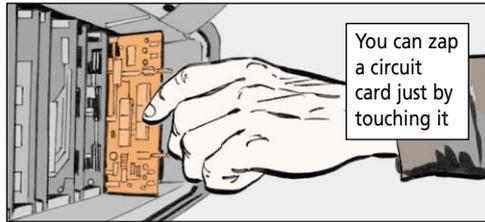


# HOW TO DEFEAT TOO MUCH STATIC



Electrostatic discharge (ESD) destroys or degrades your commo by damaging circuit cards, transistors, resistors and integrated circuits. ESD can strike during packing, shipping, handling or installation of circuit cards.



## What Causes ESD?

ESD comes from electrically charged objects in your work area: clothing, rugs, chairs, paper, ordinary packaging materials, or the work surface itself.

But the main source of ESD is you! You build up thousands of volts of static electricity just by walking across the floor or combing your hair. Then, just by touching a circuit card, you'll discharge static electricity, often without realizing it.



A spark as little as 30 volts can ruin a sensitive electronic device. You may not feel the discharge or see the damage, but you can bet it's happened. The circuit card may fail now, or be weakened enough to cause intermittent current problems or even complete failure at a later time—just when you least expect it.

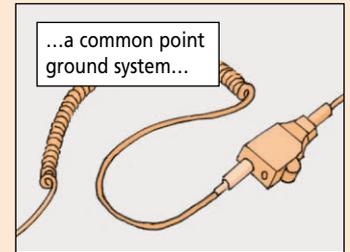
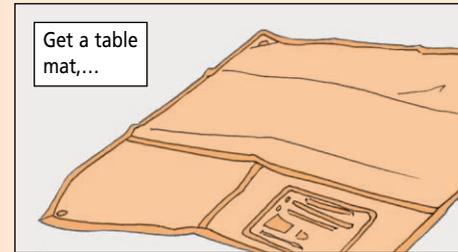
## Static-safe Workstations

So, protect your circuit cards from ESD. Handle them only at static-safe workstations that include a grounded static-dissipative table mat, floor mat and wrist strap. They're designed to limit static buildup and carry already-existing charges to ground.

HERE'S WHAT'S AVAILABLE!



NSN 4940-01-250-4236 will bring you a static dissipative table mat, common point ground system, and an adjustable wrist strap cuff to use in all areas other than clean rooms. It also includes a small/medium and large/extra large wrist cuff.

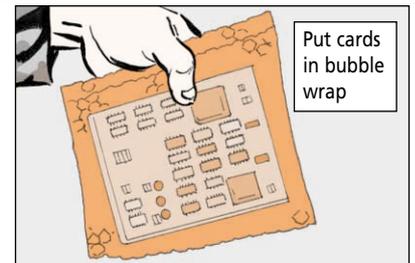


NSN 4940-01-253-5368 BRINGS A FIELD SERVICE KIT WHICH HAS THREE POUCHES, THREE BARRIER BAGS, TWO WRIST STRAPS, ONE GROUNDING CORD AND A WORK SURFACE MAT.



If you're going to be packaging ESD-sensitive (ESDS) circuit cards, here are a couple of ways to protect them:

First, wrap the cards in anti-static bubble wrap, NSN 8135-01-234-6649. Then make a bag from static shielding barrier material, NSN 8135-01-185-6816. Heat seal the bag with a hand-held sealer, NSN 3540-00-975-4255.



IF THE PIECE OF ELECTRONIC EQUIPMENT IS SMALL ENOUGH, PUT IT INTO ONE OF THESE ESD-FREE FLEXIBLE CUSHION POUCHES...



Pouch Size (inches)	NSN 8105-01-
12x12	197-2965
11x15	215-4752
10x10	197-2966
10x12	197-7846
8x8	215-0462

Whichever way you go, finish the job with a fast pack. Two useful ESD fast packs are NSN 8115-01-019-4084 for 12x18x3-½ inches and NSN 8115-01-057-1244 for 10x10x3-½ inches.

There's much more to know about packaging, and you can get the word from a LOGSA pub. To get your copy of *Packaging—The Basics*, write to:

LOGSA-PSCC  
ATTN: AMXLS-TP-P  
11 Hap Arnold Blvd  
Tobyhanna, PA 18466-5097

Or call DSN 795-7685,  
or (717) 895-7105

A FEW PRECAUTIONS AND SOME REGULAR PM AROUND YOUR WORKSTATION WILL KEEP STATIC ELECTRICITY UNDER CONTROL.



### High Charge

These common items have a high static charge: candy wrappers, folders, paper, styrofoam cups, cigarette packs, plastic and masking tape, plastics, vinyl, heat guns with blowers and common packing material. Keep them away from the work site. If you must have technical manuals and paperwork at the workstation, store them in antistatic bags.

When you package a circuit card in the protective plastic wrap, put a rubber band around it—**never** use tape to fasten it. The tape holds static electricity.

Things like magnets, radios, tape players and telephones can create an electromagnetic field. Keep them clear of the workstation.

If as part of your job, you must package an item in stretch-wrap or shrink-wrap, do it away from your workstation. Packaging an item with these wraps generates static electricity.

### Training

Anyone handling ESDS items should be trained in ESDS precautionary procedures. Untrained personnel should **never** handle ESDS items when the items are outside the ESDS protective packaging.



Train your soldiers in ESD

### Clean Means Safe

Dirt and dust on the table and floor mats act as insulators, making it harder for the mats to carry electrical charges to ground. Clean the mats with a soft cloth or brush them with a whisk broom.



Use only brushes made with natural bristles, such as horse hair. Brushes made with nylon or other synthetic bristles will generate static electricity.

Never wax or polish the table or floor mats. That leaves a residue that insulates the mats.

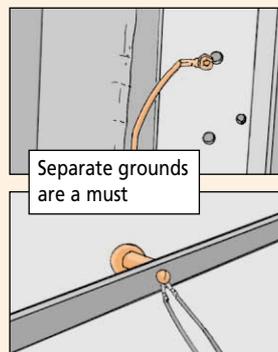
### Grounding

Connect table and floor mat grounding cords directly to shop ground. Ground each workstation individually. Never connect workstations in series to ground them. If connected when one goes out, they all become ungrounded.

Make sure your grounding cords are firmly attached to bare metal, not paint.

Wear your wrist strap on your skin, not over your sleeve, or it won't work.

Replace grounding cords if they're badly worn or cut.



Separate grounds are a must



Wear strap next to skin, not on sleeve

### Resistance Checks

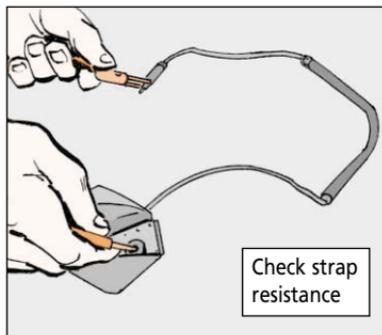
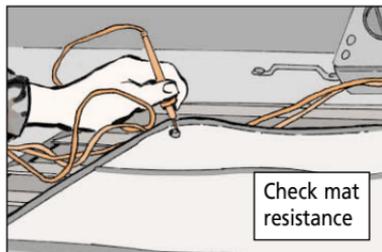
Follow the manufacturer's instructions for measuring the resistance of your workstation components. That's the only way to be sure your workstation's doing its job of carrying static charges to ground.

Measure grounding cord resistance once a week with an ohmmeter or multimeter. All readings should be in accordance with manufacturer's specifications.

Measuring resistance in the wrist strap is especially important. The strap gets more wear and tear than any other part of your workstation. Measure it at least daily.

The wrist strap has a resistor to protect you against high-voltage shocks. If the resistance is too low, the strap can't protect you. Too much resistance means the strap can't draw static electricity away from your body. Either way, you'll need to replace it.

Have your workstation tested for resistance from the surface of the table or floor mats to ground. That takes special testing equipment and special support. Contact your local TMDE support folks or CECOM LAR for help.



FOR MORE INFO ON ESD PROTECTION, SEE THESE PUBLICATIONS...



**MIL-HDBK-773,**  
*Electrostatic Discharge Protective Packaging;*  
**DOD-HDBK-263B,**  
*Electrostatic Discharge Control Handbook;*

**MIL-STD-1686B,**  
*Electrostatic Discharge Control Program;*  
and **MIL-W-87893,**  
*Electrostatic Discharge Control Work Station.*

If you can't find copies locally, order them from the  
Defense Automated Printing  
Service (DAPS)  
ATTN: DPM-DODSSP  
Bldg 4D  
700 Robbins A  
Philadelphia, PA 19111-5094

Or just call DSN 442-2179 or  
(215) 697-2179, or fax your  
request to DSN 442-1462, (215)  
697-1462.

You can also enroll in a correspondence course on electrostatic discharge. It's called *Packaging and Handling of Electrostatic Discharge Sensitive Items*, 908F36-PT3600.

Go to web site: [www.atsc.army.mil/acpp/dlsd.htm](http://www.atsc.army.mil/acpp/dlsd.htm) to enroll in the course. Click on LOGIN/REGISTER. Apply for a password to enter the site. Once you have your password, find the packaging course in the course listings.