



# 8400 Series ESD Floor Tile

The need for static protection to drain electrostatic charges from personnel and materials is well accepted in many industries. Whether safeguarding sensitive electronic components during manufacture or service or helping control charge in a computer room or munitions factory, a key element of an ESD (electrostatic discharge) prevention program is the use of a properly designed flooring system.

## Description

3M™ 8400 Series Static Control Floor Tile is a long-term solution to controlling ESD. This solid vinyl tile is durable and attractive and can easily be installed by competent flooring contractors. The flexible, resilient tiles are made with only 100% pure vinyl and contain a minimum amount of filler and none of the regrind that can make tile brittle. Both the “conductive” and “static-dissipative” versions are available in a selection of bright, vivid colors. A proprietary manufacturing process completely seals in the conductive carbon medium, resulting in a unique tile that can be easily cleaned and shined to a gloss while maintaining its electrical properties — without the use of an ESD wax or polish.

## Key Features

- Lifetime warranty on electrical performance
- 10-year limited warranty on materials
- Long-term ESD protection
- Superior wear resistance and durability
- Lowest outgassing
- Easy, low-cost maintenance (no waxing — ever!)
- Made with 100% pure homogeneous vinyl; no regrind
- Micro-edged for perfect squareness for ease of installation
- Available in either “conductive” or “static-dissipative” resistance range
- Available in 24.25" size for raised access floors, plus 12", 24", and 36" sizes.
- Available in 12 standard colors; custom colors can be formulated
- May be seamwelded or self-coved

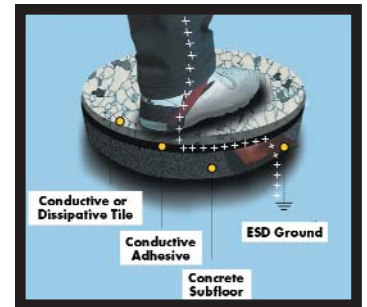
## Installation

(See 3M Floor Tile Installation Guide for complete instructions.)

- Moisture can be a major problem for any flooring material. The subfloor must be tested prior to tile installation to ensure that the moisture content is below the specified limit. (Use 3M™ 8405 Moisture Test Kit or equivalent, calcium chloride type).
- The subfloor must be clean, dry, level and properly abraded for optimum adhesion.
- 3M 8400 Series ESD tile must be installed with 3M-approved conductive adhesive.
- Proper grounding is recommended for all static-dissipative and conductive floor installations. Grounding guidelines are



included in the installation instructions packed with each unit of conductive adhesive, and each unit of adhesive contains one copper grounding strip.



## Maintenance

(See 3M 8400 Tile Maintenance Instructions for complete details.)

Install 3M entrance matting at all room doors to prevent debris from being tracked onto the ESD Floor Tile.

### **Never Wax 3M Static-Dissipative or Conductive Floor Tile!**

Sweep or damp-mop the entire floor and then clean it using 3M™ Neutral pH Cleaner and a low-speed buffer (150-350 rpm) with a 3M™ Red Buffer Pad 5100. If ground-in dirt or heavy scuff marks remain, use a 3M™ Blue Cleaner Pad 5300 with the cleaner.

*Note: A trigger-spray bottle of 3M™ TroubleShooter™ Cleaner may also be useful for spot-cleaning small, heavily soiled areas or scuff marks.*

Once the floor has been cleaned and allowed to dry, use a clean, dry 3M Red Buffer Pad 5100 to buff the tile to its natural sheen. (The floor care products mentioned above are available from 3M Commercial Care Division. Call 1-800-852-9722 for a supply location near you.)

## Unique Cleanability

Our customers report that 3M™ 8400 Series ESD Floor Tile is unique in the industry in its ability to be repeatedly cleaned and then buffed to a high sheen *without ever using wax*.

With other ESD tiles, normal cleaning procedures may dull the finish and can even degrade the electrical properties. Expensive conductive wax or glaze must then be used to restore their shine and conductivity. 3M 8400 Series Tiles never lose their electrical properties and can be shined like new with simple buffing. The photos below graphically demonstrate this feature.

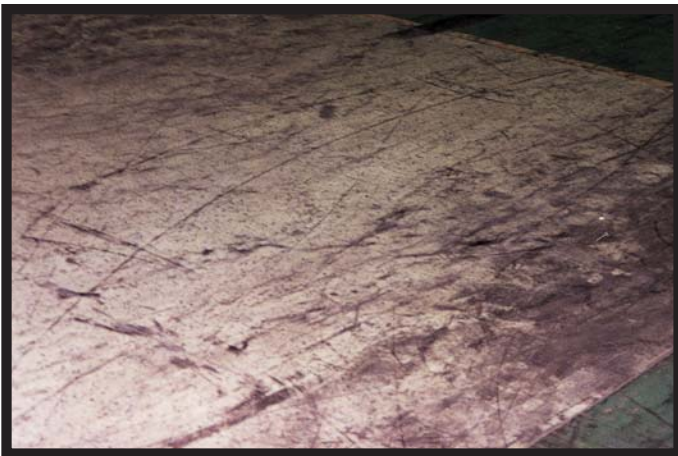
The floor section shown is a test patch of 3M 8412 white static-dissipative tile installed in a high-traffic area of a regional telephone company warehouse. To determine whether the tile could truly withstand serious abuse and then be turned into "like new" condition with simple cleaning *and without wax*,

the section was intentionally left unattended for 11 months as it was subjected to the wear and grime of continual forklift traffic. The result of this abuse is evident in Photos 1, 2 and 3.

After being swept, the tile was scrubbed with neutral cleaner, left to dry, and then buffed according to the maintenance procedure outlined on the previous page. As Photos 4 and 5 show, in spite of nearly a year of dramatic abuse, the high gloss of the restored floor finish matches that of the tile when it is newly installed —*without the use of any kind of wax*.

The final stage of the cleaning process is documented in Photo 6, when a megohmmeter was used to confirm that the electrical properties of the tile also remained unchanged.

This trial is an impressive demonstration of the durability of the 3M ESD tile and its unique "no wax" feature.



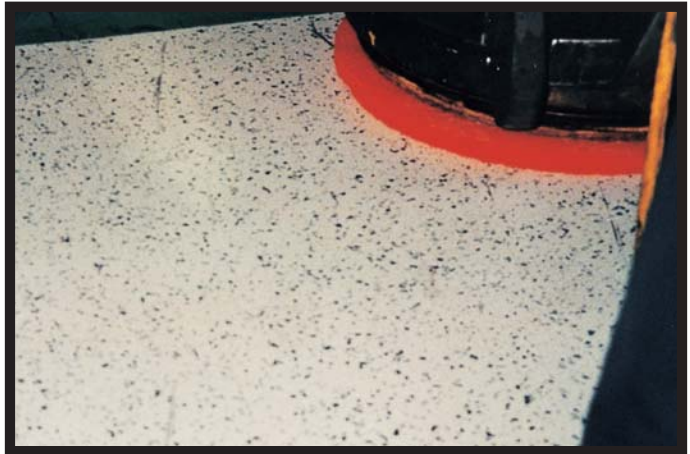
1. Forklift trucks have been riding over this area for 11 months, and no maintenance or cleaning has been attempted.



3. Although heavily soiled, the resilient vinyl tile has held up well under continuous forklift traffic.



2. A closer look at the floor.



4. The floor was simply scrubbed with 3M™ Neutral pH Cleaner and a low-speed buffer per 3M maintenance instructions and allowed to dry.



5. The clean floor was then polished with a low-speed buffer. The badly abused floor looks like new and NO WAX OF ANY KIND WAS USED.



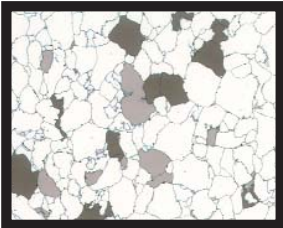
6. Resistance measurements taken with a megohmmeter confirm that the electrical properties were unchanged.

### Available Floor Tile Colors

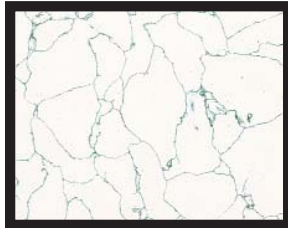
**Static-Dissipative (S.D.): Model numbers 8411 through 8427**

**Conductive (Cond.): Model numbers 8431 through 8447**

Brown  
8411 (S.D.) or 8431 (Cond.)



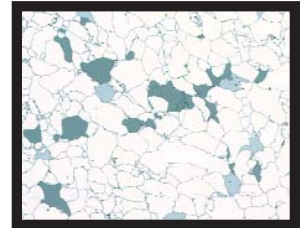
White  
8412 (S.D.) or 8432 (Cond.)



Gray  
8413 (S.D.) or 8433 (Cond.)



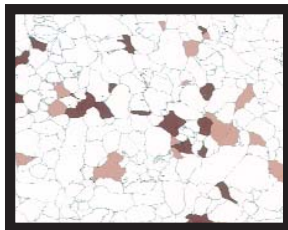
Blue  
8414 (S.D.) or 8434 (Cond.)



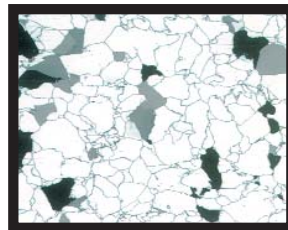
Green  
8415 (S.D.) or 8435 (Cond.)



Maroon  
8416 (S.D.) or 8436 (Cond.)



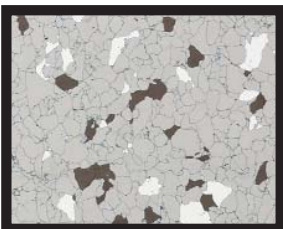
Black  
8417 (S.D.) or 8437 (Cond.)



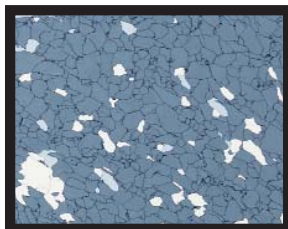
Reverse Brown  
8421 (S.D.) or 8441 (Cond.)



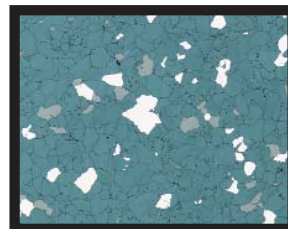
Reverse Gray  
8423 (S.D.) or 8443 (Cond.)



Reverse Blue  
8424 (S.D.) or 8444 (Cond.)



Reverse Green  
8425 (S.D.) or 8445 (Cond.)



Reverse Black  
8427 (S.D.) or 8447 (Cond.)



# 3M™ 8400 Series ESD Floor Tile

## Mechanical Properties (typical)

Static-Dissipative Floor Tile (Model numbers 8411-8427)  
Conductive Floor Tile (Model numbers 8431-8447)

Flammability	
Flame Spread Index (ASTM E162/ASTM E84)	Meets Class 1 requirements
Smoke Development (ASTM E84)	Meets Class 1 requirements
Critical Radiant Flux (ASTM E648/NFPA 253)	> 1.1w/cm <sup>2</sup>
Physical Specifications	Meets ASTM F1066-99 Meets US Federal Specification SS-T-312B
Hardness (ASTM D 2240)	55+/- Shore D
Flexibility (CSA 126.2) 100 mm mandrel @ 25°C	Does not break
Abrasion Resistance (ASTM D 3389) Taber H22 wheel, 70 rpm	0.445 grams (weight of tile removed per 1000 cycles)
Static Load (ASTM F970)	
125 lbs., 0.25 in. diameter indenter foot, 24 hours	2500 PSI point load
Residual indentation	3% of tile thickness
700 lbs., 1.125 in. diameter indenter foot, 24 hours	700 PSI point load
Residual indentation	1% of tile thickness



3M™ 8400 Series ESD Floor Tile is available in the special 24.5" x 24.5" size used for raised access floor panels.

## Important Notice

All statements, technical information, and recommendations related to 3M's products are based on information believed to be reliable, but the accuracy or completeness is not guaranteed. Before using this product, you must evaluate it and determine if it is suitable for your intended application. You assume all risks and liability associated with such use. Any statements related to the product which are not contained in 3M's current publications, or any contrary statements contained on your purchase order shall have no force or effect unless expressly agreed upon, in writing, by an authorized officer of 3M.

### Limited Warranty

Subject to the provisions of this Limited Warranty, 3M expressly warrants that 3M 8400 Series Static Control Floor Tile will be free from defects in material and manufacture for a period of ten (10) years from the date of purchase. 3M warrants that the 3M Product will meet all requirements of ASTM F 150 or will perform in accordance with test method ESD S71 for the lifetime of the Product. This applies to both "Static Dissipative" Tile (surface-to-ground resistance of  $1 \times 10^6$  to  $1 \times 10^9$  ohms) and "Conductive" Tile (surface-to-ground resistance of  $2.5 \times 10^4$  to  $1 \times 10^6$  ohms) subject to the Warranty Exclusions listed below. Must be installed using 3M approved conductive adhesive. Electrical performance of the installed tile must be tested and certified by a 3M representative.

### Exclusive Remedy; Limited Liability; Claims Procedure

Any Claims for surface defects or variations in color or pattern must be communicated to 3M in writing prior to the actual installation. If this product is proved defective within the warranty period stated above, the exclusive remedy will be, at 3M's option, to repair or replace the 3M Product or to refund the purchase price of the 3M Product. **IN NO EVENT WILL 3M OR ANY SELLER BE RESPONSIBLE OR LIABLE FOR SPECIAL, INCIDENTAL, OR CONSEQUENTIAL LOSSES OR DAMAGES UNDER ANY LEGAL THEORY INCLUDING BUT NOT LIMITED TO**

## Electrical Properties (typical)

Static-Dissipative                      Conductive

### Electrical Resistance

(Surface-to-ground, ESD S7.1)

$1 \times 10^6$  to  $1 \times 10^9$  ohms                       $2.5 \times 10^4$  to  $1 \times 10^6$  ohms

### Static Generation

(With conductive footwear at 20% RH)

< 50 volts                      < 25 volts

### Static Decay

(Federal TM 101B, Method 4046 @ 15% RH [5000 volts to 0 volts])

<0.10 sec.                      <0.03 sec.

## Sizes

### Static-Dissipative and Conductive

0.125 x 12 x 12 in. (3.2 x 305 x 305 mm)

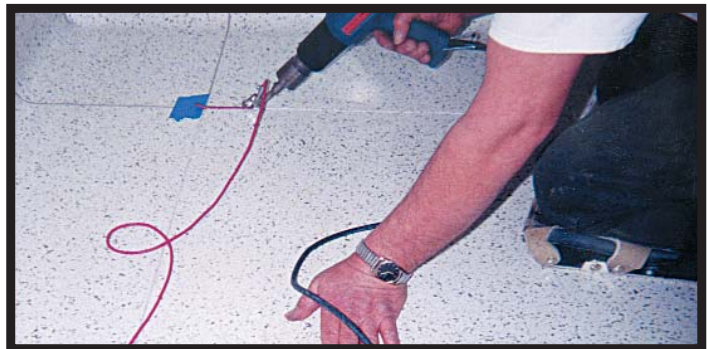
0.125 x 24.25 x 24.25 in. (3.2 x 615 x 615 mm)

– for raised access floor panels

0.125 x 24 x 24 in. (3.2 x 610 x 610 mm)

0.125 x 36 x 36 in. (3.2 x 915 x 915 mm)

– for seamwelded installations



3M 8400 Series ESD Floor Tile can be self-coved and seamwelded during installation.

**CONTRACT, NEGLIGENCE OR STRICT LIABILITY. 3M MUST BE NOTIFIED IN WRITING OF ANY DEFECT AND SUCH DEFECTIVE PRODUCT MUST BE RETURNED TO 3M ALONG WITH A PROOF OF PURCHASE.** 3M will not accept the return of any product without the prior approval of 3M. If the product is already installed, then 3M must examine and verify the defect.

### Warranty Exclusions:

(1) There is no warranty for (i) workmanship of installation and (ii) dissatisfaction, problems, or damage due to installation or maintenance, other than as recommended by 3M. (2) Excessive moisture in or below the concrete slab can result in adhesion problems and/or surface defects (blistering or cracking) in any flooring material. This warranty does not include delamination or surface defects due to the presence of alkali or other contaminants in the subfloor or due to hydrostatic pressure or moisture vapor transmission rates greater than 3 pounds per 1000 square feet per 24 hours (ASTM F-1869). (3) There is no warranty for any reduction in the gloss of the tile from use. (4) There is no warranty for damage due to accidents, gouges, scuffs, scratches or indentation. (5) If Buyer's purchase includes goods from another manufacturer, only the warranty given by that particular manufacturer will apply to those specific goods. (6) **3M MAKES NO OTHER WARRANTIES INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.** The express warranty will not apply to defects or damage due to accidents, neglect, misuse, alterations, operator error, or failure to properly install, maintain, clean or repair the 3M Product. (7) 3M Flooring Products that are sold as "seconds" are sold strictly on an "as is" basis without any warranty. NOTE: No person or representative is allowed to give any other or any additional warranty other than what is stated above unless approved by an officer of 3M.



## Electronic Handling & Protection Division

6801 River Place Blvd.  
Austin, TX 78726-9000  
800/537-2799  
www.3M.com/ehpd



Recycled paper

40% pre-consumer wastepaper

10% post-consumer wastepaper

© 3M IPC 2001 98-0799-0492-0 (09110) XX-1