DOVER CHEMICAL

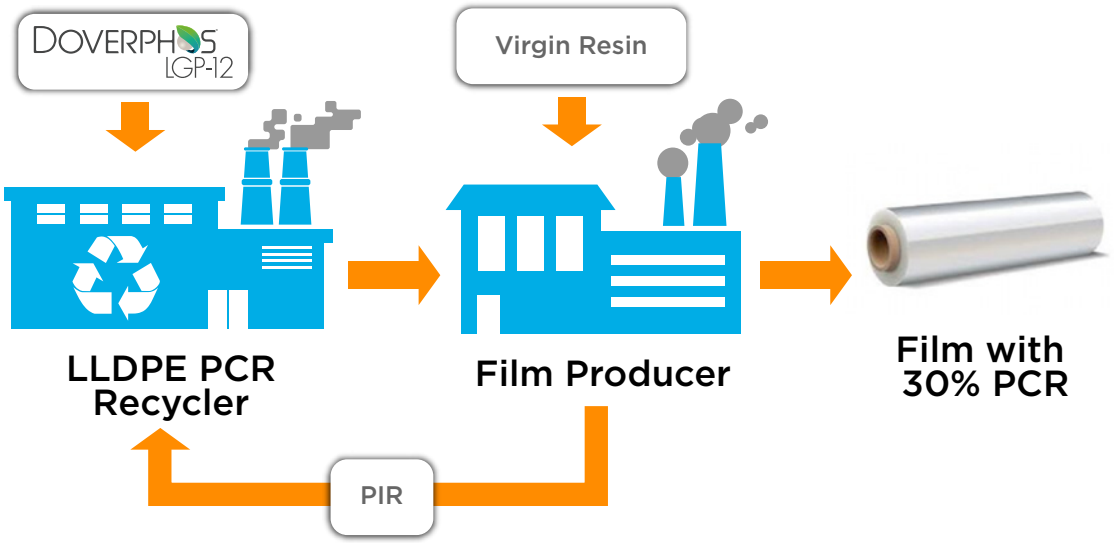
TECH BULLETIN

Reduce Gels and Upcycle Your Recycle Stream in PE Films

With increased focus on inclusion of Post-Consumer Resin (PCR) and Post-Industrial Resin (PIR) into films, so increases the problems associated with recycle streams that can negatively affect the overall physical properties of film. Defects in the form of cross-linked polymers, known as "gels," will reduce the film strength, and often more resin (i.e. thicker film gauge) is needed to compensate.

Once a gel forms, it cannot be undone. Therefore, the key to reducing gels, is to prevent them in the first place. Doverphos® LGP-12 is a polymeric, liquid phosphite that **reduces gels in film by up to 83%** for recycle streams containing 30% recycle content.

The concept of phosphite antioxidants as a thermal stabilizer to prevent cross-linking is well known. The phosphite is sacrificed to protect the resin. By the time resin enters the recycle stage, however, the phosphite is completely consumed, thereby encouraging gel formation. A program to reintroduce Doverphos LGP-12 at the recycle stage will reduce the total number of gels overall, especially the large gels (>1600 microns).



The above diagram shows the optimum application for Doverphos LGP-12 into recycle streams. The sooner the resin is restabilized, the fewer gels form, leading to a better quality recycle resin, which in turn is upcycled into a higher quality resin OR leads to a lower gauge of film to meet the necessary physical requirements for stretch and strength.