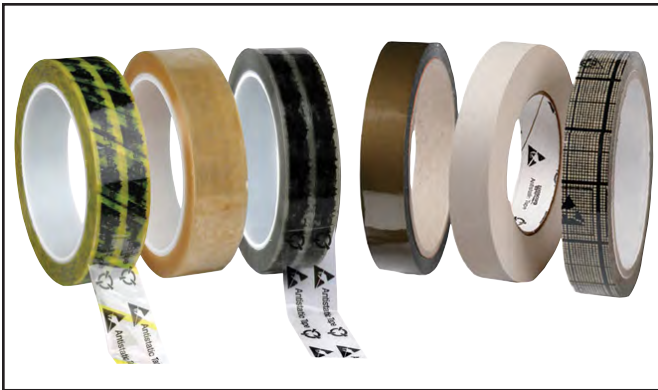




ESD Tape Applications



Wescorp ESD Tapes

In ESD protected areas, replace regular high charging tape with Wescorp ESD Tape. ANSI/ESD S20.20 section 6.23.1. state "All nonessential insulators, such as those made of plastics and paper (e.g., coffee cups, food wrappers and personal items) must be removed from the workstation."

Wescorp ESD Cellulose Tape Line



Technical Information for ESD Cellulose Tape

Thickness: 2.4 mil 0.0024", (0.06 mm)

Film construction: Cellulose

Adhesive: Rubber based - non-staining, absorbs moisture

Adhesive surface resistance: 10E10 - 10E11 ohms

Temperature Range: -10°C to 71°C (14°F to 160°F)

100°C for 10 minutes max - MIL-B-81705

Color: Transparent

Roll Length: 36 yards (1" core); 72 yards (3" core)

RoHS Compliance Statement

None of the following materials are intentionally added in manufacturing Wescorp ESD Tape: lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE) as outlined in the Directive 2002/95/EC Article 4.1. See Desco Industries Inc. letter on-line at Desco.com

Film Thickness: 2.0 mils (0.002", 0.05 mm)

Elongation: 25%

Tensile Strength: 25 lbs/in

Adhesion Strength: 40 oz/in²

Surface Resistance (73°F, 45% RH):

10E10 - 10E11 ohms - per ANSI / ESD S11.11

Static Generation from conductive plate:

(73°F, 45% RH): 80 volts average

Static Generation from roll:

(73°F, 45% RH): 50 volts average

Meets government specs: CID-A-A-113C, Type 1 Class A

Applications for ESD Clear Cellulose Tape with and without Symbols

- Sealing ESD bags and other ESD packaging / containers
- Use with ESD symbols for ESD awareness
- General purpose ESD tape applications
- Secure (bundle) IC DIP tubes
- Prevents damage to sensitive electronic components in manufacturing
- Ideal for holding notes, work orders or obstructions in offices, antistatic workstations, or for general purpose third hand use
- Ideal for conformal coating or holding and sealing supplies in manufacturing
- Ideal in packaging for container sealing, static shielding bag closure and holding DIP tubes

Applications for ESD Clear Cellulose Tape with Symbols

- Identification or making product / paperwork / processes
- High visibility with ESD susceptibility symbol for increased awareness
- Attach ESD paperwork to bags or product
- Ideal in packaging for container sealing, static shielding bag closure and holding IC DIP tubes
- Prevents damage to sensitive electronic components in manufacturing
- Available on paper cores and plastic cores

Note: Tape widths are metric.

Tape widths are nominal metric ± 0.8 mm ($\pm 1/32$ ")

- 1/4" is 6 mm nominal or 0.236"
- 1/2" is 12 mm nominal or 0.472"
- 3/4" is 18 mm nominal or 0.709"
- 1" is 24 mm nominal or 0.945"
- 2" is 48 mm nominal or 1.890"

Wescorp ESD Conductive Shielding Grid Tape



Technical Information for Conductive Shielding Grid Tape

Both surfaces non-tribocharging at 50% RH
Thickness: 1.9 mil 0.0019", (0.049 mm)
Adhesive: acrylic based
Conductive grid layer (50% RH): 10E4 - 10E5 ohms
Adhesive copolymer resistivity: 10E9 ohms
Copolymer layer resistivity: 10E12 ohms
Max Temperature: 140°F (60°C)
Absence of shed, crack, chip, or rub off
Non-corrosive

Applications for Conductive Shielding Grid Tape

- For applications requiring EMI shielding
- Use in areas where the generation of static electricity is of concern
- Using grounded Tape Dispenser, voltage generated by unrolling will effectively be reduced to zero
- Secure (bundle) IC tubes
- Covers external plugs, holes or connector pins on electronic chassis (black boxes, etc.) during transportation or storage

Excerpt from the Naval Aviation Schools Command: "... Weapon Replaceable Assemblies (WRA)s shall have ESD conductive plug caps or grid tape over all external cannon plugs and connector pins."

Wescorp ESD High-Temp Masking Tape



Technical Information for High-Temp Masking Tape

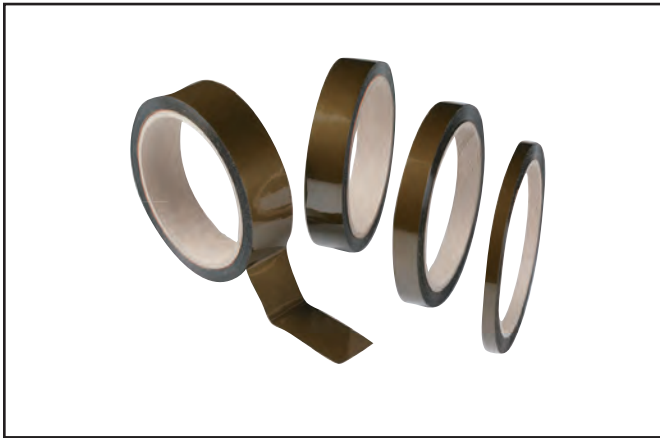
Backing: Saturated, high strength crepe paper
Adhesive: Natural rubber based, non-staining, solvent spread, cured
Thickness: 0.18 mm / 7 mils (0.007")
Adhesion Strength: 38 N/100 mm / 35 oz/in²
Tensile Strength: 385 N/100 mm / 22 lbs/in²
Temperature Resistance: 302°F (150°C) - 60 minutes
Color: Natural
Meets CDN Spec.: 53.79-94 Type 1
Meets US Spec.: A-A 883-B-Type 1
Roll Length: 55 meters (60 yards)
Thickness: 7.0 mils 0.007", (0.18 mm)
Adhesion to Steel: 1.51 newtons/cm² / 35 oz/inch²
Elongation: 8%
Moisture Resistance: fair
Solvent Resistance: good
Storage Stability: excellent
Temperature Range: -32°F to + 275°F (-36°C to + 135°C)
Max Temp: 275°F (135°C) 45 minutes maximum
Government Specs: PPP-T-42C
Type 1, CID-AA-883A Type 1
Waterproof
Tribocharges, but no charge retention (recommend slow unrolling utilizing an ionizer to neutralize charges)
Adhesive surface resistance: 10E11 ohms
Non-toxic, and pH neutral
Non-corrosive

Normal use of our High Temperature Masking Tape is for masking or protective applications on printed circuit boards not exceeding temperatures of 150°C (302°F) at a duration under 45 minutes. If the tape is used for masking operations or temporary protection, it should not be left on the product for more than 24 hours. For best results, the tape should not be exposed to ultraviolet rays or high temperature for prolonged periods of time (beyond manufacturer's specs). This tape is non-staining under normal use as described above.

Applications for High-Temp Masking Tape

- Silk screening applications
- Masking application in spray and brush painting, non-staining
- Protective purposes in manufacturing processes, strips clean
- For securing polyethylene sheeting to walls during painting
- For OEM repair shops
- Use in applications masking PCBs gold features for wave soldering or soldering under 302°F (150°C)
- For best results, apply to band using a rubber roller.
- Thick conductive adhesive excellent for conformability to protect critical PCB features
- Easily handles high temperatures of wave soldering without leaving significant residue
- Handles temperatures found in test and burn-in ovens

Wescorp ESD High Temp Polyimide Tape



Technical Information for ESD High Temp Polyimide Tape

Removal leaves little or no residue
 Adhesive surface resistance: 10E2 - 10E4 ohms
 Max Temperature: 572°F (300°C) 10 seconds
 Adhesive Strength: 1 N/cm (DIN), 5 oz/inch² (ASTM)
 Surface Resistance (Adhesive): 10E3 - 10E4 ohms
 Polyimide Film (DuPont's Kapton® or equivalent)
 Thickness: 0.0254 mm (DIN), 1.0 mil (0.001") (ASTM)
 Conductive Silicone Adhesive

Thickness: 0.0356 mm (DIN), 1.4 mil (0.0014") (ASTM)
 Total Thickness: 0.060 mm (DIN), 2.4 mil (0.0024") (ASTM)
 Color: Brown Opaque
 Tensile Strength: 50 N/cm (DIN), 28 lbs/in² (ASTM)
 Elongation: 70% (DIN & ASTM)
 Static Charge Generation (300 mm/min):
 Removal from Core (23°C, 50% RH):
 5 volts, Internal Test Method
 Removal from stainless steel (50% RH):
 5 volts, Internal Test Method

Applications for High-Temp Polyimide Tape

- Ideal for masking gold leads and other components on boards populated with sensitive integrated circuits
- Thick conductive adhesive excellent for conformability to protect critical PCB features
- Near zero voltage generation when tape unrolled from roll [at 50% relative humidity]
- Near zero voltage generation when tape removed from PCB [at 50% relative humidity]
- Masking off PCBs for IR reflow ovens or wave soldering under 572°F (300°C) ~ 10 seconds

Note: ESD High Temp Polyimide Tape with conductive acrylic, adhesive (silicone free) is available as a special order.

Applications for Aisle Marking Tape



- Use to mark off floors designating ESD Protective Areas
- Can be used as area signs
- Note: Aisle marking Tape has no ESD control properties



Tape Dispenser

2 inch wide ESD Tape Dispenser

- Use with Wescorp ESD tapes
- For tapes with 3" (7.62 cm) Cores
- For tapes up to 2" (48 mm) wide
- Groundable chassis with ground cord

Proper Storage of Tape Rolls

For best results, tape inventory should be continually replenished. It is recommended that rolls of tape be stored flat and rotated (flipped over to the other side) 6 to 8 weeks. Tapes should be stored in a dry, well ventilated room with a reasonably consistent temperature of 68° F (20° C) and be protected from exposure to direct sunlight. Tape should not be stored while exposed to ultraviolet sunlight, moisture, or heat. Tape over one year old should be evaluated by the user to determine acceptability for the user's application.

Usability

The user must determine the suitability for use of an ESD tape for his particular application.

Tape over one year old should be evaluated by the user to determine acceptability for the user's application. Desco Industries, Inc. recommends those tracking useful life of product to use shipping / invoice date as Desco Industries, Inc. expressly warrants that for a period of one (1) year from date of purchase, our Wescorp Brand Antistatic Tape will be free of defects in material (parts) and workmanship (labor).

Limited Warranty

Desco Industries, Inc. expressly warrants that for a period of one (1) year from the date of purchase, our Wescorp ESD Tape will be free of defects in material (parts) and workmanship (labor). Within the warranty period, the material will be replaced at our option, free of charge. Call our Customer Service Department at 909-627-8178 (Chino, CA) or 781-821-8370 (Canton, MA) for a Return Material Authorization (RMA) and proper shipping instructions and address. Include a copy of your original packing slip, invoice, or other proof of purchase date. Any material under warranty should be shipped prepaid to our factory.

Warranty Exclusions

THE FOREGOING EXPRESS WARRANTY IS MADE IN LIEU OF ALL OTHER PRODUCT WARRANTIES, EXPRESSED AND IMPLIED, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WHICH ARE SPECIFICALLY DISCLAIMED. The express warranty will not apply to defects or damage due to accidents, neglect, misuse, alterations, operator error, or failure to properly maintain, clean or repair products.

Limit of Liability

In no event will Desco Industries, Inc or any seller be responsible or liable for any injury, loss or damage, direct or consequential, arising out of the use of or the inability to use the product. Before using, users shall determine the suitability of the product for their intended use, and users assume all risk and liability whatsoever in connection therewith.

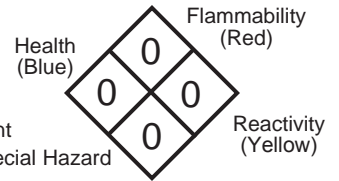
Material Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200, Standard must be consulted for specific requirements.

NFPA Designation 704

Degree of Hazard:
 4 = Extreme
 3 = High
 2 = Moderate

1 = Slight
 0 = Insignificant
 Special Hazard



IDENTITY (As Used on Label and List)
 Wescorp ESD Hi Temp Polyimide Tape

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

SECTION I

Manufacturer's Name Desco Industries Inc.	Emergency Telephone Number (909) 627-8178
Address (Number, Street, City, State, and Zip Code) 3651 Walnut Avenue, Chino, CA 91710	Telephone Number for Information (909) 627-8178
Date Prepared 12-6-2011	Signature of Preparer (Optional)

SECTION II - PHYSICAL/CHEMICAL CHARACTERISTICS

Polyimide Film
 Electrically conductive particles embedded in a layer of polysiloxane adhesive

SECTION III - HAZARDOUS INGREDIENTS

No hazardous materials present
 (1) According to Commission Directive 88/379/EEC (Article 3 6aa).

SECTION IV - FIRST AID MEASURES

- 4.1. Skin: No irritation is expected from handling the tape, however ensure good industrial hygiene and wash exposed areas with soap and Water.
- 4.2. Eyes: Rinse opened eye for several minutes under running water.
- 4.3. Inhalation: Not a probable route of exposure for adhesive tape. Exposure to the encapsulated electrically conductive articles in the adhesive layer is not likely.
- 4.4. Ingestion: Not a probable route of exposure for adhesive for adhesive tape. Treat symptomatically.
- 4.5. Other first aid information: Not known

SECTION V - FIRE EXTINGUISHING MEASURES

- 5.1. Extinguishing media: Carbon dioxide, foam, dry powder, or fine water spray.
- 5.2. Unsuitable extinguishing media: None known
- 5.3. Unusual firefighting hazards: None known
- 5.4. Special firefighting procedures: Self-contained respirator should be worn.
- 5.5. Other recommendations: None known
- 5.6. Combustion products: Polyimide film chars but does not burn in air, however it will burn in an atmosphere of 100% oxygen. The major off-gases are carbon dioxide and carbon monoxide. The silicone adhesive layer also tends to char leaving residues of silica and off-gases containing carbon dioxide, traces of incompletely burned carbon products and formaldehyde.

SECTION VI - ACCIDENTAL RELEASE MEASURE

- 6.1. Personal protection: Avoid contact with eyes.
- 6.2. Precautions to protect the environment: None established
- 6.3. Clean up procedure: Pick up to prevent floor

SECTION VII - HANDLING AND STORAGE

- 7.1. Handling precautions: Avoid contact with eyes. Ensure good industrial hygiene and wash skin with soap and water after contact.
- 7.2. Storage: No special measures are required.
- 7.3. Unsuitable packaging materials: None known.
- 7.4. Incompatibilities: None known.
- 7.5. Other information: None known.

SECTION VIII - EXPOSURE CONTROLS AND PERSONAL PROTECTION

- 8.1 Exposure controls: Safe handling/usage of Wescorp ESD Hi Temp Polyimide Tape at high temperatures (above 200°C/392°F) requires adequate ventilation. Using small quantities normal air circulation may be adequate otherwise further ventilation measures are recommended.
- 8.2. Exposure controls for hazardous components: No hazardous materials present
- 8.3. Personal protective equipment:
 - Respiratory: Not required for normal handling.
 - Protective gloves: Not required for normal handling, if tape is hot gloves are recommended as good industrial practice.
 - Eye/Face: Safety glasses are recommended as good industrial practice.
 - Industrial Hygiene: Wash after handling, especially before eating, drinking or smoking. Exercise good industrial hygiene practice.

SECTION IX - PHYSICAL AND CHEMICAL PROPERTIES

9.1 Appearance:

Form: Self-adhesive tape Color: Opaque black Odor: None

9.2. Safety Related Information

pH: Not determined
 Boiling point/Boiling range: Not determined
 Melting point/Melting range: Not determined
 Flash point: Not determined
 Flammability (solid): Non-flammable
 Auto flammability: Non-flammable
 Explosive properties: Not determined
 Oxidizing properties: Not determined
 Vapor pressure: Not determined
 Specific gravity: Not determined
 Solubility in water: Not soluble
 Solubility in organic solvent: Soluble in Toluene
 Oil/water partition co-efficient: Not determined

Other data:

Vapor density (air=1): Not determined
 Evaporation rate (ethyl ether = 1): Not determined
 Viscosity: Not determined
 % Volatiles: < 0.05% @ 200°C (392°F)
 Molecular weight: Not determined

SECTION X - STABILITY AND REACTIVITY

10.1 Stability: Stable at normal temperatures and storage conditions (ideal 23°C ± 2°C (73°F ± 4°F) 50% ± 2% relative humidity)

10.2 Reactivity:

Conditions to avoid: none known.

Materials to avoid: Can react with strong oxidizing agents

Hazardous decomposition products: At temperatures above 400°C/752°F, the major off-gases from polyimide film are carbon monoxide and carbon dioxide. With prolonged exposure to temperatures above 150°C/302°F silicone adhesives in the presence of oxygen may emit trace quantities of formaldehyde.

SECTION XI - TOXICOLOGICAL INFORMATION

Possible Health Effects

Skin: (1) Prolonged or repeated contact may lead to slight irritation

Eyes: (1) May cause temporary discomfort

Inhalation: (1) No adverse effects are normally expected.

Ingestion: (1) Not known

Other health hazard information: None known.

LC 50 : Not determined

LD 50 : Not determined

(1) This information is based either on test data, extrapolation from tests on similar materials, review of component details, or a combination of all of these.

Section XII - ECOLOGICAL IMPACT

12.1 Elimination Persistence: Not known Degradability: The adhesive is partly biodegradable

12.2 Behavior in an aquatic environment Mobility: Insoluble in water Bioaccumulation: Not known

12.3 Aquatic: Ecotoxic effects not known Terrestrial: Not known

Section XIII - WASTE DISPOSAL

13.1. Product disposal: Can be incinerated or land filled in accordance with federal, state and local regulations.

13.2. Packaging disposal: Packaging should be disposed of in accordance with regional and/or national regulations.

Section XIV - TRANSPORT INFORMATION

UNNO: Not applicable Label: Not applicable

ROAD & RAIL TRANSPORT (ADR/RID) No special packaging or labeling required.

SEA TRANSPORT (IMO) No special packaging or labeling required.

IMO MARINE POLLUTANT: Not applicable

AIR TRANSPORT (ICAO) No special packaging or labeling required.

Section XV - REGULATORY INFORMATION

15.1. EEC Supply classification & labeling: (1) Contains: Not applicable - No special packaging or labeling requirements

15.2 National legislation. For product information in other EC languages, including appropriate national legislation, please contact the sales office at the above address.

15.3 Other regulations

German water class: 1 - slight risk of causing water pollution

German Vbf: Not applicable

Ozone depleting chemicals: No ozone depleting chemicals are present or used in manufacture.

N/A = Not Applicable; NE = None Established