

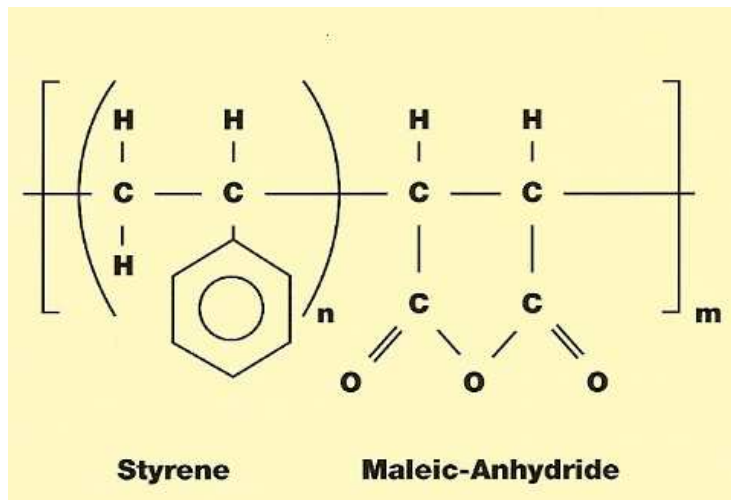
# *XIRAN*<sup>®</sup> SMA

**“New tricks in polymer blends”**

*Peter Flippo*

*Polyscope Polymers B.V.*

## SMA = Styrene Maleic Anhydride Copolymer



XIRAN<sup>®</sup>



*Modern Plastics (May 2008), highlights*

Styrene maleic anhydride (SMA):

- hardly a new material
- one of the few suppliers of it, Polyscope, has ‘taught’ the material a few new tricks
- that might make it of even greater interest to plastics processors across a broad swath of applications

- History
- Xiran<sup>®</sup> SMA tricks
- Applications
- Summary

## Polyscope/SMA history:

1980-2002:

- DSM developed SMA for ABS blends → Stapron S
- ABS sold by DSM to BASF
- Wide range of new opportunities investigated

2006

- Polyscope Polymers BV acquires SMA Production plant, Technology and all Patents

2006 – ytd:

- Still learning new tricks with SMA

Typical technical data Xiran SMA:



	<i>XIRAN<sup>®</sup> SMA</i>
Transparency	crystal clear
MA content	18-35 wt%
Mw range	50-200 kg/mol
Physical appearance	pellets (~ 4 mm)
Density	1,08 g/cm <sup>3</sup>
Glass temperature (T <sub>g</sub> )	145 - 175 °C

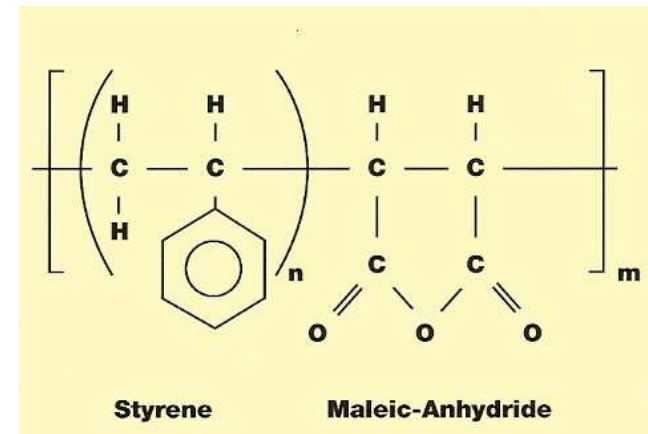
*Performance enhancer:*

Dial-in-Heat

- High Heat
- Dimensional Stability
- High Precision Molding

High Polarity

- Adhesion
- Compatibility

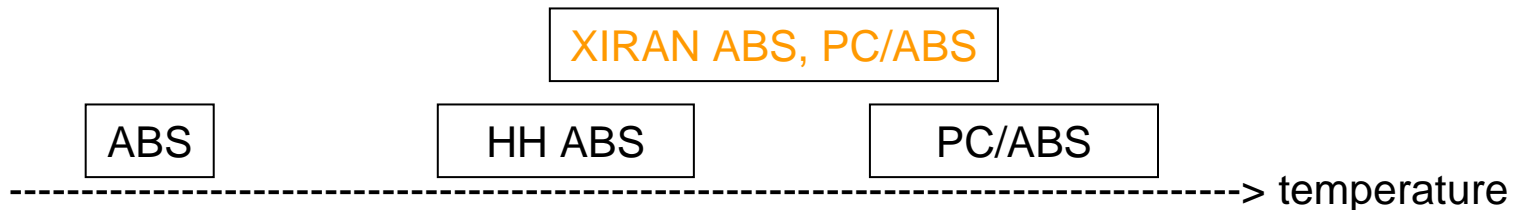


## *Performance Enhancer:*

- Heat : ABS, PMMA, PVC, PS, ....
- Polarity : plating, painting, glueing, foaming
- Compatibility : polymer blends, glass reinforced compounds, natural fiber compounds

## *Heat improvement ABS*

- Proven performance (reference Stapron S)
- Adjustable performance -> SMA content / grade
- Functional application performance positioning in range



	method	ABS	indicative SMA/ABS property window
HDT/A (1,80 MPa) [°C]	ISO 75	80	> 85
Vicat B [°C]	ISO 307	95	>100
CTE [m/m/°C]	ISO 11359	80-110	< 70

## *Heat improvement PMMA*

- Proven performance:
  - increase HDT
  - keeping optical properties
- Adjustable performance → SMA content / grade
- Indicative range:

	method	PMMA	indicative SMA/PMMA property window
Tg [°C]	DSC	90	> 95
Tg [°C]	DSC	110	> 115
transparancy [%]	ASTM D1003	92	92
haze	ASTM D1003	0,70	0,70

## *Heat improvement PVC*

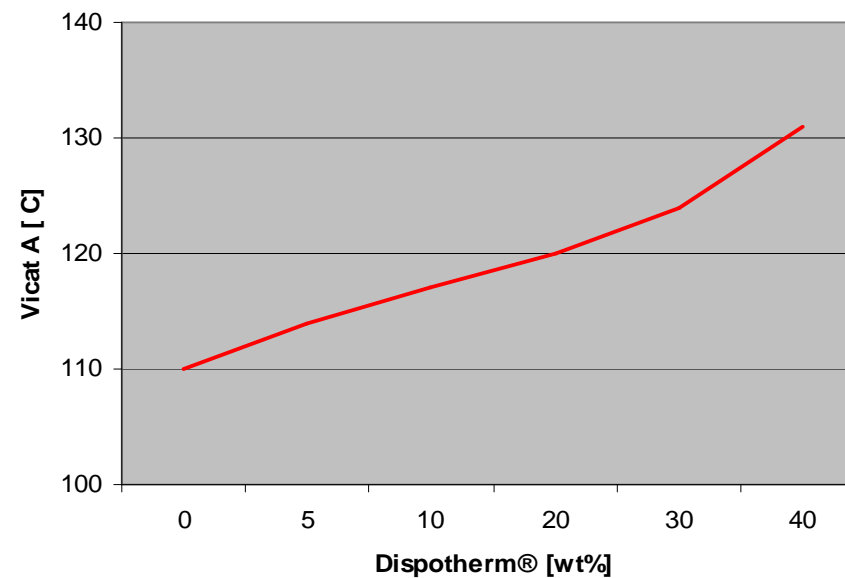
- Increase of Vicat B

	method	PVC	indicative SMA/PVC property window
Vicat B [°C]	ISO 307	80	> 80

- Adjustable performance ->SMA content / grade
- Injection moulded PVC:
  - application: pipe fittings,...
  - Ca/Zn stabiliser reduces Vicat B < 80°C
  - requirement Vicat B 80-85 °C

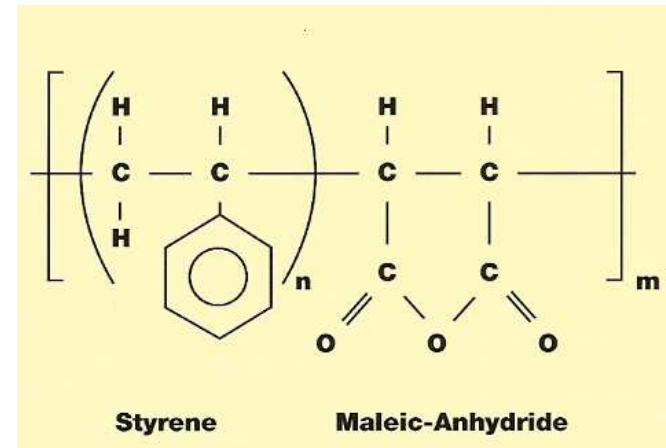
## *Heat improvement PS*

- microwaveable PS food trays
- alternative to PPE, competitive SMA FG
- offering customised solutions  
(based on Masterbatch Dispotherm<sup>®</sup>)



## *Polarity & Compatibility enhancer*

- maleic anhydride (MA) group:
  - polarity
  - functional reactivity
- styrene:
  - non-polarity
- tailor made functionality:
  - ratio MA/styrene
  - molecular weight



## *Polarity & Compatibility enhancer*

### Improved surface adhesion:

- painting, glueing, foaming



→ adhesion: highest classification class 0 (ISO 2409)

→ NO pretreatment of surface!!

### Improved compatibility:

- miscibility, mechanical / surface properties, ...
  - Polymer blends
  - Glass reinforced compounds
  - Natural fiber compounds



# XIRAN<sup>®</sup> Automotive Applications



# XIRAN® Industrial Applications



## Summary

- Insight in Xiran<sup>®</sup> SMA performance enhancer
- Still learning new tricks
- Interested and challenged by the opportunities of XIRAN<sup>®</sup>?  
  
→ Contact us for further details!

More information.....



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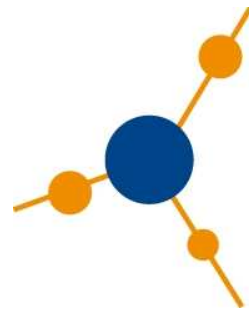
[www.polyscope.eu](http://www.polyscope.eu)

*Press references:*

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- Modern Plastics

<http://mpw.plasticstoday.com/?q=articles/14657>



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