

masterbatch
product portfolio

Masterbatch - Ace Colour

Universal – A full standard colour range available from stock plus special effects including pearlescent and metallic.

Polymer Specific – for Commodity, Engineering and Styrenic based polymers:

Commodity – HDPE, LDPE, LLDPE, PPHP, PPCP

Styrenics – ABS, SAN, GPPS, HIPS

Engineering – PC, PA, POM, PMMA, PBT/PET, PVC

Bespoke Colours – A full match and make colour service is available for all polymers.

Masterbatch applications – Injection Moulding, Blow Moulding, Profile Extrusion, Sheet Extrusion and Film Extrusion.

Barrel Cleaner – Ace Clean

Ace Clean – A complete thermoplastic purging compound developed for safe, effective and efficient cleaning of plastic processing equipment.

Ace Clean – Is formulated to have a natural flow through the barrel of the extruder and the injection moulding machine, allowing a non-melting but softening thermoplastic to scrub the screw and walls of the barrel.

Additives

Stearate, Talc, UV, Antistatic.

Focus on Masterbatch



Through its close relationship with Masterbatch producers, such as Colourtone, Plastrubation is able to offer a very comprehensive range of Masterbatch products including colour additive & flame retardant in quantities ranging from a few kgs to full trucks. With this facility customers can combine Masterbatch and polymer deliveries giving them the potential to save time, effort & money.

Injection moulding, blow moulding, profile extrusion, sheet extrusion, film extrusion, cast film, fibres and calendered sheet processes commonly employ masterbatch. Why? Because masterbatch offers processors an easy and convenient way of adding colour and/or performance-enhancing additives to natural or base polymers on their own plant.

Key Benefits

- low stock holding compared with pre-compounded materials
- optimum dispersion of pigments/additives
- dust free, no health and safety risks in comparison to undispersed fine powder pigments or additives
- elimination of 'trial and error' development or formulation work
- reduction in purging/cleaning costs.

But What Exactly Is Masterbatch?

A masterbatch is a solid concentrate of colour and/or performance enhancing additives such as anti-static, UV stabiliser and metal deactivator, added to a base polymer. It is usually supplied in granular form, either as pellets similar in size to most polymers or as miniature pellets, known as micro-granules. Alternatively, masterbatch can be delivered in 'rough cut' form – a mixture of small shreds and chunks.

Two main types are offered: polymer specific and universal. Polymer specific masterbatch is produced using the same base polymer group as the type being used by the processor. Universal masterbatch employs a carrier system that is capable of carrying the high quantities of additives necessary to deliver the end use properties required, as well as affording the essential compatibility required across

a broad range of polymers. Universal masterbatches are normally readily available from stock in small quantities and have proved cost-effective if used correctly. However, in terms of compatibility, they can be considered a compromise and processing difficulties sometimes arise with some materials, and engineering polymers that may have to be pre-dried. They are not usually recommended for use at high dosage levels as the appearance or physical properties of the final product may be adversely affected. Conversely, polymer specific masterbatch can be pre-dried with the host polymer and added at high loading without compatibility problems.

Application Determines Suitability

The application almost always influences the type of masterbatch chosen. Only a limited range of colours are generally available and not all engineering polymers lend themselves to conversion to masterbatch. Toys and food packaging, for example, have to be produced from materials made with 'controlled' ingredients and engineering products demand reliable high performance properties. Other typical determining factors might be service conditions such as weatherability or light-fastness. In simple terms, manufacture is a two-stage process: gathering ingredients and then mixing them together by applying heat and shear to produce a homogenised pellet. Generally, high or low speed mixers are used to produce a pre-mix of the additives, which is then compounded on roller mills, kneaders or single or twin screw extruders. Even distribution (dispersion) and development (breaking down) of the additives throughout the carrier are essential. This processing depends on several key elements: formulation, quality of raw materials, quality of mixing and compounding plant. Finally, the finished masterbatch is pelletised (die-face or strand-cut) or ground.

Adding Masterbatch to the Base Polymer

Masterbatch, available from Plastrubation, can be introduced to the processor's base polymer on the production line in a number of ways, the most successful methods being volumetric or gravimetric dosing. In both techniques, the masterbatch is added directly into the polymer stream immediately before processing.

How Do You Know If You Need It?

A basic method of determining whether you will benefit from using masterbatch is to consider that small lots of coloured compound invariably carry a surcharge. Also, look at the cost of stock holding tonnes of coloured compounded material and weigh this up against using the space saved by installing a plant that contributes to profit.

Although masterbatch can typically cost from £7 to £25 per kilo, it has the potential to save hundreds of pounds per tonne against compounded materials.

Ace Clean/Barrel Cleaner

Advantages of Ace Clean

- Safe and easy to use
- Customized solution
- 10% addition rate
- No heat adjustments
- May be left in the machine during shutdown
- Stable and effective through a wide temperature range
- Carrier matrix acts as a displacing / neutralizing agent
- Non-abrasive / non-melting resin allowing the carrier matrix to flush out the system

Reduce Wastage, Increase Productivity

ACE CLEAN is ideal to use:

- During resin and colour changeovers
- Prior to maintenance
- As routine preventative maintenance to minimize build-up of deposits prior to machine shutdown and start-up

Cleans Safely – No Chemicals or Abrasives

ACE CLEAN is designed to flow naturally through the processing equipment, exercising a scrubbing action that loosens deposits and build up while pushing out residue from injection cylinders and extrusion barrels on the first pass.

No Hidden Costs – Packaged Ready to Use

- **ACE CLEAN** is non-abrasive, thermally stable and has an unlimited shelf life
- Pre-blended and complete, the compound is supplied ready to use. No soaking, pre-mixing, waiting period or machine adjustments are required
- Since only a small amount of **ACE CLEAN** is needed for each application, it goes further than most other products.

Quick and Easy to Use

- Does not require a temperature change or RPM adjustment to begin purging
- **ACE CLEAN** is introduced at the resident resin processing temperature and RPM. There is no wait and no concern that the resident resin will freeze in the machine.

Processing Guidelines

POLYMER	RECOMMENDED PROCESSING TEMPERATURES °C						MOULD SHRINKAGE %	DENSITY g/cm ³	MATERIAL PREPARATION		COMMENTS
	ZONE 1	ZONE 2	ZONE 3	NOZZLE	MELT	MOULD			DRYING TEMP °C	DRYING TIME HRS	
Polycarbonate	275-300	280-310	285-315	280-310	270-310	70-110	0.5-0.7	1.2	120	2 to 4	
Polycarbonate 30% Glass	300-320	310-345	315-330	310-330	310-330	70-130	0.3-0.5	1.5	120	2 to 4	
Nylon 6	220-250	230-260	230-270	220-260	230-280	60-90	1.2-1.5	1.14	80	3 to 6	Normally supplied Suitable for moulding
Nylon 6 30% Glass	270-290	280-290	265-280	260-270	270-280	55-80	0.5-0.7	1.36	80	3 to 6	Normally supplied Suitable for moulding
Nylon 66	250-270	250-270	280-290	275-285	280-290	50-150	1.5-2.0	1.14	85	3 to 6	Normally supplied Suitable for moulding
Nylon 66 30% Glass	270-280	285-300	285-300	285-300	275-300	65-95	0.3-0.7	1.36	75	3 to 6	Normally supplied Suitable for moulding
Acetal Homopolymer	165-210	170-210	180-215	170-215	190-230	60-120	1.8-2.2	1.42	85	2 to 3	If necessary
Acetal Copolymer	160-180	180-200	190-215	190-215	200-225	60-120	1.4-1.8	1.41	85	2 to 3	If necessary
PBT	225-235	230-240	235-245	235-245	235-245	40-80	1.7-2.3	1.31	140	2 to 4	
PBT 30% Glass	230-245	230-245	240-250	240-260	240-260	50-100	0.3-1.0	1.52	140	2 to 4	
PET	270-280	270-285	270-290	265-280	270-290	120-140	0.2-0.5	1.34	165	4	
PMMA	170-230	180-250	180-275	180-275	210-270	60-90	0.2-0.6	1.18	75	2 to 4	If necessary

processing guidelines

Engineering Polymers

POLYMER	RECOMMENDED PROCESSING TEMPERATURES °C						MOULD SHRINKAGE %	DENSITY grms/cm ³	MATERIAL PREPARATION		COMMENTS
	ZONE 1	ZONE 2	ZONE 3	NOZZLE	MELT	MOULD			DRYING TEMP °C	DRYING TIME HRS	
Polycarbonate	275-30	280-310	285-315	280-310	270-310	70-110	0.5-0.7	1.2	120	2 to 4	
Polycarbonate 30% Glass	300-320	310-345	315-330	310-330	310-330	70-130	0.3-0.5	1.5	120	2 to 4	
Nylon 6	220-250	230-260	230-270	220-260	230-280	60-90	1.2-1.5	1.14	80	3 to 6	Normally supplied ready for moulding
Nylon 6 30% Glass	270-290	280-290	265-280	260-270	270-280	55-80	0.5-0.7	1.36	80	3 to 6	Normally supplied ready for moulding
Nylon 66	250-270	250-270	280-290	275-285	280-290	50-150	1.5-2.0	1.14	80	3 to 6	Normally supplied ready for moulding
Nylon 66 30% Glass	270-280	285-300	285-300	285-300	275-300	65-95	0.3-0.7	1.36	75	3 to 6	Normally supplied ready for moulding
Acetal Homopolymer	165-210	170-210	180-215	170-215	190-230	60-120	1.8-2.2	1.42	85	2 to 3	If necessary
Acetal Copolymer	160-180	180-200	190-215	190-215	200-225	60-120	1.4-1.8	1.41	85	2 to 3	If necessary
PBT	225-235	230-240	235-245	235-245	235-245	40-80	1.7-2.3	1.31	140	2 to 4	
PBT 30% Glass	230-245	230-245	240-250	240-260	240-260	50-100	0.3-1.0	1.52	140	2 to 4	
PET	270-280	270-285	270-290	265-280	270-290	120-140	0.2-0.5	1.34	165	2 to 4	
PMMA	170-230	180-250	180-275	180-275	210-270	60-90	0.2-0.6	1.18	75	2 to 4	If necessary

Styrenics

POLYMER	RECOMMENDED PROCESSING TEMPERATURES °C						MOULD SHRINKAGE %	DENSITY g/cm ³	MATERIAL PREPARATION		COMMENTS
	ZONE 1	ZONE 2	ZONE 3	NOZZLE	MELT	MOULD			DRYING TEMP °C	DRYING TIME HRS	
GPSS	150-180	180-230	210-280	210-280	200-250	10-80	0.4-0.6	1.04	70	2-3	If necessary
HIPS	160-190	180-230	210-280	210-280	200-270	10-80	0.4-0.7	1.04	70	3	If necessary
SAN	180-230	210-280	210-280	210-280	200-270	40-80	0.3-0.5	1.07	70-75	3-4	If necessary
Acrylic	170-230	180-250	180-275	180-275	210-270	60-90	0.2-0.6	1-18	75	2-4	If necessary
ABS	180-240	200-240	210-260	210-260	220-260	60-90	0.4-0.6	1.06	80-85	2-4	If necessary

Commodity Materials

POLYMER	RECOMMENDED PROCESSING TEMPERATURES °C						MOULD SHRINKAGE %	DENSITY g/cm ³	MATERIAL PREPARATION		COMMENTS
	ZONE 1	ZONE 2	ZONE 3	NOZZLE	MELT	MOULD			DRYING TEMP °C	DRYING TIME HRS	
Polypropylene	190-230	200-240	220-270	220-270	220-275	30-80	1.2-2.5	0.90	N/A	N/A	
High Density Polyethylene	160-200	200-260	220-280	210-270	205-280	10-60	1.5-4.0	0.95	N/A	N/A	
Low Density Polyethylene	120-200	180-260	200-280	210-270	180-280	10-60	2.0-5.0	0.92	N/A	N/A	
Linear Low Density Polyethylene	130-200	160-260	160-280	160-270	160-280	10-60	1.5-3.0	0.95	N/A	N/A	
Eva	120-160	130-180	150-220	160-220	140-225	15-40	0.5-4.0	0.94	N/A	N/A	



Plastribution

chemical resistance

Chemical & Environmental Resistance of Thermoplastics

MATERIAL DESCRIPTION	WEEK ACIDS	STRONG ACIDS	WEAK ALKALIS	STRONG ALKALIS	ORGANIC SOLVENTS	ALCOHOLS	HYDRO CARBONS	FUELS	GAMMA RADIATION	UV RADIATION
Polypropylene	E	G1	E	E	P3	G	F	F	P	F
Low Density Polyethylene	E	G	E	E	G	E	F	G	F	F
Linear Low Density	E	G	E	E	G	E	F	G	F	F
High Density Polyethylene	E	G1	E	E	G5	E	G	G	F	P
Polystyrene	E	F1	G	G	P3	G	P	P	G	P
Styrene Acrylonitrile	G	G2	G	G	P4	P	P	P	G	P
Acrylonitrile Butadiene Styrene	E	G1	E	E	P4	P	P	P	G	P
Saturated Styrenic Elastomer	E	G	E	G	P3	F	P	P	P	F
Unsaturated Styrenic Elastomer	E	G	E	G	P3	F	P	P	P	P
Nylon 6	G	P	E	F	E	G	G	G	F	F
Nylon 6/6	G	P	E	F	E	G	G	G	F	P
Impact Modified Nylon 6/6	G	P	E	F	G	P	F	G	F	F
Nylon 6/10	G	P	E	F	E	G	F	G	F	F
Nylon 11	G	P	E	F	G	P	G	G	F	F
Nylon 6/12	G	P	E	F	G	P	G	G	F	F
Amorphous Nylon	G	P	E	F	F	P	F	F	F	F
Polycarbonate	E	F1	F	P	P3	G	P	P	G	F
Polycarbonate/ABS Alloy	E	G1	G	F	P3	P	P	P	G	F
Modified Polyphenylene Oxide	E	E	E	E	P	P	F	P	F	F
Acetal	P	P	F	P	E	F	G	G	P	P
Acrylic	P	P	G	F	P	P	P	F	G	G
Polybutylene Terephthalate	G	P	P	P	E	G	P	G	G	F
Polyethylene Terephthalate	G	P	P	P	E	G	P	G	G	F
Polyurethane Elastomer	G	F	G	F	P	F	F/G7	F/G7	F	P
Polyester Elastomer	G	P	G	P	F	G6	E	E	P	P

These chemical and environmental resistance ratings for thermoplastics are provided for comparison purposes only. No assurance can be implied that any material supplied by Plastrubition will meet the ratings listed. End users should conduct their own evaluation of the materials to ensure satisfactory compatibility with any environmental or physical conditions to which they may be exposed.

- E - Excellent
- G - Good
- F - Fair
- P - Poor

- (1) Attacked by oxidizing acids.
- (2) Attacked by sulfuric acid.
- (3) Soluble in aromatic and chlorinated hydrocarbons.
- (4) Soluble in ketones and esters, aromatic and chlorinated hydrocarbons.

- (5) Below 176 degrees F (80 degrees C)
- (6) At ambient temperature.
- (7) 1200 Series: F/G = Fair for Polyether based/Good for Polyester based.
- (8) Property retention with swelling.

injection moulding

Injection Moulding – Fault Finding Guidelines

	MATERIAL TEMP.	MOULD TEMP.	GATE SIZE	MOISTURE	CLAMP PRESSURE	INJECTION PRESSURE	BACK PRESSURE	SCREW SPEED	AFTER PRESSURE TIME	COOLING TIME	FILL RATE/SPEED	CUSHION	VENTING	RELEASE AGENT	REGRIND	CHECK MOULD DIMENSIONS
Gate Splay	I	I	I	D		D		D								
Jetting	I	I	I			D		D								
Orange Peel	I	I				I										
Short Shot	I	I	I			I		I		I						
Flash	D	D			I	D		D								
Warpage	D	D				D			I							
Sinks	I	D	I			I		I		I						
Voids	D	I	I			I	I	I	I	D						
Parts too Small	I	D	I			I	I	I	I	I				I		
Parts too Large	D	I				D			D					D		
Brittleness	D			D		D	D	D	D				D	I	D	D
Pigment Dispersion			I				I	I			D					
Cloudy Appearance	I	I		D										D	D	
Silver Streaks	D		D						D	D						
Brown Streaks	D		I	D			D	D								
Charred Areas						D										
Part Sticking	D	D				D			D	D				I		
Gloss	I	I				I							I	D		
Poor Weld Lines	I	I	D	D		I							I			
Delamination	D	I	D													

Key: I = Increase to Improve
D = Decrease to Improve



Plastribution

Plastribution Limited PO Box 7743 5 Ashby Park Findel House
Ashby-de-la-Zouch Leicestershire LE65 1XY
Tel +44(0)1530 560560 Fax +44(0)1530 560303
Email sales@plastribution.co.uk www.plastribution.co.uk