



GLASS RECYCLING

How to supply glassworks with a recycled cullet of a high colour and material purity

GLASS CAN BE INFINITELY RECYCLED

And STEINERT provides the sorting systems to do that

Glass recycling pays off, as up to 30% less energy is required to melt down used glass than to produce it from scratch. Moreover, up to 90% less raw materials are needed in production when recycling, resulting in vastly reduced CO₂ emissions. But not all glass is the same. So sorting systems need to separate the input material by glass type and colour as well as remove impurities. This is where our optical MSort sorting systems come into play. With container glass, it is very important to remove impurities, such as metal and ceramics, and to ensure colour purity. The same impurities have to be removed from flat glass, but a different technology is deployed here. For example, PVB plastic films, window frames and broken windows have to be released and separated.

The threshold values for Germany, for example, are laid down in the T 120 Directive, which permits 2 grams of ferrous metals, 3 grams of non-ferrous metals and 20 grams of CSP (ceramics, stones, porcelain) per ton. In both cases, a series of process steps are required for cleaning and sorting.

// The camera-based sorting process deployed by our MSort machines and magnetic separation are used to cut costs and improve profitability:

- + Pre-treatment of container and MRF glass (p. 6–7)
- + Damp processing of container glass (p. 8–9)
- + Dry processing of container glass (p. 10–11)
- + Coarse wet and fine dry container glass combined (p. 12–13)
- + Wet and dry processing of MRF glass from a single stream (p. 14–15)
- + Processing of flat glass (p. 16–17)

MSort has been available on the global market since 1996 and is providing tailored glass recycling solutions.



For Reiling, the MSort AF is the perfect choice for dry colour sorting of glass in a particle range of 4–60 mm.

STEINERT's Danish customer Reiling uses MSort AF and MSort AK for fine sorting.

MSort® AK

Sorts dry bulk materials from 0.5 mm with the maximum precision

+ **For challenging sorting jobs:** In the colour sorting process, impurities such as ceramics, stones, porcelain (CSP) and metals with a particle size of 0.5–60 mm are removed from the glass flow.

+ **Optical detection in visible light:** The optical colour sorting system uses parallel processor technology to evaluate particles by colour, brightness and transparency using the reflected/transmitted light method.

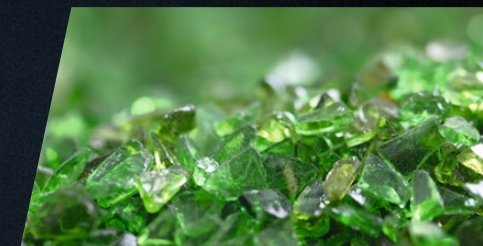
+ **Ejection:** High-speed compressed air pulses separate the product flows in milliseconds, while a fine nozzle pattern enables maximum ejection rate with minimal glass loss.

+ **Low-maintenance design:** The compact design of the chute sorting system is very low-maintenance and easy to service.

+ **The result:** Pure colour fractions such as green, amber, olive, semi-flint, flint and blue glass as ready-to-melt grades.

MSort® AK

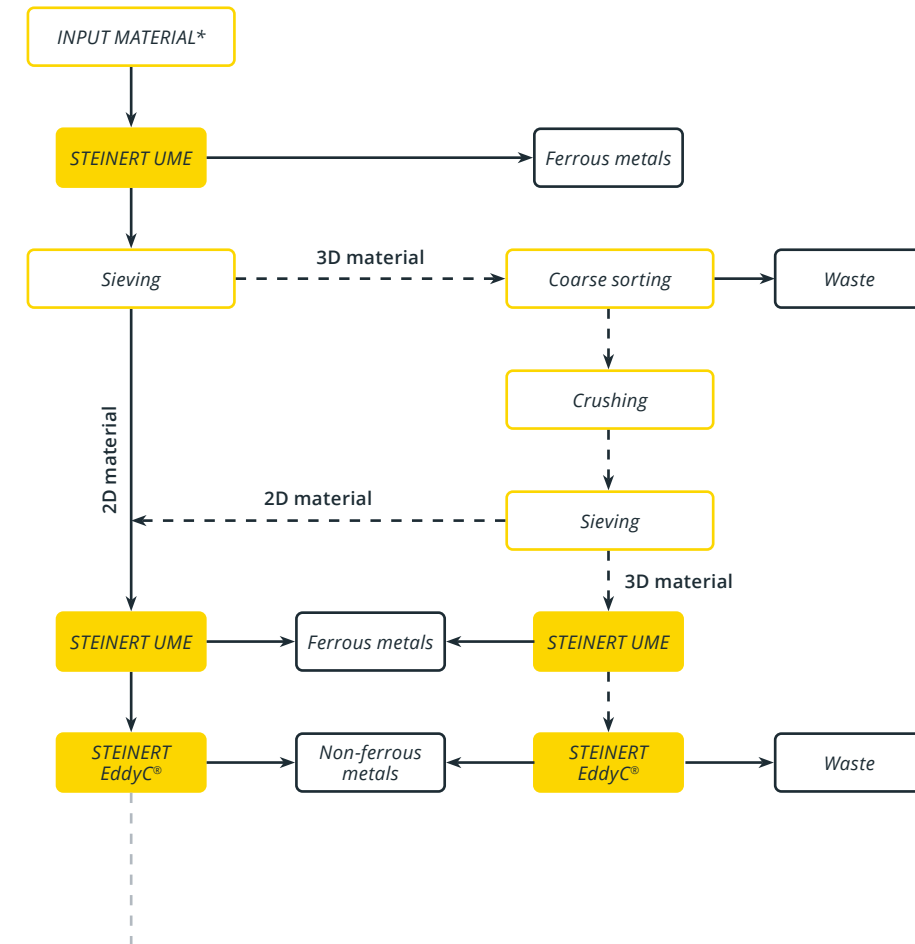
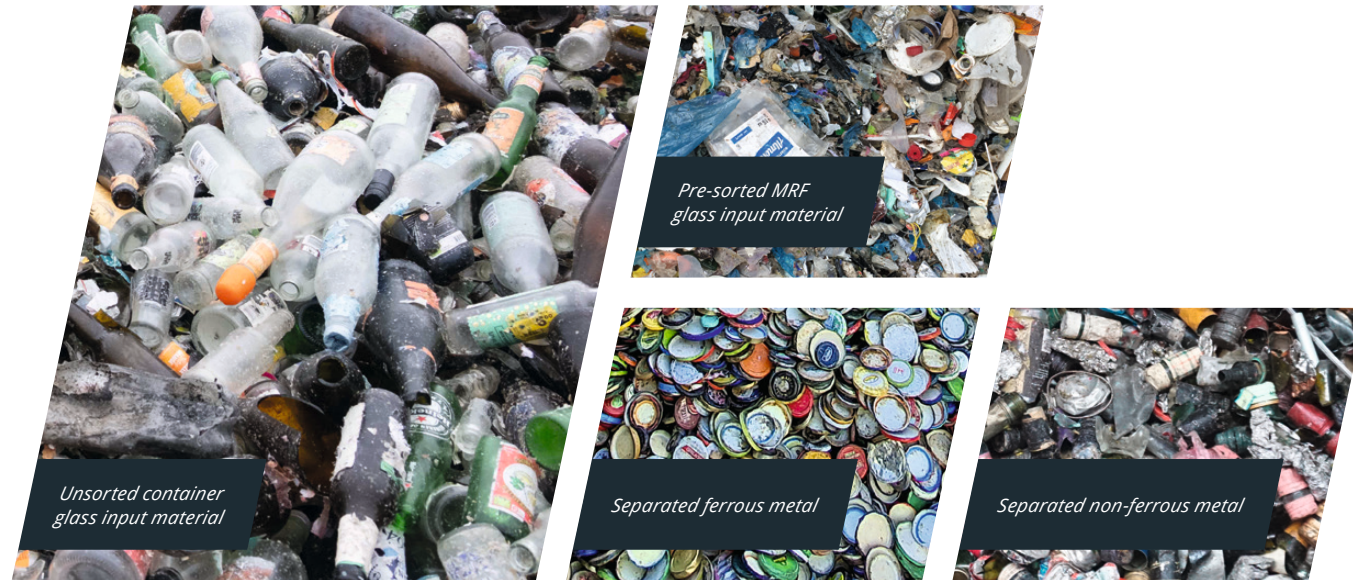
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PRE-TREATMENT OF CONTAINER AND MRF GLASS

Ferrous and non-ferrous separation and removal of impurities

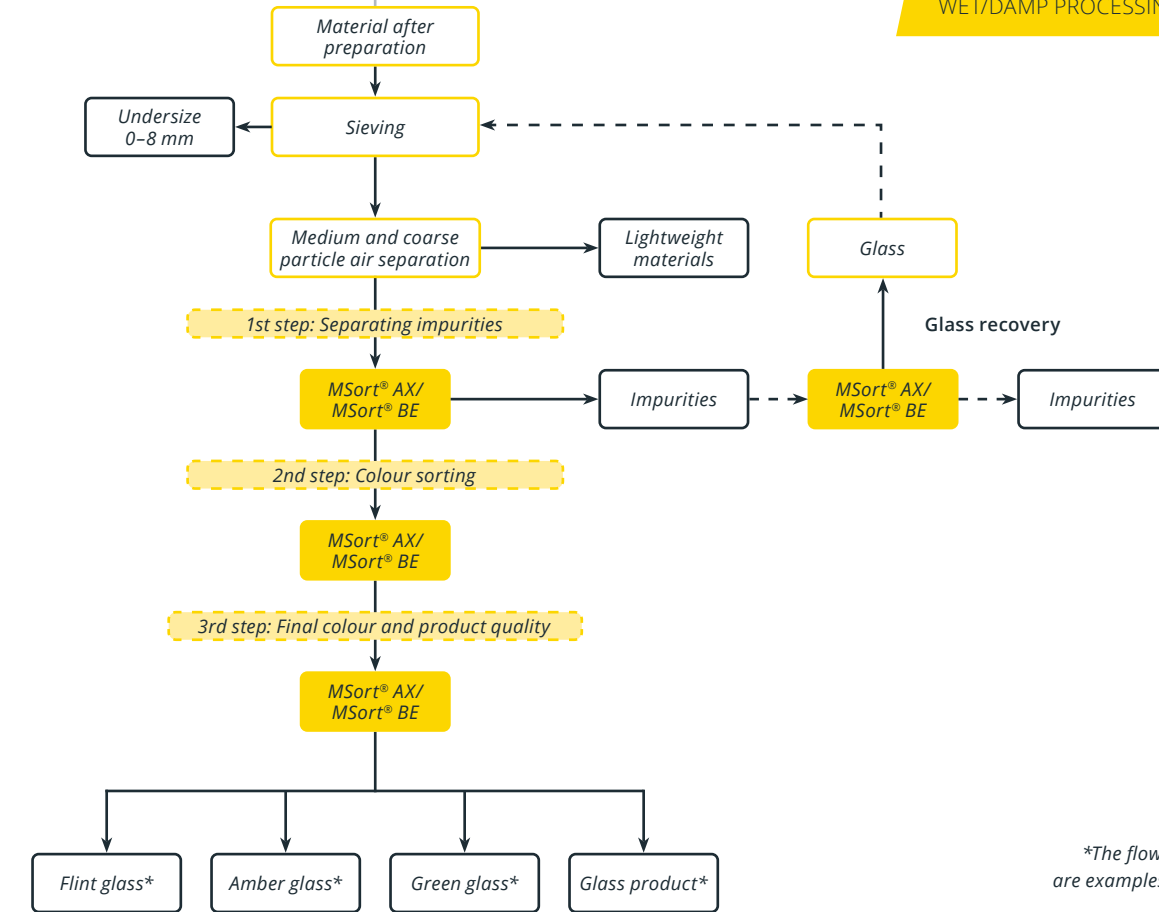
The preparation process is identical for all three types of container glass sorting (wet, dry and mixed).



**MRF glass pre-treatment from a single stream is preceded by sieving and air separation.*

SORTING OF WET GLASS

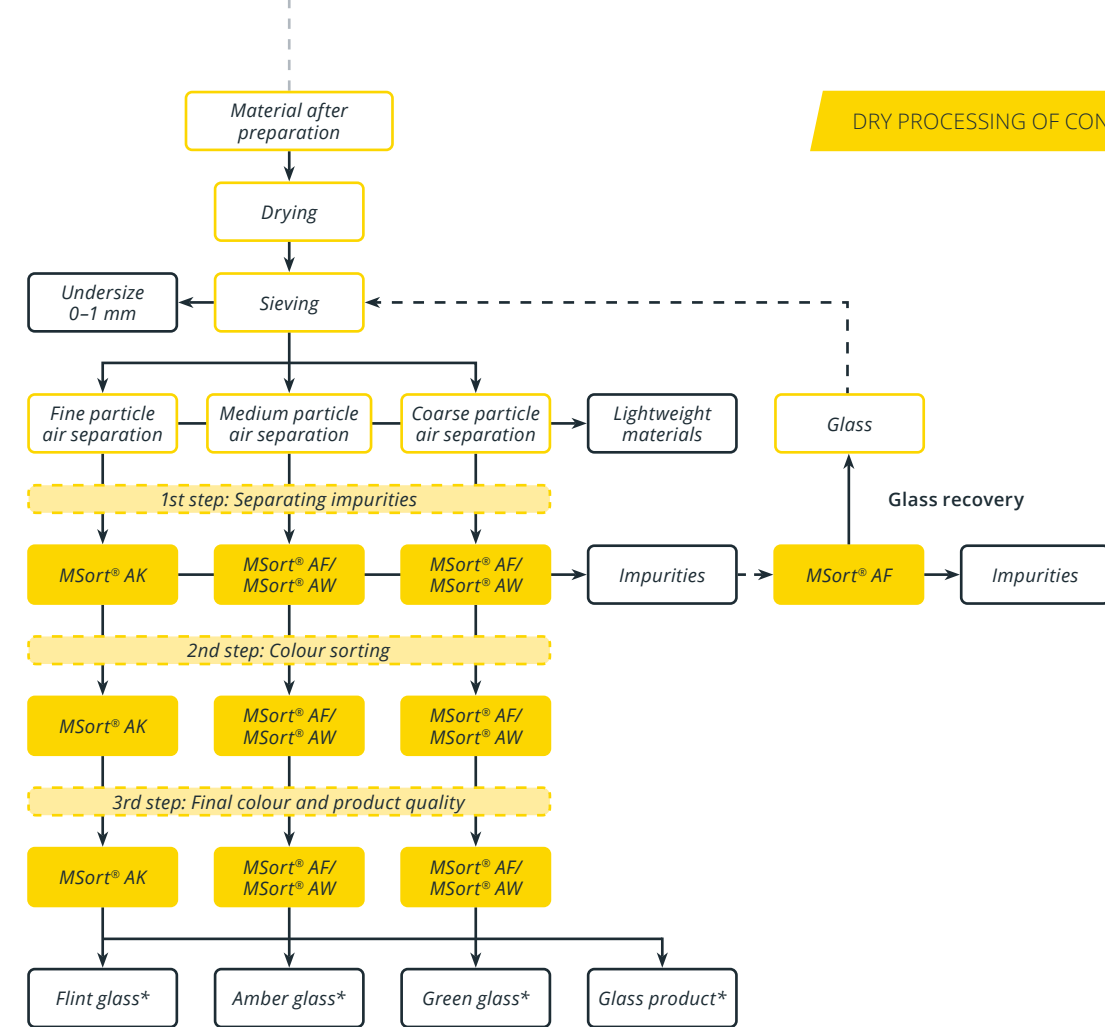
Simplified illustration of a processing facility for non-dried container glass sized 8 mm and larger, including colour sorting.



*The flowcharts and final products shown are examples and are adapted individually to customer requirements.

DRY SORTING OF CONTAINER GLASS

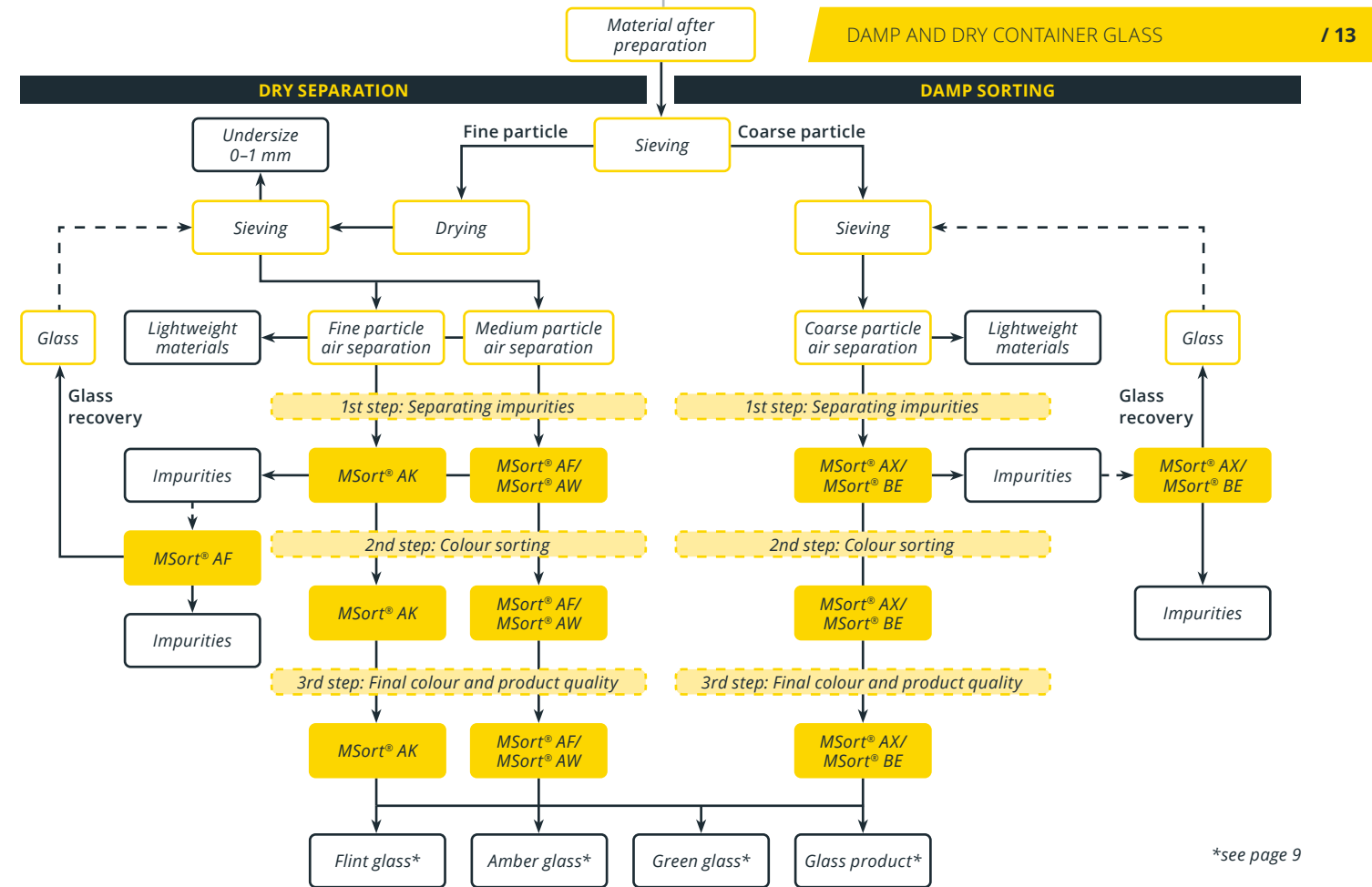
Simplified illustration of processing dried container glass sized 1–60 mm, including removal of impurities and colour sorting.



*see page 9

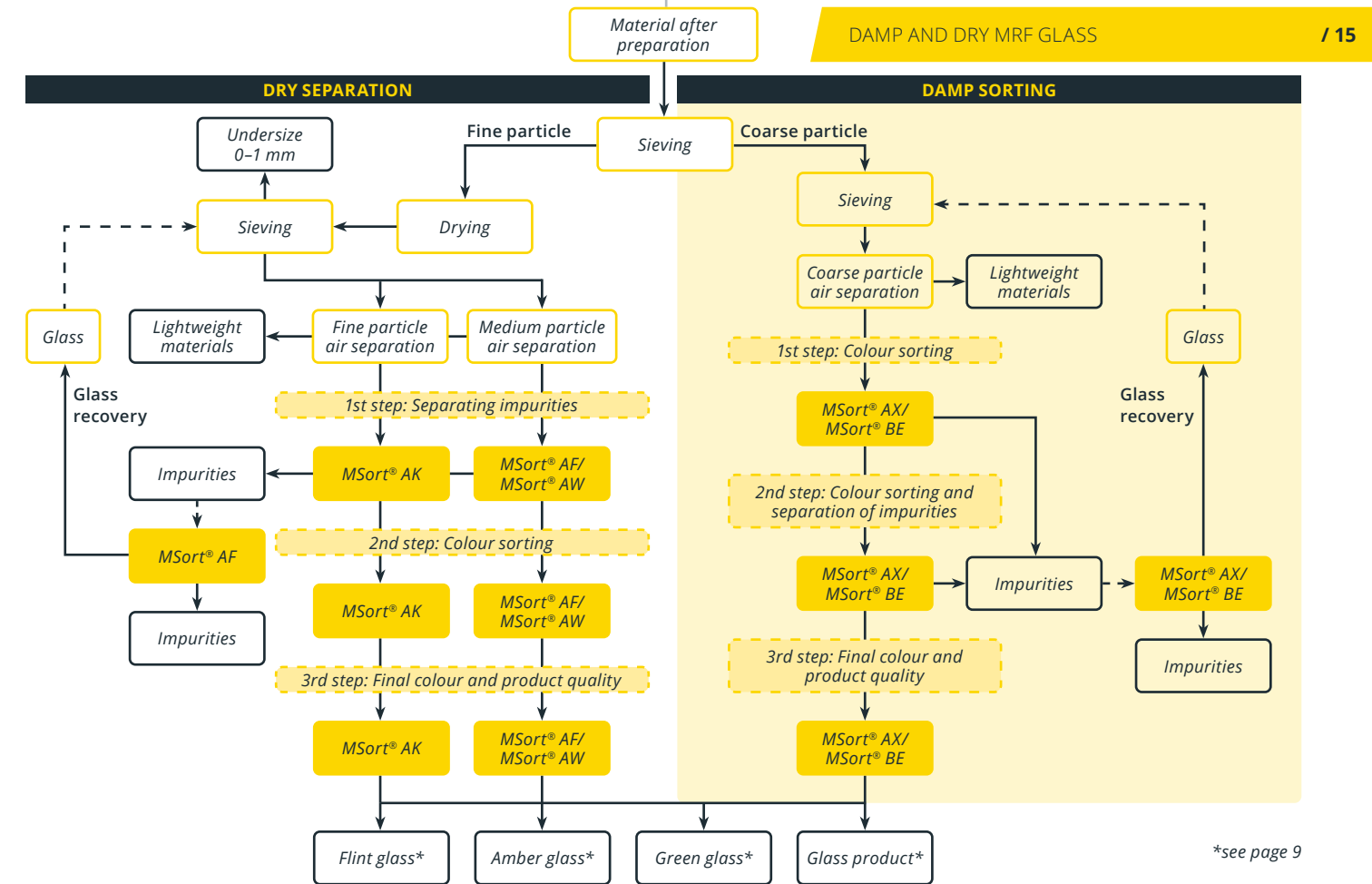
DAMP AND DRY CONTAINER GLASS COMBINED

Simplified illustration of a processing facility in which damp container glass in a coarse fraction and dried container glass in a fines fraction of 1 mm and larger have impurities removed and are sorted by colour.



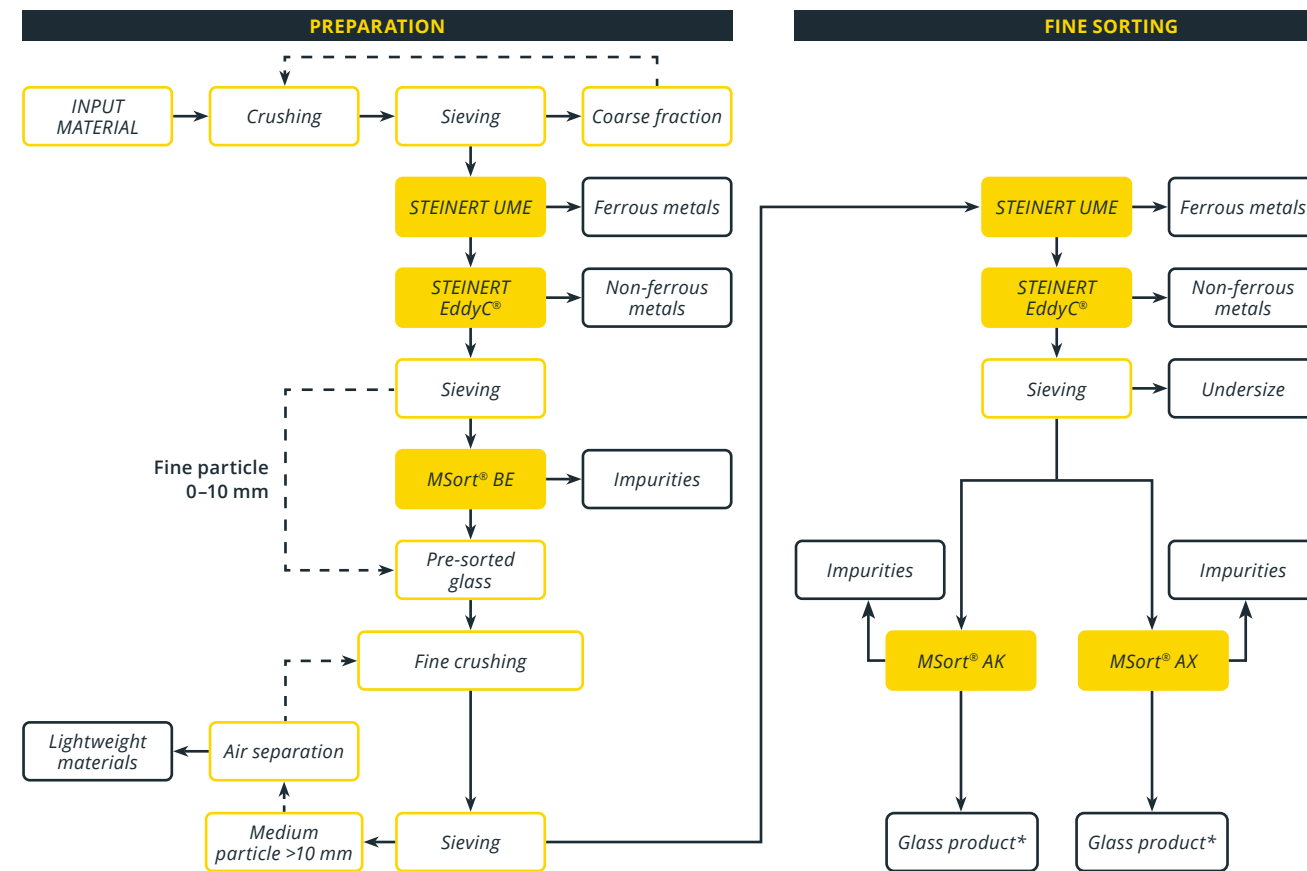
DAMP AND DRY MRF GLASS COMBINED

Simplified illustration of a processing facility in which damp MRF glass in a coarse fraction and dried MRF glass in a fines fraction of 1 mm and larger have impurities removed and are sorted by colour.



PROCESSING FLAT GLASS

Simplified illustration of a processing facility with ferrous and non-ferrous metals separation followed by sensor sorting in a particle size of between 1 and 10 mm.



OUR PRODUCTS

for separating ferrous and non-ferrous metals



STEINERT UME

The self-cleaning overhead suspension magnets reliably separate the input material from coarse iron scrap. The overhead suspension magnet is arranged above a feeding conveyor belt and extracts the ferromagnetic materials from the supply flow against the force of gravity.



STEINERT MTP

For the separation of coarse to fine ferrous materials down to less than 1 mm. The traversing operation is especially suitable for the highest iron extraction, since the sorted cullet material is maximum close to the magnetic field. If the sorting process focuses more on achieving a high-purity glass product, we would recommend the lifting design with a STEINERT MTP Q.



STEINERT EddyC®

The eddy current separator can be used wherever non-ferrous metals are to be recovered or separated within the context of glass recycling. Using eddy current technology, it sorts non-ferrous metal mixes containing aluminium, copper, zinc or brass.



STEINERT EddyC® FINES

The STEINERT EddyC FINES was developed especially for separating particularly fine non-ferrous metals. Using eddy current technology, it allows non-ferrous metal mixes containing aluminium, copper, zinc or brass to be separated from the glass.

OUR PRODUCTS

for efficient colour sorting and removal of impurities



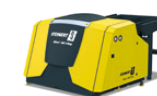
MSort® AF

The MSort AF is the perfect choice for dry colour sorting of bulk material. It separates container, MRF or flat glass in the particle range of 4 to 60 mm with highest precision. The machine has a fine nozzle pattern for effective ejection with very little lost product. Parallel processor technology is used to evaluate the images, taking account of colour, shape and brightness. The sensor also detects transparency using different forms of exposure within the range of visible light and is therefore also able to sort using the transmitted/reflected light method.



MSort® AK

The MSort AK is particularly suitable for dry colour sorting of bulk material such as container, MRF or flat glass in a particle range from 0.5 to 60 mm. State-of-the-art parallel processor technology is used to instantly evaluate the images based on colour and shape criteria. The sensor detects true colours and colour intensity in detail. The sensor also detects transparency using different forms of exposure within the range of visible light and is therefore able to sort using the transmitted/reflected light method.



MSort® AW

Eliminate a sorting step – the MSort AW is the ideal choice for efficiently colour sorting dry container, MRF or flat glass of between 5 and 60 mm. It enables three separate materials to be sorted out at the same time instead of the usual two – ideal for separating green, amber and flint glass at the same time. State-of-the-art parallel processor technology is used to evaluate the images based on the shape, colour and colour intensity. It detects transparency using different forms of exposure within the range of visible light and is also able to sort using the transmitted/reflected light method.



MSort® AX

The MSort AX is the wet sorting specialist for a particle size of 6 mm and above. But it is also the perfect choice for not just wet but also dry colour sorting of container, MRF or flat glass. It separates glass in a particle range of between 6 and 60 mm with the utmost precision. State-of-the-art parallel processor technology is used for image evaluation. The sensor detects true colours and colour intensity in detail and can also use different forms of exposure within the range of visible light to detect transparency. This allows sorting to be carried out using the transmitted light method.



MSort® BE

The MSort BE sorting system in a particle range of 8 to 60 mm is particularly cost-efficient for dry and damp colour sorting of glass up to max. 12 t/h. The state-of-the-art parallel processor technology uses shape and colour as the criteria for image evaluation. The sensor detects the true colours and colour intensity in detail. It also detects the transparency of the glass fragments using different forms of exposure within the range of visible light.

FOR A SECURE INVESTMENT

Test your cullet material in the Test Center in Wedel

Tap into the knowledge of our expert engineers and discover our MSort sensor sorting systems in this special space in the world of glass recycling.

Realistic testing can be undertaken in the Test Center in Wedel near Hamburg. It can be performed on an industrial scale to reproduce the demands, feasibility and ROI of your planned investment and provide investors with security on the basis of data and facts. Together we will find the right machine for your needs!

- + Check the feasibility, planning and layout of the system
- + Carry out sorting trials
- + Verify sorting performance in terms of quality, yield and throughput

Our application specialists from the Test Center and our sales team will help you solve your sorting tasks. If desired, we can actually demonstrate the potential for recovering material with STEINERT sorting technology using your own test material.

Want to try out the STEINERT Test Center for yourself? Simply get in touch with your personal STEINERT contact.



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MAGNETIC + SENSOR SORTING SOLUTIONS

