhesive
- Cleanroom approved pens
- 3M Velostat plastic light proofing material

Current list of approved and supplied chemicals

Chemical Name	Supplier	Prod #
Acetic Acid	JT Baker	9503-3
Hydrochloric Acid	EMD Chemicals	HX0603-75
Hydrofluoric Acid	General Chemical	UN1790
Nitric Acid	EMD Chemicals	NX0409-75
Phosphoric Acid	J T Baker	0260-01
Sulfuric Acid	J T Baker	9681-33
Hydrogen Peroxide	J T Baker	2186-1
Ammonium Fluoride	J T Baker	0702-05
Ammonium Hydroxide	J T Baker	9731-03
Sodium Hydroxide	J T Baker	3725-03
Microposit 1813 Photoresist	Shipley	41280
MF-319 Microposit Developer	Rohm Haas	
Microposit 1165 Remover	Rohm Haas	
AZ400K Developer	Hoechst Celanese	70703220
Propanol	J T Baker	9084-03
Acetone	Burdick & Jackson	010-4
Ethyl Alcohol	Pharmco	111USP190
Methanol	Fisher Scientific	A454-4
HMDS 100%	Transene Co	
Micro-90	Cole Parmer	EW-18100-01

Current list if approved and supplied gas cylinders

Cylinder Gas	Supplier	Prod #
N20	Airgas	
N2	Airgas	
He	Airgas	
CF4/O2	Airgas	80%-CF4 20%-O2
O2	Airgas	
SF6	Airgas	
Ar	Airgas	
SiH4/N2	Airgas	5%-SiH4 95%-N2
NH3	Airgas	

Items not allowed in the clean room area:

- Food & drink.
- Wood products
- Non cleanroom paper (cleanroom approved paper is available in the dispensers provided).
- Non cleanroom notebooks (cleanroom approved notebooks are available).
- Bare aluminium, it is preferred that aluminium is alocromed before being brought into cleanroom.
- Cardboard/cardboard boxes of any type.
- Pens and Pencils. The cleanroom has ample supply of approved pens.
- Books and book bags.
- Make up.
- Wash bottles etc. (the cleanroom has adequate provision of Teflon wash bottles filled with Spectro grade IPA and Critical Neutral detergent).
- Solvents not listed in the approved materials list above.
- Compressed gasses e.g. Nitrogen, Argon and Helium etc. (the cleanroom has dedicated Nitrogen and Argon supply lines available equivalent to zero grade).
- Masking tape,insulation tape and sellotape.
- Silicone adhesive backed Kapton tape.
- Silicone sealing compounds/greases.
- Silicone based mastics.
- Leather
- Oils of any type.
- Mobile phones (interference with test equipment and general transfer contamination)
- Bubble wrap (slip agents and silicone contamination)
- Black ESD bags (slip agents and silicone contamination)
- Plastic bags of any kind (slip agents and silicone contamination)
- Pink poly cleanroom bags (slip agents and antistatic additive contamination)
- Any type of adhesive not listed in the Approved materials list above
- Open cell foam materials
- Smoking materials
- Powders, aerosols, DOP
- Commercial vacuum cleaners (non HEPA filter cleaners)
- Plastic containers which are not approved by the technican
- Velcro

• Anything that can easily shed particles or aerosolizes; i.e., anything that may serve as a source of particles.

ERC Clean Room Materials Handling Protocol

Procedure:

1. Complete the new material request form below.

2. Send completed form to the clean room manager at eceshop@egr.msu.edu or deliver it to the clean room technican room C138 ERC.

3. Once the material has been approved (you will be notified by email) you will need to bring the material to C138 ERC

4. The clean room technican will properly mark the material and take it into the clean room for use.

Request for Bringing New Materials into the Cleanroom

Name_____ Date_____
Email Address _____
Phone_____
Supervisor_____ or Company
_____
Supervisor Email Address _____
Phone_____
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Material_____
Common Name, Trade Name and CAS number
Chemical Ingredients_____
_____
Other New Support Materials Required
_____
i.e. New Resist may require new Developer – list developer
_____
Vendor(s)_____
Address, phone number, website URL

Reason for Request_____
Why do you need this non-standard material?

Attach MSDS to this document
Detailed Process Flow Required: Attach to this document
Include CR tools that the sample or chemical will touch during the remainder of its process.

Amount and Form of Material Required_____
Volume or Mass and is it liquid, solid or powder?

Storage Requirement_____

What are its storage requirements, in-compatibilities, Fire Code? Is it base, solvent or acid?
_____

Waste Disposal_____

How will it or its by-products be disposed of after it is used?

Instructions for filling out the New-Chemical Request Form

1. Supply your contact information in the first section. Include contact information for the person you work for also.
2. Material: Provide the common name for the material and include trade names.
3. Chemical ingredients: List the chemicals in the material by their chemical names and CAS numbers.
4. Other Support Materials Required: List any materials that must also be added to the clean room chemical supply to support the new process. Example: a new photoresist that needs a different type developer from the standard supply in the clean room.
5. Vendor(s): We will need the name, address, phone number, and web URL for the vendor of the new material.
6. Reason for Request: Why do you need this new material? Can the process be accomplished with standard Cleanroom materials? Why not? If there is a publication outlining the process using the new material, please include a copy with this form so we can include it in our thinking about approving this material.
7. Attach the MSDS: Attach a hard copy of the MSDS to this form, but please send email with an electronic copy attached to eceshop@egr.msu.edu
8. Detailed process Flow: List a detailed step by step process flow so we can determine how it is to be used in the clean room. Also list the clean room tools that will come into contact with this new material. This information is important to help us decide if there is any compatibility issues related to the use of this material.
9. Amount and Form: What is the volume required for its use? Do we keep a gallon, pint, or thimble size quantity in the chemical cabinets? And what form is the material in – solid, liquid, powder? Note that powder will draw considerable attention from the approval committee since it is next of kin to particle contaminants for the clean room integrity.
10. Storage: What environment does this material require for storage? i.e. does it need refrigeration? What type of material is it – acid, base, solvent, strong oxidant, etc.? What are the NFPA 704 fire code values and HMIS handling code values? These are sometimes contained in the MSDS sheets.
11. Waste Disposal: Define how the waste material generated by this new material is disposed of after use. Are there any hazardous chemicals generated during the storage and handling of this waste? i.e. does it degenerate or react into a hazardous material while waiting for disposal?