

industry know-how

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Blending for success

The trend towards customising materials at the machine is becoming an increasingly popular approach to both reducing cost and optimising both processing and properties.

Over the last three decades, we have witnessed masterbatch becoming the predominant method for both colouring plastics and adding small concentrations of additives and processing aids.

More recently processors are looking to blend additives such as Vistamaxx™ propylene-based elastomers, Exact™ plastomers, which can be used to modify the rigidity and impact performance of polyolefins, and Granic® compounds with high concentrations of mineral fillers used as rigidity modifiers, productivity enhancers and extenders.

Whilst the advantages of blending at the machine are clear, the close control of this process is vital.

In the case of additive and colourant masterbatches, for instance, excessive dosing will increase cost, while in the case of plastomers and Granic®, incorrect dosing will lead to the properties of the end product not meeting the required specification.

In recognition of this trend, industry know-how is providing practical advice on blending.

Which technologies are available to plastic processors seeking to blend material at the hopper?

There are four main options:

- Hand blending
- Tumble blending
- Volumetric blending
- Gravimetric blending

Each technique has the following advantages and disadvantages:

In the case of hand and tumble blending, the labour cost and error rates only make it feasible for very small production runs.

In the case of volumetric blending we need to look at what happens in the real work environment to assess its practical value.

The key to accuracy with volumetric equipment is frequent calibration and correction of control settings. Unfortunately, the time and attention to detail required to do this is rarely available to personnel on the factory floor and as a result processors often run without the correct settings risking their product integrity.

When the masterbatch or additive amount added to the process is too low, the error is often visible and a correction to increase is obviously made. However, when the material addition is too high, the problem may not be visible and adjustments are not made.

This results in high and excessive raw material costs to our customers. This excessive material usage is almost always a minimum of 10 percent and frequently much more.

Indeed, excess masterbatch usage of between 20 and 50 percent is not uncommon, resulting in inconsistent product quality, function and form.

In contrast a gravimetric blender solves the problem of incorrect dosage as it automates the job of calibration and correction by it checking and adjusting addition rate every cycle.

Furthermore gravimetric blending facilitates the blending of multiple materials with different and/or variable bulk density.



The relative merits of principal blending methods

	Distribution	Consistency	Risk of Separation	Risk of Error	Capital Cost	Life-time Cost
Hand Blending	Poor	Poor	High	High	Low	High
Tumble Blending	Good	Poor	High	High	Low	High
Volumetric Blending	Good	Good	Low	Low	Medium	High
Gravimetric Blending	Good	Good	Low	Low	High	Low

Plastribution is the UK's leading distributor of plastics raw materials, delivering reliability, know-how and true business partnership to the world's best polymer suppliers and our UK customers.

In the event that you require further information about the colouring of plastics, please do not hesitate to contact a member of the Plastribution team for further information by emailing sales@plastribution.co.uk or phone 0845 3454560

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