Product Manual

010-160-300
Comcode 107724791
Issue 2
June 1996

LUCENT TECHNOLOGIES ACID SPILL MANAGEMENT SYSTEM

Notice:
The information, specifications, and procedures in this manual are subject to change without notice. Lucent Technologies assumes no responsibility for any errors that may appear in this document.

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1 Introduction: Product Description and Customer Services

Introduction

The Acid Spill Management System is intended to contain and neutralize battery electrolyte in the event of a spill or leak from a battery(ies). It is a system consisting of:

- The complete system described in this product manual is designed to meet or exceed the requirements stated in OSHA regulation 1910.178, "Materials Handling & Storage-Powered Industrial Trucks", 1910.268, "Special Industries-Telecommunications", and 1926.441, "Safety Requirements for Special Equipment-Batteries & Charging" and Section 64.104, "General Installation and Maintenance of Battery Systems" of the Uniform Fire Code. This system in conjunction with proper training and Hazard Management/Contingency planning to describe the actions that personnel must take to respond to unplanned, releases of hazardous waste (i.e. - battery electrolyte) will minimize or eliminate:
    - •Health and safety risk to personnel and the environment.
    - •Damage to batteries, equipment, and surrounding surfaces.
    - •Time to neutralize , absorb, and clean-up.
    - •Regulatory compliance risks and fines.
- A 4 inch spill barrier around the base of the battery rack or stand and bonded to the floor.

- An acid resistant epoxy coating to protect the floor from the corrosive effects of battery electrolyte. While this optional coating is a strongly recommended part of the total control system, the containment system may be installed without the coating. The epoxy coating may then be added to the system as an upgrade at a later time.
- Optional Neutra-Tubes/Neutra-Mats inside the containment area to absorb and neutralize the electrolyte upon exposure thus reducing the risk of personal injury and structural damage or contamination.
- Optional Spill Response and Battery Leak Detector/ Cleaning kits that provide personal safety equipment, neutralizing electrolyte absorber for electrolyte spill clean-up, and battery cleaning and leak detection to provide for the safe and complete neutralization and cleaning of spilled or leaking battery electrolyte.

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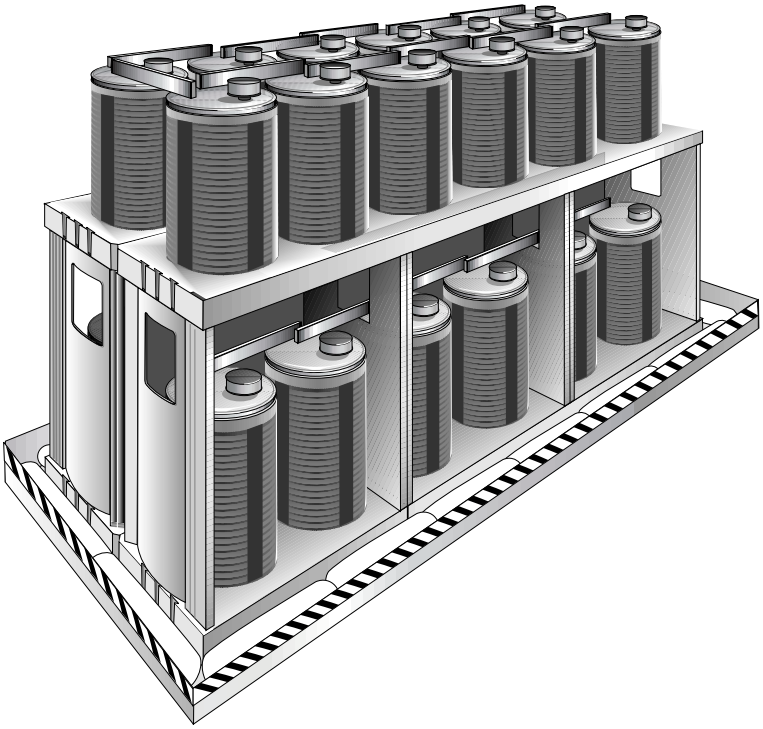

Figure 1.1 - Acid Spill Management System

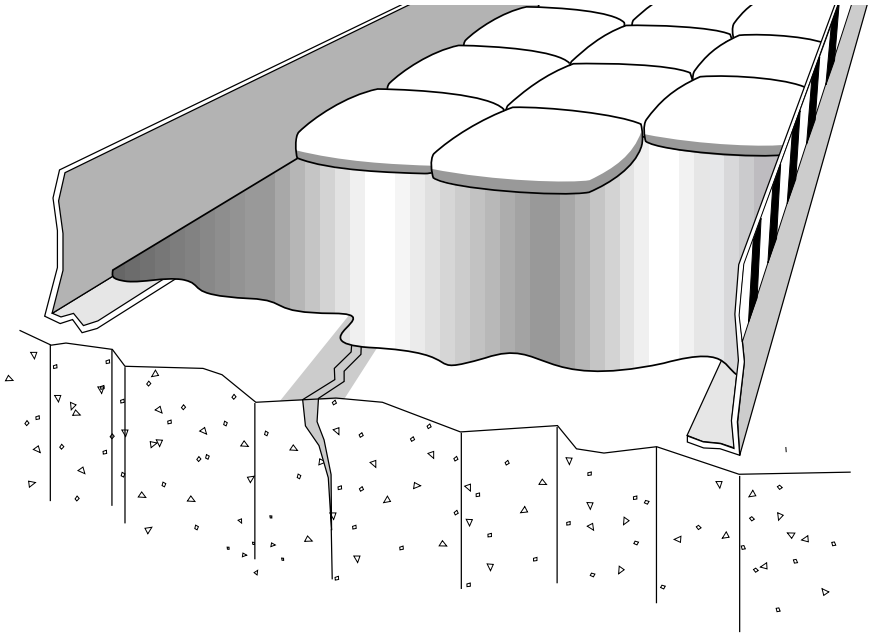

Figure 1.2 - Acid Spill Management System

Customer Services

The Lucent Technologies Acid Spill Management System is warranted to be free of defects in design, material and workmanship and to perform in accordance with the requirements described in the Lucent Technologies Acid Spill Control System specifications. If the Lucent Technologies Acid Spill Management System(s) fails to perform satisfactorily, contact the Lucent Technologies Regional Quality Services Management Organization to initiate an investigation.

Lucent Technologies maintains a nationally deployed force of battery specialists. Special engineering and consulting services for existing or new applications, or resolution of questions regarding any information in this manual are available through the Lucent Technologies Regional Quality Services Management Organization.

Lucent Technologies offers a 24-hour technical assistance hotline for its customers. You may reach this service at any time by dialing 1-800-CAL-RTAC (1-800-225-7822). Normally there is no fee for this service during installation or while the product is under warranty.

Notice:

For customer service, including copies of this or other Lucent Technologies documents, please call 1-800-THE-1PWR (1-800-843-1797).

Material Safety Data Sheets (MSDS's) for the products used in conjunction with this acid spill control system are maintained in Appendix H of this manual.

Description

Components

Spill Barrier: The spread of fluid to other areas during a battery electrolyte spill is a major concern. The cost of cleanup and the hazard to personnel rises exponentially as the spreading acid. In some cases lead particulate, contaminates a larger area. The 4 inch steel spill containment barrier serves to prevent the spread of acid. The individual barrier components are bolted together and bonded to the floor using a novolac epoxy adhesive. The barrier can be installed in standard (4 side) or wall-mounted (3 side) configurations.

Adhesive: The Flexible Novolac Epoxy Adhesive has similar chemical resistance properties to the Coating but has a higher elasticity. The Adhesive's 40% elongation makes it an excellent medium for adhering the Barrier Pieces to the floor without the need for drilling holes in the floor. This resilient bond permits the barrier to absorb the shocks and stresses placed on it in an industrial environment without harming the containment integrity. This material will henceforth be referred to as the "Adhesive.

Coating: The High Strength Novolac Epoxy Coating is a specially formulated polymer that resists acid damage for extended periods even when sulfuric acid concentrations reach 98%. The Coating forms a liquid-tight boundary which protects the flooring from the corrosive effects of battery electrolyte. In addition to its long-term chemical resistance, it is designed to provide good wear and abrasion resistance. Throughout the following procedure, this material will be referred to simply as the "Coating."

"**Absorbent/Neutralizer:** Battery electrolyte spills or continuous leaks can sometimes go unnoticed for long periods. To prevent damage to personnel or facilities, electrolyte should be absorbed and neutralized immediately after release from the battery jar. Neutra-Tube and Neutra-Mats are available for installation inside the containment area to absorb electrolyte from spills. The 16 by 3-1/2 inch Neutra-Tubes are designed to fit snugly between the Round Cell Battery Stand base and the barrier. The 10-1/2 by 10-1/2 inch Neutra-Mats can cover large areas of floor surface and form easily around the frames of any standard battery rack. When exposed to electrolyte, these tubes/ mats change color to a bright pink to provide a clear indication a spill has occurred. Both styles can be quickly and easily replaced and disposed of when expended.

Spill Response Kit: Safe practices and specific OSHA standards state that battery rooms are to be equipped with proper spill neutralization, clean-up and disposal equipment. Regulations also require the condition and availability of these spill kits to be audited and recorded monthly. The spill kit should be placed in an easily accessible part of the battery room between the exit door and the batteries themselves. A minimum of one Spill Clean-up and Disposal kit is recommended to be ordered and maintained at each installation site. The Clean-up and Disposal kit contains all necessary personal protective equipment and supplies for neutralizing, cleaning, and shipping for disposal of the electrolyte residue from a spill.

Battery Cleaning and Leak Detector Kit: Clean batteries last longer and achieve peak performance. Although they are not always visible, dirt, oils and acids on a battery case (even in small quantities) can affect battery performance. Even a dry acid trace sets up a trickle discharge and shorts. Controlling electronics can be “fooled” by short readings and equipment can shut down. Personnel can receive shocks and acid burns. Acid causes corrosion of metals. Improper chemical cleaners crack and embrittle rubber and plastic. Battery and equipment warranty claims are challenged because of suspect battery cleaning practices. Safe cleaning and neutralizing is a good battery management practice. Regular use of this kit will:

- Eliminate corrosion damage to batteries and related equipment.
- Reduce the time required to effectively clean batteries.
- Reduce the risk of shocks and acid burns that occur when acid covered batteries are used or serviced.

- Eliminate trickle self-discharge by making the case neutral and non-conductive.
- Detect leaks by color change when acid or acid salts are present.

Standard Features

- Spill Barrier sized to fit rack

Options

- Novolac epoxy adhesive and floor coating combination
- Neutra-Tube/Neutra-Mat acid absorbing and neutralizing pads
- Leak Repair Kit
- Joint/Crack Filler Kit
- Installation Tool and Supply Kits
- Spill Response Kit*
- Battery Cleaning/Leak Detector Kit*
- Replenishment Kits
- Replacement Neutra-Tubes
- Replacement Neutra-Mats
- Floor Coating (1 or 4 gallon quantities)
- Cable Access Barriers (6 x 6 inch, 6 x 12 inch or 12 x 12 inch sizes)

* It is recommended one of each of these kits be located and maintained in each battery installation.

2 Specifications and Ordering Information

How to Order

The following table describes currently available systems and options. Contact your Lucent Technologies representative at 1-800-THE-1PWR (843-1797) to obtain further product information and for order placement.

PRODUCT CODE	DESCRIPTION	BATTERY STAND APPLICATION	NOTES
ED-83139-30, Group 1	Spill Control System, 38 x 53 inches	J85504A-1 LIST 4	1,2
ED-83139-30, Group 2	Spill Control System, 38 x 98 inches	J85504A-1 LIST 12	1,2
ED-83139-30, Group 3	Spill Control System, 38 x 188 inches	J85504A-1 LIST 10	1,2
ED-83139-30, Group 49	Spill Control System, 38 x 53 inches (For Retrofit Applications Only)	J85504A-1 LIST 4	1,2
ED-83139-30, Group 50	Spill Control System, 38 x 98 inches (For Retrofit Applications Only)	J85504A-1 LIST 12	1,2
ED-83139-30, Group 51	Spill Control System, 38 x 188 inches (For Retrofit Applications Only)	J85504A-1 LIST 10	1,2
ED-83139-30, Group 222	Spill Control System,41 x 93 inches	J85504B-1	1,2
ED-83139-30, Group 223	Spill Control System,41 x 183 inches	J85504B-1	1,2
ED-83139-30, Group 290	Spill Control System, 32 x 219 inches	RD-1295, RD-1295-EP2 LIST 18	1
ED-83139-30, Group 486	Spill Control System, 41 x 51inches	RD-1372-EP2 LIST 4	1

PRODUCT CODE	DESCRIPTION	BATTERY STAND APPLICATION	NOTES
ED-83139-30, Group 487	Spill Control System, 41 x 99 inches	RD-1372-EP2 LIST 8	1
ED-83139-30, Group 488	Spill Control System, 41 x 183 inches	RD-1372-EP2 LIST 15	1
ED-83139-30, Group 489	Spill Control System, 41 x 279 inches	RD-1372-EP2 LIST 23	1
407523455	Joint/Crack Filler	-	
407523471	Floor Coating, 1 gal. Kit	-	
407523489	Floor Coating, 4 gal. Kit	-	
407523497	Neutra-Tube, 6 per pkg.	-	
407523505	Neutra-Mat, 10 per pkg.	-	
407532233	Bulk Acid Neutralizer/Absorber, 40 lbs.	-	
407532241	Spill Response Kit, 50 lbs.	-	
407523513	Spill Response Kit, 210 lbs.	-	
407532258	Bulk Acid Neutralizer/Absorber, 500 lbs.	-	
407532266	Transport Dolly for 210 lb. Respnonse Kit	-	
407532274	Transport Dolly for 500lb. Respnonse Kit	-	
407552736	Incidental Spill Kit	-	
407523521	Battery Cleaning/Leak Detector Kit	-	
407523539	Leak Repair Kit - Complete	-	
407523488	Leak Repair Kit - Epoxy Adhesive/Sealant	-	
407523547	Installers Tool Kit	-	
407523554	Installation Site Supply Kit	-	
407523562	Installation Kit - Concrete Supply	-	
407551662	Installation Kit - Wall Mount	-	

Application Notes

1. All Spill Management Systems are supplied with adhesive, barrier strips, and hardware to contain battery electrolyte for the battery stand configuration specified.

2. Spill Management Systems ordered in accordance with

ED-83139-30 Groups 49-96 (not listed) are supplied with epoxy coating and shall be ordered for retrofit Round Cell Battery applications where floor coating is required. For all other Round Cell Battery Stand applications, order the Spill Management System in accordance with ED-83139-30 Groups 1-48. For example, a typical order would be as follows:

Qty	Product Code	Description
2	ED-83139-30 G1	Spill Containment System for J85504A-1 L4
1	407532513	Spill Response Kit (210 Lbs)
1	407523521	Battery Cleaning/Leak Detector Kit
1	407532266	Optional Dolly
1	407523554	Site Supply Kit
1	407523547	Installer Tool Kit (Installer has never installed before)
1	407523471	Floor Coating

3. For all Spill Management Systems except for ED-83139-30 Groups 49-96, when floor coating and/or acid neutralization is required, epoxy floor coating and Neutra Tubes/Mats shall be ordered in accordance with the table below or Table C of drawing ED-83139-30.

ED-83139-30 Group	Weight (Lbs.)	Floor Coat (Gal.)	Neutralizer
1	51	1	2
2	76	2	3
3	126	4	5
222	73	2	4
223	125	4	7
290	141	4	7
486	48	1	2
487	78	3	4
488	125	4	7
489	179	6	11

4. Neutra Tubes/Mats shall only be ordered in packages as specified. For orders requiring quantities of tubes or mats greater than the amount in one package, order additional packages.

5. For Spill Response Kits, Transport Dollies, and Battery Cleaning/Leak Detector Kits, order quantities as required. See installation instructions *"Spill Response Kit"* in Section 5 of this manual.

6. For new applications with optional floor coating where battery stands which require earthquake bracing or anchoring are to be installed after the Acid Spill Management System is installed, order one Leak Repair Kit and one Supplemental Replenishment Kit for ever 10 anchor bolts (See ED-83139-30 Notes 55 and 56).

3 System Engineering

Engineering Information

Identify the battery stand and type of installation (i.e. new or retrofit). Consult the Lucent Technologies configuration drawing ED-83139-30 for selection of appropriate system to fit battery stand. Table A in that drawing matches Acid Spill Management System configurations with various battery stands. Table C in that drawing identifies the components supplied with a given system configuration.

For non-standard applications or application not listed in ED-83139-30 contact your Lucent Technologies representative with barrier floor dimensions and battery stand type. Determine the barrier width and length by adding 2.5 inches to the outside battery stand dimensions (include bolt heads) and round up to the next inch increment. For Round Cell systems, add 4 inches to the outside stand dimensions. Verify that the barrier has sufficient containment volume for all electrolyte from the single largest cell or multi-cell battery in the battery rack or system to be contained.

The aisle clearance after barrier installation shall not be reduced below the 30 inch standard for maintenance requirements. In a retrofit installation where aisle clearance would be unacceptably reduced by standard configurations, a custom configuration may be designed. The custom spill barrier may surround several groups of battery stands and allows entry/exit by inclined ramp. Contact your Lucent Technologies representative for assistance in configuring the custom system.

The following items are recommended options for an Acid Spill Management System:

Floor Coating: The epoxy floor coating provides immersion resistance for up to 98% sulfuric acid. The floor coating is available in 1 and 4 gallon size containers and will cover 12.8 and 51.2 sq. ft. respectively.

Nuetra Tubes/Nuetra Mats: In-place neutralization and absorbtion of electrolyte spilled within the barrier is available and may be ordered in addition to the the containment system. Nuetra Tubes/Mats are to be placed side by side in the containment area around and under the battery stands.

Joint/Crack Filler Kit: This kit provides materials to fill large voids, moving cracks, and expansion joints. A specialized, high elongation, epoxy membrane combined with fiberglass reinforcement protects the integrity of the top coat from crack development. One kit covers a 1/2 by 1 inch expansion joint 6 feet long or an area of 5.0 square feet.

Spill Response Kits: This kit provides all personal protective gear, equipment, and materials to neutralize, clean up, and dispose of an electrolyte from a spill. Order one kit per site. Sizing of the kit is an important pre-purchase consideration. It is both sensible and required by a variety of codes and regulations that spill clean up kits be available in all battery rooms. The size of the kit selected should contain enough neutralizing acid absorber to neutralize and absorb all the electrolyte from the single largest cell or multi-cell battery jar in each battery room. Available kits and components are as follows:

Description	(Gallons)
Bulk Neutralizing Absorber-40 lbs	2.0
Kit w/Safety wear-50 lbs	2.5
Kit w/Safety wear-210 lbs	10
Kit w/Safety wear-500 lbs	23
Dolly for list 142	
Dolly for list 143	
Incidental Spill Kit-30 lbs	1.5

Valve-regulated, lead acid batteries leak small quantities of electrolyte when they break. The Incidental Spills Kit or equivalent should be maintained in applications involving these types of batteries.

Battery Cleaning/ Leak Detector Kit: This kit includes a color changing and neutralizing solution to detect and clean electrolyte leakage from battery cases. The kit also includes personal protective and cleaning equipment. Order one per site.

Leak Repair Kit: Material and tools are supplied in this kit for the repair of leaks or damage to the floor coating. The supplement kit provides only the coating and thickener for sealing anchor holes and earthquake bracing. Order one complete kit per site and one supplement kit for every 10 anchors.

Installation Kits: The installer tool kit includes non-expendable tools required for installation. The site supply kit provides expendable tools and materials for up to 10 systems. The concrete kit includes concrete cleaner, etchant, and neutralizer for up to 10 systems installed on concrete flooring. The wall mount kit includes hardware and equipment for applying up to 10 barriers in a 3-sided configuration.

4 Installation Instructions

Installation checklists for the various types of installations of the acid spill management system are provided in Appendixes E, F, and G of this Manual. Refer to these checklists to verify each of the assembly operations associated with the installation of the spill control system.

WARNING:

DUE TO THE NATURE OF THE WORK INVOLVED WITH THE INSTALLATION OF THE ACID SPILL MANAGEMENT SYSTEM, IT IS ESSENTIAL FOR ALL PERSONNEL INVOLVED WITH THE INSTALLATION TO HAVE RECEIVED THE FOLLOWING TRAINING PRIOR TO BEGINNING ANY WORK:

GENERAL SAFETY PRECAUTIONS
HAZARDOUS COMMUNICATIONS
RESPIRATOR TRAINING/FIT TESTING (AS REQUIRED)
PERSONAL PROTECTIVE EQUIPMENT
HAZARDOUS MATERIAL/WASTE

DO NOT ATTEMPT TO INSTALL THE ACID SPILL MANAGEMENT SYSTEM PRIOR TO COMPLETION OF REQUIRED TRAINING

Material and Equipment Requirements

Examine all shipping containers for signs of external damage. Also look for indications of coating spillage during shipment. In the event that coating material has been spilled, consult the Material Safety Data Sheet for handling instructions and personal protective equipment requirements. Make note of any damage on the bill of lading before signing for delivery. If system components have been damaged or lost in transit, contact the shipping carrier for instructions concerning filing a claim.

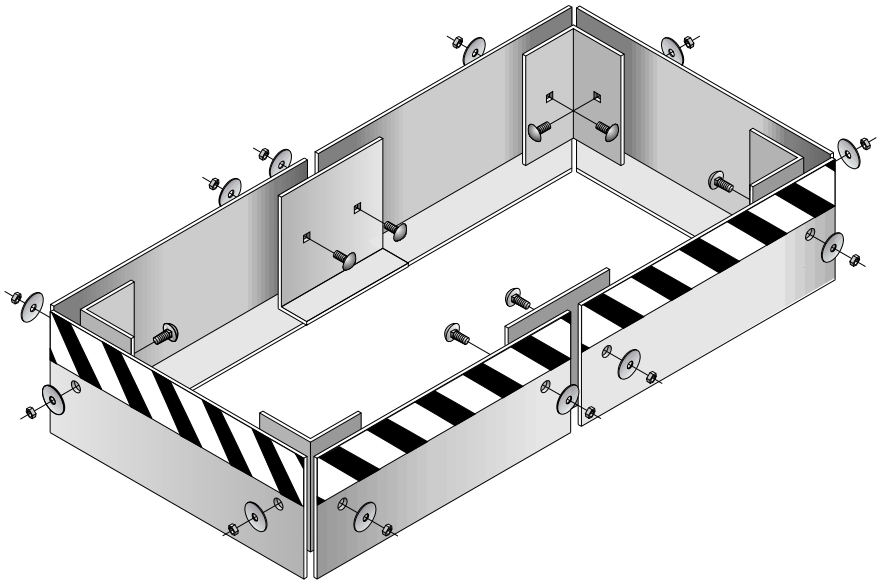

Figure 4.1 - Exploded View of Barrier Components

Begin the installation process by unpacking the Spill Control System and inventorying the contents. Use the packing list to check that all components are present. The exploded view shown in Figure 4.1 shows a typical barrier system configuration.

Materials The following items are provided with a Battery Acid Spill Control System:

1. Barrier Strips
2. Corner Plates
3. Splice Plates
4. 1/4-20 stainless steel carriage bolts, nuts and flat washers
5. High Strength Novolac Epoxy Coating (optional)

6. Flexible Novolac Epoxy Adhesive
7. Fiberglass Cloth Strips (For retrofit to Round Cell battery facilities only)
8. Product Manual
9. Installation Checklist (At the back of this manual)
10. Bill of Materials (Attached to the cover of this manual)
11. Neutra-Tubes/Neutra-Mats (optional)

Supplies The following tools and supplies (available in kit form as listed) are recommended for a thorough and safe installation:

Optional Installer's Tool Kit (Comcode 407523547):

1. Mixing attachments - large, small
2. Safety goggles
3. Spike Pin Roller 1-1/2” wide
4. Spike Pin Roller 3” wide

Optional Installation Site Supply Kit (Comcode 407523554):

1 Disposable Latex gloves
2. V-notch spreaders & Trowel
3. Putty knife 1-1/2” wide
4. 1/2 inch paintbrushes
5. Alkaline detergent
6. Poly scrub pads & holder
7. Stirring sticks
8. 40 grit sandpaper sheets
9. 2 inch masking tape
10. Cleaning cloths

Optional Concrete Supply Kit (Comcode 407523562):

1. Concrete etching/cleaning solution
2. Bulk neutralizer

Optional Wall Mount Supply Kit (Comcode 407551662):

1. 4 inch roller with extension
2. Spare 4 inch roll
3. Mixing tray
4. 1/4 inch bolts and assorted anchors

The following tools and supplies are recommended for a thorough and safe installation and are to be provided by the installer.

1 Disposable gloves for applying coating
2. Kneepads
3. Respirators (as required)
4. Penlight
5. Scissors or pocket knife
6. Medium screwdriver or small prybar
7. 7/16" wrench
8. Fine point permanent marker
9. Electric drill with 3/8 inch chuck
10. Tape Measure
11. Small machinist rule with 1/64 inch increments to end or a wet film thickness guage
12. Wet and dry shop vacuum cleaner
13. Broom, dustpan, mop, and bucket
14. First Aid kits
15. Eye wash
16. Warning sign kit
17. Container to hold waste materials
18. Polypropylene sprinkling can

Initial Layout and Setup (Alignment)

Lay out the Barrier Strips on the floor around the battery stand location as shown in Figure 4.1 and lightly bolt the pieces together using carriage bolts, washers, nuts and the appropriate connector plates. Position the barrier around the battery stand location to provide equal clearances on all sides between the battery stand and the barrier. Note that the horizontal flange on all of the barrier strips faces the battery stand (Figure 4.1). This orientation is important both for barrier strength and liquid-tight integrity. If there is likely to be less than 1-1/2 inches of clear space between the battery stand and a wall, use a three-sided wall-mount barrier configuration in which the wall will be coated and will form the fourth side of the containment area. Refer to Appendix D for supplementary instructions regarding wall mounted barrier systems.

The installer or site/equipment engineer is responsible for ensuring that there will be sufficient aisle space between the racks after the barriers have been installed. There should be a minimum of 30 inches between barriers. Aisle spacing at the end of each rack may be as little as 24 inches if no battery maintenance needs to be performed there. In any case, the aisle

spacing, including the space between the surrounding barriers, should be sufficient to permit all required maintenance (including battery installation and removal). See the National Electrical Code or contact the local authority having jurisdiction for further clarification regarding aisle clearances.

If the containment area includes holes in the floor for cable access, refer to Appendix C for details on assembling Cable Access Barriers.

After assembling and positioning the barrier system, mark the outer perimeter of the barrier on the floor using 2 inch masking tape. This will mark the proper placement of the barrier and help keep the floor clean when adhering the Barrier Strips to the floor.

To improve the effectiveness of the Spill Control System, the floor surface should be flat, smooth and reasonably level. An uneven surface will likely cause gaps between the barrier and the floor. Rough or unleveled surfaces under the Barrier Strips may require further attention during final assembly. Check for these conditions by measuring the distance between the bottom of the barrier and the floor. Gaps greater than 1/8 inch should be marked for the application of additional adhesive material during the barrier assembly process.

Disassemble the barrier and move the pieces aside for floor surface inspection and preparation.

Surface Preparation and Initial Conditions

The Spill Control System, specifically the adhesives and coatings, are adversely affected by poorly prepared surfaces (i.e. floors, walls. bases of battery racks or stands, etc). Failure to properly prepare the surface prior to applying the coating can cause degraded performance or failure over time of the control system. Improper preparation of the surface of the floor prior to installation of the control system shall be considered improper installation and use in a manner not in accordance with the Seller's specifications and will affect the warranty of this product. See Section 6 of this manual for product warranty information.

Surface cleaning of all floor surfaces is required prior to beginning the installation of the spill control system. For all floor types removal of all oil, grease, dirt, efflorescence, laitance, chemicals, hardeners, curing membranes, scaly paint, wax, or other surface contaminants is required.

Due to the unknown contaminates that may be present on a customer floor surface (i.e. PCB oils, mercury, lead, petroleum products, etc.) any waste product produced in the process of cleaning and preparing floors for application of the spill control system may be considered a hazardous waste. Hazardous waste constituents and characteristics can be found in Title 40 of the Code of Federal Regulations, Part 261. Please consult this reference to determine if any contituents or characteristics are present in the building (floor) that would render a waste hazardous according to EPA definition. Also check any Local and State regulations or rules applicable to the generation of hazardous waste that may impose additional classification, handling and disposal requirements.

When used as specified in this Manual, all cleaning materials provided or supplied with the acid spill control system are not classified as a hazardous waste according the Federal EPA definitions. However, any waste product produced in the process of cleaning and preparing the floors for the application of the spill control system is the property of the original owner of the material or contaminate, in this case the customer. Assurance of, or arrangements for , the proper classification, handling, and disposal of this waste product is the responsibility of the customer. The obligation cannot be sold or relinquished to a third party. If, however, the customer does not wish to arrange for disposition of the waste, they may contract the Installer to perform these services at an additional cost. The Installer can only act as the customer's agent after receiving written authorization to handle and make the required arrangements to test, package, and dispose of the waste on their behalf. The customer must still sign all shipping papers and manifests.

If a concrete floor contains expansion joints, moving cracks, multiple cracks (spider), or control joints, the application of a joint filler/crack filler kit is recommended prior to floor coating installation.

Permanent floor coverings (resilient flooring) such as vinyl, linoleum, composite or asbestos tiles will not affect the ability of the barrier or Coatings to contain electrolyte spills provided that they are in good condition, that all other initial conditions are met and the Coating has been mixed and applied properly. Loose or broken tiles should be removed and voids filled using a Joint/ Crack Filler kit. Observe appropriate handling precautions when working with asbestos containing tiles. Physical abrasion of the

flooring should not be done if the flooring contains or may contain asbestos. It is the customer's responsibility to notify the installers of any asbestos containing materials.

CAUTION:

All asbestos handling precautions should be observed when handling loose or broken asbestos tiles, including respiratory protection, protective clothing and specialized disposal. Consult with the local authority having jurisdiction for asbestos abatement requirements. It is the customer's responsibility to handle, remove or dispose of any loose or broken asbestos floor tile. All hazardous asbestos must be removed by the owner of the facility before installation begins.

For optimum bond strength of the adhesive and coatings used in the spill control system, concrete floors should be completely dry, properly cured (minimum 28 days for new concrete floors), and cleaned to remove concrete cure compounds, form release materials, or concrete hardeners. Alteration of the concrete surface profile may be required to remove any foreign materials and weak surface laitance. Alteration of the surface profile may be done by abrading or acid etching. The surface may be etched with a phosphoric acid solution, scrubbed, and rinsed with neutralizing solution (See Concrete Cleaning).

Concrete slabs installed on or below grade or otherwise exposed to weather may transmit water vapor, causing pinholes in the floor coating during cure. Evening (after 7 PM) is the most suitable time of day for a ground-floor installation as the effects of concrete off-gassing will be minimized. If a wall is to be used as part of the containment barrier, ensure that it is thoroughly cleaned also. The coating will adhere well to clean wall surfaces such as concrete block and sheet rock.

Local ambient air temperature must be greater than 50^{o}F when applying and curing epoxy adhesives and floor coating materials. As ambient air temperature decreases, the time necessary to set and cure the membrane, adhesive and coating increases.

General Floor Cleaning (All Floor Types)

Clean the surface of the containment area thoroughly by first sweeping it and then mopping and scrubbing it with an alkaline detergent. Mix one 1-1/2 ounce packet of concentrate to 2

gallons of water (hot water is recommended). Use a nonmetallic scrubbing pad and use care that the entire containment area has been scoured (do not scour asbestos floors). Floor wax, dirt, solvents, grease, and oils should be removed by this process. Previously applied floor coatings need to be removed using either chemical or mechanical methods. Remove any liquid with a wet/dry vacuum cleaner.

Perform a preliminary check for cleanliness by rubbing the floor with a clean, white cloth. If the cloth appears dirty, perform the steps identified in *General Cleaning* again.

Concrete Cleaning

If the Spill Control System is to be installed on a concrete surface, etch the concrete in the following manner:

Caution:

The etching solution is a mild phosphoric acid and may cause damage to clothing and irritate skin. Wear gloves and safety goggles at all times when handling or working with the etching solution. See the MSDS for additional safety and handling instructions.

Due to the difficulty in containing the flow of the etchant solution, etching should not be performed on retrofit to Round Cell applications.

Pre-wet the concrete surface with water prior to applying etching solutions. Free-standing water should be removed. Uniformly apply the etching solution to the wet surface. Polyethylene sprinkling cans are suitable for applying acid solutions. Bubbling should be uniformly evident; If not, this indicates the presence of grease and/or oil contamination, curing compounds or sealers, or a need to increase the concentration of the acid solution. Scrub the acid wetted surface with a nonmetallic scrubbing pad or stiff bristle brush. Use care when applying the etching solution to avoid contact with cables and other equipment that may be damage by it. Avoid holes or cracks which may permit seepage of the etching solution into other areas.

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When the bubbling of the etching solution stops (10 to 15 minutes), immediately apply a neutralizing solution. Mix 2-1/2 pounds of neutralizer with 2 gallons of water and apply liberally with a mop. Before this solution dries on the floor, remove the liquid with a wet and dry vacuum cleaner. Rinse the area twice more with water, again using the vacuum cleaner to remove the liquid so that no standing pools remain. Allow the floor to dry for 3-4 hours at room temperature before applying any adhesive or coating.

Note:

- For a more complete guide to the preparation of concrete floors see ASTM standard practice F-710-92 “Preparing Concrete Floors ... to Receive Resilient Flooring”.
- For a complete description of the procedures to clean, abrade or acid etch concrete surfaces, refer to ASTM standard practices D-4258-83, D-4259-88 and D-4260-88.

Spot Cleaning

Spot cleaning of the floor to remove floor wax, dust, and other efflorescence and laitance can be done using a clean cloth dampened with denatured alcohol. Cleaning using denatured alcohol shall not take the place of general floor cleaning using the alkaline detergent.

CAUTION

Denatured alcohol is poisonous, flammable and may be fatal or cause blindness if swallowed. Do not smoke while using. Extinguish all flames and turn off all pilot lights, stoves, heaters, electric motors and all other sources of ignition.

USE ONLY WITH ADEQUATE VENTILATION TO PREVENT THE BUILDUP OF VAPORS

For occasional use, where an engineered air control is not feasible, use properly maintained NIOSH approved respirator for organic solvent vapors. A dust mask does not protect against vapor. See the MSDS for additional safety and handling instructions.

Barrier Installation

Use 40 grit aluminum oxide or silicon carbide sandpaper to lightly sand the underside of the Barrier Strips and mating surfaces of the connector plates. Wipe all sanding debris from the Barrier Strips with a rag lightly dampened with denatured alcohol.

Inspect the floor inside the containment area for any gaps, progressive cracks or expansion joints. Such surface defects must be repaired or filled before progressing any further with the Spill Control System installation. An optional Joint/Crack Filler Kit is available from your sales representative.

Caution:

The adhesive and coating materials are eye irritants and, after prolonged exposure, skin and lung irritants. Wear safety goggles, long sleeved shirt, latex gloves and a NIOSH/MSHA TC-23C approved respirator when mixing and applying these compounds. See the MSDS for additional safety and handling instructions.

Note:

Once prepared, the adhesive and coating materials should be applied immediately. Interaction between Part A and Part B generates heat that will accelerate the hardening process.

Move the Barrier Strips into the proper position as marked on the floor. Use care to achieve the correct alignment and recheck clearances. Note any large gaps between strips and floor. Apply additional adhesive at these locations.

Mix the adhesive by removing the separator between Part A and Part B in one container of adhesive (save the separator for use in a later step). Knead the package vigorously until it has been thoroughly mixed. To ensure complete and thorough mixing, continue kneading for several minutes after the adhesive material has achieved an even consistency and color.

Roll the end of the bag such that the empty space has been taken up (Figure 4.2). Diagonally cut one of the bottom corners so that the bag may be used as an applicator. Squeezing the bag will apply a bead of adhesive.

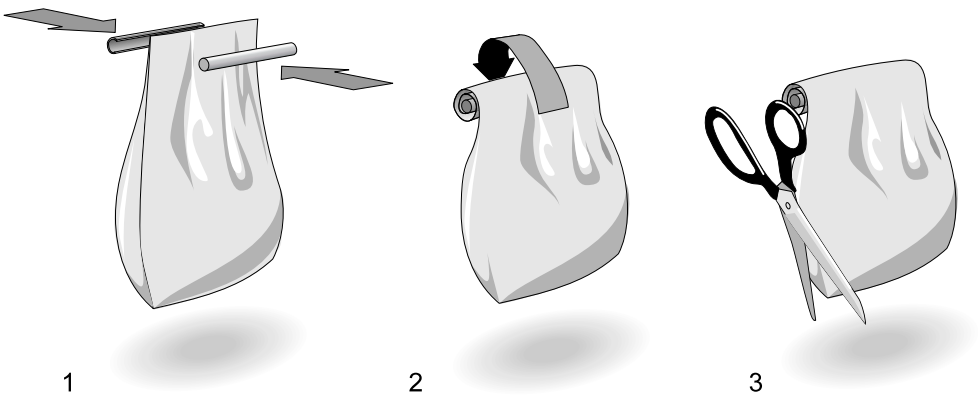


Figure 4.2 - Preparing the bag for Applying the Adhesive

Use the adhesive to fill any defects in the floor inside the containment area that have not been previously filled using the Joint/Crack Bridging Kit. Use a putty knife to scrape the filled areas flush with the surrounding surface.

Affix all of the Barrier Strips to the floor. Apply adhesive to the bottom surface of all of the Barrier Strips and spread it evenly over the surface with a 3/16 inch v-notch trowel. Use the 1/4 inch v-notch if additional adhesive is required for filling gaps. Press the strips into place on the floor and align them to the markings made in *Alignment* steps.

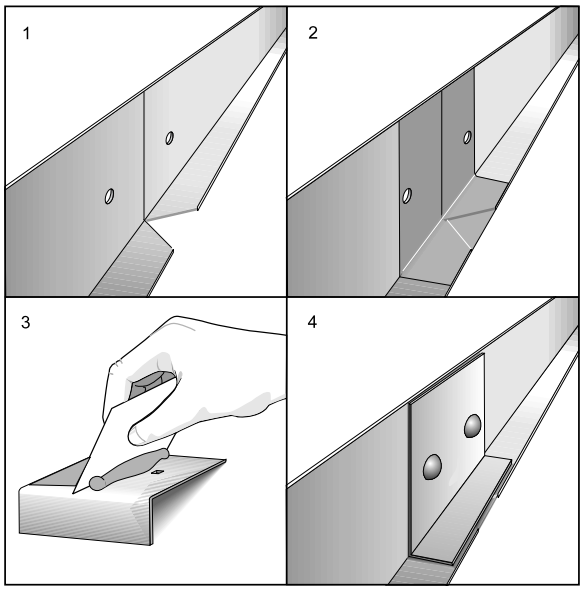


Figure 4.3 - Assembly of Barrier Splices

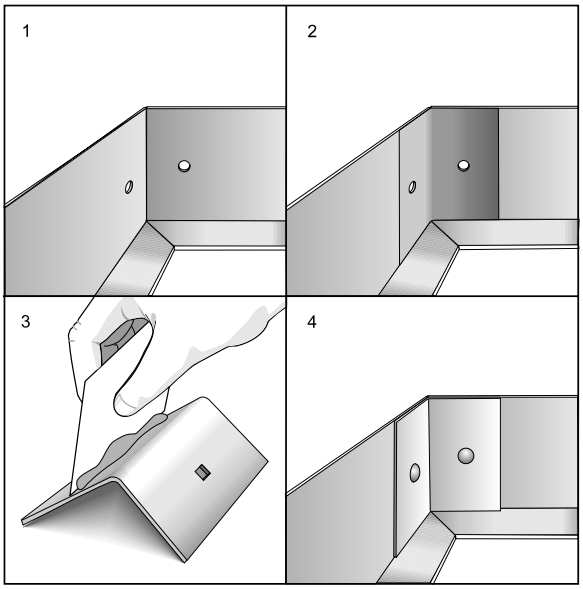


Figure 4.4 - Assembly of Barrier Corners

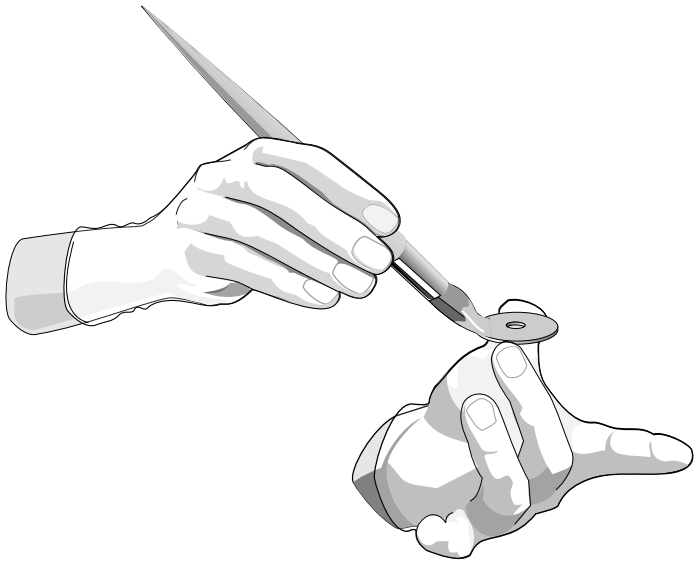


Figure 4.5 - Applying Adhesive Gel to Flat Washers

Assemble the barrier corner joints and splices. Apply adhesive to the mating surfaces of the respective corner or splice plates, spread the adhesive evenly over the surface using a 1/8 inch v-notch trowel and press the plate into place over the joint (Figures 4.3 & 4.4).

At each joint, coat the mating surface of the associated flat washer with the adhesive (Figure 4.5). Lightly bolt the Corner or Splice Plates to the interior surface of the Barrier Strips using the carriage bolts, flat washers and flange nuts (refer to Figure 4.1).

Recheck the alignment and position of the barrier and its components once more and tighten all of the assembly hardware using a 7/16 inch box-end or combination wrench. The hardware has been properly tightened when adhesive material squeezes out evenly around the edge of the connector plate. Use a putty knife to scrape away the excess adhesive.

Coat the interior bolt heads at all of the barrier corners and splices with a layer of the adhesive.

Clean any adhesive that has been spilled using a cloth lightly dampened with denatured alcohol.

Allow the remaining adhesive to harden in its container and dispose of in accordance with local, state and federal regulations.

Coating Application

Verify that the proper quantities of coating component A and coating component B are matched up properly in preparation for mixing. A 4 gallon kit will be comprised of one 5 gallon plastic bucket of component A and a 1 gallon can of component B. A 1 gallon kit will be comprised of one 1 gallon can of component A and a 1/2 gallon can of component B.

Pour all of Part B into a corresponding container of Part A and blend with a rotary stirrer and an electric drill on slow speed. Take care to keep the stirring vanes well below the surface of the coating to avoid entrapping air into the mixture. To properly mix the coating comnpound, the stirring device should be frequently raised from the bottom of the container. Continue to stir the coating compound for several minutes after the mixture has achieved an even color and remember to pay special attention to unmixed resin at the sides and bottom of the container. Mix additional Coating as necessary during the coating process to complete the installation.

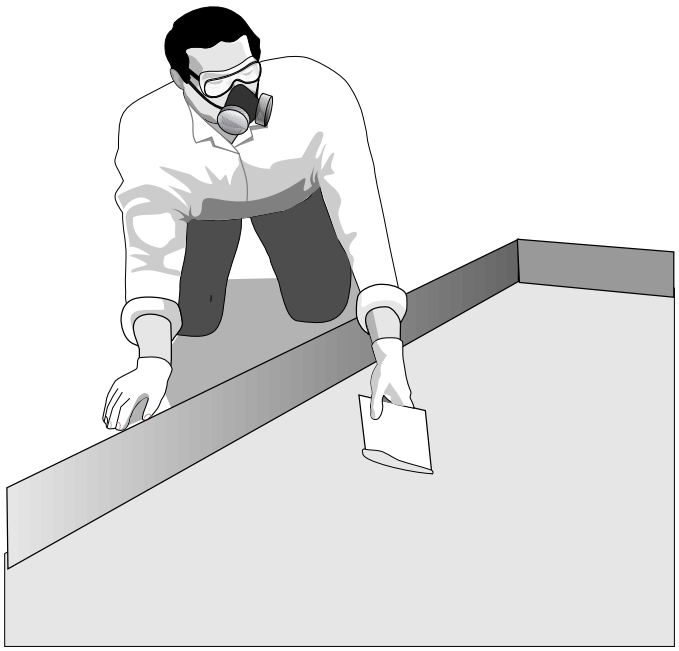


Figure 4.6 - Spreading the Coating in a New Installation

Pour and spread all of the coating evenly over the floor inside the containment area using a plastic spreader or putty knife (Figure 4.6).

Verify that coating thickness in all areas is at least 7/64 inches using a small metal ruler. Spread the Coating as necessary to achieve a uniform thickness. If the nominal film thickness in an area is insufficient, pour additional coating material or use the spreader to redistribute the coating as necessary.

Use the spiked pin roller to rupture any air bubbles. In places that the spiked pin roller is unable to reach, break the surface of any bubbles seen by probing them with an unfolded paper clip, safety pi, or similar device..

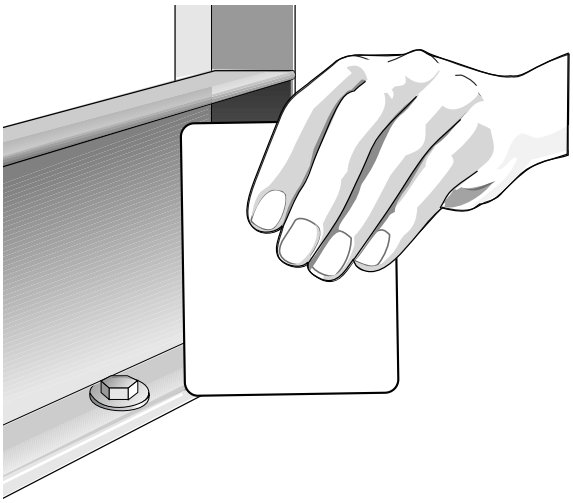


Figure 4.7 - Sealing Battery Rack Base

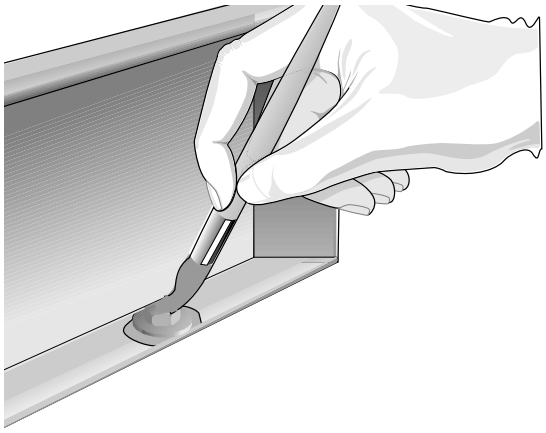


Figure 4.8 - Coating Battery Rack Hardware

Inspect the perimeter of the barrier for coating seepage. If coating material is found seeping under the barrier, use a spreader or gloved finger to force some remaining adhesive under the barrier in the area of the leak until the flow stops. If no usable adhesive remains, a Leak Repair Kit may be used or a small piece of paper towel saturated with floor coating may be tamped under the barrier at the seepage location.

Remove the masking tape from the floor around the barrier.

Any mixed coating that has been spilled may be absorbed with cat litter box filler and wiped up with a cloth moistened with denatured alcohol. Allow remaining coating material to harden in its container and dispose of in accordance with local, state and federal regulations.

Mark the label attached to the cover of this manual with the date of the barrier installation (Mo./Yr.) and attach the label to the inside surface of one of the Barrier Strips near a corner.

The battery stands or racks may be installed only after the coating has been completely cured. If a leak test is to be performed, it also must be completed satisfactorily prior to rack installation. Do not load the racks with batteries until the coating has had at least seven days to completely cure. Once the battery racks have been installed, obtain a Leak Repair Kit and use it to seal the bases/frames (Figure 4.7), anchors (Figure 4.8) and the earthquake bracing .

Leak Testing and Repair

The barrier leak test is an optional procedure to verify the liquid-tight integrity of the system.

After the coating has been permitted to cure for 24 hours, perform a leak test on the barrier by filling the barrier system with water and allowing it to stand while checking for leaks.

If any leakage occurs, identify and mark the unsealed location.

Drain the barrier and make sure the floor is clean and dry. In most cases, a wet/dry shop vacuum is the quickest and easiest method to remove the water from the barrier.

If leakage is found, obtain a Leak Repair Kit from your sales representative. Mix an appropriate quantity of Flexible Novolac Epoxy Adhesive and brush it over the area of the leak until the crack or seam is no longer evident. Allow the repair 24 hours to cure before retesting.

Neutra-Tube Installation

After the battery stand has been installed and loaded, lay the Neutra-Tubes/Neutra-Mats within the Spill Control Barrier. For Lucent Technologies Round Cell installations, the 16 by 3-1/2 inch Neutra-Tubes are positioned end to end between the barrier wall and the battery stand base. For other types of installations, lay the 10-1/2 by 10-1/2 inch Neutra-Mats side-by-side within the containment area and around the battery rack bases. When Neutra-Tube/Neutra-Mat placement has been completed, the floor surface inside the barrier should be completely covered with at least one layer.

Check the Neutra-Tubes/Neutra-Mats periodically for signs of electrolyte leakage. Remove used Neutra-Tubes/Neutra-Mats and replace them with new ones as necessary.

5 Maintenance and Troubleshooting

Coating Maintenance

Coating integrity is important to the effectiveness of the barrier system. The elastic nature of the coating typically resists cracking and chipping in a conventional battery room environment and no complete re-applications are likely to be required for the lifetime of the battery system. However, extreme conditions or circumstances may damage the surface of the coating. For that reason, it must undergo periodic inspection and sometimes repair.

If the battery facility has experienced an earthquake or other event causing damage to the floor has occurred, remove the Neutra-Tubes and perform an inspection of the floor inside the barrier to detect any cracks or breaks in the coating. Fill a 1 quart atomizing bottle with at least 16 ounces of distilled water, 1 to 2 fluid ounces of food dye and 6 to 8 drops of a surfactant such as Dawn or Ivory liquid dish soap. Shake well and mist the suspect area. Wipe the sprayed area with a damp rag and any fractures will appear as dye-colored lines. If cracks or defects are found, repair as follows:

Ensure that the area is completely clean, degreased, and dry. Sand an area at least 1 inch on all sides of the crack or chip for the entire length of the defect using 40 to 60 grit aluminum oxide or silicon carbide sandpaper. Remove any sanding debris.

From the Leak Repair Kit, mix an appropriate quantity of coating material (*Section 4*) and brush it over the sanded area until the crack is no longer evident. Allow the repair 24 hours to cure before replacing the Neutra-Tubes.

For cracks larger than 1/8 inch in width, obtain a Joint/Crack Filler Kit. Repair the crack in accordance with the associated instructions.

Spill Response Kit

Spills Happen! All styles and types of batteries are capable of spilling some quantity of highly corrosive and hazardous electrolyte. Having a battery acid spill kit and people trained and equipped to respond is crucial.

Training your spill responders is important if the spill is to be dealt with safely and before the spill spreads and has time to do severe damage to facilities and equipment. This same training is required if employees of contractors are involved with spill clean-up.

OSHA 29 CFR Part 1910.120 covers Hazardous Waste Operations and Emergency Response (HAZWOPER). It requires written spill response plans, provision of personnel protective equipment and clean-up equipment. Fines for non-compliance, particularly post-incident, are expensive.

Kit design and contents have to do with the specific risks that are encountered in acid spill clean-up in a high voltage and confined space environment.

These spill kits contain personal protective equipment and clean-up tools that are non-conductive and chemically resistant (classified for use with battery electrolyte-sulfuric acid).

The Neutralizing Acid Absorber itself is non-hazardous; When used as directed on sulfuric acid the acid is neutralized. The acid becomes sodium sulfate salt and absorbed water. The dry powder waste will be pH neutral.

Sealed, valve regulated batteries leak small quantities of electrolyte when they break. The incidental spills kit, WP-93377 L146 should be considered in application involving these types of batteries.

Large wet cell batteries can contain many gallons of free electrolyte per jar. Larger batteries require larger spill kits and may even suggest placement of supplemental bulk container of Neutralizing Acid Absorber.

Placement of the spill kit is dictated by sensible safe practices and by specific OSHA standards. All battery rooms are to be equipped with proper spill neutralization, clean-up, and disposal equipment. These comprehensive spill kits satisfy the requirements stated in OSHA regulations 1910.178, 1910.268 and 1926.441. According to regulations, the condition and availability of these spill kits should be audited and recorded monthly.

Place the spill kit in an accessible part of the battery room. Kits should be between the exit door and the batteries themselves. Immediate access during a spill incident is crucial.

Disposal after clean-up in a chemical spill situation must be decided upon by the waste generator. Normally that is the same organization that "owned" the spill. Characterization of the waste and decisions about its disposal (i.e. hazardous waste vs. Non-hazardous waste) have to do with the total contents of the cleaned-up waste. While the sulfuric acid had been rendered non-hazardous by the neutralization other hazardous material have been present in the spill (i.e. lead).

After the spill clean-up is complete the personal protective equipment, clean-up tools, and unused portion of the Neutralizing Acid Absorber can be recouped for use in future spills.

These spill clean-up and disposal kits were specifically designed for use in battery acid spill situations. Years of successful use in actual spill incidents have proven their value.

The historic use of water, bicarbonate of soda, sodium carbonate, ammonia, and other chemicals on acid spills has been challenged. These are not the recommended method for cleaning large acid spills and in certain circumstances may be unsafe, ineffective, and non-compliant with codes and regulations. These chemicals often cause exothermic reactions and generate asphyxiating and potentially toxic gases. They react with vigorous splatter and bubbling. When working in confined spaces, like battery rooms, their use can be quite dangerous. Simple absorbers are totally inappropriate for use on corrosive

acid spills. They do not neutralize and will always become hazardous and require extreme care in handling and expensive hazardous waste disposal.

Battery Cleaning/Leak Detection

Acid, even dry acid salts, on the cell covers, jars and related cables and racks will dramatically alter the performance and safety of those batteries. Left unchecked extreme corrosion damage will result.

Even sealed batteries are subject to exterior acid contamination. Acid migrates through lead posts and vents, and if pin hole leaks or small cracks develop the exterior acid problem is worse.

Small leaks and even dry acid salts become highly visible when sprayed with Neutra-Clean. In the presence of acid, an immediate color change will identify the location and size of the acid exposed areas. With immediate neutralization occurring the problem is eliminated.

Cleaning tools must be non-conductive and chemically resistant. This cleaning and leak detection occurs in a high voltage environment. Cleaning and leak detection should be made a part of written safe practices and some training of those involved should be conducted.

Personal protective equipment should be worn during the cleaning/leak detection operation. This is to minimize the risk of exposure to corrosive battery electrolyte and to electrical shorts and shocks.

Frequency of this leak detection and neutralization operation depends on the age and condition of the batteries. Wet cell batteries can be expected to show more exterior acid than sealed product. But both styles will.

Early detection is critical. Small leaks can result in catastrophic battery failure and battery jar rupture. A method of reporting discovered leaks must be created. Timely follow-up diagnosis and leak repair need to occur.

Avoiding common mistakes is important. Cleaning batteries with any chemical containing petroleum distillates can severely damage stationary battery plastics. Even a solution of bicarbonate of soda and water should not be used. Leaks will not be detectable because there will be no color change or visible

leak indication. Solutions of baking soda and water have no cleaning power and will leave conductive soda salts behind when they dry, and soda build-up can plug vents and flame arrestors.

Trouble Shooting

See *Section 4* for "Leak Testing and Repair"

6 Warranty - Acid Spill Management System

Seller warrants to customer that:

- As of the date title product sold passes, Seller will have the right to sell, transfer and assign such product and the title conveyed by seller shall be good;
- Upon shipment, Product will be free from defects in material and workmanship, and will conform to Seller's specification.

The Warranty Period and Conditions applicable to the new Product installed in non-traffic areas (material only) are listed below:

- The warranty shall expire on the second anniversary date after the date the material was shipped.
- The warranties made by Seller are subject to the following limitations and conditions:
  1. The material must be stored and handled in a manner consistent with the provisions set forth in this manual.
  2. The material must be prepared for application in the manner prescribed in this manual.
  3. Surfaces of the material to be coated must be prepared in the manner prescribed by the Seller.
  4. Upon installation of the material, the spill control system physical environment must be consistent with those defined in TR-NWT-000063, Issue 4.
- If during the Warranty period and under the Warranty Conditions, a defect or non-conformity is identified in the

Product and Customer notifies Seller in writing of such defect or non-conformity, and follows Seller's instructions regarding the non-conforming or defective product, Seller shall repair or replace such product without charge or provide equivalent replacement materials at no cost to the customer.

- Discoloration, but not coating chipping, flaking or other types of missing coating, of the product caused by UV light, acid exposure or other causes that do not affect performance of the material are not failures covered by this warranty.
- Payments for installation/deinstallation and potential product disposal, are the responsibility of the Customer.

Warranty Exclusions and Limitations:

- The warranty does not cover products installed in traffic areas.
- The warranty does not cover any physical damage due to nature or man which stresses the product beyond design limits.
- The Spill Control System shall be maintained in accordance with published instructions.
- The Customer shall promptly clean-up and properly dispose of any acid spill which may occur.

Seller makes no warranty with respect to defective conditions or non-conformities resulting from actions of anyone other than the Seller or its subcontractor, caused by any of the following: Modifications, misuse, neglect, accident or abuse; improper installation, repair, alteration, or maintenance; use in a manner not in accordance with Seller's specifications or failure of Customer to apply previously applicable Seller modifications warranty and corrections.

This warranty shall run only to Customer who is a direct purchaser form Seller.

THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESS AND IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. CUSTOMER'S SOLE AND EXCLUSIVE REMEDY SHALL BE SELLER'S OBLIGATION TO REPAIR, REPLACE OR CREDIT AS SET FORTH PREVIOUSLY IN THIS WARRANTY

Appendix A *Retrofit to Round Cell Battery Stands*

Notice:

These instructions are meant as a supplement to those found in Section 4. Except where noted, these steps are not intended to replace any of those found in the primary instructions.

Surface Preparation and Initial Conditions

Thoroughly clean and degrease the battery stand base(s) and inspect them for damage (cracks, holes or separation) that will require repair prior to Coating application. Also see Floor Cleaning & Preparation

Do not use etching solution on concrete floors as it unlikely seepage under the stand is unlikely; instead, perform mechanical abrasion (sanding)..

Notice:

If an acid spill had previously occurred at a Round Cell Stand, it may be necessary to remove the entire stand to clean any acid residue trapped underneath the stand prior to installation of the Acid Spill Management System.

Cable guards should not be allowed to interfere with Coating application to the battery stand base. It is safe and relatively simple to temporarily move the cable guard so that is does not disrupt the continuity of the containment area:

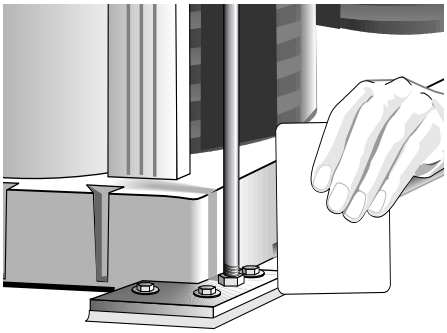
Slide the cable guard cover upward a minimum of four inches. If clearances at the top of the cable guard will not permit this, the cover may be removed entirely by pressing in at the sides and releasing it from the cable guard brackets. Set the cover aside until control system installation is complete.

Slide the bottom most cable bracket upward to allow coating application to the seams between the bases and the floor.

Barrier Installation

Use the adhesive compound and a putty knife to fill the gaps along the base of the battery stand(s) as in Figure A.2.

Fill the vertical seams in the battery stand bases with adhesive material to a minimum depth of 1/4 inch as in Figure A.3. Scrape the filled areas flush with the surface using a putty knife.



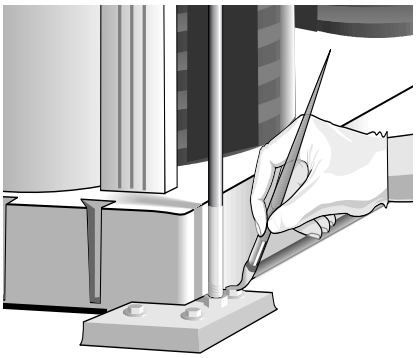


Figure A.1 - Coating Earthquake Bracing

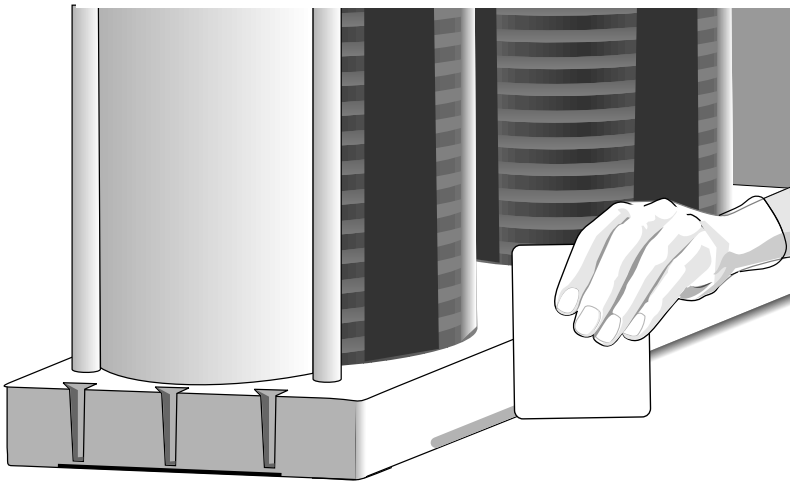


Figure A.2 - Sealing Along Base of Round Cell Stand

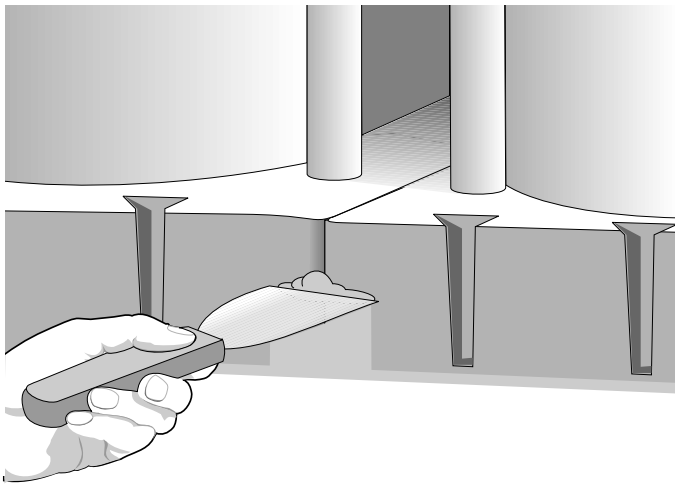


Figure A.3 - Sealing Seams Between Adjacent Stands

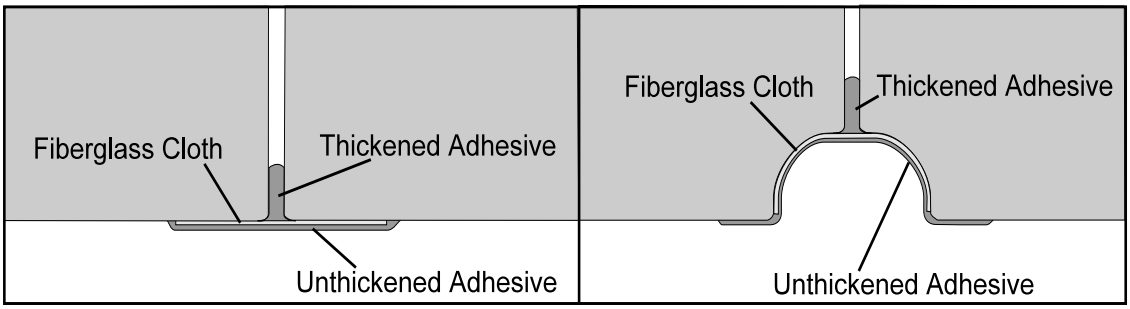


Figure A.4 - Sealing Vertical Seams in Battery Stands

Fill any defects in the battery stand base. Use a putty knife to scrape the filled areas flush with the surrounding surface.

If the battery stand is equipped with earthquake bracing, apply adhesive gel to the gap between the battery stand base and the corner and edge retainer plates. Be sure to fill all of the voids in these areas.

For each vertical seam in the battery stand, fill the seam with adhesive gel, saturate a fiberglass cloth strip with floor coating and cover the seam, then brush the seam with an additional layer of floor coating (see Figure A.4).

Coating Application

These systems include floor coating in two possible containers:

1. A 16 oz. divided plastic pouch similar to the gel adhesive or,
2. A 1 gallon kit with part A in a 1 gallon can and part B in a 1/2 gallon can.

Mix the coating in accordance with the directions in *Section 4* for the type of container used.

Use a putty knife to spread the coating within the barrier as shown in Figure A5.

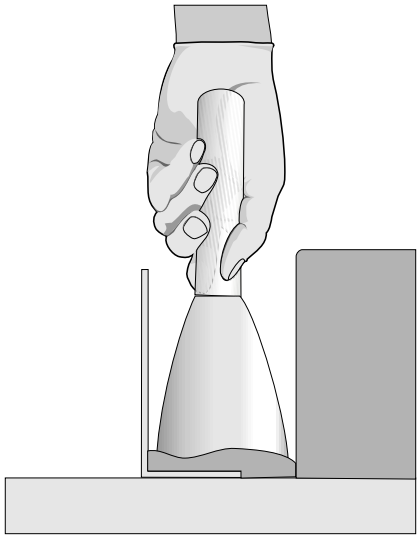


Figure A.5 - Spreading the Coating Within the Barrier

Use a brush to also coat the earthquake bracing corner and edge retainer plates and anchor bolts. This will ensure that the earthquake bracing will not be susceptible to damage during an acid spill.

Be sure that all areas where the barrier or battery stand contact the floor are completely sealed.

When inspecting the installation after applying the coating, pay particular attention to the bottom edge of the battery stand base. An irregularity in the Coating surface along this edge may mean that Coating material is seeping underneath the stand. Fill any gaps found by thickening a small portion of the adhesive gel and applying directly to the area of the gap.

Cable Guards: When Coating application and leak testing have been completed replace the cable guard bracket and move the cable guard cover back into place

Install the Nuetra-Tubes into the control system as shown in Figure A.6.

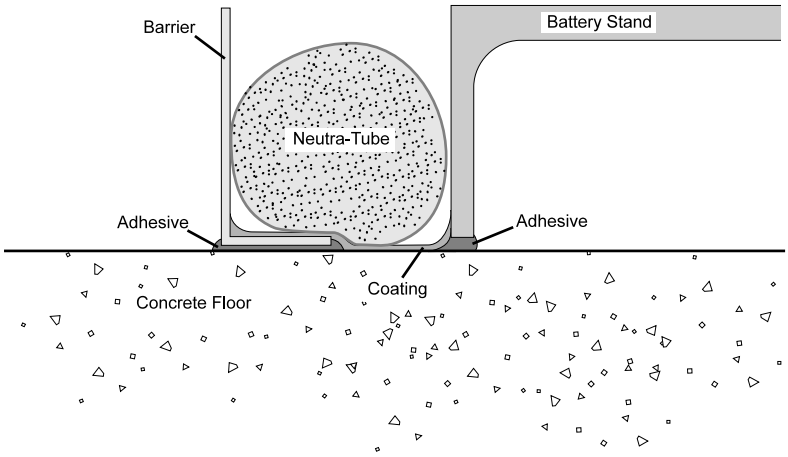


Figure A.6 - Cross Section of Control System

Appendix B *Retrofit To Metal Frame Battery Racks*

Notice:

These instructions are meant as a supplement to those found in Sections 4. Except where noted, these steps are not intended to replace any of those found in the primary instructions.

Surface Preparation and Initial Conditions

Thoroughly clean and degrease the battery stand base(s) and inspect them for damage (cracks, corrosion) that will require repair prior to Coating application. Also see Floor Cleaning & Preparations.

Barrier Installation

In facilities where a standard metal battery rack is installed, use a spreader or putty knife to seal the base of the battery rack with adhesive gel as shown in Figure B.1.

Using a brush, apply adhesive gel to the battery rack anchoring hardware as in Figure B.2.

Coating Application

Pour the coating inside the containment area under the rack. Try to allocate equal amounts of coating material between each set of rack frames. Spread the coating using a 1/4 inch v-notch spreader to obtain a uniform thickness. Figure B.3 shows coating being applied under a rack. Note that the batteries are not illustrated for reasons of clarity; batteries need NOT be removed in order to apply the coating.

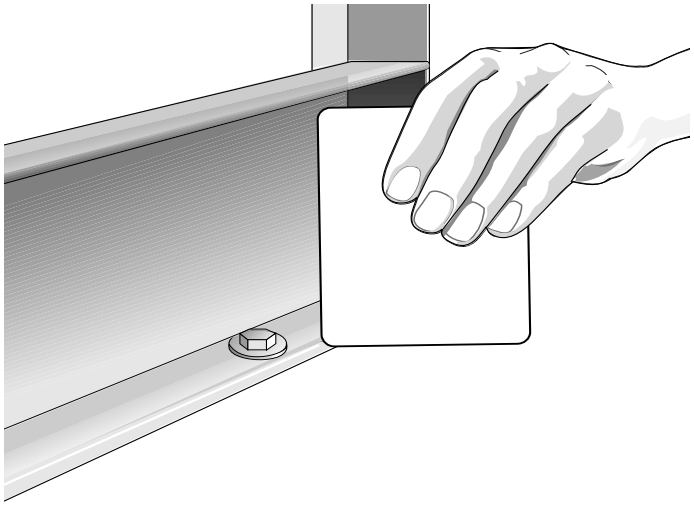


Figure B.1 - Sealing Battery Rack Base

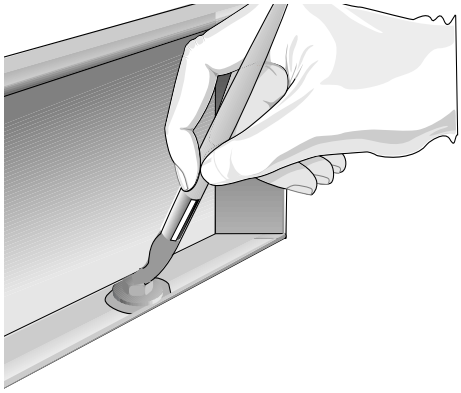


Figure B.2 - Coating Battery Rack Hardware

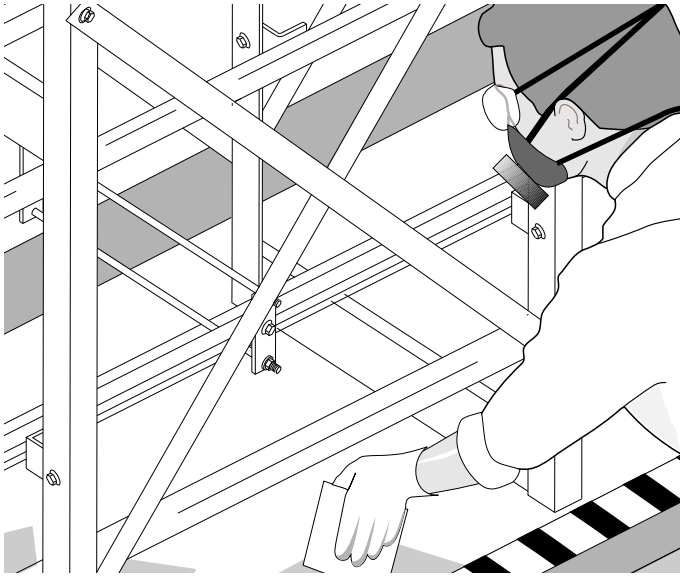


Figure B.3 - Spreading the Coating in an existing Installation

Appendix C Cable Access Barriers

Notice:

These instructions are meant as a supplement to those found in Section 4. Except where noted, these steps are not intended to replace any of those found in the primary instructions.

If the containment area includes holes in the floor for cable access, a Cable Access Barrier may be assembled around the opening using shortened Barrier Strips. A properly sized Cable Access Barrier will have a length and width at least 3 inches greater than the hole. The Cable Access Barriers is 33 by 18 inches, with adjustment in 6, 12, 15 and 18 inch increments. Size is adjustable by removing barrier strips and connectors as necessary.

The installation of the Cable Access Barrier should, where possible, coincide with the installation of the Spill Control Barrier:

Mark the position of the Cable Access Barrier on the floor with masking tape. the markings should be made on the interior of the Cable Access Barrier (which will remain un-coated).

Follow the applicable steps in Section 4.3 to adhere the Cable Access Barrier strips to the floor and to bond and bolt the Corner and Splice plates into place.

When applying the Coating to the floor, ensure that the surfaces inside the Cable Access Barrier remain free of Coating.

Observe the Cable Access Barrier closely during barrier leak testing.

Appendix D *Wall Mounted Barriers*

Notice:

These instructions are meant as a supplement to those found in Sections 4. Except where noted, these steps are not intended to replace any of those found in the primary instructions.

Wall mounted barrier systems are recommended only in cases where standard, four-sided systems will not fit (i.e. battery rack frames less than 2.5 inches from a wall). Wall mounted barrier systems are significantly more difficult to install and are more prone to leakage than four-sided systems. In a wall mounted system, one barrier piece is removed and the wall serves as part of the barrier. Certain preconditions are necessary in order to ensure the effectiveness of the system: The wall must extend the entire length of the barrier and be of either concrete, cinderblock or drywall construction. The wall must also be anchored to the floor and substantial enough to support the barrier. Choose an anchoring method suitable for the type of wall being used (i.e. toggle bolts for drywall or expansion anchors for concrete or cinderblock).

After the barrier has been assembled in place, measure and mark a spot on the wall inside the barrier enclosure 1 inch from the barrier wall and 2-3/16 inches from the floor.

Drill a hole in the marked location of the appropriate size to accommodate the anchoring device being used. See the anchor bolt instructions for the appropriate drill size.

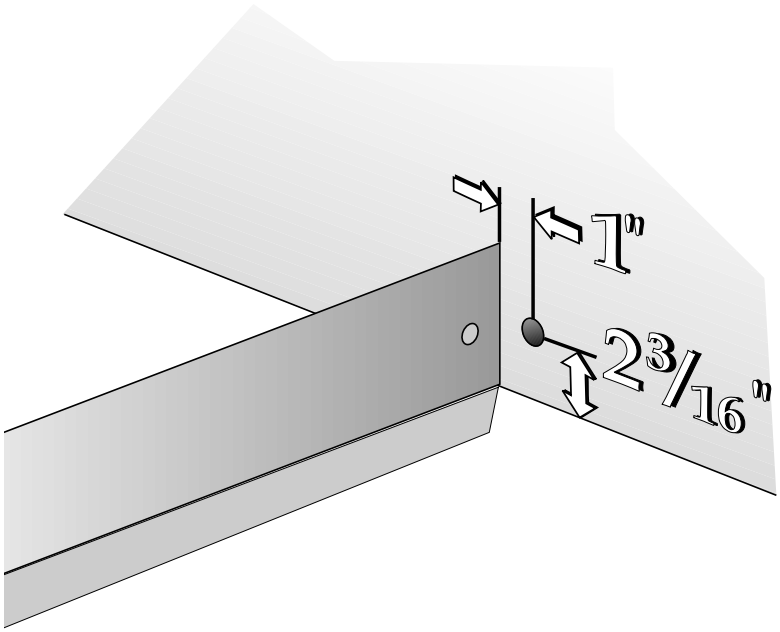


Figure D.1 - Locating Hole for Wall-Mounted System

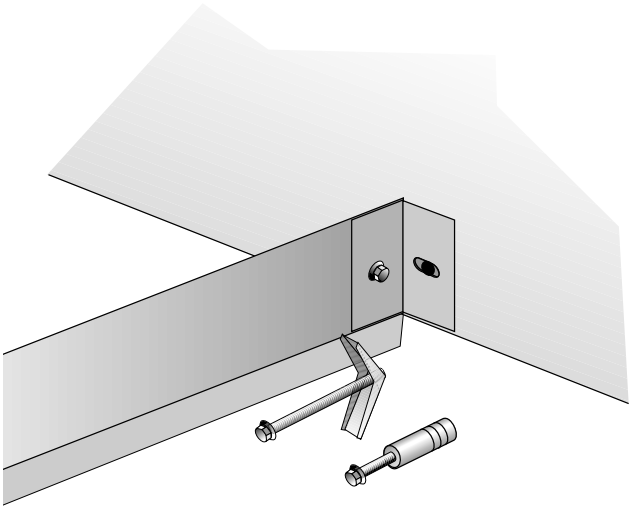


Figure D.2 - Anchoring the Wall-Mounted Bracket

Mask the wall inside the containment area above 4 inches from the floor to avoid overage when applying the Coating.

Seal the base of the wall with Adhesive using a spreader or putty knife.

Apply Adhesive to the mating surface of the wall anchor Corner Plates as shown in Figures D.1 and D.2. Bolt the Corner Plate to the barrier using the barrier hardware and then to the wall using the anchor bolts obtained earlier.

Immediately after applying the floor Coating, coat the wall within the containment area using a roller or spreader.

When the coating application has been completed, remove the masking from the wall.

Appendix E Installation Checklist for New Facility

___A. Thoroughly read Acid Spill Management System Product Manual

I. Material and Equipment Staging (page 4-1)

___A. Inventory Spill Control System materials
___B. Inventory installation tools and equipment
___C. Assemble and position barrier around battery stand location
___D. Mark piece locations on walls[1] and floors and disassemble barrier

II. Surface Preparation (page 4-4)

___A. Clean floor and walls[1] inside containment area
___B. Check surface cleanliness
___C. Etch flooring surface directly under containment area (concrete only) and neutralize
___D. Lightly sand bottom of Barrier Strips
___E. Check surface for defects
___F. Drill wall anchor holes [1]
___G. Mask walls 4 inches from floor [1]
___H. Fill floor cracks and expansion joints if necessary

III. Barrier Installation (page 4-6)

___A. Move barrier components into position
___B. Recheck barrier placement and clearances
___C. Mix first batch of Adhesive
___D. Apply Adhesive to Barrier Strips and affix them to the floor
___E. Glue and bolt the barrier corner and splice joints together
___F. Assemble Cable Access Barrier [2]
___G. Check barrier alignment and tighten hardware
___H. Coat wall inside containment area [1]
___I. Coat interior surface of all hardware
___J. Cleanup excess Adhesive with denatured alcohol and cloth

IV. Coating Application (page 4-13)

___A. Verify sufficient quantity of Coating to be applied
___B. Mix the Coating
___C. Pour and spread coating evenly over floor inside the barrier
___D. Check coating film thickness and continuity
___E. Rupture air bubbles in Coating using spike pin roller
___F. Remove masking from floor and wall [1]
___G. Cleanup excess coatings with denatured alcohol and cloth
___H. Battery stands may be installed after 24 hours, batteries may be loaded after 7 days
___I. Seal battery stand bases, frames and anchors
___J. Wait 24 hours for leak test
___K. Install Neutra-Tubes/Neutra-Mats

VI. Leak Testing and Repair - Optional (page 4-14)

___A. Fill containment area with water
___B. Inspect and observe barrier carefully, noting and marking any leaks
___C. Drain water from containment area, wipe with clean cloth, and allow to dry
___D. Mix and apply coating to touch up cracks or leaks and retest as needed

Reference Notes: The operation is not performed as described in the absence of

1 - Wall anchored barrier system
2. Cable access hole(s)

Appendix F *Installation Checklist for Round Cell Facility*

___ A. Thoroughly read Acid Spill Management System Product Manual

I. Material and Equipment Staging (page 4-2)

___ A. Inventory Spill Control System materials
___ B. Inventory installation tools and equipment
___ C. Assemble and position barrier around battery stand location
___ D. Mark piece locations on walls[1] and floors and disassemble barrier

II. Surface Preparation (page 4-4)

___ A. Clean floor and walls[1] inside containment area
___ B. Check surface cleanliness
___ C. Mechanically abrade (sand)
___ D. Lightly sand bottom of Barrier Strips
___ E. Check surface for defects
___ F. Drill wall anchor holes [1]
___ G. Mask walls 4 inches from floor [1]
___ H. Fill floor cracks and expansion joints if necessary

III. Barrier Installation (page 4-6)

___ A. Move barrier components into position
___ B. Recheck barrier placement and clearances
___ C. Mix first batch of Adhesive
___ D. Seal bases and seams of battery stand(s)
___ E. Fill holes and defects in battery stand(s)
___ F. Fill vertical seams in battery stand base(s)
___ G. Cover vertical seams in battery stand base(s) with saturated Fiberglass Cloth
___ H. Coat vertical seams in battery stand base(s) with layer of Coating
___ I. Apply Adhesive to Barrier Strips and affix them to the floor
___ J. Glue and bolt the barrier corner and splice joints together
___ K. Assemble Cable Access Barrier [2]
___ L. Check barrier alignment and tighten hardware
___ M. Coat wall inside containment area [1]
___ N. Coat interior surface of all hardware
___ O. Cleanup excess Adhesive with denatured alcohol and cloth

IV. Coating Application (page 4-13)

___ A. Verify sufficient quantity of Coating to be applied
___ B. Mix the Coating
___ C. Pour and spread coating evenly over floor inside the barrier
___ D. Check coating film thickness and continuity
___ E. Rupture air bubbles in Coating using spike pin roller
___ F. Remove masking from floor and wall [1]
___ G. Cleanup excess coatings with denatured alcohol and cloth
___ H. Wait 24 hours before leak testing
___ I. Install Neutra-Tubes

VI. Leak Testing and Repair - Optional (page 4-14)

___ A. Fill containment area with water
___ B. Inspect and observe barrier carefully, noting and marking any leaks
___ C. Drain water from containment area, wipe with clean cloth, and allow to dry
___ D. Mix and apply coating to touch up cracks or leaks and retest as needed

Reference Notes: The operation is not performed as described in the absence of

1 - Wall anchored barrier system

2. Cable access hole(s)

Appendix G Installation Checklist for Standard Facility

___ A. Thoroughly read Acid Spill Management System Product Manual

I. Material and Equipment Staging (page 4-1)

___ A. Inventory Spill Control System materials
___ B. Inventory installation tools and equipment
___ C. Assemble and position barrier around battery stand location
___ D. Mark piece locations on walls[1] and floors and disassemble barrier

II. Surface Preparation (page 4-4)

___ A. Clean floor and walls[1] inside containment area
___ B. Check surface cleanliness
___ C. Etch flooring surface directly under containment area (concrete only) and neutralize
___ D. Lightly sand bottom of Barrier Strips
___ E. Check surface for defects
___ F. Drill wall anchor holes [1]
___ G. Mask walls 4 inches from floor [1]
___ H. Fill floor cracks and expansion joints if necessary

III. Barrier Installation (page 4-6)

___ A. Move barrier components into position
___ B. Recheck barrier placement and clearances
___ C. Mix first batch of Adhesive and thicken with Thixatropic Fibers
___ D. Seal bases of battery rack(s)
___ E. Apply Adhesive to Barrier Strips and affix them to the floor
___ F. Glue and bolt the barrier corner and splice joints together
___ G. Assemble Cable Access Barrier [2]
___ H. Check barrier alignment and tighten hardware
___ I. Coat wall inside containment area [1]
___ J. Coat exposed battery rack anchoring hardware
___ K. Coat interior surface of hardware
___ L. Cleanup excess Adhesive with denatured alcohol and cloth

IV. Coating Application (page 4-13)

___ A. Verify sufficient quantity of Coating to be applied
___ B. Mix the Coating
___ C. Pour and spread coating evenly over floor inside the barrier
___ D. Check coating film thickness and continuity
___ E. Rupture air bubbles in Coating using spike pin roller
___ F. Remove masking from floor and wall [1]
___ G. Cleanup excess coatings with denatured alcohol and cloth
___ H. Wait 24 hours before leak testing
___ I. Install Neutra-Mats

VI. Leak Testing and Repair - Optional (page 4-14)

___ A. Fill containment area with water
___ B. Inspect and observe barrier carefully, noting and marking any leaks
___ C. Drain water from containment area, wipe with clean cloth, and allow to dry
___ D. Mix and apply coating to touch up cracks or leaks and retest as needed

Reference Notes: The operation is not performed as described in the absence of
1 - Wall anchored barrier system
2. Cable access hole(s)

Appendix H *Material Safety Data Sheets*

The following Pages contain the Material Safety Data Sheets for the materials used in the Acid Spill Management System.

MATERIAL SAFETY DATA SHEET

Joint Bridging Membrane (Part A) WP-93377 List 101

Section I General Information

Manufacturer:
Acran, Inc.
5316 Hwy 290W., Suite 340
Austin, TX 78735
Date Prepared:
22 January, 1996

Emergency Telephone No
(800) 424-9300
(Chemtrec)
Telephone Number for Information
(512) 892-7000

Section II Hazardous Ingredients / Identity Information

Bisphenol A Epoxy	CAS# 25068-38-6	Weight 75.77%
Bisphenol Epoxy Resin	CAS# 28064-14-4	Weight 5.03%
Alkylglycidyl Ether	CAS# 68609-97-2	Weight 12.79%
Epichlorohydrin	CAS# 106-86-8	<15ppm (TLV 2ppm)

(All ingredients in this product are listed in the T.S.C.A inventory)

Section III Physical Data

Boiling Point: Unknown
Evaporation Rate: n-Butyl Acetate
Volatiles: 0%vol. 0%wt.
V.O.C.: 0.0 lbs/gal

Vapor Density: Heavier than air
Liquid Density: Heavier than water
Weight per Gallon: 9.63 lbs
pecific Gravity: 1.15606

Section IV Fire And Explosion Hazard Data

Flammability Class: 3B
Flash Point: 310o F TCC
LEL: Unknown
UEL: Unknown

Extinguishing Media: Foam, alcohol foam, CO2 , dry chemical. Water fog may be ineffective but should be used to cool fire-exposed containers to prevent pressure build up and possible auto-ignition or explosion.

Special Firefighting Procedures: Use full protection equipment including self contained breathing apparatus (NIOSH/MSHA) for respiratory protection in fighting fires in enclosed or confined spaces to prevent breathing gases, vapors, fumes or decomposition products.

Unusual Fire & Explosion Hazards: During emergency conditions, overexposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent. Obtain medical attention.

Section V Health Hazard Data

Permissible Exposure Level: See Section II

Primary Routes of Entry: Dermal, Inhalation

Acute Exposure: Skin - Moderate Irritation Eyes - Moderate Irritation

Emergency First Aid Procedures: Eyes - Flush thoroughly with running water for 15minutes (including under eyelids), obtain medical attention. Skin - Promptly remove contaminated clothing and wash affected areas thoroughly with soap and water. If irritation occurs get medical attention. Wash contaminated clothing thoroughly before re-use. Ingestion - Call a physician immediately, only induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person. Inhalation - Remove to fresh air. If breathing is difficult, give oxygen. If necessary, get medical attention if effects persist.

Medical Conditions Prone To Aggravation By Exposure: Effects of chronic overexposure - Irritation, sensitization and dermatitis.

Section VI Reactivity Data

Stability: Stable Hazardous Polymerization: Will not occur

Incompatibility: Avoid contact with strong acids and bases in bulk.

Conditions to Avoid: Any exposure to sources of ignition.

Hazardous Decomposition Products: Carbon monoxide and unidentified organics may be formed.

Section VII Spill Or Leak Procedures

Steps To Be Taken In Case Material Is Released Or Spilled: Before attempting cleanup, refer to hazard caution information in other sections of this sheet.

Large Spills: Notify safety personnel. Eliminate potential sources of ignition. Wear appropriate respirator and protective clothing. Soak up with absorbant such as sand, clay or other suitable material. Place in non-leaking containers and seal tightly for proper disposal. Ventilate confined spaces. Minimize breathing vapors. Open all windows and doors. Minimize skin contact. Keep product out of sewers and water courses by diking and impounding. Observe precautions for volatile, combustible vapors from absorbed material.

Small Spills: Take up with absorbant material and place in non-leaking containers for proper disposal.

Waste Disposal Method: Assure conformity with applicable federal, state and local regulations.

Section VIII Special Protection Information

Respiratory Protection: Use a vapor/particulate respirator, such as NIOSH/MSHA approval #TC-23C, during and after application and until work areas are exhausted of all vapors and mist. In confined spaces use a constant flow air-line respirator such as NIOSH/MSHA approved #TC-19C.

Ventilation: Provide sufficient ventilation to keep air contaminant concentration below current applicable OSHA permissible exposure limit or ACGIH's TLV limit. No smoking or open lights.

Protective Gloves: Use chemical-resistant gloves to prevent skin contact.

Eye Protection: Use chemical splash goggles or face shield to prevent eye contact.

Other Protective Equipment: Use chemical-resistant or other protective outerwear to protect against clothing contamination and skin contact.

Section IX Special Precautions

Precautions To Be Taken In Handling, Transportation, And Storage: Store in cool, well-ventilated, fire resistant storage area. Protect containers against physical damage. Keep away from heat, flame, and strong oxidizing agents.

Do not store above 100o F. Use only with adequate ventilation. Keep containers closed when not in use. Do not breath vapor or mist. avoid contact with eyes, skin, and clothing. Do not take internally.

Other Precautions: Contact lenses pose a special hazard; soft lenses may absorb and ALL lenses concentrate irritants.

Section X Additional Regulatory Information

HMIS Hazard Ratings		Rating: 4 - Severe
Health	- 1	3 - Serious
Fire	- 0	2 - Moderate
Reactivity	- 1	1 - Slight
		0 - Minimal

Prop 65 (Carcinogen): Warning: This product contains a chemical known to the state of California to cause cancer.

Epichlorohydrin	CAS# 106-86-8	<15 PPM

This Product Safety Data Sheet is offered solely for your information, consideration and investigation. Lucent Technologies provides no warranties, either expressed or implied, and assumes no responsibility for the accuracy and completeness of the data contained herein

MATERIAL SAFETY DATA SHEET

Joint Bridging Membrane (Part B) WP-93377 List 101

Section I General Information

Manufacturer:
Acran, Inc.
5316 Hwy 290W., Suite 340
Austin, TX 78735
Date Prepared:
22 January, 1996

Emergency Telephone No
(800) 424-9300
(Chemtrec)
Telephone Number for Information
(512) 892-7000

Section II Hazardous Ingredients / Identity Information

Epoxy Curing Agent Weight 100%
(All ingredients in this product are listed in the T.S.C.A inventory)

Section III Physical Data

Boiling Point: Unknown
Evaporation Rate: n-Butyl Acetate
Volatiles: 0%vol. 0%wt.
V.O.C.: 0.0 lbs/gal

Vapor Density: Heavier than air
Liquid Density: Heavier than water
Weight per Gallon: 8.17 lbs
Specific Gravity: 0.98079

Section IV Fire And Explosion Hazard Data

Flammability Class: 3B Flash Point: 219^{o} F TCC
LEL: Unknown UEL: Unknown

Extinguishing Media: Foam, CO2 , dry chemical. Water fog may be ineffective but should be used to cool fire-exposed containers to prevent pressure build up and possible auto-ignition or explosion.

Special Firefighting Procedures: Use full protection equipment including self contained breathing apparatus (NIOSH/MSHA) for respiratory protection in fighting fires in enclosed or confined spaces to prevent breathing gases, vapors, fumes or decomposition products.

Unusual Fire & Explosion Hazards: During emergency conditions, overexposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent. Obtain medical attention.

Section V Health Hazard Data

Permissible Exposure Level: See Section II

Primary Routes of Entry: Dermal, Inhalation

Acute Exposure: Skin - Corrosive. Expected to cause severe skin damage with burns. Eyes - DANGER! Causes severe eye irritation or burns. Do not get product in eyes. Respiratory System - CAUTION!

Excessive inhalation can cause respiratory irritation, dizziness, nausea, headache, unconsciousness, or asphyxiation.

Emergency First Aid Procedures: Eyes - Flush thoroughly with running water for 15minutes (including under eyelids), obtain immediate medical attention. Skin - If drenched, remove contaminated clothing under safe conditions and flush exposed areas with water. Get immediate medical attention. Wash contaminated clothing thoroughly before re-use. Ingestion - Call a physician immediately, only induce vomiting at the instruction of a physician. Give a large quantity of milk or water. Never give anything by mouth to an unconscious person. Inhalation - If overcome by vapor, remove to an area free from risk of further exposure and call a physician immediately. Administer oxygen or artificial respiration as needed.

Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.

Medical Conditions Prone To Aggravation By Exposure: None

Section VI Reactivity Data

Stability: Stable Hazardous Polymerization: Will not occur

Incompatibility: Oxidizers

Conditions to Avoid:

Hazardous Decomposition Products: Carbon monoxide and unidentified organics may be formed.

Section VII Spill Or Leak Procedures

Steps To Be Taken In Case Material Is Released Or Spilled: Before attempting cleanup, refer to hazard caution information in other sections of this sheet.

Large Spills: Notify safety personnel. Wear appropriate respirator and protective clothing. Soak up with absorbant such as sand, clay or other suitable material. Place in non-leaking containers and seal tightly for proper disposal. Ventilate confined spaces. Minimize breathing vapors. Open all windows and doors. Minimize skin contact. Keep product out of sewers and water courses by diking and impounding. Flush area with dilute (5%) acetic acid.

Small Spills: Take up with absorbant material and place in non-leaking containers for proper disposal.

Waste Disposal Method: Ensure conformity with applicable federal, state and local regulations.

Section VIII Special Protection Information

Respiratory Protection: Use a vapor/particulate respirator, such as NIOSH/MSHA approval #TC-23C, during and after application and until work areas are exhausted of all vapors and mist. In confined spaces use a constant flow air-line respirator such as NIOSH/MSHA approved #TC-19C.

Ventilation: Provide sufficient ventilation to keep air contaminant concentration below current applicable OSHA permissible exposure limit or ACGIH's TLV limit.

Protective Gloves: Use chemical-resistant gloves to prevent skin contact.

Eye Protection: Use chemical splash goggles or face shield to prevent eye contact.

Other Protective Equipment: Use chemical-resistant or other protective outerwear to protect against clothing contamination and skin contact.

Section IX Special Precautions

Precautions To Be Taken In Handling, Transportation, And Storage: Protect containers against physical damage. Keep away from heat, flame, and strong oxidizing agents. Do not store above 100^{o} F. Use only with adequate ventilation. Keep containers closed when not in use. Do not breath vapor or mist. avoid contact with eyes, skin, and clothing. Do not take internally.

Other Precautions: Contact lenses pose a special hazard; soft lenses may absorb and ALL lenses concentrate irritants.

Section X Additional Regulatory Information

HMIS Hazard Ratings		Rating: 4 - Severe
Health	- 3	3 - Serious
Fire	- 1	2 - Moderate
Reactivity	- 0	1 - Slight
		0 - Minimal

This Product Safety Data Sheet is offered solely for your information, consideration and investigation. Lucent Technologies provides no warranties, either expressed or implied, and assumes no responsibility for the accuracy and completeness of the data contained herein

MATERIAL SAFETY DATA SHEET

High Strength Novolac Epoxy Coating (Part A) WP-93377 List 111 and 112

Section I General Information

Manufacturer:
Acran, Inc.
5316 Hwy 290W., Suite 340
Austin, TX 78735
Date Prepared:
16 January, 1996

Emergency Telephone No
(800) 424-9300
(Chemtrec)
Telephone Number for Information
(512) 892-7000

Section II Hazardous Ingredients / Identity Information

Bisphenol Epoxy Resin	CAS# Trade Secret	Weight >50%
Bisphenol Epoxy Resin	CAS# 28064-14-4	Weight 41.76%
Glycidyl Ether	CAS# 30499-70-8	Weight 4.73%
Epichlorohydrin	CAS# 106-86-8	<15ppm (TLV 2ppm)

(All ingredients in this product are listed in the T.S.C.A. inventory.)

Section III Physical Data

Boiling Point: Unknown
Evaporation Rate: n-Butyl Acetate
Volatiles: 0%vol. 0%wt.
V.O.C.: 0.0 lbs/gal

Vapor Density: Heavier than air
Liquid Density: Heavier than water
Weight per Gallon: 10.30 lbs
Specific Gravity: 1.23649

Section IV Fire And Explosion Hazard Data

Flammability Class: 3B
Flash Point: 230o F TCC
LEL: Unknown
UEL: Unknown

Extinguishing Media: Foam, alcohol foam, CO2 , dry chemical. Water fog may be ineffective but should be used to cool fire-exposed containers to prevent pressure build up and possible auto-ignition or explosion.

Special Firefighting Procedures: Use full protection equipment including self contained breathing apparatus (NIOSH/MSHA) for respiratory protection in fighting fires in enclosed or confined spaces to prevent breathing gases, vapors, fumes or decomposition products.

Unusual Fire & Explosion Hazards: During emergency conditions, overexposure to decomposition products may cause a gealth hazard. Symptoms may not be immediately apparent. Obtain medical attention.

Section V Health Hazard Data

Permissible Exposure Level: See Section II

Primary Routes of Entry: Dermal, Inhalation

Acute Exposure: Skin - Moderate Irritation (rabbits)Eyes - Moderate Irritation

Emergency First Aid Procedures: Eyes - Flush thoroughly with running water for 15minutes (including under eyelids), obtain medical attention. Skin - Promptly remove contaminated clothing and wash affected areas thoroughly with soap and water. If irritation occurs get medical attention. Wash contaminated clothing thoroughly before re-use. Ingestion - Call a physician immediately, only induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person. Inhalation - Remove to fresh air. If breathing is difficult, give oxygen. Get medical attention if effects persist.

Medical Conditions Prone To Aggravation By Exposure: Effects of chronic overexposure - Irritation, sensitization and dermatitis.

Section VI Reactivity Data

Stability: Stable Hazardous Polymerization: Will not occur

Incompatibility: Avoid contact with strong acids and bases in bulk.

Conditions to Avoid: Any exposure to sources of ignition.

Hazardous Decomposition Products: Carbon monoxide and unidentified organics may be formed

Section VII Spill Or Leak Procedures

Steps To Be Taken In Case Material Is Released Or Spilled: Before attempting cleanup, refer to hazard caution information in other sections of this sheet.

Large Spills: Notify safety personnel. Eliminate potential sources of ignition. Wear appropriate respirator and protective clothing. Soak up with absorbant such as sand, clay or other suitable material. Place in non-leaking containers and seal tightly for proper disposal. Ventilate confined spaces. Minimize breathing vapors. Open all windows and doors. Minimize skin contact. Keep product out of sewers and water courses by diking and impounding. Observe precautions for volatile, combustible vapors from absorbed material.

Small Spills: Take up with absorbant material and place in non-leaking containers for proper disposal.

Waste Disposal Method: Ensure conformity with applicable federal, state and local regulations.

Section VIII Special Protection Information

Respiratory Protection: Use a vapor/particulate respirator, such as NIOSH/MSHA approval #TC-23C, during and after application and until work areas are exhausted of all vapors and mist. In confined spaces use a constant flow air-line respirator such as NIOSH/MSHA approved #TC-19C.

Ventilation: Provide sufficient ventilation to keep air contaminant concentration below current applicable OSHA permissible exposure limit or ACGIH's TLV limit. No smoking or open lights.

Protective Gloves: Use chemical-resistant gloves to prevent skin contact.

Eye Protection: Use chemical splash goggles or face shield to prevent eye contact.

Other Protective Equipment: Use chemical-resistant or other protective outerwear to protect against clothing contamination and skin contact.

Section IX Special Precautions

Precautions To Be Taken In Handling, Transportation, And Storage: Store in cool, well-ventilated, fire resistant storage area. Protect containers against physical damage. Keep away from heat, flame, and strong oxidizing agents. Do not store above 100o F. Use only with adequate ventilation. Keep containers closed when not in use. Do not breath vapor or mist. avoid contact with eyes, skin, and clothing. Do not take internally.

Other Precautions: Contact lenses pose a special hazard; soft lenses may absorb and ALL lenses concentrate irritants.

Section X Additional Regulatory Information

HMIS Hazard Ratings		Rating: 4 - Severe
Health	- 3	3 - Serious
Fire	- 1	2 - Moderate
Reactivity	- 0	1 - Slight
		0 - Minimal

Prop 65 (Carcinogen): Warning: This product contains a chemical known to the state of California to cause cancer.

Epichlorohydrin CAS# 106-86-8<15 PPM

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MATERIAL SAFETY DATA SHEET

High Strength Novolac Epoxy Coating (Part B) WP-93377 List 111 and 112

Section I General Information

Manufacturer:
Acran, Inc.
5316 Hwy 290W., Suite 340
Austin, TX 78735
Date Prepared:
8 October, 1995

Emergency Telephone No
(800) 424-9300
(Chemtrec)
Telephone Number for Information
(512) 892-7000

Section II Hazardous Ingredients / Identity Information

Cycloaliphatic Amine Weight 92.94%
Benzene - 1, 3 - Dimethanamine CAS #1477-55-0 Weight 2.12%
Exposure limit for skin contact: STEL = 0.1 mp/F3 0.1 mp/F3
(All ingredients in this product are listed in the T.S.C.A inventory)

Section III Physical Data

Boiling Point: Unknown
Evaporation Rate: n-Butyl Acetate
Volatiles: 0%vol. 0%wt.
V.O.C.: 0.0 lbs/gal

Vapor Density: Heavier than air
Liquid Density: Heavier than water
Weight per Gallon: 8.77 lbs
Specific Gravity: 1.05282

Section IV Fire And Explosion Hazard Data

Flammability Class: 3B Flash Point: 219^{O} F TCC
LEL: Unknown UEL: 0.00%

Extinguishing Media: Foam, CO2 , dry chemical. Water fog may be ineffective but should be used to cool fire-exposed containers to prevent pressure build up and possible auto-ignition or explosion.

Special Firefighting Procedures: Use full protection equipment including self contained breathing apparatus (NIOSH/MSHA) approved for respiratory protection in fighting fires in enclosed or confined spaces to prevent breathing gases, vapors, fumes or decomposition products.

Unusual Fire & Explosion Hazards: During emergency conditions, overexposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent. Obtain medical attention.

Section V Health Hazard Data

Permissible Exposure Level: See Section II
Primary Routes of Entry: Dermal, Inhalation

Acute Exposure: Skin - Corrosive. Expected to cause severe skin damage with burns. Eyes - DANGER! Causes severe eye irritation or burns. Do not get product in eyes. Respiratory System - CAUTION! Excessive inhalation can cause respiratory irritation, dizziness, nausea, headache, unconsciousness, or asphyxiation.

Emergency First Aid Procedures: Eyes - Flush thoroughly with running water for 15minutes (including under eyelids), obtain immediate medical attention. Skin - If drenched, remove contaminated clothing under safe conditions and flush exposed areas with water. Get immediate medical attention. Wash contaminated clothing thoroughly before re-use. Ingestion - Call a physician immediately, only induce vomiting at the instruction of a physician. Give a large quantity of milk or water. Never give anything by mouth to an unconscious person. Inhalation - If overcome by vapor, remove to an area free from risk of further exposure and call a physician immediately. Administer oxygen or artificial respiration as needed.

Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.

Medical Conditions Prone To Aggravation By Exposure: None

Section VI Reactivity Data

Stability: Stable Hazardous
Polymerization: Will not occur

Incompatibility: Oxidizers

Conditions to Avoid:

Hazardous Decomposition Products: Carbon monoxide and unidentified organics may be formed.

Section VII Spill Or Leak Procedures

Steps To Be Taken In Case Material Is Released Or Spilled: Before attempting cleanup, refer to hazard caution information in other sections of this sheet.

Large Spills: Notify safety personnel. Wear appropriate respirator and protective clothing. Soak up with absorbant such as sand, clay or other suitable material. Place in non-leaking containers and seal tightly for proper disposal. Ventilate confined spaces. Minimize breathing vapors. Open all windows and doors. Minimize skin contact. Keep product out of sewers and water courses by diking and impounding. Flush area with dilute (5%) acetic acid.

Small Spills: Take up with absorbant material and place in non-leaking containers for proper disposal.

Waste Disposal Method: Ensure conformity with applicable federal, state and local regulations.

Section VIII Special Protection Information

Respiratory Protection: Use a vapor/particulate respirator, such as NIOSH/MSHA approval #TC-23C, during and after application and until work areas are exhausted of all vapors and mist. In confined spaces use a constant flow air-line respirator such as NIOSH/MSHA approved #TC-19C.

Ventilation: Provide sufficient ventilation to keep air contaminant concentration below current applicable OSHA permissible exposure limit or ACGIH's TLV limit.

Protective Gloves: Use chemical-resistant gloves to prevent skin contact.

Eye Protection: Use chemical splash goggles or face shield to prevent eye contact.

Other Protective Equipment: Use chemical-resistant or other protective outerwear to protect against clothing contamination and skin contact.

Section IX Special Precautions

Precautions To Be Taken In Handling, Transportation, And Storage: Protect containers against physical damage. Keep away from heat, flame, and strong oxidizing agents. Do not store above 100^{o} F. Use only with adequate ventilation. Keep containers closed when not in use. Do not breath vapor or mist. avoid contact with eyes, skin, and clothing. Do not take internally.

Other Precautions: Contact lenses pose a special hazard; soft lenses may absorb and ALL lenses concentrate irritants.

Section X Additional Regulatory Information

HMIS Hazard Ratings		Rating:	4 - Severe
Health	- 2		3 - Serious
Fire	- 1		2 - Moderate
Reactivity	- 0		1 - Slight
			0 - Minimal

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MATERIAL SAFETY DATA SHEET

Neutra-Tube/Neutra-Mat WP-93377 List 120, 130

Section I General Information

Manufacturer:
Acran, Inc.
5316 Hwy 290W., Suite 340
Austin, TX 78735
Date Prepared:
13 December, 1995

Emergency Telephone No
(800) 424-9300
(Chemtrec)
Telephone Number for Information
(512) 892-7000

Section II Hazardous Ingredients / Identity Information

Name: Neutralizer/Absorber CAS #: Trade Secret Percentage: >99.8
This product contains no hazardous ingredients- considered nuisance dust
OSHA PEL: 15mg/M3 total dust, 5mg/M3 total dust
ACGIH TLV: 10mg/M3 total dust

Section III Physical Data

Boiling Point: N/A
Melting Point: N/A
Volatiles: 0%vol. 0%wt.
Specific Gravity: 2.5
Solubility: 3.5% wt in water.

Vapor Density: N/A
Liquid Density: N/A
Evaporation Rate: N/A

Appearance & Odor: Pillow containing a light gray powder. Oderless.

Section IV Fire And Explosion Hazard Data

Flash Point: Non-flammable LEL: None UEL: None
Extinguishing Media: Water,
Special Firefighting Procedures: If extremely large quantities of product are involved, significant levels of CO2 may be generated making necessary the use of a self contained breathing apparatus (CO2 is an asphyxiant at levels over 5%).
Unusual Fire & Explosion Hazards: None

Section V Health Hazard Data

Acute and Chronic Effects of Overexposure:
Eye Contact: Not an eye irritant per 16 CFR 1500.42 eye-rbt 100 Mg. RNS MLD
Skin Contact: Not a skin irritant per 16 CFR1500.41. Not toxic per CFR 1500.42. Irritant dose: Human skin 30mg/3days intermittant - Mild irritation
Skin Absorption: Not expected to be absorbed through skin. In case of contact, wash skin with soap and water.
Inhalation: Nusiance dust can aggravate chronic bronchial difficulties.

Ingestion: Non-toxic per 16 CFR 1500.3. Excessive oral doses may produce gastrointestinal disturbance, alkalosis.

Section VI Reactivity Data

Stability: Stable Hazardous
Polymerization: Will not occur

Conditions to avoid: Exceessive heat, HF acid, magnesium with hydrogen

Hazardous Decomposition Products: Combustion byproducts may be CO, NOx, Heating may release dangerous levels of CO2 gas.

Section VII Spill Or Leak Procedures

Steps To Be Taken In Case Material Is Released Or Spilled: Not classified as hazardous. Scoop up into clean container. If bags are torn or damaged, avoid breathing dust.

Waste Disposal Method: If unused, safe for landfill disposal (40 CFR Part 261). After absorption of hazardous or toxic liquid, dispose of in accordance with applicable federal, state and local regulations.

Section VIII Special Protection Information

Respiratory Protection: Dust mask should be used if dust levels exceed 10mg/M3

Ventilation: No dust should be produced in normal usage. If dust is created during handling, keep dust levels below 10 mg/M3

Local Exhaust: See above Special: N/A

Mechanical (General): See above Other: N/A

Skin Protection: Gloves and labcoat, apron or coveralls

Eye Protection: Use goggles or safety glasses to avoid irritation.

Work/hygenic practices: Establish good personal hygiene and work practices. Always wash hands and face before eating, drinking or smoking.

Section IX Special Precautions

Precautions To Be Taken In Handling, Transportation, And Storage: Store in a dry place to protect product from loss of performance. Handle with care not to puncture bags.

Other Precautions: None

Section X Additional Regulatory Information

Product not regulated by the DOT

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MATERIAL SAFETY DATA SHEET

Flexible Novolac Epoxy (Part A) WP-93377 List 6 and 7

Section I General Information

Manufacturer:
Acran, Inc.
5316 Hwy 290W., Suite 340
Austin, TX 78735
Date Prepared:
16 January, 1996

Emergency Telephone No
(800) 424-9300
(Chemtrec)
Telephone Number for Information
(512) 892-7000

Section II Hazardous Ingredients / Identity Information

Bisphenol Epoxy Resin	CAS# 28064-14-4	Weight 81.45%
Glycidyl Ether	CAS# 30499-70-8	Weight 4.73%
Glycidyl Ether	CAS# 68609-96-1	Weight 4.73%
Epichlorohydrin	CAS# 106-86-8	<15ppm (TLV 2ppm)

(All ingredients in this product are listed in the T.S.C.A inventory)

Section III Physical Data

Boiling Point: Unknown
Evaporation Rate: n-Butyl Acetate
Volatiles: 0%vol. 0%wt.
V.O.C.: 0.0 lbs/gal

Vapor Density: Heavier than air
Liquid Density: Heavier than water
Weight per Gallon: 10.24 lbs
Specific Gravity: 1.22929

Section IV Fire And Explosion Hazard Data

Flammability Class: 3B
Flash Point: 200^{O} F TCC
LEL: Unknown
UEL: Unknown

Extinguishing Media: Foam, alcohol foam, CO2 , dry chemical. Water fog may be ineffective but should be used to cool fire-exposed containers to prevent pressure build up and possible auto-ignition or explosion.

Special Firefighting Procedures: Use full protection equipment including self contained breathing apparatus (NIOSH/MSHA) for respiratory protection in fighting fires in enclosed or confined spaces to prevent breathing gases, vapors, fumes or decomposition products.

Unusual Fire & Explosion Hazards: During emergency conditions, overexposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent. Obtain medical attention.

Section V Health Hazard Data

Permissible Exposure Level: See Section II

Primary Routes of Entry: Dermal, Inhalation

Acute Exposure: Skin - Moderate Irritation Eyes - Moderate Irritation

Emergency First Aid Procedures: Eyes - Flush thoroughly with running water for 15 minutes (including under eyelids), obtain medical attention. Skin - Promptly remove contaminated clothing and wash affected areas thoroughly with soap and water. If irritation occurs get medical attention. Wash contaminated clothing thoroughly before re-use. Ingestion - Call a physician immediately, only induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person. Inhalation - Remove to fresh air. If breathing is difficult, give oxygen. If necessary, get medical attention if effects persist.

Medical Conditions Prone To Aggravation By Exposure: Effects of chronic overexposure - Irritation, sensitization and dermatitis.

Section VI Reactivity Data

Stability: Stable Hazardous Polymerization: Will not occur

Incompatibility: Avoid contact with strong acids and bases in bulk.

Conditions to Avoid: Any exposure to sources of ignition.

Hazardous Decomposition Products: Carbon monoxide and unidentified organics may be formed.

Section VII Spill Or Leak Procedures

Steps To Be Taken In Case Material Is Released Or Spilled: Before attempting cleanup, refer to hazard caution information in other sections of this sheet.

Large Spills: Notify safety personnel. Eliminate potential sources of ignition. Wear appropriate respirator and protective clothing. Soak up with absorbant such as sand, clay or other suitable material. Place in non-leaking containers and seal tightly for proper disposal. Ventilate confined spaces. Minimize breathing vapors. Open all windows and doors. Minimize skin contact. Keep product out of sewers and water courses by diking and impounding. Observe precautions for volatile, combustible vapors from absorbed material.

Small Spills: Take up with absorbant material and place in non-leaking containers for proper disposal.

Waste Disposal Method: Assure conformity with applicable federal, state and local regulations

Section VIII Special Protection Information

Respiratory Protection: Use a vapor/particulate respirator, such as NIOSH/MSHA approval #TC-23C, during and after application and until work areas are exhausted of all vapors and mist. In confined spaces use a constant flow air-line respirator such as NIOSH/MSHA approved #TC-19C.

Ventilation: Provide sufficient ventilation to keep air contaminant concentration below current applicable OSHA permissible exposure limit or ACGIH's TLV limit. No smoking or open lights.

Protective Gloves: Use chemical-resistant gloves to prevent skin contact.

Eye Protection: Use chemical splash goggles or face shield to prevent eye contact.

Other Protective Equipment: Use chemical-resistant or other protective outerwear to protect against clothing contamination and skin contact.

Section IX Special Precautions

Precautions To Be Taken In Handling, Transportation, And Storage: Store in cool, well-ventilated, fire resistant storage area. Protect containers against physical damage. Keep away from heat, flame, and strong oxidizing agents.

Do not store above 100^{o} F. Use only with adequate ventilation. Keep containers closed when not in use. Do not breath vapor or mist. avoid contact with eyes, skin, and clothing. Do not take internally.

Other Precautions: Contact lenses pose a special hazard; soft lenses may absorb and ALL lenses concentrate irritants.

Section X Additional Regulatory Information

Prop 65 (Carcinogen): Warning: This product contains a chemical known to the state of California to cause cancer.

Epichlorohydrin CAS# 106-86-8<15 PPM

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MATERIAL SAFETY DATA SHEET

Flexible Novolac Epoxy (Part B) WP-93377 List 6 and 7

Section I General Information

Manufacturer:
Acran, Inc.
5316 Hwy 290W., Suite 340
Austin, TX 78735
Date Prepared:
22 September, 1995

Emergency Telephone No
(800) 424-9300
(Chemtrec)
Telephone Number for Information
(512) 892-7000

Section II Hazardous Ingredients / Identity Information

Cycloaliphatic Amine Weight 100%
(All ingredients in this product are listed in the T.S.C.A inventory)

Section III Physical Data

Boiling Point: Unknown
Evaporation Rate: n-Butyl Acetate
Volatiles: 0%vol. 0%wt.
V.O.C.: 0.0 lbs/gal

Vapor Density: Heavier than air
Liquid Density: Heavier than water
Weight per Gallon: 8.80 lbs
Specific Gravity: 1.05642

Section IV Fire And Explosion Hazard Data

Flammability Class: 3B Flash Point: 219o F TCC
LEL: Unknown UEL: Unknown

Extinguishing Media: Foam, CO2 , dry chemical. Water fog may be ineffective but should be used to cool fire-exposed containers to prevent pressure build up and possible auto-ignition or explosion.

Special Firefighting Procedures: Use full protection equipment including self contained breathing apparatus (NIOSH/MSHA) for respiratory protection in fighting fires in enclosed or confined spaces to prevent breathing gases, vapors, fumes or decomposition products.

Unusual Fire & Explosion Hazards: During emergency conditions, overexposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent. Obtain medical attention.

Section V Health Hazard Data

Permissible Exposure Level: See Section II

Primary Routes of Entry: Dermal, Inhalation

Acute Exposure: Skin - Corrosive. Expected to cause severe skin damage with burns. Eyes - DANGER! Causes severe eye irritation or burns. Do not get product in eyes. Respiratory System - CAUTION!

Excessive inhalation can cause respiratory irritation, dizziness, nausea, headache, unconsciousness, or asphyxiation.

Emergency First Aid Procedures: Eyes - Flush thoroughly with running water for 15minutes (including under eyelids), obtain immediate medical attention. Skin - If drenched, remove contaminated clothing under safe conditions and flush exposed areas with water. Get immediate medical attention. Wash contaminated clothing thoroughly before re-use. Ingestion - Call a physician immediately, only induce vomiting at the instruction of a physician. Give a large quantity of milk or water. Never give anything by mouth to an unconscious person. Inhalation - If overcome by vapor, remove to an area free from risk of further exposure and call a physician immediately. Administer oxygen or artificial respiration as needed.

Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.

Medical Conditions Prone To Aggravation By Exposure: None

Section VI Reactivity Data

Stability: Stable Hazardous Polymerization: Will not occur

Incompatibility: Oxidizers

Conditions to Avoid:

Hazardous Decomposition Products: Carbon monoxide and unidentified organics may be formed.

Section VII Spill Or Leak Procedures

Steps To Be Taken In Case Material Is Released Or Spilled: Before attempting cleanup, refer to hazard caution information in other sections of this sheet.

Large Spills: Notify safety personnel. Wear appropriate respirator and protective clothing. Soak up with absorbant such as sand, clay or other suitable material. Place in non-leaking containers and seal tightly for proper disposal. Ventilate confined spaces. Minimize breathing vapors. Open all windows and doors. Minimize skin contact. Keep product out of sewers and water courses by diking and impounding. Flush area with dilute (5%) acetic acid.

Small Spills: Take up with absorbant material and place in non-leaking containers for proper disposal.

Waste Disposal Method: Ensure conformity with applicable federal, state and local regulations.

Section VIII Special Protection Information

Respiratory Protection: Use a vapor/particulate respirator, such as NIOSH/MSHA approval #TC-23C, during and after application and until work areas are exhausted of all vapors and mist. In confined spaces use a constant flow air-line respirator such as NIOSH/MSHA approved #TC-19C.

Ventilation: Provide sufficient ventilation to keep air contaminant concentration below current applicable OSHA permissible exposure limit or ACGIH's TLV limit.

Protective Gloves: Use chemical-resistant gloves to prevent skin contact.

Eye Protection: Use chemical splash goggles or face shield to prevent eye contact.

Other Protective Equipment: Use chemical-resistant or other protective outerwear to protect against clothing contamination and skin contact.

Section IX Special Precautions

Precautions To Be Taken In Handling, Transportation, And Storage: Protect containers against physical damage. Keep away from heat, flame, and strong oxidizing agents. Do not store above 100o F. Use only with adequate ventilation. Keep containers closed when not in use. Do not breath vapor or mist. avoid contact with eyes, skin, and clothing. Do not take internally.

Other Precautions: Contact lenses pose a special hazard; soft lenses may absorb and ALL lenses concentrate irritants.

Section X Additional Regulatory Information

HMIS Hazard Ratings		Rating:	4 - Severe
Health	- 2		3 - Serious
Fire	- 1		2 - Moderate
Reactivity	- 0		1 - Slight
			0 - Minimal

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Material Safety Data Sheet (MSDS)

Acid Etching Solution

Section I Product and Preparation Information

Manufacturer:
RUST-OLEUM CORPORATION
11 Hawthorn Parkway
Vernon Hills, IL 60061

Emergency and Information Telephone:
(708) 367-7700

PRODUCT CLASS; Acid Solution
MANUFACTURERS CODE: 108
TRADE NAME: Cleaning and Etching Solution
DATE OF PREPARATION: December 5, 1993 (rwb)

SECTION II HAZARDOUS INGREDIENTS

	EXPOSURE LIMITS				
INGREDIENT/CAS NO	WT %	ACGIH-TLV	OSHA-PEL	LEL	mmHg@20C
Phosphoric acid/7664-38-2	35%*	1mg/m3	1mg/m3	NA	8.2

*Nearest 5%
NE-not established NA-not applicable

SECTION III PHYSICAL DATA

Boiling range: 212-400 F (100-205 C)
Evaporation Rate (Ether=1): Slower
Vapor density: Heavier than air
% Volatile (by volume): 76%
Wt/gal: 9.5 lbs
pH: 1.0 - 2.0

SECTION IV FIRE AND EXPLOSION HAZARDS

Flammability classification: Non-flammable
Flashpoint: NA
DOT Classification: Class 8 Corrosive Pg III
Extinguishing Media: Not Applicable
Special Fire Fighting Procedures:
Water may be used to cool closed containers to prevent build-up of steam>
Unusual Fire and Explosion Hazards:
Closed containers may explode when exposed to extreme heat due to build-up of steam.

SECTION V HEALTH HAZARD DATA

Effect of Overexposure:
Acute (Inhalation):
Breathing mists can cause damage to nasal and respiratory passages.
Acute (skin or Eye Contact):
Direct contact may cause eye and skin burns.
Ingestion:
Swallowing will result in severe damage to mucous membranes.

Chronic:

None recognized

Emergency and First Aid Procedures:

Fumes:

Remove from exposure.

Spray (eyes):

Flush immediately with large amounts of water for at least 15 minutes. Notify a physician.

Splash (skin):

Wash affected area with soap and water, remove contaminated clothing.

Ingestion:

DO NOT induce vomiting. Dilute with water and give milk of magnesia.

DO NOT give anything by mouth to an unconscious person. Notify a physician.

SECTION VI REACTIVITY DATA

Stability: Stable

Incompatible: Strong alkalis

Hazardous Decomposition Products: None

Hazardous Polymerization: Will not Occur.

SECTION VII SPILL OR LEAK PROCEDURES

Release or Spill Procedures:

Cover spill with Sodium Bicarbonate (baking soda) to neutralize it.

Mix and add water to form a slurry. Scoop up slurry and wash area with Sodium Bicarbonate solution

Waste Disposal Method:

Dispose of according to local, state and federal regulations.

SECTION VIII SPECIAL PROTECTION INFORMATION

Respiratory Protection:

Use a NIOSH approved mechanical filter respirator to remove solid are borne particles of overspray during spray application.

Eye Protection:

Use safety eyewear designed to protect against splash of liquids.

Other Protective Equipment:

Use impervious gloves to prevent skin contact.

Ventilation:

Provide general dilution or local exhaust ventilation in volume and pattern to keep TLV of hazardous ingredients below permissible limits.

SECTION IX SPECIAL PRECAUTIONS AND REGULATORY ISSUES

Handling/Storage Precautions:

Non-flammable. See OSHA 1910.106. KEEP FROM FREEZING. Do not take internally.

Other Regulations:

Pennsylvania/New Jersey Right-To-Know laws- Other ingredients in 1

This product is non-hazardous; and considered trade secrets under these regulations.

CALIFORNIA PROPOSITION 65 STATEMENT:

This product is not known to contain any chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

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MATERIAL SAFETY DATA SHEET

Cleaner/Degreaser Paks

Section I General Information

Manufacturer:
The Drackett Products Company
5020 Spring Grove Ave.
Cincinnati, Ohio 45232-1988

Emergency Telephone No
1-800-242-1677

Telephone Number for Information

Date Prepared:
October, 1992
PRODUCT NAME:
MR. MUSCLE HEAVY-DUTY CLEANER/DEGREASER EASY PAKS
PRODUCT CODE: 90682
N.F.P.A. 704:
Powder:
HEALTH: 3
FLAMMABILITY: 0
REACTIVITY: 1
Dilation:
HEALTH: 1
FLAMMABILITY: 0
REACTIVITY: 0
D.O.T. HAZARD CLASS: NONE

Drackett powdered products are concentrated chemicals intended to be diluted prior to use. This product is labeled in accordance with regulations administered by the Consumer Product Safety Commission, in that the use pattern and exposure in the workplace are generally consistent with those experienced by consumers. In certain respects, the requirements of the Occupational Safety and Health Administration applicable to the drafting of this Material Safety Data Sheet may differ from the requirements of that agency and as a result, this MSDS may contain additional information to that found on the label.

Section II Hazardous Ingredients / Identity Information

HAZARDOUS COMPONENT: Sodium Carbonate
PERCENT: CONCENTRATE: Less than 45%
DILUTED (2 gal): Less than 1%
CAS NUMBER: 497-19-8
ACGIH ILV: Not Established
OSHA PEL: Not Established
MANUFACTURER PEL: Not Established

HAZARDOUS COMPONENT: Tetrasodium Ethylene Diamine Tetraacetic Acid (EDTA)
PERCENT: CONCENTRATE: Less than 15%

DILUTED (2 gal): Less than 0.1%
CAS NUMBER: 64-02-8
ACGIH TLV: Not Established
OSHA PEL: Not Established
MANUFACTURER PEL: Not Established

HAZARDOUS COMPONENT: Sodium Dodecylbenzene Sulfonate
PERCENT: Concentrate: Less than 15%
DILUTED (2 gal): Less than 0.1%
CAS NUMBER: 25155-90-0
ACGIH ITV: Not Established
OSHA PEL: Not Established
MANUFACTURER PEL: Not Established

HAZARDOUS COMPONENT: Ethylene Glycol h-Hexy1 Ether*
PERCENT: CONCENTRATE: Less than 10%
DILUTED (2 gal): Less than 0.1%
CAS NUMBER: 112-25-4
ACGIH ILV: Not Established
OSHA PEL: Not Established
MANUFACTURER PEL: Not Established

HAZARDOUS COMPONENT: Sodium Metasilicate
PERCENT: CONCENTRATE: Less than 10%
DILUTED (2 gal): Less than 0.1%
CAS NUMBER: 6834-92-0
ACGIH ILV: Not Established
OSHA PEL: Not Established
MANUFACTURER PEL: Not Established

If an * appears next to a hazardous material in Section II, the chemical is subject to the reporting requirements of Section 313 of Title II of the Superfund Amendments and Reauthorization Act of 1995 and 40CFR, Part 372.

Section III Physical Data

BOILING POINT (degrees F):
Powder: None
Dilution: 212
VAPOR PRESSURE (mm Hg.): None
VAPOR DENSITY (AIR-1)= None
SOLUBILITY IN WATER (W/V%): Greater than 95%
SPECIFIC GRAVITY (water-1):
Powder: 0.75
Dilution: 1.00
MELTING POINT (degrees F): None
EVAPORATION RATE (8uAc = 1): None

pH: Saturated solution: Approx. 11

Dilution 10.0 - 11.0

APPEARANCE AND ODOR:

Purple powder with a slight glycol ether odor

Section IV Fire And Explosion Hazard Data

FLASH POINT (degrees F): None METHOD USED: SETA

FLAMMABLE LIMITS - LEL (V/V%): NONE

FLAMMABLE LIMITS - LEL (V/V%): NONE

EXTINGUISHING MEDIA:

Water fog, dry alcohol-type or all purpose foam, dry chemical, carbon dioxide or other Class B extinguishing agents

SPECIAL FIRE FIGHTING PROCEDURES:

Fire fighters and others exposed to combustion by-products should wear full protective equipment, including pressure demand self-contained breathing apparatus and turnout equipment. Avoid contact with contaminated fire water flush contaminated protective equipment with clean water.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

Section V Reactivity Data

STABILITY: Stable

CONDITIONS TO AVOID: Do not mix with anything but water

INCOMPATIBILITY (MATERIALS TO AVOID):

Strong mineral and organic acids. Oxidizers such as hydrogen peroxide, bromine and chromic acid.

HAZARDOUS DECOMPOSITION PRODUCTS:

When burned oxides of carbon form

HAZARDOUS POLYMERIZATION: Will Not Occur

CONDITIONS TO AVOID: None known

Section VI Health Hazard Data

ROUTES OF ENTRY FOR SYSTEMIC POISONING:

POWDER:

INHALATION: Systemic poisoning is not expected by this route.

ABSORPTION: Systemic poisoning is not expected by this route.

INGESTION: Corrosive to esophagus and gastrointestinal tract.

DILUTION:

Systemic poisoning is not expected by inhalation, absorption or ingestion.

HEALTH HAZARDS (ACUTE and CHRONIC):

POWDER:

EYES: CORROSIVE, Causes burns on contact.

SKIN: CORROSIVE, Causes burns on contact.

INGESTION: CORROSIVE to mucous membranes. Harmful if swallowed.

CARCINOGENICITY:

No ingredients on HTP, IARC or other such lists.

SIGNS AND SYMPTOMS OF EXPOSURE:

POWDER:

EYES: Pain, tissue damage

SKIN: Pain, tissue damage

INGESTION: Burns mouth, tongue, etc. Esophagus and gastrointestinal damage. Spontaneous vomiting may occur.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:

Exposure to the concentrated powder can aggravate asthmatic or bronchial conditions.

EMERGENCY AND FIRST AID PROCEDURES:

This concentrated powdered chemical is intended to be diluted for use. The following are the recommended FIRST AID procedures for the powder and the dilution.

POWDER: GIVE FIRST AID IMMEDIATELY

EYES: Rinse immediately with water. Remove contact lenses, and then flush eyes with water for 20 minutes. Then contact a poison center or physician.

SKIN: Remove affected clothing. Rinse with water for 15 minutes. If irritation develops, contact a Poison Center or physician.

IF INGESTED: Rinse mouth rapidly. Drink a glassful of water or milk. Do not induce vomiting. Then contact a Poison center or physician immediately.

DILUTION: The diluted product is not an eye or skin irritant or toxic if ingested so as to require FIRST AID procedures on the product label. However, the following steps may be taken to lessen discomfort.

EYES & SKIN: flush eyes or skin with water.

IF INGESTED: Give a glassful of water or milk.

Section VII Procedures for Safe Handling and Use

RELEASE ON SPILL ACTIONS:

Avoid contact with eyes, skin, mouth and clothing. Wear eye protection and rubber gloves. In case of spill sweep up and remove to authorized disposal site. Mop or flush area with clean water.

WASTE DISPOSAL METHOD:

Dispose only in accordance with applicable federal, state and local laws and regulations.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

Do not remove packets before use. Do not handle with wet hands. Reseal container after removing packets. Store in cool, dry place. Keep from freezing.

OTHER PRECAUTIONS:

Always practice good housekeeping and hygienic measures. Clean up spills immediately.

Section VIII Control Measures

When used according to label directions, this product does not require respiratory, skin, eye protection or ventilation. When exposure exceeds that contemplated by the label directions (e.g., manufacturing and large spills) use respiratory, eye and skin protection and ventilate area. Consult protective equipment manufacturers.

WORK/HYGIENIC PRACTICES:

Always use the product in the vicinity of a water source in case of accident.

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MATERIAL SAFETY DATA SHEET

Acid Neutralizer

Section I General Information

Manufacturer
Acran, Inc.
5316 Hw. 290 W.
Suite 340
Austin, TX 78735
Date Prepared: 4 August 1995

Emergency Telephone Number
(512)892-7000
Telephone Number for Information
(512)892-7000

Section II Hazardous Ingredients / Identity Information

Sodium Bicarbonate - Irritation hazard
Cas #: 144-55-8

OSHA PEL: 15 mg/M^3 Total Dust
5 mg/M^3 Respirable Dust

Section III Physical Data

Boiling Point: Not Applicable
Vapor Pressure: Not Applicable
Vapor Density: Not Applicable
Specific Gravity(Water=1): 2.16-2.2
Evaporation Rate: Not ApplicableMelting Point: 518°F
Solubility in Water: 8.8% WT
Appearance and Odor: Free flowing, odorless, crystalline powder

Section IV Fire And Explosion Hazard Data

Flash Point: N/A
Flammable Limits: N/A
LEL: N/A
UEL: N/A
Extinguishing Media: No fire or explosive hazard
Special Fire FIghting Procedures: None
Unusual Fire and Explosion Hazards: None

Section V Reactivity Data

Stability: Stable.
Hazardous Polymerization: Will not occur.
Conditions to Avoid: Excessive heat and contamination of any kind.
Hazardous Decomposition or Byproducts: May liberate Carbon Monoxide, Carbon Dioxide or oxides of Sodium.
Acid Neutralizer: P/N FBN-BSO-000-005

Section VI Health Hazard Data

Routes of Entry: Inhalation, Skin or Eye Contact.

Carcinogenicity: This material is not considered to be a carcinogen by the National Toxicology Program.

The International Agency for Research on Cancer, or The Occupational Safety and Health Administration.

Acute and Chronic Effects of Overexposure:

Inhalation: May irritate nose and throat, cause coughing and chest discomfort.

Skin Contact: Prolonged or repeated contact with the dust may irritate skin.

Eye Contact: May irritate eyes.

Ingestion: May cause gastrointestinal disturbance.

Section VII Precautions for Safe Handling and Use

Steps to be Taken In Case Material is Released or Spilled: Wear protective equipment as specified in Section VIII. Always wear eye protection. For small spills, sweep up and dispose of in DOT approved waste containers. Keep out of sewers, storm drains, surface waters, and soil. Comply with all applicable governmental regulations on spill reporting, handling and disposal of waste.

Waste Disposal Method: Dispose of contaminated product and material used in cleaning up spills or leaks in a manner approved for this material. Consult appropriate federal, state and local regulatory agencies to ascertain proper disposal procedures.

Precautions to be Taken in Handling an Storage: Store in a cool, dry, well-ventilated place away from acidic materials. Keep bags or fiber drums dry at all times. Wash thoroughly after handling. Do not get in eyes, on skin or on clothing.

Other Precautions: None

Section VIII Control Measures

Respiratory Protection: If dust is generated, wear NIOSH approved respirator appropriate for those emission levels. Appropriate respirators may be a full facepiece or a half mask air-purifying cartridge respirator with particulate filters, a self-contained breathing apparatus in the pressure decand mode, or a supplied-air respirator.

Ventilation: Local mechanical exhaust ventilation capable of maintaining dust emissions at the point of use below PEL requirements.

Protective Gloves: Yes

Eye Protection: Chemical goggles and full face shield. Note: It is generally recognized that contact lenses should not be worn when working with chemicals because contact lenses may contribute to the severity of eye injury.

Other Protective Clothing or Equipment: Long sleeved shirt trousers, safety shoes, & rubber apron.

Work / Hygenic Practices: Eyewash and safety shower should be nearby and ready for use.

Section IX Transportation Regulatory Requirements

None:

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