CORMACK PACKAGING
A TRICORBRAUN® COMPANY

HELPING THE ENVIRONMENT

CORMACK PACKAGING CONTINUE TO MOVE FORWARD WITH WAYS TO IMPROVE WHAT WE DO FOR THE ENVIRONMENT.
Building on our previous R – R – R → REDUCE – RECYCLE – REUSE

PIGMENTS IN PLASTICS

We have been active in reducing our electricity per tonne of plastic produced by a series of initiatives including updating our fleet of moulding machines, power correction and running 24/7.

Already we have changed to a closed loop water cooling system that does not use a high waste evaporative cooling system.

We continue to launch light weighted closures where we have often achieved a 10% reduction in plastic per cap over the current competitor offerings.

This update covers work we have been doing to further improve our environmental initiatives. First with pigments and master batches, then with resin and recycling.

PIGMENTS AND MASTER BATCHES

With pigments and master batches this covers the elimination of heavy metals, information on Calcium Carbonate and the start of elimination of Carbon Black.

Heavy Metals – Whilst there are various Heavy Metals that can be used in packaging, the main one used in pigments for plastics is Cadmium. This is used to give a "Vibrance" of particularly fluorescent colours. Examples would be a fluorescent green or a brilliant pink. Due to health concerns we no longer have new colours formulated using this additive and do not use them at all on our Condell Park site.

Calcium Carbonate – This is used to give a depth of colour on light colours that would otherwise be washy and transparent. Given it is a solid white, it will give sufficient density in the base for only a small amount of the colour pigment needed to be used. While Calcium Carbonate on its own is not good to touch, once it is moulded in to the cap the relatively small amount used is trapped inside the plastic. It does not affect the recycling process.

Carbon Black – This has been used to give the same depth of colour to dark plastics like Calcium Carbonate does to light colours. Removing Carbon Black from pigments has become important with the advancement of recycling centres. When council collected waste is run through a "MURPH" the infra-red sensor is used to detect the type of plastic (HDPE, PP, PET etc.) at high speed and the individual plastic item sent on different streams based on those specific materials. The Carbon Black interferes with the Infra Red Scan confusing the reader so that it then sends the plastic off to general waste instead of to the correct segregated streams for shredding and recycling. With the emphasis on the bottle return scheme, plus vastly improved recycling centres, the industry has started to move to pigments that don't use Carbon Black.

Cormack Packaging are moulding Blacks and Browns already without any Carbon Black content. It does tend to give a cloudy result and some levels of transparency in the finished caps. To date, these new Carbon Black "free" master batches are far more expensive and need a much higher dosage rate, but it does allow the scanned item to go to the correct material stream. Indicatively it is increasing the coloured cost component of these caps by at least 50%, but as volume demand increases, this should gradually drive the prices down.

38/400 Black Cap
2% Carbon Black MB

38/400 Black Cap
4% No Carbon Black MB

24/415 Flip Cap
2% Carbon Black Brown

24/415
6% No Carbon Black Brown

RECYCLED PLASTICS

THERE ARE CURRENTLY 3 STREAMS FOR SUPPLY OF RECYCLED PLASTICS

1. Mixed waste recycled feedstock | 2. Closed loop | 3. Remade Resins from oil (2 processes)

MIXED WASTE RECYCLED FEEDSTOCK

For many years waste plastic when segregated from other materials has gone through various forms of shredding, then centrifugally spun so that the various densities of plastic can be identified in the spin process to be removed separately to give broadly separated plastic types (e.g. HD, LD, PP etc.). These are then pressed by heat and pressure to give the product back as pellets for reuse. The downside of this process is that the pellets will have various degrees of colour, grease and small contaminants in the pellet and will be of a certain resin type (e.g. LDPE pellets) but not to a specific MFI (Melt Flow Index) so they are not suitable for high grade injection (such as plastic caps) and will be largely used in downstream products, such as black builders film, stands for reo in concreting , plastic outdoor chairs and garbage bins. Virgin plastic and binders will often be added to give the end product strength.

Milk bottles and PET bottles are two very specific high volume items that are easily identifiable in segregation sorting so they can be trapped, shredded and reused in the same bottles. Coca Cola's new 300ml 100% recycled bottles are a great example. The introduction of beverage bottle return machines has greatly increased the recycling rates of these bottles and significantly reduced cross contamination from other recycled items. (These two plastics are almost becoming a closed loop).

Advancements in plastic extrusion and blow moulding has allowed multi-layer structures, where the majority of the film or bottle wall will be recycled resin with a skin on the inside to protect the contents from contamination and/or a skin on the outside to provide a consistent container colour.

These recycled resins are improving in quality. Particularly as councils improve their collection process and consumers are better educated on what they can put in their recycled bins, the volumes of these plastics is increasing. The down side is that the specific grades within each material type cannot yet be identified so ordering a specific MFI to mould say a tamper evident cap is not going to be available for many years yet.

CLOSED LOOP

This is where a specific resin type (HDPE) and melt flow of plastic in a single colour is partitioned off from the plastic manufacturer to the user and returned upstream. It can be reground, cleaned and made back into pellets of a specific and known grade of resin. The resin will have a low level of contamination including colour. One example of this would be a blue plastic milk crate. Cormack has commenced some limited manufacturing with closed loop plastic for low technical products (such as a clip on measuring cup for non-food contact use). We are now offering limited Silgan triggers and pumps with closed loop plastics in the components not in direct contact with the product (like shrouds, trigger piece and closures) in a milky black colour only.

This material particularly in Australia is only available in very limited quantities and around 50% dearer than virgin plastic. We are using this at a 30% addition rate to the virgin resin to best optimise the use of the small quantities we can get, and to limit the cost impact in the finished part.

RECLAIMED OLIS

There is limited availability starting to come on stream from reclaimed oils. These can come from a wide range of sources such as restaurant and café oil fryers, automotive lubricants from work shops and garages. These can be used as feedstock to make new plastic feedstock that will have the specific grades we need in cap manufacturing, but supply is very limited and there are many other competing uses for it that reduces the availability.

REMANUFACTURED RESINS

This technology is very much in its infancy and not commercially available in any viable volumes. Old plastics are now being broken down into the oil format they originally came from and then being remade into plastics that are totally clean and food contact safe, in specific resin types and grades.

Several pilot plants are running with limited output, trying to perfect the process so that it can be done on a large volume scale. When linked to increased separation of plastics at sorting centres, this will eventually lead to commercial recycled resins we can use in our full day to day cap manufacturing. This is not expected at this stage until 2027. This initiative would definitely advance the volume of daily products we could have with a high plastic recycling content.

VARIOUS EMERGING RECYCLING STREAMS