



PACE[®] AND E-TEC[®]
PRODUCTS

PACE® MASTERBATCH

The high performance Colloids **PACE®** brand for the engineering polymer market is designed for use in a comprehensive range of polymer specific applications.

Our product range is particularly suitable where special functionality is required. UV stability, resistance to high temperatures and friction reduction are just some of the qualities demanded in our customers' end products. Although the majority of our **PACE®** products contain functional black colorants we also manufacture **PACE®** additive and **PACE®** colour masterbatches.

The *PACE®* range includes, but is not limited to, masterbatches based on the following polymer:

- PA-6 (Nylon-6)
- PA-6,6 (Nylon-6,6)
- PA-11
- PA-12
- PBT
- PET
- PC
- TPE

We are accredited to ISO/TS 16949:2002. This is based on ISO 9001:2000 with additional requirements for the Automotive sector.

Colloids can also develop and produce customer specific formulations in conjunction with our Technical department.



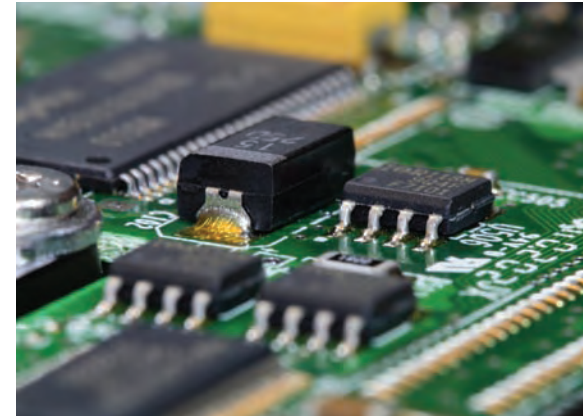
***E-TEC*[®] Antistatic, Dissipative and Conductive Compounds**

The *E-TEC*[®] brand has been created to provide speciality compounds formulated for applications where varying degrees of permanent electrical conductivity are required.

Such products find use in areas where accumulations of static electrical charges can potentially cause problems. Based on dispersions of conductive carbon black the *E-TEC*[®] range is available as standard in the following polymers:

- **Polystyrene** Offers good definition and lower shrinkage
- **Polycarbonate/ABS** For applications requiring high strength
- **Polypropylene** Good balance between rigidity and toughness
- **Polyamide** Ideal for higher operating temperatures
- **Polyethylene** Suggested for film extrusion down to 75 micron

Also available are compounds incorporating colourless additives designed to impart permanent antistatic properties.





Contents

This document contains information about a selection of products that forms Colloids standard range of **PACE**[®] and **E-TEC**[®] Masterbatch types.

Simply click on the title of the Masterbatch you would like more information on.

Further products are available based on different polymer carriers and other colourant/additive systems.

For more information please contact the Colloids Sales Team on +44 (0) 151 546 9222.

PACE[®] Masterbatches 4

E-TEC[®] Conductive Compounds 5

Table Reference Information

*******Food contact:** 'Tick' means that the Masterbatch is generally accepted for food packaging application in most countries. For specific details please contact the Colloids Sales Office.

PLEASE NOTE: The product information contained within this pdf is based on our general experience and does not constitute a specification. Since many factors affect the use of our products, no warranty is given or implied with respect to this information or patent infringement. We do not accept liability for any loss or damage arising from the use of this information.

All sales are subject to our standard terms and conditions of sale.

PACE® Masterbatches

Symbol Reference Guide

✓ = Suitable, * = Partial suitability, ✗ = Not suitable

GRADE	POLYMER BASE	POLYMER COMPATIBILITY For other polymers please contact Colloids sales office			COLOURANT / ADDITIVE CONTENT	COLOURANT / ADDITIVE TYPE	FOOD CONTACT APPROVED *****	RECOMMENDED USE			OTHER COMMENTS
		PA (Nylon)	PET	PC				COMPOUNDING	EXTRUSION	INJECTION MOULDING	
PACE® N 54/1044	PA-6	✓	✗	✗	25%	High jet furnace carbon black	✓	✓	✓	✓	Superior quality carbon black masterbatch for colouration and UV stability
PACE® N 54/1033	PA-6	✓	✗	✗	40%	Black solvent dye	✗	✓	✓	✓	Black solvent dye system for improved moulding behaviour and surface properties
PACE® N 54/14	PA-6	✓	✗	✗	30%	High jet furnace carbon black + Black solvent dye	✗	✓	✓	✓	Combination of carbon black and black solvent dye system for combined performance
M PA ADDITIVE 11200	PA blend	✓	✗	✗	25%	Graphite	✗	✓	✓	✓	Friction and wear reducing additive
EL 4303	PA-6	✓	✗	✗	40%	Molybdenum Disulphide	✗	✓	✓	✓	Friction and wear reducing additive
PACE® ADDITIVE 101	PA-6	✓	✗	✗	Not disclosed	Copper halogen stabiliser	✗	✓	✓	✓	Thermal stabiliser optimised for service temperatures above 120°C
PACE® N 54/1/01	PA-6	✓	✗	✗	50%	Titanium dioxide	✓	✓	✓	✓	Superior quality rutile titanium dioxide white masterbatch
PACE® BLACK 4357	PC	✗	✗	✓	30%	High jet furnace carbon black	✓	✓	✓	✓	Highly effective black colouration with the benefits of a polycarbonate carrier
PACE® PT 4778	PET	✗	✓	✗	30%	Small particle furnace carbon black	✓	✓	✓	✓	Highly effective black colouration with the benefits of a PET carrier

E-TEC® Conductive Compounds

The majority of conventional thermoplastics are insulative. Such polymers can be modified to achieve varying degrees of electrical conductivity. The generally recognised classification of such modified polymer compounds is shown below. The surface resistivity of metals and unmodified polymers are included for comparison.

Surface Resistivity (Ohms)	Material
$10^{-1} - 10^{-5}$	METALS
$<10^6$	CONDUCTIVE COMPOUNDS
$10^6 - 10^9$	STATIC DISSIPATIVE COMPOUNDS
$10^{10} - 10^{12}$	ANTISTATIC COMPOUNDS
$> 10^{12}$	INSULATIVE POLYMERS

GRADE	POLYMER TYPE	DESCRIPTION	APPLICATIONS					TYPICAL SURFACE RESISTIVITY
			EXTRUSION FILM	EXTRUSION SHEET	EXTRUSION PROFILE	INJECTION MOULDING	BLOW MOULDING	
E-TEC® ABS 11368	ABS	Colourless permanently antistatic compound which can be coloured with Colloids standard masterbatches	X	✓	✓	✓	X	10^9
E-TEC® HD 12491	HDPE	Black conductive compound based on high molecular weight HDPE for blow moulded containers	X	✓	X	X	✓	10^4
E-TEC® PA 4332	Modified PA-6	Black modified polyamide compound with excellent toughness and rigidity	X	X	✓	✓	X	10^4
E-TEC® PC/ABS 13491	Modified PC/ABS	Black conductive compound ideal for thermoforming	X	✓	✓	✓	X	10^5
E-TEC® PE 4329	Modified LDPE	Black conductive compound designed for film extrusion down to 75 microns	✓	✓	✓	✓	X	10^3
E-TEC® PP 50/CON/2	PP	Black conductive compound offering increased rigidity	X	X	✓	✓	X	10^3
E-TEC® PP 10542	PP	Black conductive compound ideal for sheet extrusion including twin wall corrugated sheet	X	✓	X	X	X	10^3
E-TEC® PP 11357	PP	Colourless permanently antistatic compound which can be coloured with Colloids standard masterbatches	X	✓	✓	✓	X	10^9
E-TEC® PP 13579	PP	Black conductive compound offering increased conductivity compared to other PP grades in the E-TEC® range	X	X	✓	✓	X	10^2
E-TEC® PS 13680	Modified PS	Black conductive compound ideal for thermoforming	X	✓	✓	✓	X	10^3

For further technical information or samples of any of our products please contact the Colloids sales office.