



Monomeric plasticizer, engineered for a safer environment !

SASA plusTM 88

Background



California governor Arnold Schwarzenegger (R.) has signed legislation that will ban phthalates in toys and other products designed for children under the age of three, beginning in 2009.

– Chemical Week –

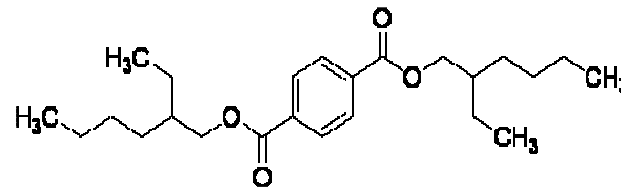
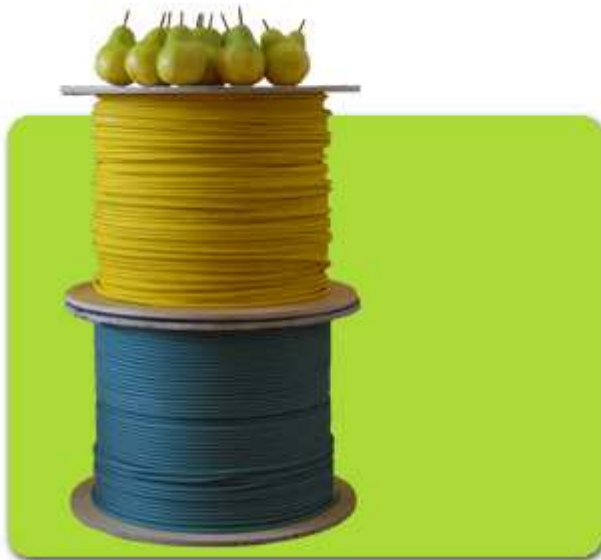
SASA plus™ 88

Unique Chemical Structure of SASA plus™ 88

bis(2-ethyl hexyl)-1,4-benzene dicarboxylate

CAS No: 6422-86-2

Molecular Formula: C₂₆H₅₀O₄



SASA plus™ 88

General Properties of SASA plus™ 88

PROPERTY	SASA Plus 88	DEHP	DINP	DIDP
Molecular Weight	390.6	390.7	418	447
Specific Gravity	0,9835	0,9852	0,974	0,971
Boiling Point, 760mmHg, C	400	384	400	250
Freezing Point, C	-48	-50	-54	-50
Solubility in Water, mg/L (25 C)	0,3	3	0,6	0,6
Viscosity, Cp (25 C)	63	56	52	130

SASA plus™ 88

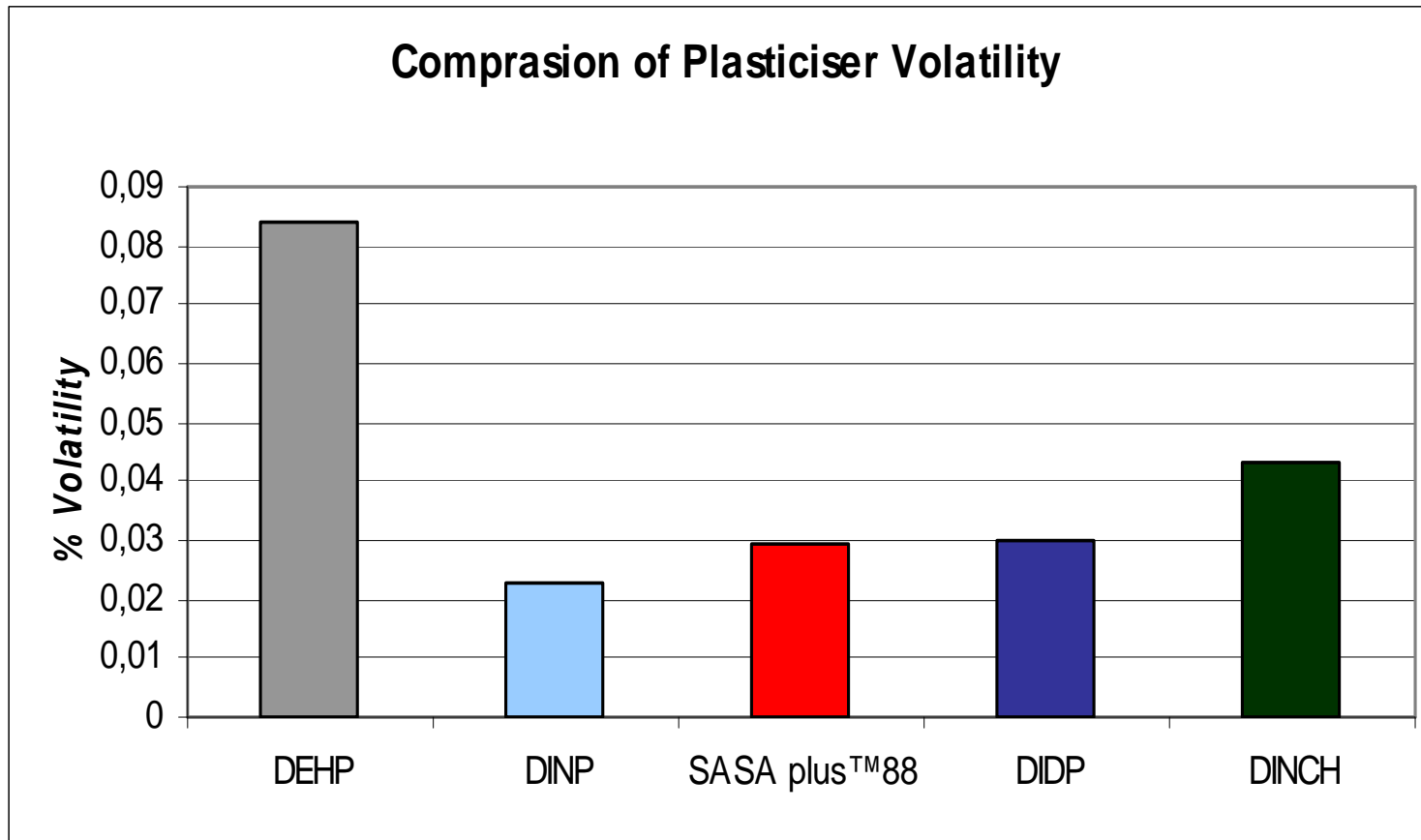
Application Areas of SASA plus™ 88

SASA PLUS 88 works well in all types of PVC processing.

- Extrusion
- Calendering
- Injection molding
- Rotational molding
- Dip molding
- Slush molding
- Plastisol screen ink

SASA plus™ 88

% Volatility at 90 °C



SASA plus™88

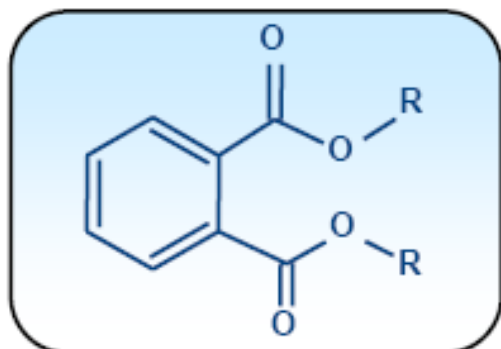
Physical Properties of Compounds

	DOP	SASA Plus 88	DINP	DIDP
Plasticizer Concentration to Give Equal Modulus,phr	50	50	54	53
Mechanical Properties				
Tensile Strenght, mPa	19	19,3	18,9	18,3
Elongation %	370	385	385	360
Tear Strenght, N/mm	84	87	77	87
Permanence				
Soapy Water, % Loss	0,78	1,02	0,85	0,33
Oil Extraction, % Loss	10,4	16,1	17,3	16,4
Low Temperature Flexibility				
Torsion Modulus °C 35.000 psi	-19	-21	-16	-20
Low-Temperature Impact °C	-33	-37	-33	-29

SASA plusTM 88

Studies on Human Exposure to Orto-Phthalates (DOP,DINP, DIDP,etc)

Phthalates

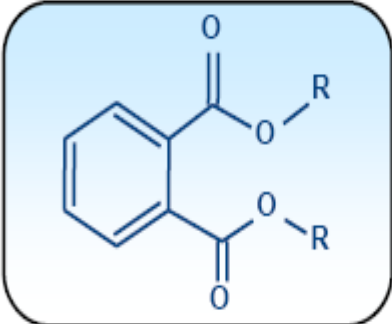


Plasticizer in PVC articles
Personal care products
Pharmaceuticals
Medical devices
Paints, adhesives

Phthalat	Consumption Europe
Di-n-butyl	26.000 t (1998)
Di-i-butyl	?
Benzylbutyl	20.000 t (2004)
Di-2-ethylhexyl	200.000 t (2005)
Di-isononyl	600.000 t (2005)
Di-isodecyl	

Sum phthalates > 1.000.000 t (2007)

Phthalates



- Plasticizer in PVC articles
- Personal care products
- Pharmaceuticals
- Medical devices
- Paints, adhesives

Phthalates leaches out of those products

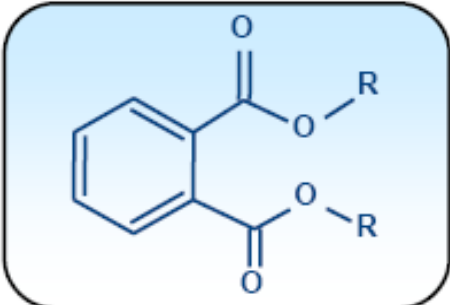


Ubiquitous environmental contamination



Human exposure

Phthalates



- Plasticizer in PVC articles
- Personal care products
- Pharmaceuticals
- Medical devices
- Paints, adhesives

Phthalates leaches out of those products



Ubiquitous environmental contamination



Human exposure

Phthalates Endocrine disruptors in animals

DnBP

DiBP

BBzP

DEHP

DiNP

**Adverse effects on reproduction
and development in animals**

- malformations
- testicular toxicity
- feminization
- reduced fertility



reduced testosterone levels

Phthalates Endocrine Disruptors in Humans?

Do phthalates contribute to trends in reproduction medicine ?

- Testicular cancer



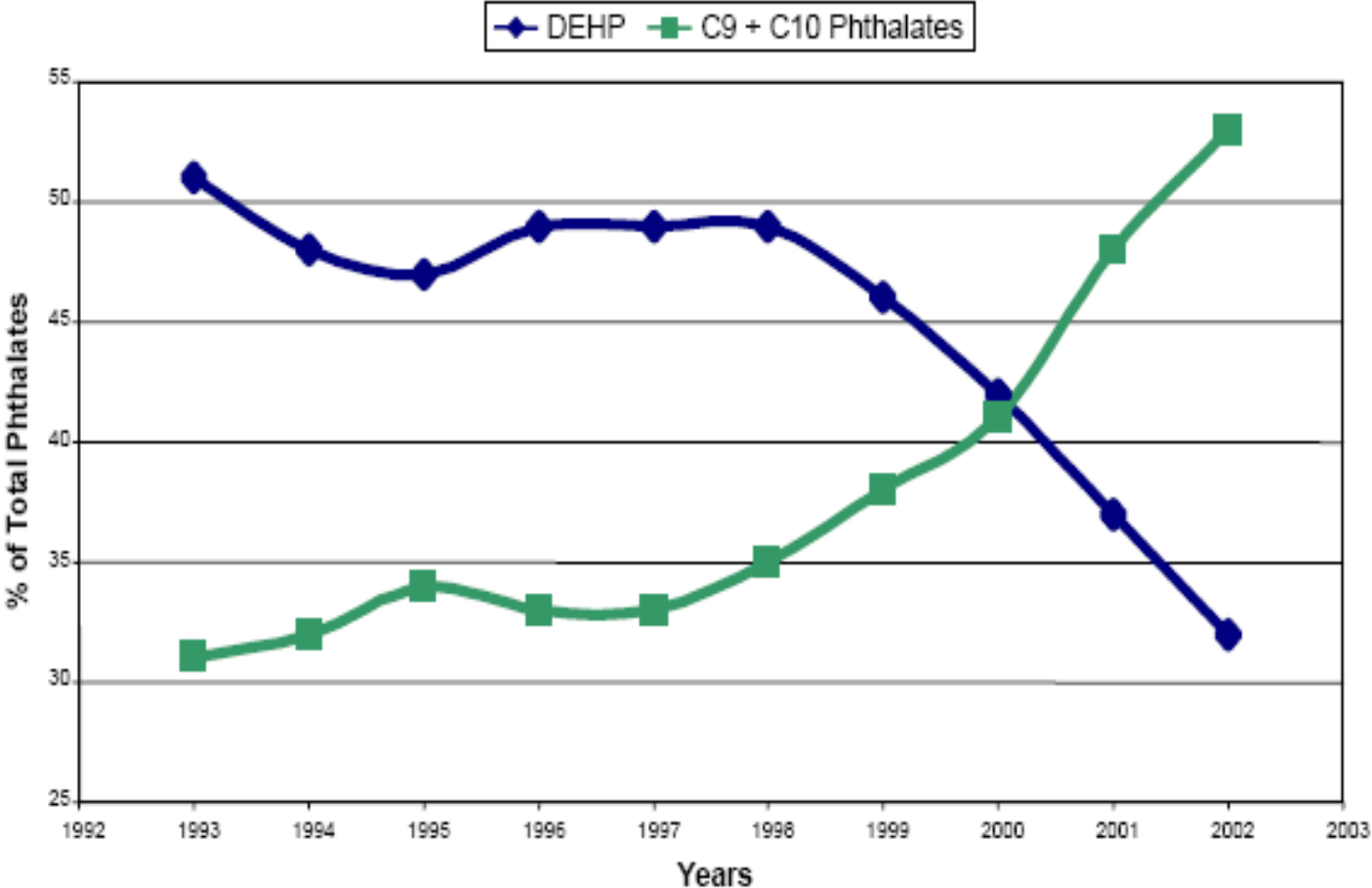
- Hypospadias



- Sperm counts



Phthalate consumption in Western Europe





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