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# The Good Regrind Guide

**Regrind is typically a term that applies to plastic components/products, which have been mechanically, reduced in size to particles less than 10mm in diameter.**

**The source of these plastic components can be pre-consumer waste such as process scrap, or less commonly post-consumer waste (Typically this source of material is handled by specialist recycling companies).**

This process takes place in a device called a grinder, in which the plastic components are fed in through the throat of the grinder and then pass into a chamber that typically contains rotating knifes which mechanically cut the plastic component dimensions to a size small enough to pass through a screen. This regrind may then be: -

1. Fed directly back into the manufacturing process on a continuous basis

2. Fed directly back into the manufacturing process on a batch basis

3. Used in another manufacturing process such as a component for a compounded material containing the regrind (and other ingredients).

Given that thermoplastics are by definition capable of being heated and re-shaped many times the use of regrind would appear to be an obvious solution to achieve greater rates of operational efficiency through the use of process scrap and/or reject components.

However care must be taken to ensure that the use of regrind does not significantly impact on either processing and/or the performance of the product being manufactured and in order to determine the possibility to use regrind the following factors must be considered: -

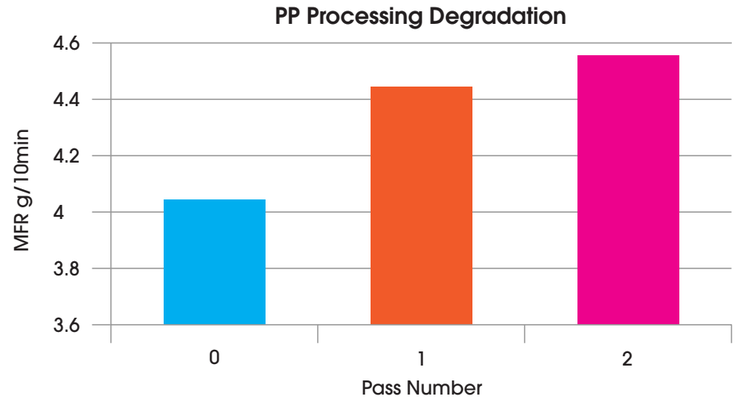
## Degradation

Thermoplastic raw materials are inherently unstable at processing temperatures. The extent of degradation will be dependent upon: -

- Type of polymer
- The use of stabilsers
- Thermal history (Time spent at processing temperature)
- Presence of other materials such as pigments and fillers

In the case of `closed loop' type recycling operations it is worth considering the addition of additional staibisers during the manufacturing process.

The degree of degradation when processing a standard MFR 4 PPHP by injection moulding and subsequent granulation is depicted in the graph where the melt flow (an approximate measure of degradation) is increased by 13% after two cycles.




## Contamination

As most plastics are incompatible great care should be taken not to mix material types.

It is therefore essential that no purgings, or scrap product resulting from material changes are recycled and it is vital that machinery is thoroughly cleaned between material types. Other sources of contamination include: -

- Oil
- Dirt / Rubbish
- Masterbatch

All contaminated material should be eliminated from any recycling process and disposed of. Failure to do so will result in the contamination of more material and further scrap.

## Dust

The mechanical abrasion that constitutes the regrind process tends to result in dust. Ideally this should be removed and disposed of. In the case of some polymers dust will significantly affect the physical properties of the end product.

## Fibre Fillers

The mechanical abrasion that takes place in the regrind process dramatically affects the physical properties of plastics that contain glass, carbon or other fiber reinforcement.

In addition to reducing the length of the fibers, any chemical coupling agent (size) will also be affected, and since the fibres depend upon their interface with the plastic that surrounds them the grinding process can dramatically reduce physical properties.

## Food and Medical Applications

In both these cases special consideration should be given to the use of regrind. Normally in medical applications regrind is not used. In the case of food packaging careful evaluation must be undertaken to ensure that compliance with required standards are maintained as well as overall suitability for any given application.

It is strongly advised that if there is any cause for concern about the use of regrind then further advice should be sought from the material supplier. Where it is not desirable to use regrind the scrap can be sold to specialists companies who will recycle the waste.

**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 shrinkage of polymers, 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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