



Self-adhesive films and sustainability – a material comparison

■ Where quality meets green speciality

Why PVC free is not generally the solution and what possibilities there are currently in the field of self-adhesive films for sign making and digital printing if you want to produce more sustainably – we at ASLAN would like to convey this to you briefly and concisely using data and facts. So that you can give your customers the right answers, make your production as sustainable as possible and avoid the impression of greenwashing.

INTRODUCTION AND TERMINOLOGY

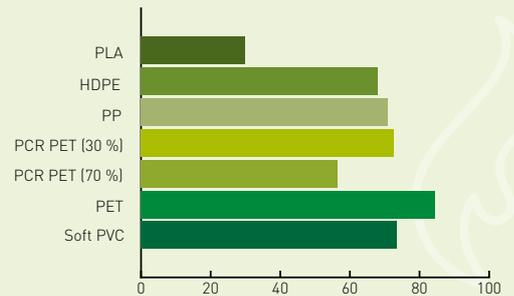
The call for more sustainable products is also increasing significantly in the sign making and digital printing industries. Many large companies are committed to reducing their ecological footprint. The answer to the question of PVC free products and solutions is often simply PP or PET. ASLAN has decided to increase the use of PCR (post-consumer recycled) PET. The raw materials for this are obtained from recycled plastics from household and commercial waste. But is that really more sustainable? And where do you differentiate between more environmentally friendly and more people-friendly? We would like to briefly explain that here.



FOSSIL RESOURCE CONSUMPTION

This table shows the amount of fossil resources used in the raw material composition and consumed in production. Apart from PLA, results for PCR PET (70 %) are the lowest.

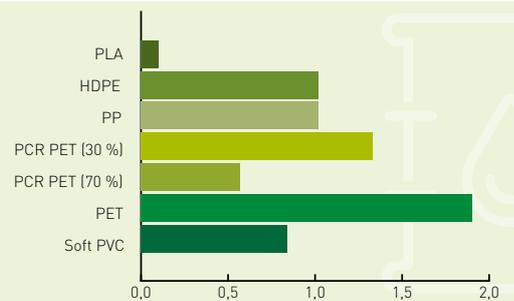
Fossil resource consumption of oil per kg in MJ/kg



OIL CONSUMPTION

The values determine the pure amount of crude oil that a product includes. As can be seen from the table „Fossil Resource Consumption“, this is only a part of the story and should be considered secondary.

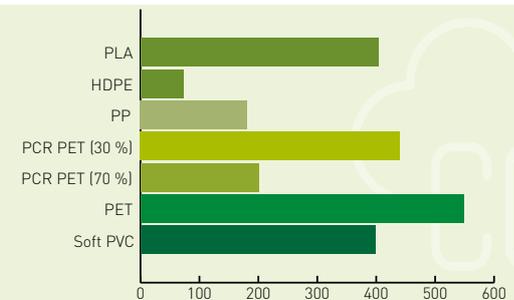
Oil consumption per kg



CRITICAL AIR FLOW

There are also significant differences in CO₂ emissions. In this chart, HDPE, PP and PCR PET (70 % recycled content) score points.

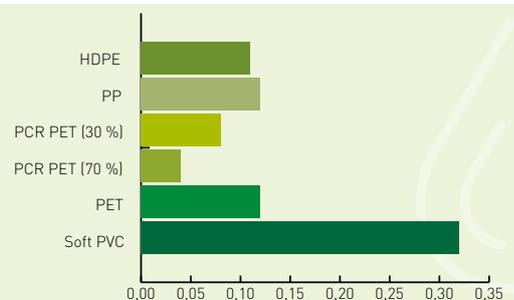
Critical air volume in production in g/kg



CRITICAL QUANTITY OF WATER

What is examined here is how much water is consumed in the production of a raw material. Soft PVC scores the worst, while PCR PET scores the best.

Critical consumption of water in production in l/kg



PVC

For long-term applications and therefore, in terms of energy use, sometimes soft PVC is the most sustainable material.

PCR PET

PET with 70 % recycled content currently has the best results.

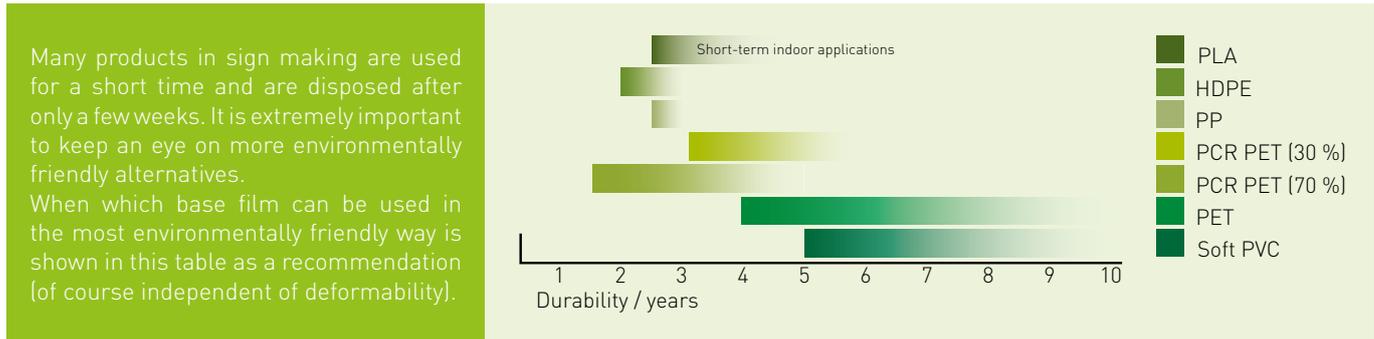
PP

Definitely more favourable than PVC when it comes to plasticisers use.

WHICH MATERIAL IS REALLY SUSTAINABLE?

There is no simple answer to this question. In three out of four charts, PCR PET seems to be the most sustainable choice. However, in terms of energy used, due to its longevity PVC can still be the best choice. Despite this, for short- and medium-term applications onto flat surfaces, PCR PET with a 70 % recycled content is currently the most sustainable solution.

DURABILITY IN SIGN MAKING AND DIGITAL PRINTING



AT A GLANCE

As you can see in the overview below, there is no single answer. Do you want to reduce CO₂ emissions or the quantity of fossil resources? Do you want to prevent children from ingesting plasticisers, or to choose the most durable product in relation to energy use?

| | Soft PVC | PET | PCR PET (70 %) | PCR PET (30 %) | PP | HDPE | PLA |
|-------------------------------|----------|------|----------------|----------------|------|------|---------------|
| Fossil resource consumption | ●●● | ●●●● | ●● | ●●● | ●●● | ●●● | ● |
| CO ₂ emissions | ●●● | ●●●● | ●● | ●●● | ●● | ● | ●●● |
| Critical quantity of water | ●●●● | ●● | ● | ● | ●● | ●● | N/A |
| Plasticisers | ●●● | none | none | none | none | none | none |
| Efficient recycling options | none | ++ | ++ | ++ | ++ | ++ | biodegradable |
| Longevity */** | +++ | +++ | ++ | ++ | + | + | + |
| 2-/3-dimensional applications | +++ | - | - | - | + | + | ++ |

● low | ●● medium | ●●● high | ●●●● very high | + good | - bad
 * with regard to sign making and digital printing
 ** referring to polymeric and cast soft PVC

PET

High-quality product that can be recycled to a large extent. But best as a PCR PET.

HDPE

Polyethylene is the world's most commonly used plastic and is primarily used for packaging. Also used for photo papers and for liners.

PLA

PLA, also called polylactic acid, is made from renewable and natural organic materials, such as corn, and belongs to the polyesters.

ASLAN SPECIALTIES WITH REDUCED CONSUMPTION OF RESOURCES

| PCR PET digital printing films for latex, UV curable and resin inks | | Recycled content |
|---------------------------------------------------------------------|--------------------------------------|------------------|
| LoopPET Clear ASLAN DRP 18 | Clear gloss digital printing film | 70 % |
| LoopPET Dryapply ASLAN DRL 19 | White gloss digital printing film | 30 % |
| PCR PET laminate to protect prints | | Recycled content |
| LoopLAM ASLAN SRL 19 | Clear gloss lamination film | 70 % |
| PCR PET metal effect films with double-sided metal effect | | Recycled content |
| LoopPET Metal ASLAN CRA 31 | Printable metal effect film silver | 70 % |
| LoopPET Metal ASLAN CRA 31 | Printable metal effect film gold | 70 % |
| PCR PET whiteboard film | | Recycled content |
| LoopPET Clearboard ASLAN CRB 91 | Whiteboard film, scratch resistant | 70 % |

IN CONCLUSION

There is not one single choice of sustainable material, so much depends on the intended use. Likewise, PVC still has its uses. Until an alternative is found, soft PVC is the best media for all long-lasting applications and where high levels of conformability is required. PP and PET is the best choice where gassing out of plasticisers could be an issue. However, for short- and long-term applications on flat surfaces (up to approx. 5 years), ecologically speaking, recycled PET with a high proportion of recyclate is currently the best option.

PLA is a new player in the field of self-adhesive films for sign making and digital printing. Because it is renewable and composed of natural organic materials, PLA is certainly a good alternative to traditional plastics. Unmixed or with a maximum of 10 % components that are not degraded within three months (e.g. inks, adhesive, pigments in the film), the product is even industrially compostable. On the other hand, the outdoor durability is currently still limited in terms of temperature and moisture resistance. Nevertheless, for indoor applications it is a first step (this is the status at the time of printing this white paper).

ASLAN continues to carry out intensive research to find ecological alternatives to the traditional films, as well as adhesives and liners. It is therefore important to always ask your ASLAN contact what new, more sustainable products are available.

For more information please visit www.aslanfolien.de