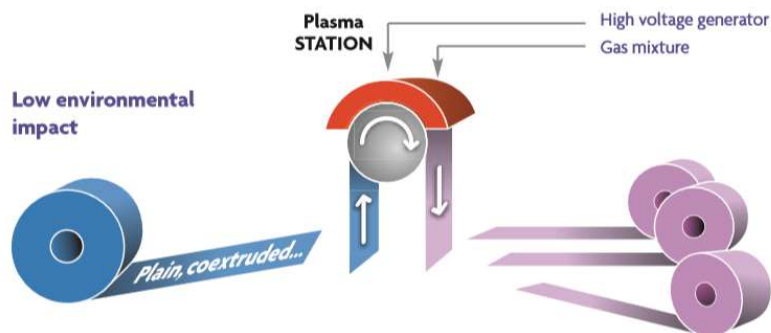


## A NEW ERA OF PRIMER COATING ON POLYESTER.

*Grafting nitrogen functions onto a PET film :*

- ➔ *increases the surface energy of PET to 60 dynes*
- ➔ *increases adhesion.*

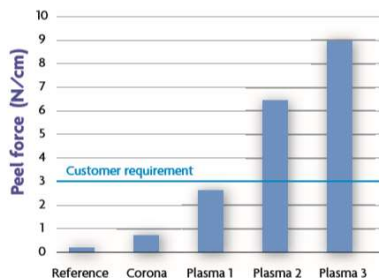


*The performance of a high quality film at a very competitive cost*

### WHY PLASMA IS THE FUTURE FOR PRIMERS:

#### - EFFICIENCY :

adhesion evaluation of a gluing-lamination :  
peel test of a thermosealed film



Functionalization and grafting create strong covalent bonds, leading to high chemical adhesion.

- ➔ Improved bonding for lamination, metallization, printing and varnishing :
- ➔ High surface energy (60dynes/cm<sup>2</sup>),
- ➔ high wettability
- ➔ control of the film surface chemistry : amines / amides / imides functions are optimized

so we adapt the film surface to a wide choice of adhesives, coatings, lacquers, etc.

## ***ENVIRONMENT FOOTPRINT :***

- ✓ Environment footprint is neglectable compared to chemical primer coatings.
- ✓ Plasma treatment requires only a high voltage and simple gazes to graft Nitrogen molecules onto PET. No fossil fuels, and overall much lower energy.
- ✓ Plasma process requires no drying: No hassle for re-processing Volatil Organic Compounds (VOCs) or acids, while government organizations are more and more restrictive regarding the emissions of VOCs and acids.
- ✓ Each year, many chemicals disappear due to REACH regulations, causing replacement problems.

## ***DURABLE :***

- ✓ Unlike corona, Plasma does not damage PET surface. Plasma grafts stable Nitrogen covalent bonds onto polyester. Result : Plasma treatment is permanent, we guarantee a shelf life of 12 months.

## ***EASY RECYCLING :***

- ✓ Only molecules are grafted: The PET after Plasma treatment is truly recyclable like a plain polyester, without surface treatment.

## ***TRANSPARENT :***

- ✓ The Molecular grafting is the only treatment that does not alter at all the transparency of PET. All other processes (Acid or Acrylic, etc...) change the haze of film.



*Not only PET can be grafted for adhesion : we can also increase bonding onto PEEK, PTFE, PP, PE, woven and non-woven materials.*

*Plasma can also perform coatings (a few nanometer) for release application, hydrophilic or hydrophobic applications*

APP treatment types		Surface energy (mN/m)	
		Untreated	Treated
<b>HDPE</b>	Grafting	32	60
<b>LDPE</b>	Grafting	30	60
<b>BOPP</b>	Grafting	30	60
	Hydrophilic Coating	30	≥ 72
	Hydrophobic Coating	30	25*
<b>COP</b>	Grafting	34	62
<b>PET</b>	Grafting	46	60
	Hydrophilic Coating	46	≥ 72
	Hydrophobic Coating	46	25*
<b>PEEK</b>	Grafting	38	56
<b>PA</b>	Grafting	46	60
<b>PVC</b>	Grafting	34	60
<b>ETFE</b>	Grafting	≤ 30	60
	Hydrophilic Coating	≤ 30	≥ 72
<b>ECTFE</b>	Grafting	46	60
	Hydrophilic Coating	30	≥ 72
<b>PTFE</b>	Grafting	< 30	60
	Hydrophilic Coating	< 30	≥ 72
<b>FEP</b>	Grafting	< 30	60

Surface energy has been measured with calibrated test inks except for very low surface energies  
 (\*) calculated by measuring contact angles of water and diiodomethane