



Part of Ant Group Ltd

ESD MATTING

ESD mats are an effective method of controlling electrostatic discharge.

Static electricity can be generated by many materials & typically, large amounts can be generated by garment movement. Static builds until the person touches something of a lower static potential, this discharge can cause severe damage to sensitive micro electronics. ESD matting slows down & controls this discharge allowing static electricity to transfer safely to ground.

ESD matting also protects the surface of the ESD sensitive devices from wear & tear, are cost effective, easy to cut to shape & provide excellent static dissipation.



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ESD Matting

Choosing the Right Matting

HOW STATIC MAT WORKS?

Static matting is designed to drain static charge from items placed on its surface, they also protects the surface of the ESD sensitive devices from wear and tear. For a mat to effectively ground an item, the item must be either conductive or dissipative as insulative items will not allow charge to drain to ground eg most plastics.

MAT MATERIALS

ESD mats are generally available in Vinyl or Rubber material.

- ESD Vinyl mats are the most widely used material for table top or work surface applications. They are cost effective, easy to cut to shape and provide excellent static dissipation.
- ESD Rubber mats are used where high resistance to heat and chemicals is required.

ESD mats are divided into two categories, ESD table top mats or ESD work surface mats and floor mats.

- ESD table top or ESD worksurface mats have smooth or lightly embossed surface and are available in light colours. ESD table top mats are available in single layer vinyl homogeneous material, two layer rubber material and three layer with homogeneous vinyl top and foamed vinyl on the back with carbon layer in the middle.
- ESD floor mats have heavy embossing or groves to improve traction, have anti fatigue style to reduce stress and are available in dark colours to hide dirt.

CONSTRUCTION:

Static mats can be made from solid sheets, multiple layers and suspended particles, offering differing electrical performance.

HOMOGENEOUS (VINYL AND RUBBER)

Dissipative Vinyl or Rubber

Homogeneous or solid mats consist of the same material throughout. These mats provide good mechanical service with electrical performance normally limited to about 10^9 to $10^{10} R_{TG}$.

THREE LATER (VINYL)

Dissipative Vinyl

Conductive Metallized Layer

Dissipative Vinyl Foam

Three layer mats are constructed from a conductive metal / carbon layer between a top surface of vinyl and a layer of foamed vinyl on the back. The conductive layer improves the electrical properties by acting as a fast track to move static charge to ground. The foam back layer provides a cushion for operators making it easier to pick up parts.

TWO LAYER (VINYL)

Dissipative Vinyl

Dissipative Vinyl Foam

This two layer mat combines the foam from the three layer mat and the dissipative vinyl from solid mats. As it contains no metallized layer it will provides average electrical performance, it does however make it more cost effective option.

TWO LAYER (RUBBER)

Dissipative Rubber

Dissipative Rubber Foam

This option provides a top layer of static dissipative rubber and the back layer of conductive rubber giving the same electrical performance as the vinyl three layer mat with great tolerance to heat and chemicals. This type of matting does come with a cost premium.

Choosing the Right Matting

GUIDE TO SELECTING THE RIGHT MAT

Please find detailed below a basic guide to help you select the right materials for your application.

Table Mats	<ul style="list-style-type: none"> • Use light colours to make finding small parts easier. • Have smooth or lightly embossed surfaces. • Are usually thinner than floor mats.
Floor Mats	<ul style="list-style-type: none"> • Use dark colours to hide dirt. • Have heavy embossing or groves to improve traction. • Are usually thicker than table mats to absorb more wear.

MAT TYPE:	ELECTRICAL PROPERTIES:		USAGE:	FEATURES:
	R_{TG}	R_{TT}		
Homogeneous	$10^9 - 10^{10}$	$10^9 - 10^{10}$	Table / Floor	Durable material
Three Layer	$10^7 - 10^8$	$10^7 - 10^8$	Table	Excellent electrical properties
Two Layer Vinyl	10^{10}	10^{10}	Table	Low cost
Two Layer Rubber	$10^7 - 10^8$	$10^7 - 10^8$	Table	Heat / solder tolerant Chemical resistant Excellent electrical properties

Ordering Matting with Studs

If you wish to order pre cut mats with added studs, please ensure that the position of the stud is specified as per Fig 1, and quote the correct product code when ordering.

FIG 1: STUD POSITIONING



PRODUCT CODE:	DESCRIPTION:	ADDITIONAL NOTES:
067-0060	10mm Stud – Top Left	Each
067-0061	10mm Stud – Top Right	Each
067-0062	10mm Stud – Bottom Left	Each
067-0063	10mm Stud – Bottom Right	Each
067-0064	10mm Stud – All 4 Corners	Qty 4 Studs

GUIDANCE ON USE OF ANTISTAT MATTING:

Matting materials have a tendency to shrink slightly when first unrolled. In applications where length is critical, allow the material to relax for at least 4 hours before cutting to size. Matting should always be trimmed with a sharp knife or razor blade.

CUTTING TOLERANCES:

Width ± 6 mm / Length ± 6 mm every linear foot of running material

ROHS COMPLIANCE:

None of the following materials are intentionally added in manufacturing this product: lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE) as outlined in the Directive 2002/95/EC Article 4.1.

GROUNDING:

Sufficient ground cords should be used to reliably meet EN 61340-5-1 Table 3 less than $1 \times 10^9 \Omega$ for working surfaces. Industry recommendation is that continuous runs of ESD matting should be grounded at 10ft intervals to allow proper charge decay rates. Each individual ESD mat should be grounded with ground snaps located no further than five feet from either end.

CLEANING:

Please note that contact between the matting surface and any acid or alkali solvent is strictly prohibited, this will result in the antistatic performance wearing away. If cleaning is required, the matting may be wiped with a cloth coated in a neutral solution (such as water).



ESD Bench Matting – 2 & 3 Layer, Smooth Finish

FEATURES:

Anti-static matting should be laid out in the workshops or advanced laboratories for microelectronic industries such as electronic semi-conduct devices, electronic computers, electronic communication equipment and integrated circuits etc.

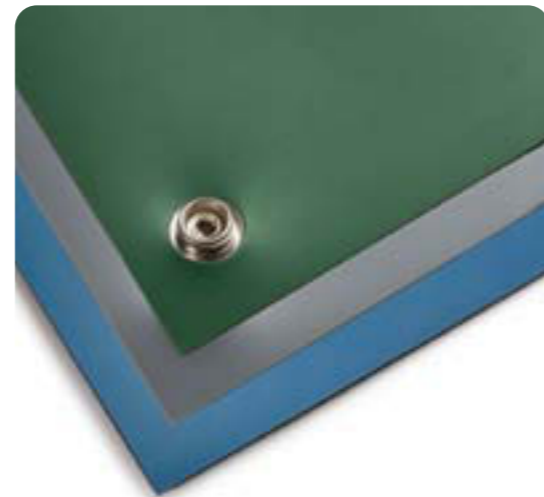
- Great value ESD Bench Matting
- Made from anti-static (conductive) and static-dissipative materials with synthetic rubber
- Available in blue, grey or green

2 LAYER

- 2mm thick double-layer structure
- Surface layer is a 0.5mm thick static-dissipative layer
- Bottom layer is a 1.5mm conductive layer
- Asian origin

3 LAYER

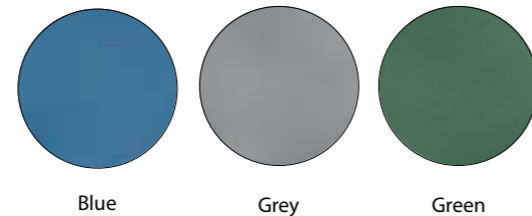
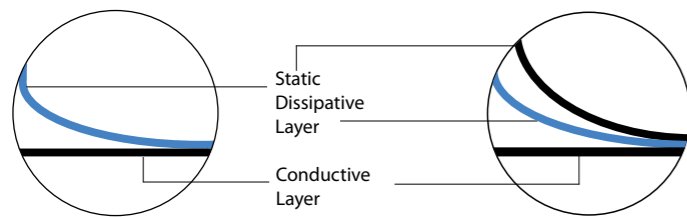
- 3mm thick double-layer structure
- Surface layer is a 1.25mm thick static-dissipative layer
- Middle layer is a 0.5mm conductive layer
- Bottom layer is a 1.25mm thick static-dissipative layer



2 LAYER CONSTRUCTION:

3 LAYER CONSTRUCTION:

COLOURS / FINISH:



TEST RESULTS:

	TEST METHOD:	UNIT:	VALUE:
Surface Resistance / R _{TG}	SJ/T10694-2004	Ω	1x10 ⁶ ≤ R ≤ 1x10 ⁹
Bottom Resistance / R _{TT}	SJ/T10694-2004	Ω	1x10 ³ ≤ R ≤ 1x10 ⁶
Volume Resistance	GB/T14437-97	Ω	1x10 ⁵ ≤ R ≤ 1x10 ⁸
Thickness	YY-1001	mm	Permissible Tolerance +0.1
Temperature Resistance	YY-1001	°C	180 (Instantaneous Temp)
Temperature	N/A	°C	20-26
Relative Humidity	N/A	%	40-65

R_{TG} is the resistance from one point on the mat's surface to the mat's ground point, and is the fundamental electrical test for a mat. A proper R_{TG} insures that a mat can conduct charge from a point on the surface to the mat ground point. The guideline in ESD STM-4.1 for R_{TG} is 1x10⁶ to 1x10⁹ Ω. ANSI/ESD S-20.20 has an upper limit of <1 x10⁹ Ω. R_{TT} is the resistance from one point on the mat's surface to another point. A proper R_{TT} insures the consistency of the mat's resistance properties. The ESD STM-4.1 guideline for R_{TT} is >1x10⁶ Ω.



ESD Bench Matting – 2 & 3 Layer, Smooth Finish

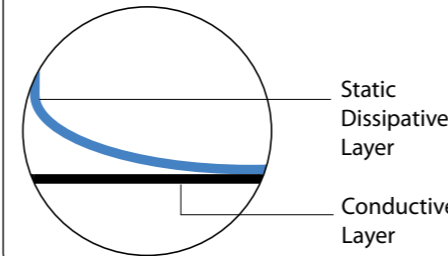
PRODUCT CODE:	DESCRIPTION:	SIZE:	ADDITIONAL NOTES:
082-0043	ESD Bench Matting – Smooth Finish	1.2m wide / 10m length roll	Grey
082-0044	ESD Bench Matting – Smooth Finish	1.2m wide / 10m length roll	Blue
082-0056	ESD Bench Matting – Smooth Finish	1.2m wide / 10m length roll	Green
082-0070	ESD Bench Matting – Smooth Finish	600 x 1200mm	Blue
082-0071	ESD Bench Matting – Smooth Finish	600 x 1200mm	Grey
082-0072	ESD Bench Matting – Smooth Finish	600 x 1200mm	Green

ESD Bench Matting – 2 Layer, Textured Finish

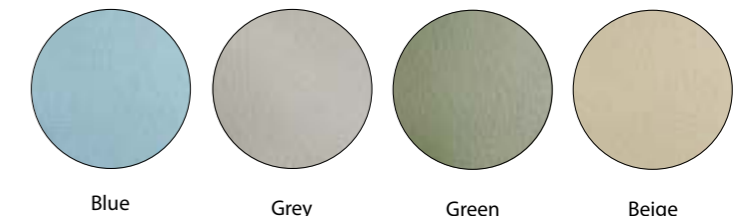
FEATURES:

- High quality ESD bench matting
- Reflection breaking surface to reduce glare and improve operator comfort
- Protection against small collisions thanks to natural resilience of rubber
- Prevents sliding of delicate components thanks to excellent friction coefficient
- Heat resistant: rubber does not melt or burn coming into contact with hot metal parts or soldering debris
- Resistant to chemical agents normally used for maintenance
- Oil resistance: this product resists most oils
- Suitable for loose laying: does not require application with adhesive
- Good resistance to scratches
- Excellent flexibility and comfort
- Cut mats available on request
- European origin

CONSTRUCTION:



COLOURS / FINISH:



TEST RESULTS:

CHARACTERISTICS:	STANDARD:	AVERAGE RESULTS (Ω):
Surface Resistance	IEC 61340-4-1	1x10 ⁷ / 1x 10 ⁹
EN 100015-1	-	5x10 ⁶ / 5x 10 ⁸
EOS/ESD S11-11	-	1x10 ⁷ / 5x 10 ⁸
Volume Resistance	IEC 61340-4-1	5x10 ⁶ / 1x 10 ⁸
Resistance to Ground	EN 100015-1	1x10 ⁶ / 1x 10 ⁸
EOS/ESD S11-11	-	1x10 ⁶ / 1x 10 ⁸
IEC 61340-4-1	-	5x10 ⁶ / 5x 10 ⁷
Charge Decay	FED TM 101C (5000V-50V)	<0,01sec





ESD Bench Matting – 2 Layer, Textured Finish

RESULTS AFTER ACCELERATED AGEING AT 70°C FOR 12 DAYS:

CHARACTERISTICS:	STANDARD:	AVERAGE RESULTS (Ω):
Surface Resistance	EOS/ESD S11-11	<10 ⁹
EN 1000015-1	-	-
Volume Resistance	IEC 61340-4-1	<5 x 10 ⁸
Resistance to Ground	EOS/ESD S11-11	<10 ⁸
IEC 61340-4-1	-	<10 ⁸
Charge Decay	FED TM 101C (5000V-50V)	<0,02sec

PRODUCT CODE:	DESCRIPTION:	SIZE:	ADDITIONAL NOTES:
082-0028	ESD Bench Matting – Textured Finish	1.2m wide / 10m length per roll	Blue
082-0034	ESD Bench Matting – Textured Finish	1.2m wide / 10m length per roll	Grey
082-0030	ESD Bench Matting – Textured Finish	1.2m wide / 10m length per roll	Beige
082-0035	ESD Bench Matting – Textured Finish	1.2m wide / 10m length per roll	Green
082-0024	ESD Bench Matting – Textured Finish	600 x 1200mm	Blue
082-0025	ESD Bench Matting – Textured Finish	600 x 1200mm	Grey
082-0026	ESD Bench Matting – Textured Finish	600 x 1200mm	Beige
082-0027	ESD Bench Matting – Textured Finish	600 x 1200mm	Green

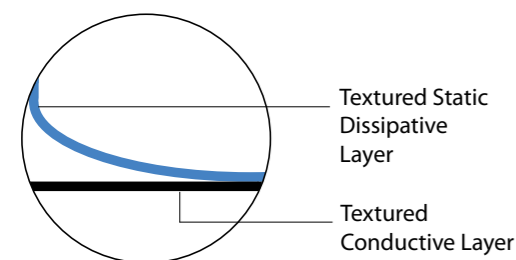
ESD Anti Slip Multipurpose Matting – 3mm

FEATURES:

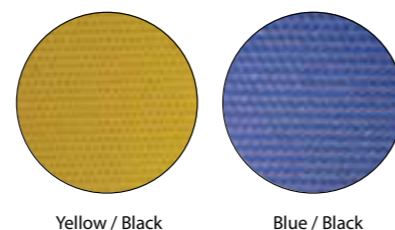
A multi purpose, anti-static matting for use on either workstation benches or as a flooring solution in the workshops of advanced laboratories for microelectronic industries.

- Made from anti-static (conductive) and static-dissipative materials with synthetic rubber
- Corrugated surface provides slip resistance and even footing
- Excellent abrasion resistance
- Easy to clean, sweep or hose off
- Resistant to cuts, tears, impact, ozone damage, fire and most chemicals
- Available in 2 / 3 and 4mm thick double-layer structure
- Surface layer is a 1mm thick static-dissipative layer
- Available in blue and yellow surface with black textured bottom surface

CONSTRUCTION:



COLOURS / FINISH:



Yellow / Black

Blue / Black

ESD Anti Slip Multipurpose Matting – 3mm

TEST RESULTS:

	TEST METHOD:	UNIT:	VALUE:
Surface Resistance / R _{TG}	SJ/T10694-2004	Ω	1x10 ⁶ ≤ R ≤ 1x10 ⁹
Bottom Resistance / R _{TT}	SJ/T10694-2004	Ω	1x10 ³ ≤ R ≤ 1x10 ⁶
Volume Resistance	GB/T14437-97	Ω	1x10 ⁵ ≤ R ≤ 1x10 ⁸
Thickness	YY-1001	mm	Permissible Tolerance +0.1
Temperature Resistance	YY-1001	°C	180 (Instantaneous Temp)
Temperature	N/A	°C	20–26
Relative Humidity	N/A	%	40–65

R_{TG} is the resistance from one point on the mat's surface to the mat's ground point, and is the fundamental electrical test for a mat. A proper R_{TG} insures that a mat can conduct charge from a point on the surface to the mat ground point. The guideline in ESD STM-4.1 for R_{TG} is 1x10⁶ to 1x10⁹ Ω. ANSI/ESD S-20.20 has an upper limit of <1 x10⁹ Ω. R_{TT} is the resistance from one point on the mat's surface to another point. A proper R_{TT} insures the consistency of the mat's resistance properties. The ESD STM-4.1 guideline for R_{TT} is >1x10⁶ Ω.

PRODUCT CODE:	DESCRIPTION:	SIZE:	ADDITIONAL NOTES:
082-0065	ESD Anti Slip Multipurpose Matting – 3mm	1.2m wide / 10m length per roll	Yellow / Black
082-0066	ESD Anti Slip Multipurpose Matting – 3mm	1.2m wide / 10m length per roll	Blue / Black
082-0067	ESD Anti Slip Multipurpose Matting – 3mm	600 x 1200mm	Yellow / Black
082-0068	ESD Anti Slip Multipurpose Matting – 3mm	600 x 1200mm	Blue / Black

ESD Workstation Kit

KIT INCLUDES:

- 1x ESD Matting (600x1200mm) with 10mm stud in each corner (see spec for ESD Bench Matting – Smooth Finish)
- 1x10mm Fabric Adjustable Wrist Strap Hypo Allergenic
- 1x10mm Coiled Earth Lead
- 1x10mm Straight Lead
- 1x Crocodile Clip
- 1x Instruction Leaflet

UK KIT INCLUDES:

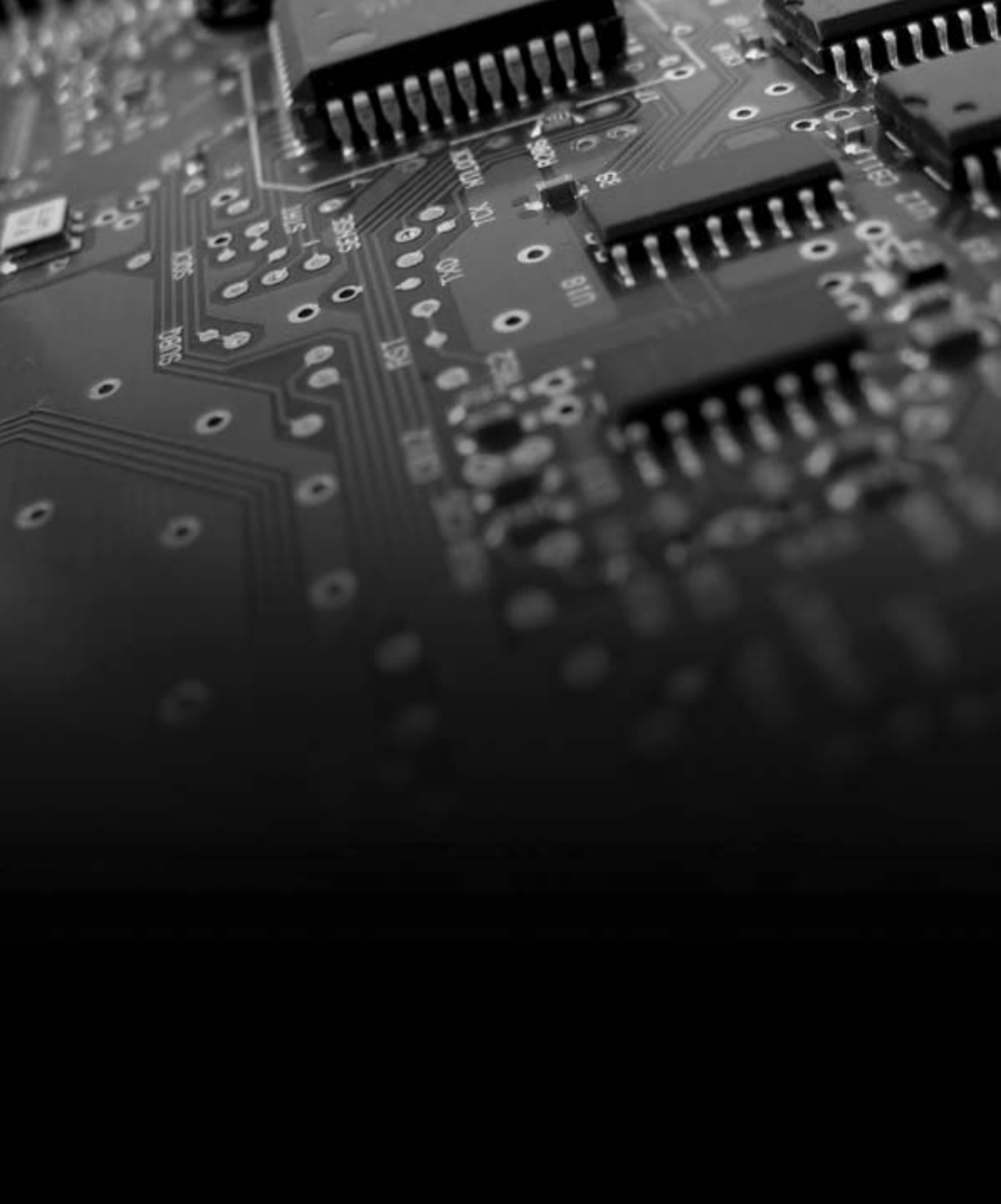
- 1x ESD Protected Area Vinyl Sign (English)
- 1x Earth Bonding Plug 3x10mm Stud

EUROPEAN KIT INCLUDES:

- 5x ESD Protected Area Vinyl Sign 300x150mm (English, Italian, Spanish, French & German)
- 1x Earth Bonding Plug 3x10mm Stud (Euro)



Image shows 069-0002 UK Workstation Kit



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