

Selector Guide for Standard CABELEC Compounds

ELECTRONICS PACKAGING

CRATES		FILM		SHEET	
PP	CA3842	LDPE	CA4918	EVA	CA0887
PP	CA3839	LLDPE	CA3817	PP	CA4701
HDPE	CA4743			PS	CA3896 ⁽¹⁾
				PS	CA4857
				PS	CA4252 ⁽¹⁾
				PS	CA4945 ⁽²⁾
				PE (foam)	CA4676

INDUSTRIAL

PIPES & TUBING		CONTAINERS		PALLETS		FILM		TECHNICAL PARTS	
EVA	CA0887	HDPE	XS6132	HDPE	CA4743	LDPE	CA4918	EVA	CA0887
PP	CA4701					LLDPE	CA3817	PA6	CA3178
								POM	CA3899
								PC	CA6141
								PP-fr ⁽³⁾	XS6033

AUTOMOTIVE

FUEL SYSTEMS

HDPE	XS6132
HDPE	XS6114
HDPE-gf ⁽⁴⁾	XS6115
PA6	CA3178
POM	CA3899

⁽¹⁾: is only available in Asia/Pacific
⁽²⁾: only available in Europe
⁽³⁾: flame retardant
⁽⁴⁾: glass fibre filled

Addresses

EMEA

Cabot
 Interleuvenlaan 15 i
 B - 3001 Leuven
 BELGIUM
 Tel.: +32 16 39 24 00
 Fax: +32 16 39 24 44

ASIA-PACIFIC

Cabot (China) Limited
 558 Shuangbai Lu
 Wujing, Shanghai 201108
 CHINA
 Tel: +86 21 6434 6025
 Fax: +86 21 6434 5532

SOUTH AMERICA

Rua do Paraíso, 148 - 5th floor
 Paraíso CeP 04103-000 São Paulo SP
 BRASIL
 Tel: +55 11 2144 6400
 Fax: +55 11 3253 0051
 Tel: 0800 195959 (Customer Service)

Notice and Disclaimer. The data and conclusions contained herein are based on work believed to be reliable; however, Cabot cannot and does not guarantee that similar results and/or conclusions will be obtained by others. This information is provided as a convenience and for informational purposes only. No guarantee or warranty as to this information, or any product to which it relates, is given or implied. CABOT DISCLAIMS ALL WARRANTIES EXPRESS OR IMPLIED, INCLUDING MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AS TO (i) SUCH INFORMATION, (ii) ANY PRODUCT OR (iii) INTELLECTUAL PROPERTY INFRINGEMENT. In no event is Cabot responsible for, and Cabot does not accept and hereby disclaims liability for, any damages whatsoever in connection with the use of or reliance on this information or any product to which it relates.

© Cabot Corporation, MA, U.S.A. All rights reserved 2010.

<http://www.cabot-corp.com/Conductive-Compounds>

CABELEC® is a registered trademark of Cabot Corporation.



CONDUCTIVE COMPOUNDS



CABELEC® Conductive Compounds for ESD Applications



CA-ESD/05.10/E

CABELEC® Conductive Compounds for ESD Applications



Static electricity is a natural phenomenon which cannot be avoided and can be a problem sometimes leading to disastrous events.

Static charges can build up on the surface of petrol pump hoses, on polyethylene bags or boxes containing explosive materials and also on tools used in confined spaces like mines and tunnels. Rapid dissipation of this charge causing a spark could be devastating.

Delicate electronic components are easily damaged by static discharge and subsequent faults in assembled equipment can be costly. Electrostatic discharge (ESD) is a serious problem.

Most thermoplastic resins are electrical insulators. However carefully designed formulations of thermoplastic resins with conductive carbon blacks can change the electrical characteristics from insulating to conductive.

Cabot offers its range of CABELEC electrically conductive compounds to greatly reduce the risk of a catastrophic discharge of electrostatic energy. The conductive properties of CABELEC compounds are permanent and not dependent on temperature or humidity. They are an integral part of the performance of the material.

CABELEC compounds can be processed on conventional plastics processing equipment and are designed to meet the needs of the many industries where permanent reduction of electrostatic hazards is required.

■ CABELEC compounds are designed for use in the following applications:

Electronics packaging

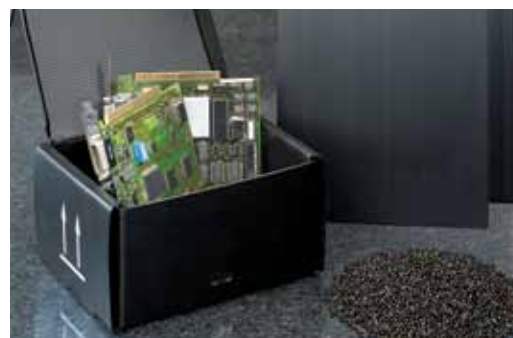
Boxes, bags, reel carrier tapes, thermoformed trays and many other types of electronics packaging, and applications in protected areas such as bench tops, wrist straps, flooring and matting are examples of conductive articles that can be manufactured using CABELEC compounds.

Safety applications

Hazardous materials and fine powders can explode when an electrostatic discharge occurs. The risk of explosion can be reduced by the use of CABELEC conductive compounds. These can be used to produce items ranging from thin films to large containers with a wide range of electrical and mechanical properties.

Automotive parts

Risks of explosion also exist with certain liquids, such as unleaded petrol or diesel. CABELEC compounds can be used for fuel system components to reduce the hazards of electrostatic discharge.



CABELEC	Base Polymer	Density kg/m ³ CTM E023	Hardness Shore D CTM E030 (ASTM D2240)	Heat Distortion Temperature (1.80MPa) ^{°C} CTM E038 (ISO 75)	Vicat Softening Point (10N) ^{°C} CTM E039 (ISO 306)	Melt Flow Index		Volume Resistivity Ohm.cm CTM E043	Surface Resistivity Ohm/sq CTM E042	Flexural Modulus MPa CTM E040A (ISO 178)	Tensile Strength at Break MPa CTM E041 (ISO 527)	Tensile Strength at Yield MPa CTM E041 (ISO 527)	Elongation at Break % CTM E041 (ISO 527)	Notched Izod Impact (80mm x 10mm x 4mm) kJ/m ² CTM E044A (ISO 180)	Processing - Special features	CABELEC
						g/10 min CTM E005 (ISO 1133)	(190°C/21.6 kg) (190°C/10 kg)									
XS6132	HDPE	1048	64	41	126	3.6 0.6	(190°C/21.6 kg) (190°C/10 kg)	63 (c)	208 (c)	838	27 (c)	21 (c)	918 (c)	65	Blow moulding	XS6132
CA4743	HDPE	1153	59	43	99	37 12 3	(190°C/10 kg) (190°C/5 kg) (190°C/2.16 kg)	70	800	1300	10	18	60	15	Injection moulding, high fluidity Large parts: e.g. pallets	CA4743
XS6114	HDPE	1064	62	37	117	15 4 1	(190°C/21.6 kg) (190°C/10 kg) (190°C/5 kg)	15	103	724	15	24	54	23	Injection moulding Automotive fuel systems, technical parts	XS6114
XS6115	HDPE-gf ⁽⁴⁾	1218	66	92	120	11 2	(190°C/21.6 kg) (190°C/10 kg)	24	149	2793	36	39	4	13	Injection moulding Automotive fuel systems, technical parts	XS6115
CA4918	LDPE	1060	-	-	-	3.5 0.8	(190°C/10 kg) (190°C/5 kg)	-	5 • 10 ³ (f)	-	LD 21 (f) TD 20 (f)	LD 12 (f) TD 11 (f)	LD 580 (f) TD 425 (f)	-	Blown film extrusion min 30 µm, generally 100-150 µm conductive pouches	CA4918
CA3817	LLDPE	1038	-	-	-	6 2	(190°C/10 kg) (190°C/5 kg)	-	10 ⁴ (f)	284(c)	LD 25 (f) TD 22 (f)	LD 12 (f) TD 12 (f)	LD 1077 (f) TD 944 (f)	-	Blown film extrusion, high tear resistance Liners, electronics and safety packaging	CA3817
CA4676	LDPE	990	50	-	-	29 5 0.9	(190°C/21.6 kg) (190°C/10 kg) (190°C/5 kg)	10 (c)	70 (c)	-	13 (c)	11 (c)	385 (c)	-	Foam extrusion Electronics and safety packaging	CA4676
CA0887	EVA	1160	59	49 (0.45MPa)	73	3 0.3 0.05	(190°C/21.6 kg) (190°C/10 kg) (190°C/5 kg)	5	100	220	13	9	250	-	Extrusion of flexible articles: pipes, tubes, flooring, matting	CA0887
CA3842	PPC	1090	66	46	148	22 5 0.4	(230°C/10 kg) (230°C/5 kg) (230°C/2.16 kg)	20	200	1500	16	21	20	31	Injection moulding: crates and technical parts	CA3842
CA3839	PPC	1038	63	47	150	94 20.5 4	(230°C/10 kg) (230°C/5 kg) (230°C/2.16 kg)	10 ⁴	10 ⁶	1200	15	21	59	45	Injection moulding, static dissipative: crates and technical parts	CA3839
CA4701	PPC	1028	68	50	155	10 2.3	(230°C/10 kg) (230°C/5 kg)	70	979 770 (t)	1108	28	20	37	72	Extrusion: plain & corrugated sheets, monofilaments	CA4701
XS6033	PP-fr ⁽³⁾	1233	65	45	151	20 3 0.3	(230°C/10 kg) (230°C/5 kg) (230°C/2.16 kg)	12	200 (t)	1150	17	19	211	30	Injection moulding UL94V0 (3mm) - As of 1st July 2008, the flame retardant additive used in CABELEC® XS6033 is no longer permitted for the manufacture of electrical and electronic equipment destined for the European Union (European Court of Justice (ECJ) ruling of 1st April 2008 against exemption of the additive from RoHS Directive: 2002/95/EC)	XS6033
CA3896 ⁽²⁾	PS	1087	75	72	101	38 5 1	(200°C/21.6 kg) (200°C/10 kg) (200°C/5 kg)	300	2 • 10 ⁵ (t)	1875	24	30	23	16	Extrusion and thermoforming	CA3896 ⁽²⁾
CA4252 ⁽¹⁾	PS	1093	75	69	102	39 5 1	(200°C/21.6 kg) (200°C/10 kg) (200°C/5 kg)	100	1 • 10 ⁴ 1 • 10 ³ (t)	1900	23	29	25	16	Extrusion and thermoforming	CA4252 ⁽¹⁾
CA4857	PS	1090	73	67	100	67 6 1	(200°C/21.6 kg) (200°C/10 kg) (200°C/5 kg)	100	5 • 10 ³ 1 • 10 ³ (t)	2015	20	26	25	9	Extrusion and thermoforming	CA4857
CA4945 ⁽²⁾	PS	1124	74	66	101	3 0.5	(200°C/10 kg) (200°C/5 kg)	50	500 (t)	2050	22	29 LD 31 (s) TD 25 (s)	16 LD 34 (s) TD 4 (s)	7	Extrusion and thermoforming, higher conductivity	CA4945 ⁽²⁾
CA6141	PC	1200	80	121	149	12 4 0.6	(260°C/10 kg) (260°C/5 kg) (260°C/2.16 kg)	200	10 ⁵	2168	47	54	24	22	Injection moulding: technical parts	CA6141
CA3178	PA6	1196	78	66	215	10	(275°C/10 kg)	100	10 ⁵	2700	45	55	15	15	Injection moulding: technical parts, automotive fuel system	CA3178
CA3899	POM	1390	79	72	168	28 9 3	(190°C/10 kg) (190°C/5 kg) (190°C/2.16 kg)	39	500	1900	45	46	42	11	Injection moulding: automotive fuel system, technical parts	CA3899

⁽¹⁾ - is only available in Asia/Pacific

⁽²⁾ - only available in Europe

⁽³⁾ - flame retardant

⁽⁴⁾ - glass fibre filled

Tests are performed according to Cabot Test Methods (CTM) based on International Standards

Typical values for CABELEC compounds are measured on injection moulded samples, except:

(c) values measured on compression moulded samples

(f) values measured on blown film (100 µm)

(t) values measured on extruded tape (400 µm)

(s) values measured on extruded sheet

LD = Longitudinal Direction

TD = Transversal Direction