

## Product Specification and Datasheet : DSS-L001

### Electro Static Discharge (ESD) Tools and Equipment

**Product name and code:**

- Brooms: ASB1240, ASB1440, ASB1450, ASB24147
- Tube brush: ASB2820, ASB3030, ASB3363, ASB3470, ASB3490, ASB3500, ASB3550
- Brushes: ASB5123,
- Floor brush: ASB5203, ASB5204
- Churn Brush: ASB5627
- Utility brush: ASB6122, ASB6124
- Machine brush: ASB6231
- Scrubbing bushes: ASB6421, ASB6530, ASB6731
- Ergonomic handles: ASH4813, ASH4815, ASH4817, ASH4817
- Lobby pan: ASW0023, ASW0050, ASW1050
- Shovel: ASP1718, ASP1728, ASP1748, ASP1768
- Scoops and Spatulas: ASP2075, ASP6113, ASP612, ASP6124, ASP6134, ASP6140, ASP6145, ASP6405, ASP6417, ASP6421
- Bucket: ASW4101, ASW4111

**Trade names:** brooms, brushes, handles, scrapers, shovels, scoops, spatulas and dustpans.

**PRE-ELEC® PP 1375 is a carbon black filled conductive thermoplastic compound based on polypropylene. In addition to a low electrical resistivity PRE-ELEC® PP 1375 has an excellent balance of mechanical properties and is easy to injection-mould.**

**Typical applications include injection moulded ESD products such as crates, boxes and tote bins for electronic components.**

**Processing**

PRE-ELEC® PP 1375 compound can be processed in the injection moulding machines using normal processing conditions as with polypropylene:

**Injection moulding:**

- Material temperature 200 - 250°C (390 - 480°F)
- Mould temperature 60 - 80°C (140 - 180°F)
- Injection pressure 600 - 800bar (8700 - 11600psi)
- Injection speed moderate

These temperatures can be used for guidance purposes. They will also depend on the equipment used. The instructions of the equipment manufacturer should be followed.

Pre-drying is recommended e.g. 2 - 4 hours at 60 - 80°C (140 - 175°F).

**Packaging and Storage**

PRE-ELEC® PP 1375 is supplied in granule form, packed in 20kg polyethylene valve bags (1000kg on one-way pallet) or in 1100kg octabin.

The product can be stored one year in normal storing condition

Date of issue	28-09-2017	Revision No.	002	Revised by	SB
Approved by	S. Britton	Doc No.	DSS-L001	Uncontrolled if printed	Page 1 of 11

## Physical Properties

Pre-elec* PP 1375	ISO	Unit		ASTM	Unit	
Specific gravity Density		g/cm <sup>3</sup>	0.98		lb/in <sup>3</sup>	0.035
Melt Flow Index 230oC / 2.16 kg 230oC / 5.0 kg	133	g/10min g/10min	12 60	D-1238		
Tensile strength	527	MPa	28	D-638	psi	4000
Yield strength	527	MPa		D-638	psi	
Elongation at break	527	%	14	D-638		
Elongation at yield	527	%		D-638		
Modulus of elasticity	178	MPa	1300	D-790	103 psi	190
Impact strength, unnotched Izod 4.0 mm (0.156-in) thickness, 23°C / 73°F 4.0 mm (0.156-in) thickness, -20°C / -4°F	180	kJ/m <sup>2</sup>	59 55	D-256	ft-lb/in <sup>2</sup>	28 26
Impact strength, notched Izod 4.0 mm (0.156-in) thickness, 23°C / 73°F 4.0 mm (0.156-in) thickness, -20°C / -4°F	180	kJ/m <sup>2</sup>	9 5	D-256	ft-lb/in <sup>2</sup>	4 2
Vicat softening point Rate A Rate B	306/ A50 B50	°C	150	D-1525	°F	300
Deflection temperature 0.45 MPa (66 psi) - load 1.8 MPa (264 psi) - load	75/ Method Bf Method Af	°C	91 54	D-648	°F	196 129
Volume resistivity	D-257*	Ωcm	<103	D-257	Ωcm	
Surface resistivity	D-257*	Ω	<104	D-257	Ω	
Mould shrinkage	294-4	%	1.5-2.0	D-955	in/in	0.015- 0.020
Hardness Shore A Shore D	868		95 65	D-2240		

Test specimen: 4.0mm (0.156in) thick, 10.0mm (0.391in) wide moulded rod

The heat content of the compound leaving the machine is high due to its relatively poor flow which leads to elevated temperatures and increased pressure, which when released raises the temperature of the material further. As the self-ignition temperature of polymer/carbon black compounds is around 350°C

Date of issue	28-09-2017	Revision No.	002	Revised by	SB
Approved by	S. Britton	Doc No.	DSS-L001	Uncontrolled if printed	Page 2 of 11

Registered in England and Wales: Klipspringer Ltd, Rynor House, Farthing Road, Ipswich, IP1 5AP. Registration number: 07676073.



In Partnership with



0764

Cert. No. 9705  
ISO 9001

Instrumentation  
Shadow boards  
Wall storage

Hygiene brushware  
Squeegees & scourers  
Production equipment

Cleaning equipment  
Specialist Food PPE  
Facilities support

Detectable equipment  
Materials handling  
Spill control & containment

(660°F) care must be taken that e.g. purged material does not catch fire. Overheated material can be cooled with e.g. water.

The information in this data sheet represents typical values obtained by us and should not be regarded as a specification.

We condition that the product will be inspected and qualified by the customer for his process to meet the specific requirements set by application, processing equipment and end product.

PRE-ELEC® is a registered trademark of Premix.

## Measurement Results of antistatic Hand Tools

Reference:

- 1) Klipspringer Catalog of Antistatic tools
- 2) ESD TR53-01-06: Compliance Verification of ESD protective Equipment and Materials, ESD Association (USA)
- 3) ASTM D-257-78: electrical resistance measurement methods of insulating materials
- 4) CENELEC/TR 50404-2003: Electrostatics - Code of practice for the avoidance of hazards due to static electricity

### 1. Background

#### Tested Material

Several black polypropylene hand tools were selected for lab characterization.

According to CENELEC/TR 50404-2003 ESD standard (Ref 4) acceptable antistatic tools would have resistivity (measured from tool handle to its end making a contact with HAZMATs) less than  $1.0 \times 10^8 \Omega$ , as is presented in the following table:

Sub clause	Type of installation	Maximum resistance to earth, ohms
10.3.4	Items fabricated from non-conductive or dissipative materials	$10^6$ to $10^8$

### Measurement Details

Measurement methods are per Ref.2 and Ref. 3

Measurement voltage: 100V

Instrument: Resistance Meter, Prostate, Model PRS-812; Upper measurement range 1014Ω

Calibration due date: 28 September. 2015

Date of issue	28-09-2017	Revision No.	002	Revised by	SB
Approved by	S. Britton	Doc No.	DSS-L001	Uncontrolled if printed	Page 3 of 11

Registered in England and Wales: Klipspringer Ltd, Rynor House, Farthing Road, Ipswich, IP1 5AP. Registration number: 07676073.



0764

Cert. No. 9705  
ISO 9001

Instrumentation  
 Shadow boards  
 Wall storage

Hygiene brushware  
 Squeegees & scourers  
 Production equipment

Cleaning equipment  
 Specialist Food PPE  
 Facilities support

Detectable equipment  
 Materials handling  
 Spill control & containment

Tool electrical resistivity was measured from end to end (handle to tool's end making a contact with ESD sensitive material/component)

### Measurement Results

All measurements were conducted at 42 °C and RH%39  
 K=1000; M=106; G=109

No.	Product code	Tool description	End-to-end resistivity kΩ	Pass/Fail
1	ASB1440	Brush	32	Pass
2	ASH4813	Brush stick	1.9	Pass
3	ASP6405	Small hand scoop	15	Pass
4	ASP6421	Large hand Scoop	4.1	Pass
5	ASW0023	Dust pan	11	Pass
6	ASW4101	Bucket	14	Pass
7	ASW1444	Bucket cover	10	Pass
8	ASB6731	Round hand scrub brush	28	Pass
9	ASP6134	Scrapper (Spatula) 100*240mm	11	Pass
10	ASP6113	Scrapper (Spatula) 250*75mm	2.5	Pass
11	ASP6124	Scrapper 110*250mm	Not available	Pass
12	ASP6431	Nail brush	160	Pass
13	ASB6124	Long Utility Brush, 410 * 55 mm	3.3	Pass
14	ASB6122	Small Utility Brush, 270 * 47 mm	13	Pass
15	ASB6231	Machine Brush 275 * 20mm	41	Pass
16	ASB5123	Bannister Brush 340 * 35mm	4.9	Pass
17	ASP6145	Hand scrapper half round	9.1	Pass
18	ASP6145	Hand scrapper - rectangular	6.4	Pass

### Conclusions

All tested hand tools were found to have very good static dissipative characteristics. They are good quality tools and need only GMP approval for pharmaceutical materials. For other processing industries such as food, hi-tech, chemicals, and petro-chemicals these hand tools are the best tools approved by our lab, so far, for ESD control.

Moshe Netzer- PE, NCE  
 EMC Compatibility Engineer  
 Specialist Consultant on ESD Control (Safety and QA)

Date of issue	28-09-2017	Revision No.	002	Revised by	SB
Approved by	S. Britton	Doc No.	DSS-L001	Uncontrolled if printed	Page 4 of 11

Registered in England and Wales: Klipspringer Ltd, Rynor House, Farthing Road, Ipswich, IP1 5AP. Registration number: 07676073.



0764

Cert. No. 9705  
 ISO 9001

Instrumentation  
 Shadow boards  
 Wall storage

Hygiene brushware  
 Squeegees & scourers  
 Production equipment

Cleaning equipment  
 Specialist Food PPE  
 Facilities support

Detectable equipment  
 Materials handling  
 Spill control & containment

**SAFETY DATA SHEET**

**SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY UNDERTAKING**

- 1.1 Product identifier  
 PRE-ELEC PP 1375  
 Company product code  
 PP1375  
 REACH registration number  
 Mixture, no registration
- 1.2 Relevant identified uses of the substance or mixture and uses advised against  
 The uses of the chemical  
 to make electrostatic conductive products  
 Classification of economic activities (NACE) **C20.16**  
 Use categories (UC62) **55**  
 The chemical can be used by the general public

The chemical is used by the general public only

- 1.3 Details of the supplier of the safety data sheet  
 Manufacturer, importer, other undertaking

Company **Klipspringer Ltd**  
 Address **Rynor House, Farthing road, Ipswich, Suffolk IP1 5AP**  
 Telephone **0(044) 1473 461800**  
 Email Address [Sales@klipspringer.com](mailto:Sales@klipspringer.com)

- 1.4 Emergency telephone number **0(44) 1473 461800**

**SECTION 2: HAZARD IDENTIFICATION**

- 2.1 Classification of the substance or mixture  
 Not hazardous mixture
- 2.2 Label elements  
 NA
- 2.3 Other hazards  
 Compound contained carbon black which is in the base polymer. Carbon black is listed in the dust form as a possible carcinogen to humans – group 2B – by the International Agency for Research on Cancer (IADC). In the compound carbon black is not in the dust form but is bound in plastic.

Date of issue	28-09-2017	Revision No.	002	Revised by	SB
Approved by	S. Britton	Doc No.	DSS-L001	Uncontrolled if printed	Page 5 of 11

Registered in England and Wales: Klipspringer Ltd, Rynor House, Farthing Road, Ipswich, IP1 5AP. Registration number: 07676073.



0764  
 Cert. No. 9705  
 ISO 9001

Instrumentation  
 Shadow boards  
 Wall storage

Hygiene brushware  
 Squeegees & scourers  
 Production equipment

Cleaning equipment  
 Specialist Food PPE  
 Facilities support

Detectable equipment  
 Materials handling  
 Spill control & containment

## SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

### Hazardous ingredients

CAS/EC number and the registration Number	Name of the ingredient	Concentration	Classification
NA			

## SECTION 4: FIRST AID MEASURES

### 4.1 Description of first aid measures

Wash with water. In case of skin contact with molten plastic cool rapidly with water. Do not attempt removal of plastics with medical assistance.

### 4.2 Most important symptoms and effects, both acute and delayed.

Burning marks in skin contact with molten plastic

### 4.3 Indication of any immediate medical attention and special treatment needed

Severe burning of skin

## SECTION 5: FIREFIGHTING MEASURES

### 5.1 EXTINGUISHING MEDIA

Water, Foam, CO<sup>2</sup>

### 5.2 Special hazards arising from the substance or mixture

Oxidises of carbon and hydrocarbon fragments

### 5.3 Advice of firefighters

Non special advice

## SECTION 6: ACCIDENTAL RELEASE MEASURES

### 6.1 Personal precautions, protective equipment and emergency procedures

No special precautions needed

### 6.2 Environmental precautions

Do not left the granules contaminate soil

### 6.3 Methods and material for containment and cleaning up

Sweep up spill

### 6.4 Reference to other sections

NA

## SECTION 7: HANDLING AND STORAGE

### 7.1 Precautions for safe handling

Follow proposer standard industrial hygiene practices

### 7.2 Conditions for safe storage, including any incompatibilities

To be stored dry

### 7.3 Specific end use(s)

None known

Date of issue	28-09-2017	Revision No.	002	Revised by	SB
Approved by	S. Britton	Doc No.	DSS-L001	Uncontrolled if printed	Page 6 of 11

**SECTION 8: EXPOSURE CONTROL / PERSONAL PROTECTION**

- 8.1 Control parameters
  - National occupational exposure limit values**
  - NA
- 8.2 Other limit values
  - NA
  - DNEL**
  - NA
  - PNEC**
  - NA
- 8.2 Exposure controls
  - Appropriate engineering controls**
  - NA
  - Eye/face protection**
  - Safety glasses where needed
  - Skin protection**
  - Normal clothing
  - Hand protections**
  - Gloves where needed
  - Respiratory protection**
  - Provide adequate ventilation, use local exhaust ventilation
  - Thermal hazards**
  - Molten plastic**
  - Environmental exposure controls**
  - Do not let the granules contaminate the soil

Date of issue	28-09-2017	Revision No.	002	Revised by	SB
Approved by	S. Britton	Doc No.	DSS-L001	Uncontrolled if printed	Page 7 of 11

Registered in England and Wales: Klipspringer Ltd, Rynor House, Farthing Road, Ipswich, IP1 5AP. Registration number: 07676073.



0764

Cert. No. 9705  
 ISO 9001

Instrumentation  
 Shadow boards  
 Wall storage

Hygiene brushware  
 Squeegees & scourers  
 Production equipment

Cleaning equipment  
 Specialist Food PPE  
 Facilities support

Detectable equipment  
 Materials handling  
 Spill control & containment



## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on basic physical and chemical properties

Appearance	Granules
Odour	Characteristic odour
Odour threshold	NA
pH	NA
Melting point/ freeze point	Melting point 140-170°C
Initial boiling point and boiling range	NA
Flash point	350°C
Evaporation rate	NA
Flammability (Solid, gas)	NA
Upper / lower flammability or exposure limits	NA
Vapour pressure	NA
Vapour density	NA
Relative density	NA
Solubility(ies)	NA
Partition coefficient: n-octanol/ water	NA
Auto-ignition temperature	NA
Decomposition temperature	NA
Viscosity	NA
Explosive properties	NA
Oxidising properties	NA

### 9.2 Other information

None

## SECTION 10: STABILITY AND REACTIVITY

### 10.1 Reactivity

Stable

### 10.2 Chemical stability

Stable

### 10.3 Possibility of hazardous reactions

Little

### 10.4 Conditions to avoid

Do not allow the product to remain in barrel at elevated temperatures for extended period of time

### 10.5 Incompatible materials

None known

### 10.6 Hazardous decomposition products

Oxidises of carbon and hydrocarbon fragments

Date of issue	28-09-2017	Revision No.	002	Revised by	SB
Approved by	S. Britton	Doc No.	DSS-L001	Uncontrolled if printed	Page 8 of 11

Registered in England and Wales: Klipspringer Ltd, Rynor House, Farthing Road, Ipswich, IP1 5AP. Registration number: 07676073.



0764

Cert. No. 9705  
ISO 9001

Instrumentation  
Shadow boards  
Wall storage

Hygiene brushware  
Squeegees & scourers  
Production equipment

Cleaning equipment  
Specialist Food PPE  
Facilities support

Detectable equipment  
Materials handling  
Spill control & containment



**SECTION 11: TOXICOLOGICAL INFORMATION**

**11.1 Information on toxicological effects**

**Acute Toxicity**

Carbon black: fish: LC50(96h)>100mg/l, (Brachydanio rerio), OECD203, water flea: EC50(24h)>5600 mg/l, (Daphnia magna), OECD202, algae: EC50 (72h)>10000 mg/l (Scenedesmus subspicatus), LD50 (oral, rats): > 8000 mg/kg.

Skin corrosion/irritation

none known

Serious eye damage/irritation

none known

Respiratory or skin sensitisation

none known

Germ cell mutagenicity

none known

Carcinogenicity

Carbon black is listed as a possible carcinogen to humans - group 2B - by the International Agency for Research on Cancer (IARC), but is not listed as a carcinogen by U.S. National Toxicity Program (NTP) and U.S. Occupational Safety and Health Administration (OSHA).

Reproductive toxicity

none

STOT-single exposure

NA

STOT-repeated exposure

NA

Aspiration hazard

NA

Other information

None

**SECTION 12: ECOLOGICAL INFORMATION**

**12.1 Toxicity**

nontoxic

**12.2 Persistence and degradability**

nonbiodegradable

**12.3 Bioaccumulative potential**

nonbioaccumulate

**12.4 Mobility in soil**

insoluble in water

**12.5 Results of PBT and vPvB assessment**

none

**12.6 Other adverse effects**

none

Date of issue	28-09-2017	Revision No.	002	Revised by	SB
Approved by	S. Britton	Doc No.	DSS-L001	Uncontrolled if printed	Page 9 of 11

**SECTION 13: DISPOSAL CONSIDERATIONS**

**13.1 Waste treatment methods**

Reuse or recycle if possible. Dispose of at approved land-fill tips according to local regulations

**SECTION 14: TRANSPORT INFORMATION**

**14.1 UN number**

NA

**14.2 UN proper shipping name**

NA

**14.3 Transport hazard class(es)**

NA

**14.4 Packing group**

NA

**14.5 Environmental hazards**

none

**14.6 Special precautions for user**

none

**14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**

NA

**SECTION 16: OTHER INFORMATION**

**CARBON BLACK dust:** Carbon black is listed as a possible carcinogen to humans - group 2B - by the International Agency for Research on Cancer (IARC), but is not listed as a carcinogen by U.S. National Toxicity Program (NTP) and U.S. Occupational Safety and Health Administration (OSHA).  
**Carbon black in the dust form:** Carbon black contains trace amounts of strongly adsorbed polynuclear aromatic compounds (PAH's). Some PAH's in the non-adsorbed form have been found to be carcinogenic. Epidemiology studies of U.S. and W. European carbon black workers show no significant health effects due to occupational exposure. Chronic inflammation, lung fibrosis and lung tumours have been found in rats experimentally exposed for long periods of time to excessive concentrations of carbon black and other insoluble dust particles which overwhelm the lung clearance mechanisms. The researchers who conducted these tests believe that these diseases most likely result from the massive accumulation of small dust particles in the lung, the "lung overload phenomenon," rather than from specific chemical effect of carbon black. Such effects occur only when the lungs are overloaded with an excess of small particles. Human studies have not found that workplace exposure to carbon black at or below the TLV causes these effects.

This specification was prepared on behalf of Klipspringer Ltd and the information included is to the best of our knowledge correct at the time of writing. Klipspringer offer the information within this document as a guide only, they do not represent any guarantee of the prescribed products in the sense of the legal guarantee regulations. It is the responsibility of the end user to ensure the items purchased are suitable for the intended application.

28-09-2017

Date of issue	28-09-2017	Revision No.	002	Revised by	SB
Approved by	S. Britton	Doc No.	DSS-L001	Uncontrolled if printed	Page 10 of 11

Registered in England and Wales: Klipspringer Ltd, Rynor House, Farthing Road, Ipswich, IP1 5AP. Registration number: 07676073.



0764

Cert. No. 9705  
 ISO 9001

Instrumentation  
 Shadow boards  
 Wall storage

Hygiene brushware  
 Squeegees & scourers  
 Production equipment

Cleaning equipment  
 Specialist Food PPE  
 Facilities support

Detectable equipment  
 Materials handling  
 Spill control & containment

Date of issue	28-09-2017	Revision No.	002	Revised by	SB
Approved by	S. Britton	Doc No.	DSS-L001	Uncontrolled if printed	Page 11 of 11

Registered in England and Wales: Klipspringer Ltd, Rynor House, Farthing Road, Ipswich, IP1 5AP. Registration number: 07676073.



0764



Cert. No. 9705  
ISO 9001

Instrumentation  
Shadow boards  
Wall storage

Hygiene brushware  
Squeegees & scourers  
Production equipment

Cleaning equipment  
Specialist Food PPE  
Facilities support

Detectable equipment  
Materials handling  
Spill control & containment