

kalwar group

Application technology for surfaces like
created by nature



kalwar at a glance

- Founded 1965 in Germany, Halle Westphalia by Klaus Kalwar
- More than 5.000 systems sold worldwide (calvatron[®], calvamat[®], calvamas[®])
- kalwar **CFT FUSIONS-TECHNIK** GmbH: Design, development and plant engineering
- kalwar **CIV INNOSERV** GmbH & Co. KG: Marketing, IP management and licensing
- kalwar **CSP Spezialprodukte** GmbH & Co. KG: Application, service, R&D

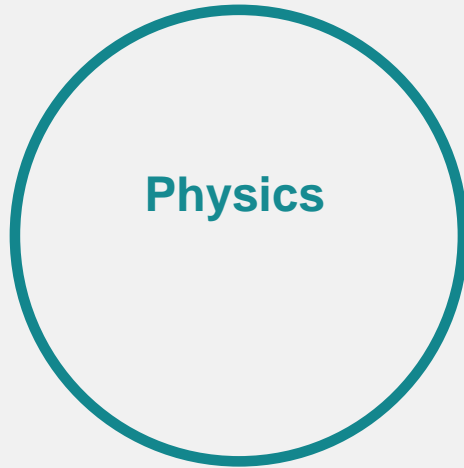
calvasol®

The next evolution of surface treatment



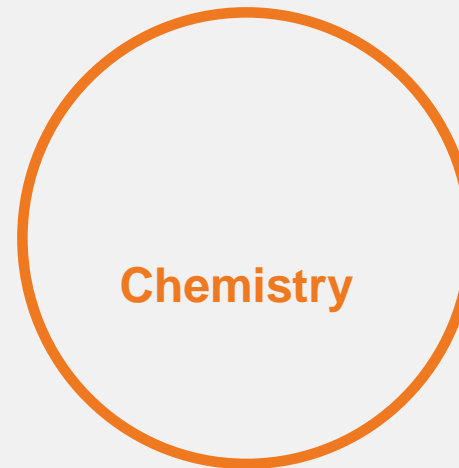
Ingenious combination

calvatron



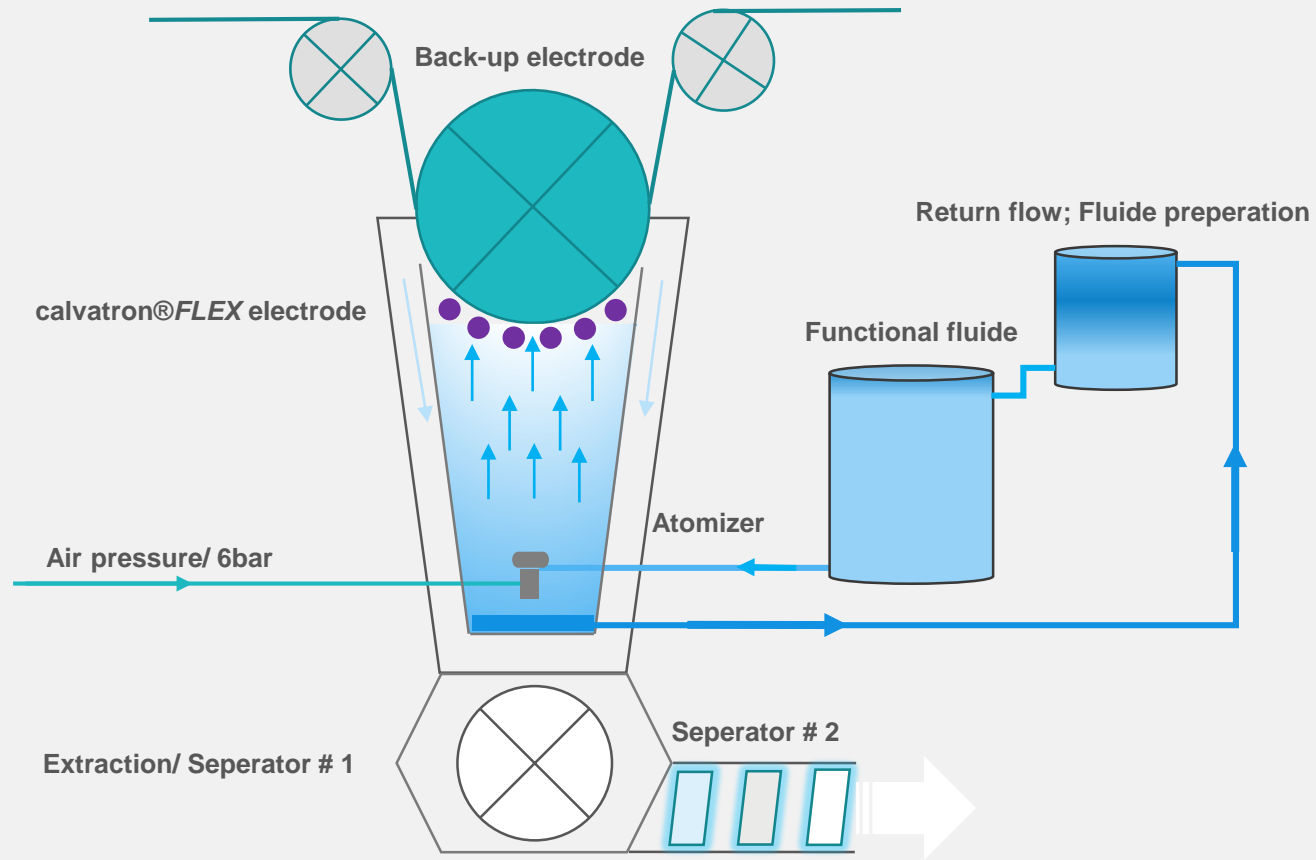
®

Aerosol

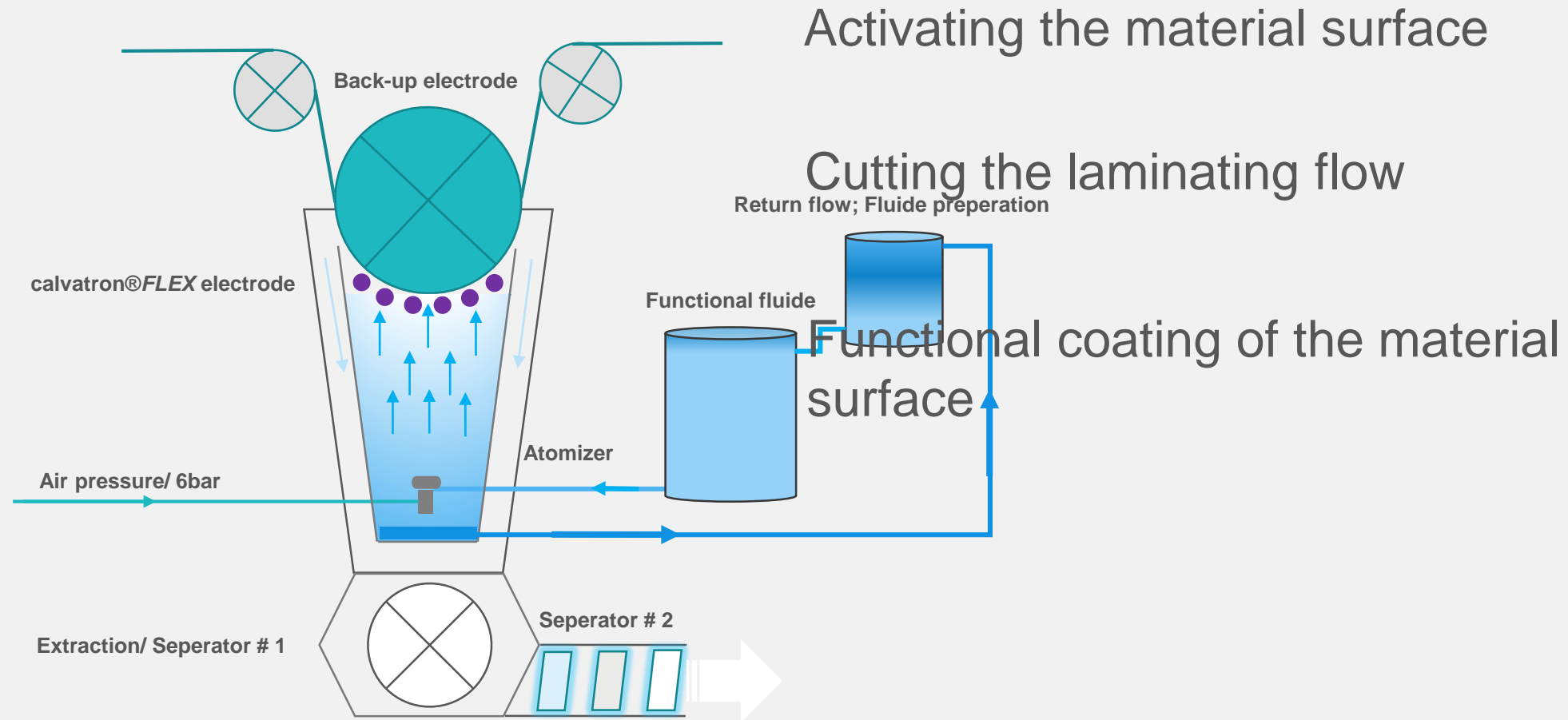


The functional combination of calvatron® corona technology and reactive chemistry

How does calvasol[®] work



Three effects in one process step



Key benefits....

- Coating layer only 3 to 10 nanometer
- Up to 70% savings of chemistry substances
- Up to 80% savings of energy
- Coronatreatment and coating in one process step
- Immediate effective function on top of the surface
- Easy integration

... assembled in a compact system



calvasol[®] *ADHESION*

Usable on most flexible materials

Adhesion promoter optimized for following process

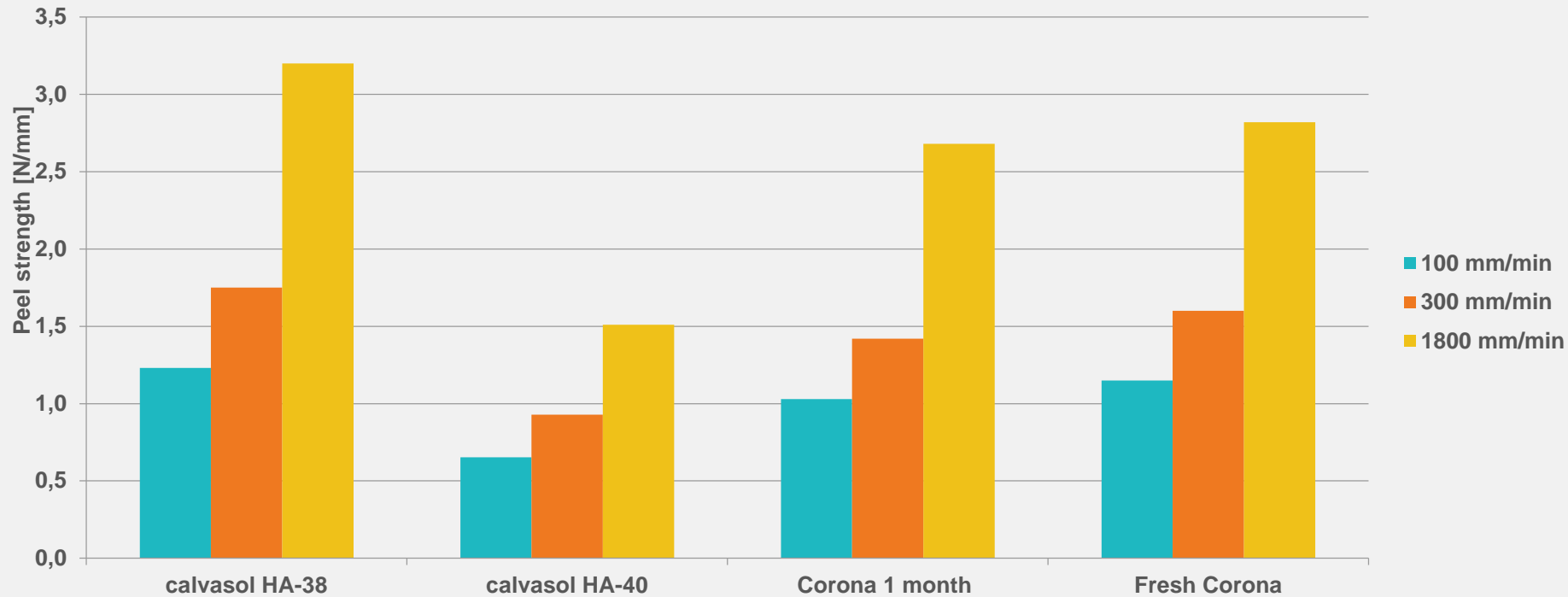
Excellent alternative to „classical“ treatment methods



Peel test: calvasol vs corona

90 ° peel test at various loading rates

Failure: between foam and adhesive

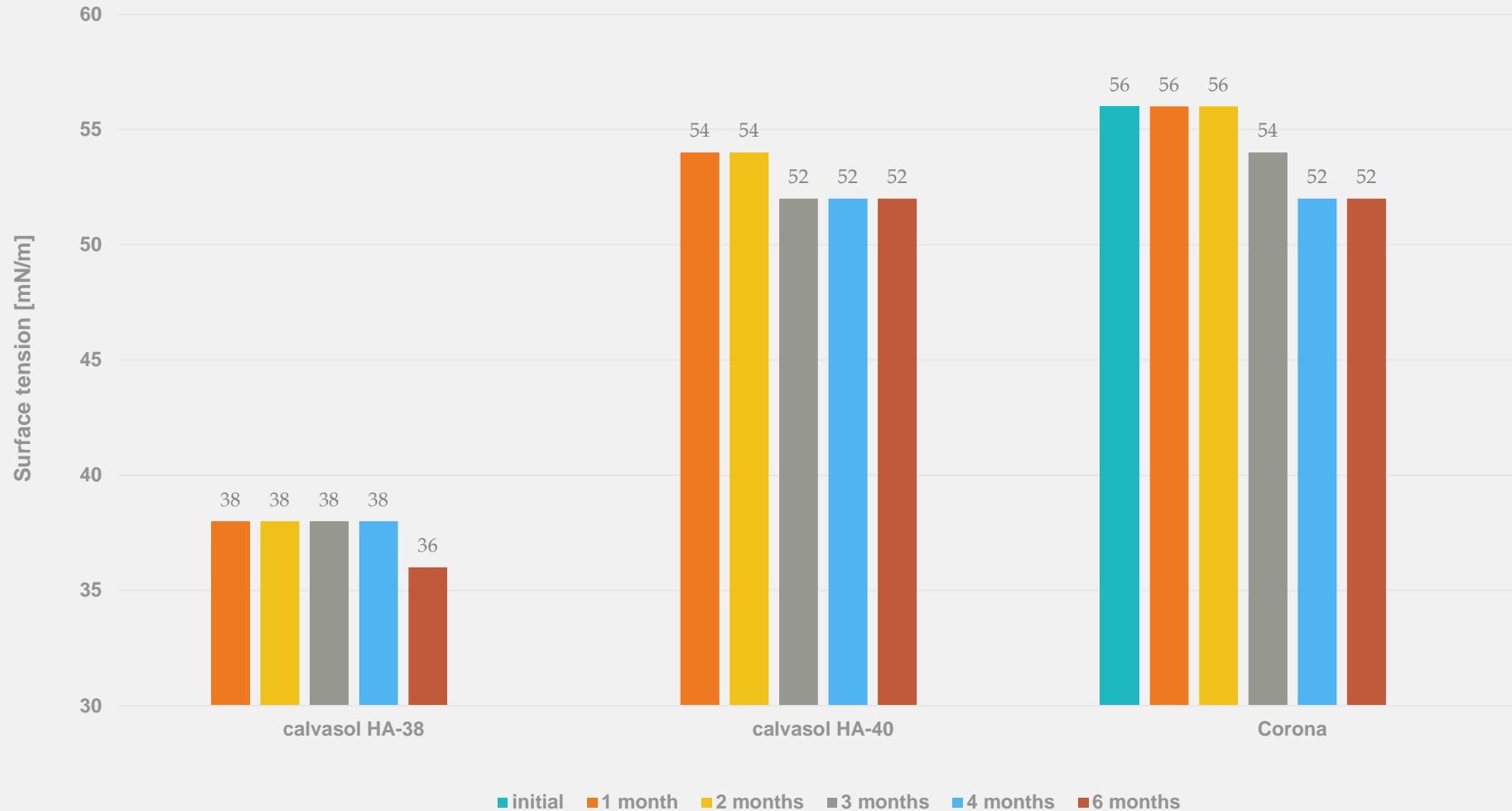


Tested with Alveo high density PE foam 0.5mm/ 250kg/m³ and pure acrylic solvent borne psa

Difference between surface tension and effective bonding

Material		Datum				
0.5mm foam	initial	1 month	2 months	3 months	4 months	6 months
Surface treatments		mN/m	mN/m	mN/m	mN/m	mN/m
HA-38		38	38	38	38	36
HA-40		54	54	52	52	52
Corona	56	56	56	54	52	52

Difference between surface tension and effective bonding

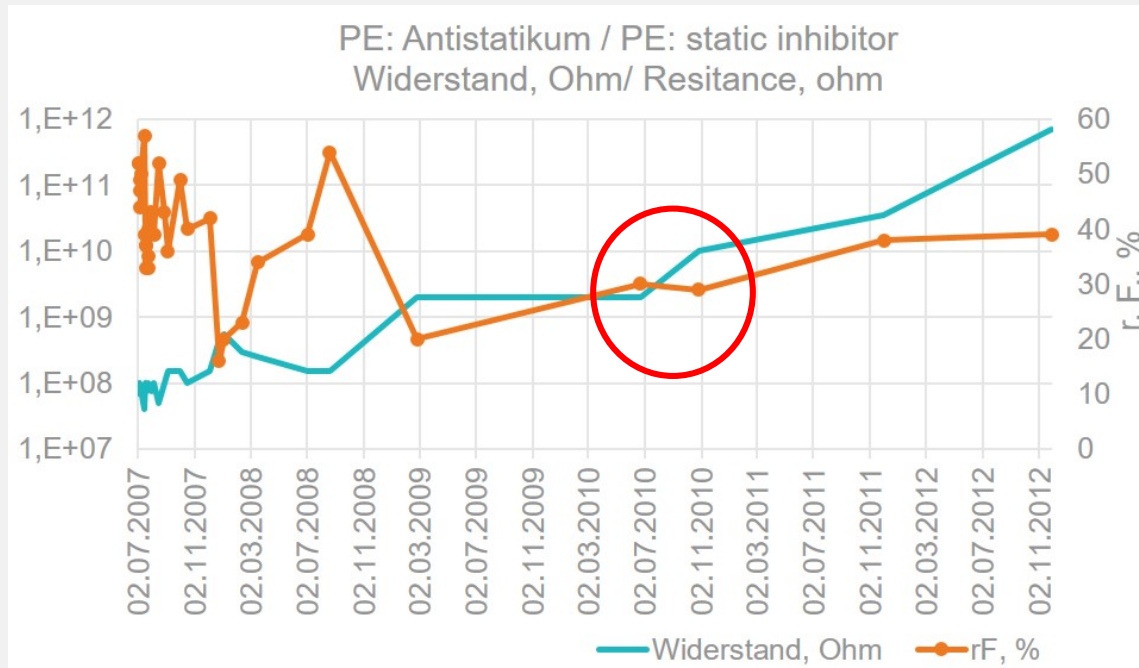


calvasol[®] ANTISTAT

Optimiced for PET, PP, PE,OPP, CPP film

Bleeder resistance < 10⁹ Ohm

Long-term stability (Ø) at 23°C und 25% r. H.



calvasol[®] *RELEASE*

Alternative to silicone

Also usable as „slip- agent“

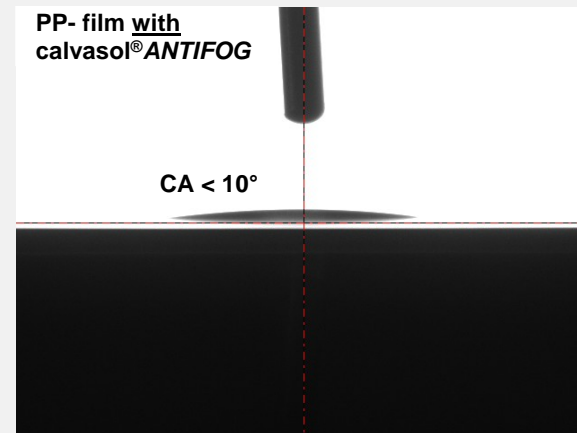
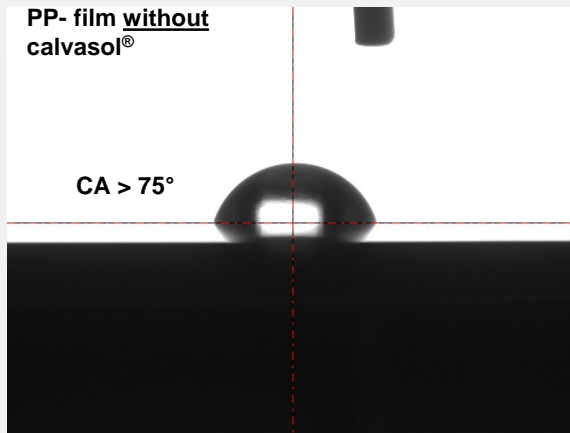
Following problem- free process

calvasol[®] ANTIFOG

Optimiced for PET, PP, OPP, CPP film

Contact angle with water (72 mN/m) < 20°

Solvent free and FDA compliant



EVONIK & KALWAR

Cooperative teamwork in the field of calvasol[®]
between Evonik Ressource Efficiency GmbH and
kalwar

Evonik provides excellent know-how of special
chemistry for new product solutions

R&D support for functional aerosols

Support at IP management



Summary

- Combination of 2 process steps into one
- Easy integration; inline or offline
- High bonding rates compared to standard methods especially on a long term evaluation
- Functional layer in the range of 3 to 10 nanometer
- Significant savings of chemistry and energy
- Large variety of functional coatings
- Can be used as „classical“ high end corona treater as well

Thank you for your
attention