

SunChemical[®]

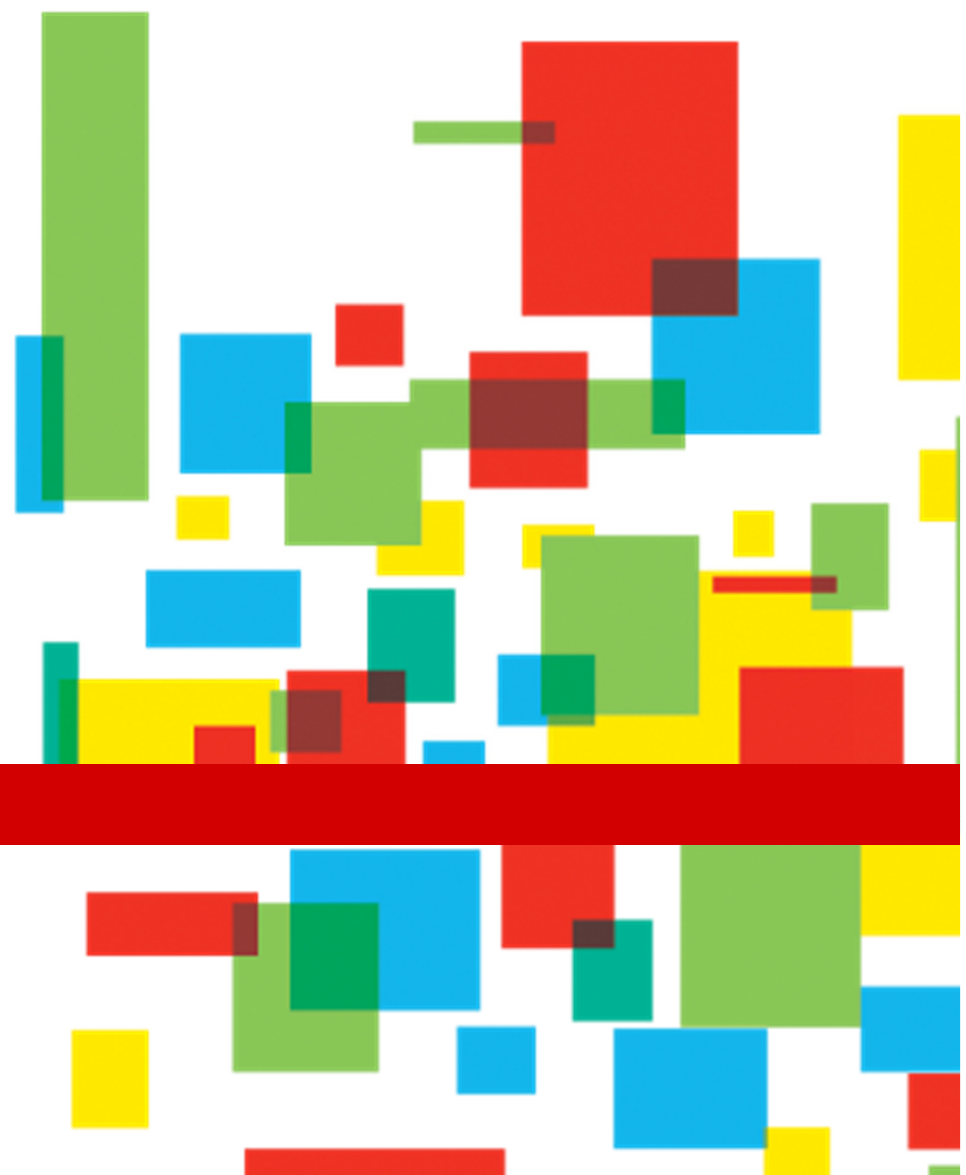
a member of the DIC group



PACKAGING INNOVATION & CAPABILITIES

Image-to-Print
Budapest October 2014

working for you.





Print Technologies

Gravure technology is well established today

- ✓ The printing quality for films is the best in class and only recently Flexo process approached Gravure quality
- ✓ The new presses equipped with engraved sleeves feature quick change of sleeves allowing high performance short runs in Gravure printing
- ✓ At present, Gravure is again growing in the market of high printing quality
- ✓ Gravure inks can be better designed by ink makers since there are less limitations in resin selection



Gravure Technology

- ✓ Gravure presses can be easily equipped with solvent recovery plant:
 - dramatic reduction in air pollution
 - allows good financial returns by using recovered solvent
- ✓ Gravure presses can run at very high speed:
OVER 500 – 600 m/min without problems

Flexo technology is improving today

- ✓ The printing quality for films is improving with recently HD-Flexo process approaching Gravure quality
- ✓ Changeover times still shorter than with gravure technology
- ✓ For standard quality requirements and short runs flexo technology still the cheapest solution
- ✓ Flexo technology also used with energy curing process
- ✓ Flexo presses rarely run at speed over 350 – 400 m/min without problems

Sheetfed technology restricted to substrate

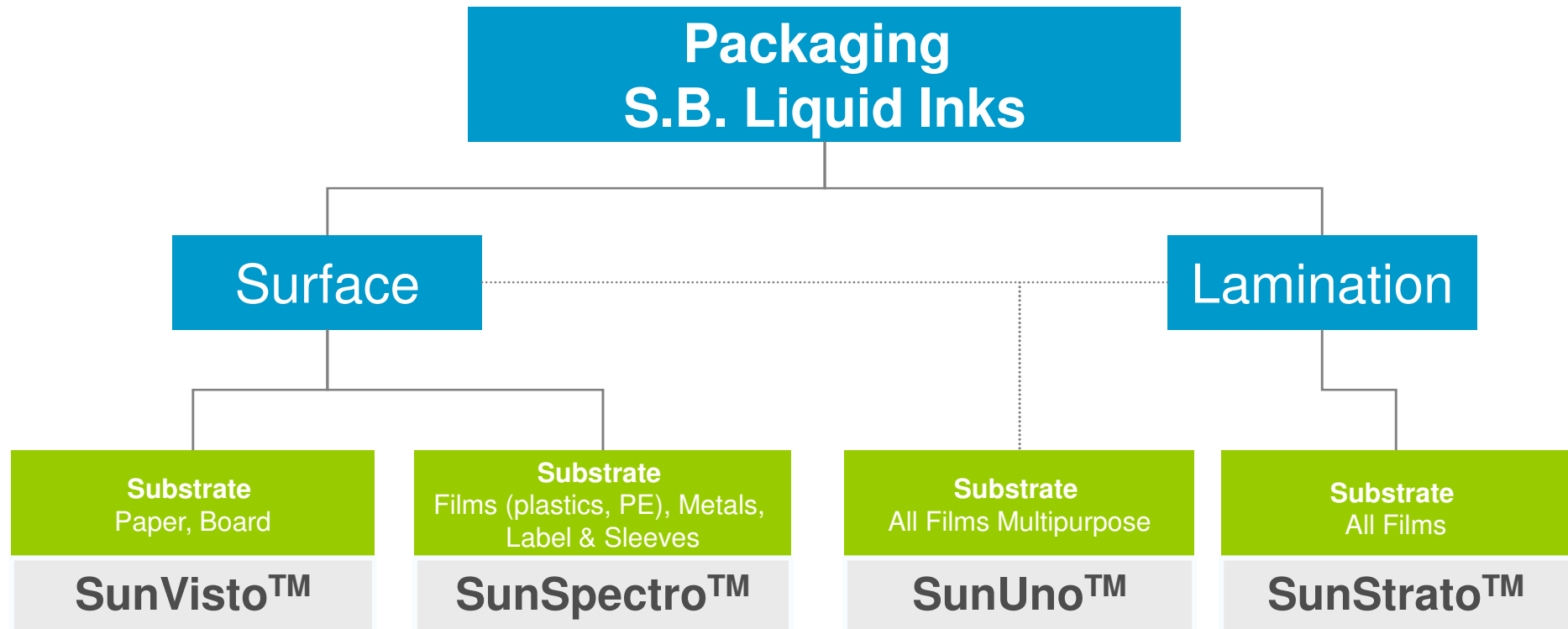
- ✓ Sheetfed Technology mainly used on carton and board
- ✓ The printing quality for board is the best in class
- ✓ For food packaging only low migration quality suitable (mineral oil free)

Used in offset and flexo technology

- ✓ For sheetfed technology on plastics only uv-curing technology possible
- ✓ Reel-to-reel printing in Offset and flexo technology both uv- and EB-curing technology.
- ✓ Offset energy curing technology for food packaging only low migration quality suitable

Gravure and flexo Ink Market

- ✓ Sun Chemical has developed a complete portfolio for any market segment over a number of years



The SunStrato™ Family of Lamination Inks

Matrix: Solutions for applications

YOUR APPLICATION NEEDS		OUR PRODUCT SOLUTIONS		
		Premium	Versatile	Value
SunStrato™	HighTemp Sterilize	Duratort	Duralam	Duraply
	Medium Temp Pasteurise and Boil	Duralam	Duralam	Duraply
	Multi Substrate PO, PET & PA	Duralam Duraflex	Duraflex Aqualam	Duraflex
	General Purpose Polyolefin Substrates	Duraline		Duraline

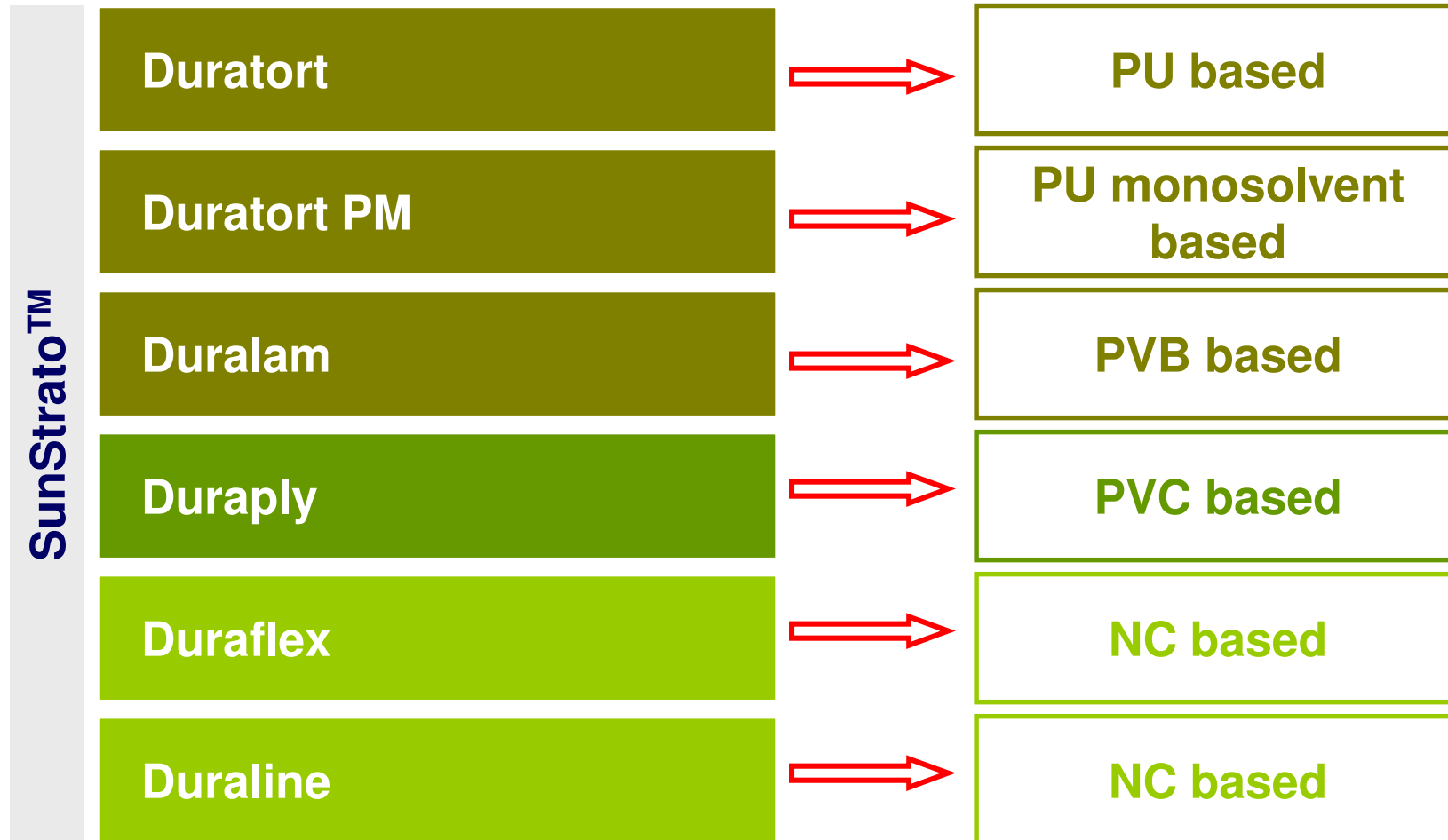
Premium: high performing product solution

Versatile: medium specs high efficiency product solution

Value: cost effective product solution



The SunStrato™ Family



High Retort and Pasteurization segment

		Premium	Versatile	Value
High Temp	Sterilize			Duraply
Medium Temp	Pasteurise and Boil			Duraply

Sun Chemical is a leading producer of PVC based inks named SunStrato **DURAPLY**

More popular films for this segment are PET / OPA

SunStrato Duraply has:

- very good adhesion on PET (plain, corona treated, chemical treated, PVdC coated) and OPA (corona or chemical treated)
- very high bond strength, over 3 N/15mm
- outstanding behavior during sterilization or pasteurization
- no risk of nitrosamine development
- the Duraply series is monosolvent (only ethyl acetate) and can be used if solvent recovery plant is installed



High Retort and Pasteurization segment

SunStrato Duraply covers **only PET and OPA** and **contains chlorine** so many Nordic European countries
and many big end-users
do not use it

High Retort and Pasteurization segment

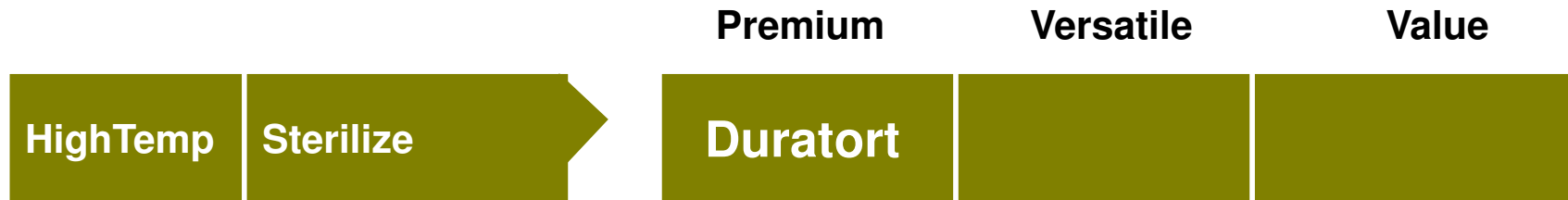
		Premium	Versatile	Value
HighTemp	Sterilize		Duralam	
Medium Temp	Pasteurise and Boil	Duralam	Duralam	
Multi Substrate	PO, PET & PA	Duralam		

For this reason, is born SunStrato **DURALAM**:

- PVB based system, chloride resin free
- suitable for the same applications but also suitable for printing and subsequent lamination of OPP (bi-oriented, coextruded, acrylic coated, pvdc coated) and PE
- some limitations on high spec sterilization, mainly on OPA
- the system is based on mixed solvents and cannot be used with solvent recovery equipment
- the series does not develop nitrosamine
- this system is popular in Northern European countries



High Retort and Pasteurization segment



Finally, the latest development: SunStrato **DURATORT** and **DURATORT Mono**

SunStrato Duratort is an unique PU system, designed by Sun Chemical with own proprietary polyurethane resins

- the ink covers all kind of films
- has very high bond strength – over 3 N/15mm
- the series can be sterilized or pasteurized
- the series does not develop nitrosamine, nor contain chlorine
- the system has very low solvent retention
- Duratort Mono is the monosolvent version, designed for solvent recovery equipment, containing only ethyl acetate as solvent



Multisubstrate segment

- Another important market segment is the multi-substrate ink market
- The suggested system is SunStrato **DURAFLEX**
- SunStrato Duraflex are NC based systems suitable for printing all major supports when no sterilization is required



Of course, SunStrato Duralam and Duratort can cover the same segment

Multisubstrate segment



SunStrato DURAFLEX

- can be easily printed and shows very good bond strengths (2 – 3 N/15mm)
- being NC based, this series is **totally compatible** with the most popular surface inks (which are NC-based too) and it is not necessary to have deep cleaning of the presses when jobs are changed from surface to lamination and vice versa

Multi-substrate segment



➤ In addition, since SunStrato Duraflex and our surface inks range SunSpectro are manufactured using the same NC bases, the system can be supplied as NC base with a different technology varnish allowing the customer to install a **unique dispensing system**

If no sterilization is required, SunStrato Duraflex is an ideal solution

Remember: the switch from SunStrato Duraply or Duralam to NC based inks (and vice versa) requires deep cleaning of the press!

General Purpose Segment

For general purpose inks intended for printing mainly OPP or PE, SunStrato DURALINE system (NC based) are available



SunStrato DURALINE are cost effective NC based inks for general purpose lamination applications:

- series is used for laminating OPP, corona treated (both bi-oriented and oriented coextruded) and acrylic coated
- the inks are also available in a monosolvent version
- the bond strength, depending on substrate quality and adhesive choice, can vary from 1 N/15mm to 3 N/15mm
- being NC based, the series is not suitable for sterilization
- the ink system can be supplied as NC bases and Technology Varnish



Surface Printing Inks Portfolio

The Surface Print area is large and complex -:

- **SunSpectro™** and **SunVisto™** cover a broad range of market applications
- Here below we summarize the major segments covered by gravure and flexo technology



Surface Printing Gravure Inks Portfolio

Alufoil
(blisters, caps, lidding, wraps)



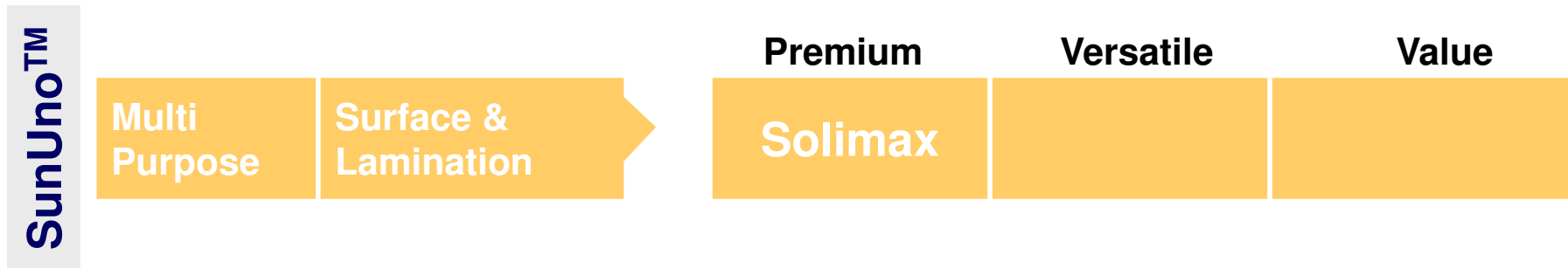
SunSpectro SOLVAFILM is an NC gravure ink with excellent adhesion, heat resistance and printability

- largely used for surface printing of paper, alufoil and metalized films
- the series is also suitable for printing acrylic coated film (mainly OPP)
- by adding adhesion promoter, also a limited choice of corona treated OPP can be printed
- for printing on metalized film – metal side, it is necessary a primer (water or solvent based)
- the ink system can be supplied as NC bases and

Technology Varnish

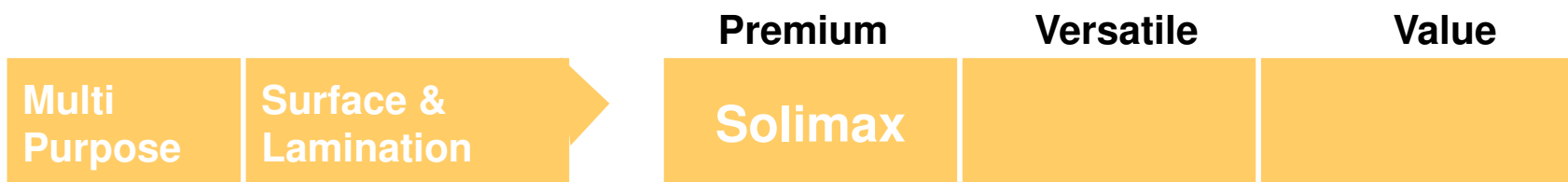


SunUno: The Multipurpose Offering

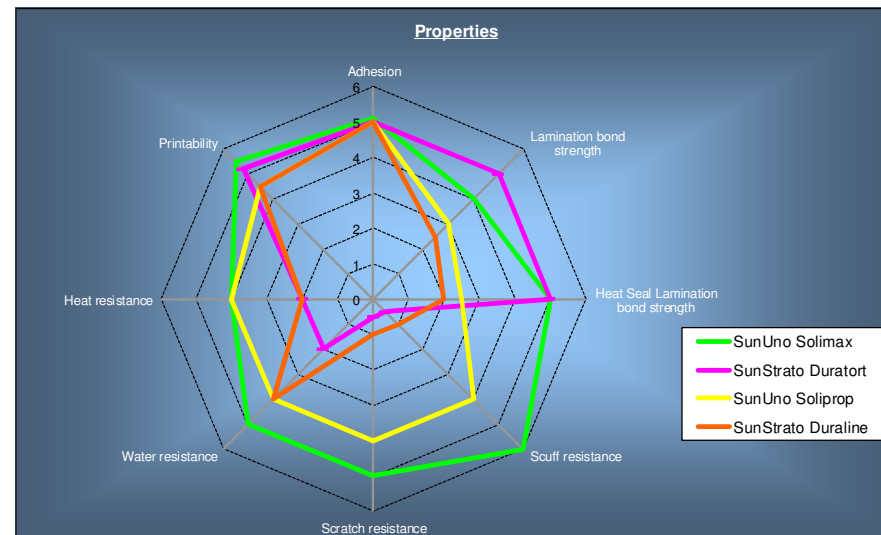
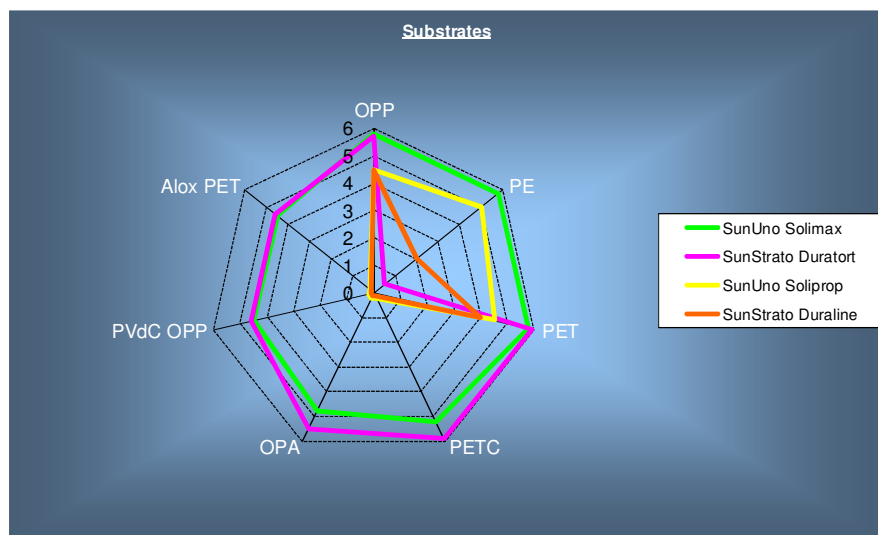


- For customers printing both surface and reverse for laminating, Sun Chemical has designed a special family of products , SunUno.
- Solimax is the main ink system designed to reduce complexity in the print shop
- And generate savings from less waste (press returns) ,
- less cleaning time and greater
- Press utilisation times

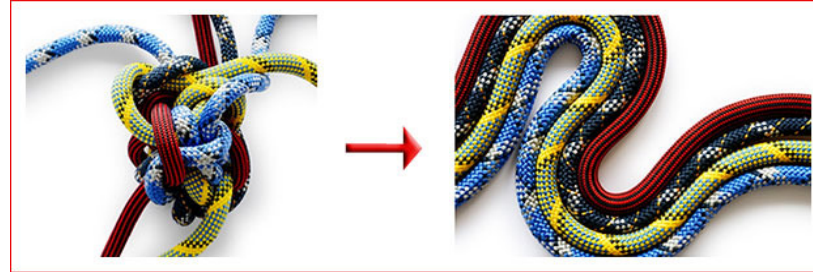
Solimax – The Multipurpose approach !



SunUno SOLIMAX is an NC based system designed for both surface and reverse print applications !



Solimax – The Future !



Solimax is an important tool that can be used to reduce complexity in a print shop and ultimately deliver operational savings and benefits !



Solimax technology is available via either a bespoke finished ink range or a base + TV approach

Narrow web – an example for film printing

- ✓ In narrow web different print technologies are used in one press
- ✓ Currently mainly labels and sleeves are printed using a combination of different print processes – e.g. EB Offset combined with gravure or flexo backing white
- ✓ First CI press presented at Drupa – EB Offset and EB Flexo
- ✓ High quality with Heptachrome inks and White resp overprint varnish



One stop Shop

Sun Chemical offers not only printing inks

- ✓ Solventfree and solventbased laminaiton adhesives - SunLam
- ✓ Functional coatings
 - ✓ Oxygen barrier - SunBar
 - ✓ Uv barrier - SunBar
 - ✓ Antimist – VistaClear
 - ✓ Cold Seal Products – Vallogo + Polarseal
- ✓ Lamination adhesive combined with oxygen barrrier - Paslim




The future

Food safety becomes more rigid

- ✓ Current status – no printing ink regulation in EU
- ✓ Suitability checked via Plastics regulation (EU)
- ✓ Non EU: Swiss Ordinance
- ✓ German regulation in preparation – basically no differentiation between direct and indirect food contact
- ✓ Transfer of substances from the package into the food (migration)

Environmental Issues

- ✓ Carbon footprint
- ✓ Sustainability



Thank you
for your attention!