150 years

BASF
We create chemistry

Elastocoat®: Polyurea

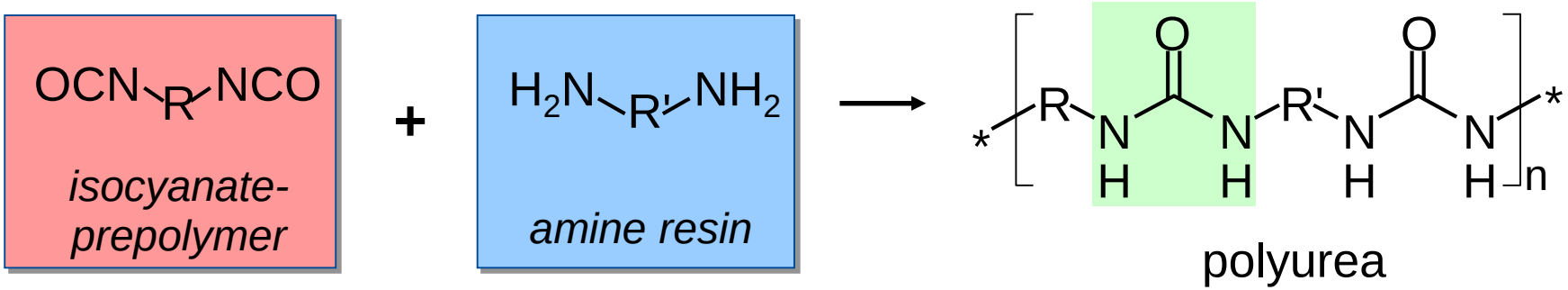
- strong
- seamless
- crack-bridging
- durable

Content

- Chemistry of polyurea
- Properties of polyurea
- Polyurea benefits
- Applications
- Spray product portfolio
- Product testing

Chemistry of Polyurea Spray Elastomers

Polyurea is an elastomer made from **two reactive components** with a volume mixing ratio of 1:1.



Isocyanate components:

- MDI-based prepolymers for aromatic systems
- HDI- or IPDI-based for aliphatic systems

Resin components:

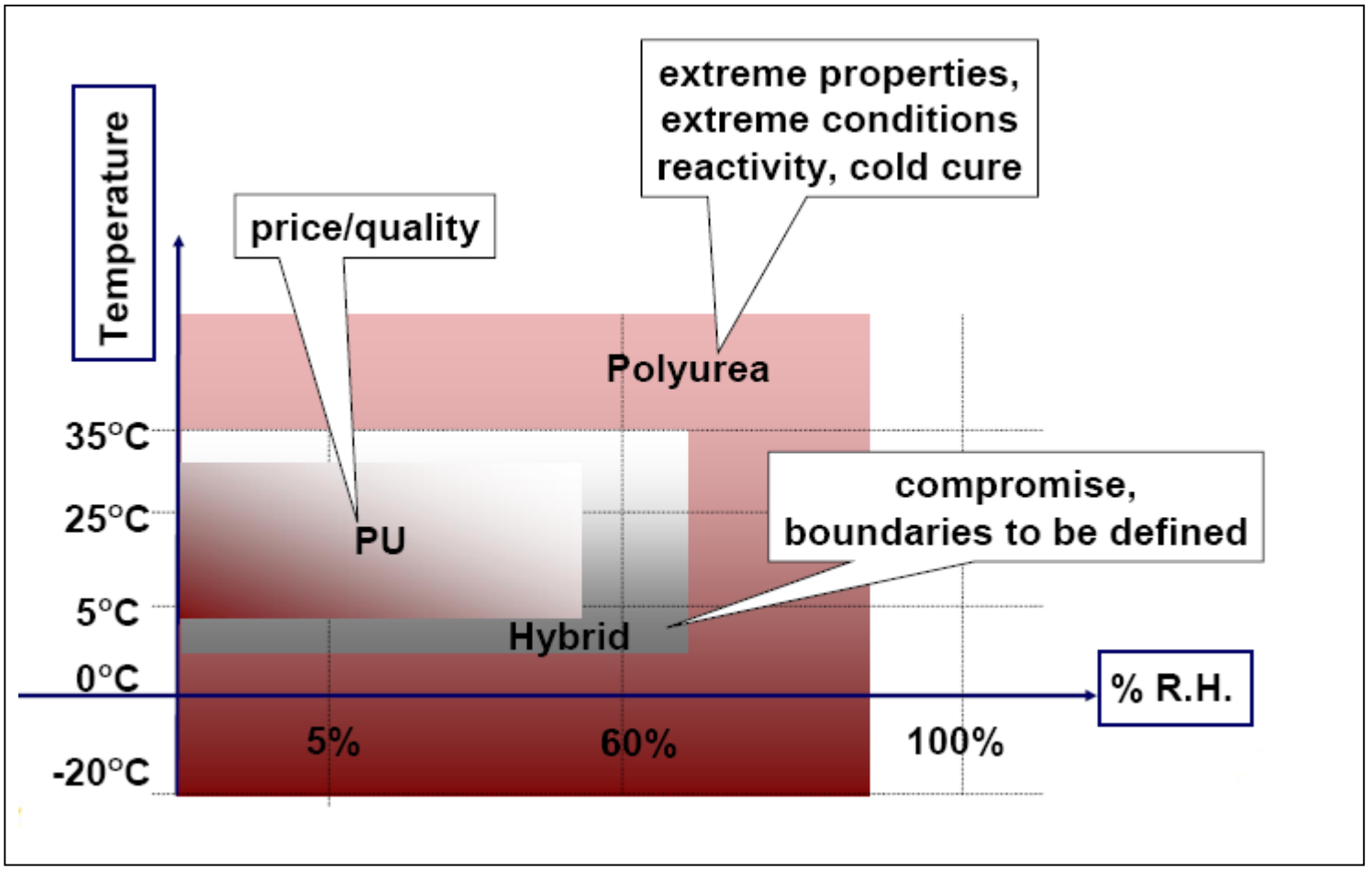
- Polyetheramines
- Amine chain extenders
- Other diamines (e.g. DMDC)
- Pigments
- Additives

Polyurea Spray Elastomers Benefits

- Fast reactivity, set and cure - rapid return to service
- Relative processing insensitivity
  - Temperature tolerant: cures even below 0 °C
  - Moisture tolerant: no foaming even at 99 % rH
- Broader processing window

Polyurea Spray Elastomers Benefits

- Wider application window



Polyurea Spray Elastomers Benefits

- Flexible, seamless and resilient, in comparison to other systems

Polyurea Spray Elastomers Benefits

- Rapid application even on vertical areas
- Relatively unlimited application thickness
- Good adhesion to many substrates with correct surface preparation (metal, concrete and wood)

Polyurea – Unique Properties, High Performance

150 years

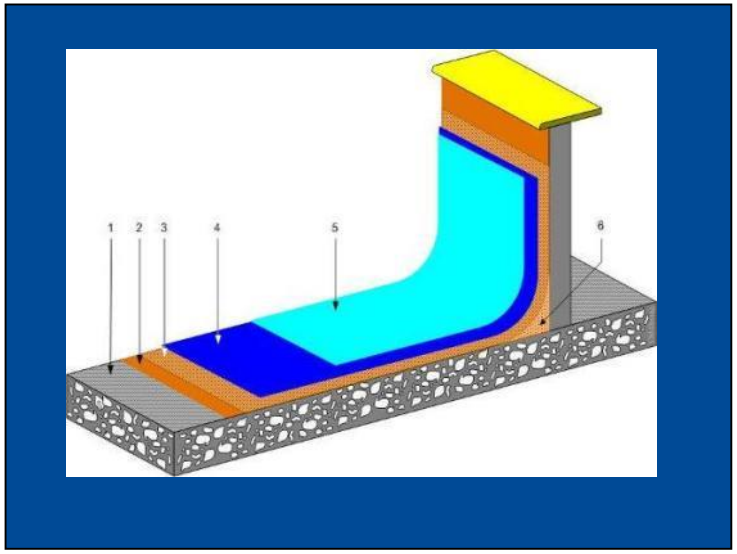
BASF
We create chemistry

	Polyurea	Polyurethane	Epoxy
Gel time	+	0	-
Moisture insensitivity	++	0	+
Elongation	+	0	--
Hardness	0	0	+
Tensile strength	++	0	-
Abrasion resistance	++	0	+
Low temperature cure	+	0	-
High temperature resistance	+	0	++
Chemical resistance	+	0	++
VOC free	+	0	-
Surface	0	0	+
Seamless	+	0	0
Coverage	+	0	-
Durability	+	0	-
Color stability	0/-	0	0

Polyurea Applications – Park Decks and Flooring

150 years

BASF
We create chemistry



- quick turn around and return to service
- suitable for high traffic applications
- allows cleaning with high pressure cleaning
- excellent crack bridging properties

Polyurea Applications - Manhole Renovation

150 years

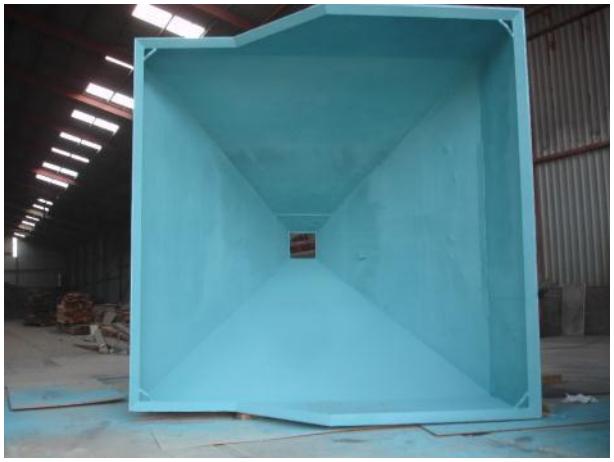
BASF
We create chemistry

- resistant to biogenic sulphuric acid
- fast curing
- quick return to service

Polyurea Applications - Wear Protection

150 years

BASF
We create chemistry



- outstanding wear resistance
- high elasticity
- high adhesion to substrate

Polyurea Applications – Transportation & noise damping

- outstanding wear resistance
- noise absorbing
- high elasticity
- high adhesion to substrate

Polyurea Applications – Construction waterproofing

- seamless liquid membrane
- secure sealant of penetrations and edges
- wide processing window
- fast curing
- quick return to service

Other Polyurea Applications

- Petrochemical industry
  - Protection against corrosion and chemical attack
- Mining industry
  - Abrasion resistance applications
  - Corrosion protection
  - Chemical attack in bunding areas
- Power industry
  - Chemical attack
  - Corrosion protection
  - High temperatures

Polyurea – Product Portfolio

Polyol	*Iso*	*Application*	*Shore Hardness*
Elastocoat C 6335/101	Iso 136/75	Standard Polyurea	40 D
Elastocoat C 6385/101	Iso 196/16	B_{fl}-s1 Fire Rated Polyurea	40 D
Elastocoat C 6330/101	Iso 196/18	Repair, Pour	30 D
Elastocoat C 6335/113	Iso 136/49	Super soft	60 A
Elastocoat C 6335/133	Iso 136/147	Intermediate	85 A
Elastocoat C 6335/134	Iso 136/149	Hard	60 D
Elastocoat C 6330/103	Iso 196/25	UV stable, sprayable	40 D
Elastocoat C 6430/100	Iso 196/19	Aliphatic Polyaspartic Topcoat	40 D
Elastocoat C 6335/114	Iso 136/117	High Abrasion	40 D

Elastocoat C 6335/101

- Aromatic fast set system
  - Case studies
  - Certifications
    - CE marking acc EN 1504-2, concrete
    - ETAG 005-1, roofing
    - OS11a, parking decks
    - WHG62, secondairy containment
    - C_{fl}-s1 acc. EN 13501-1
  - Large range of other test data available on request.

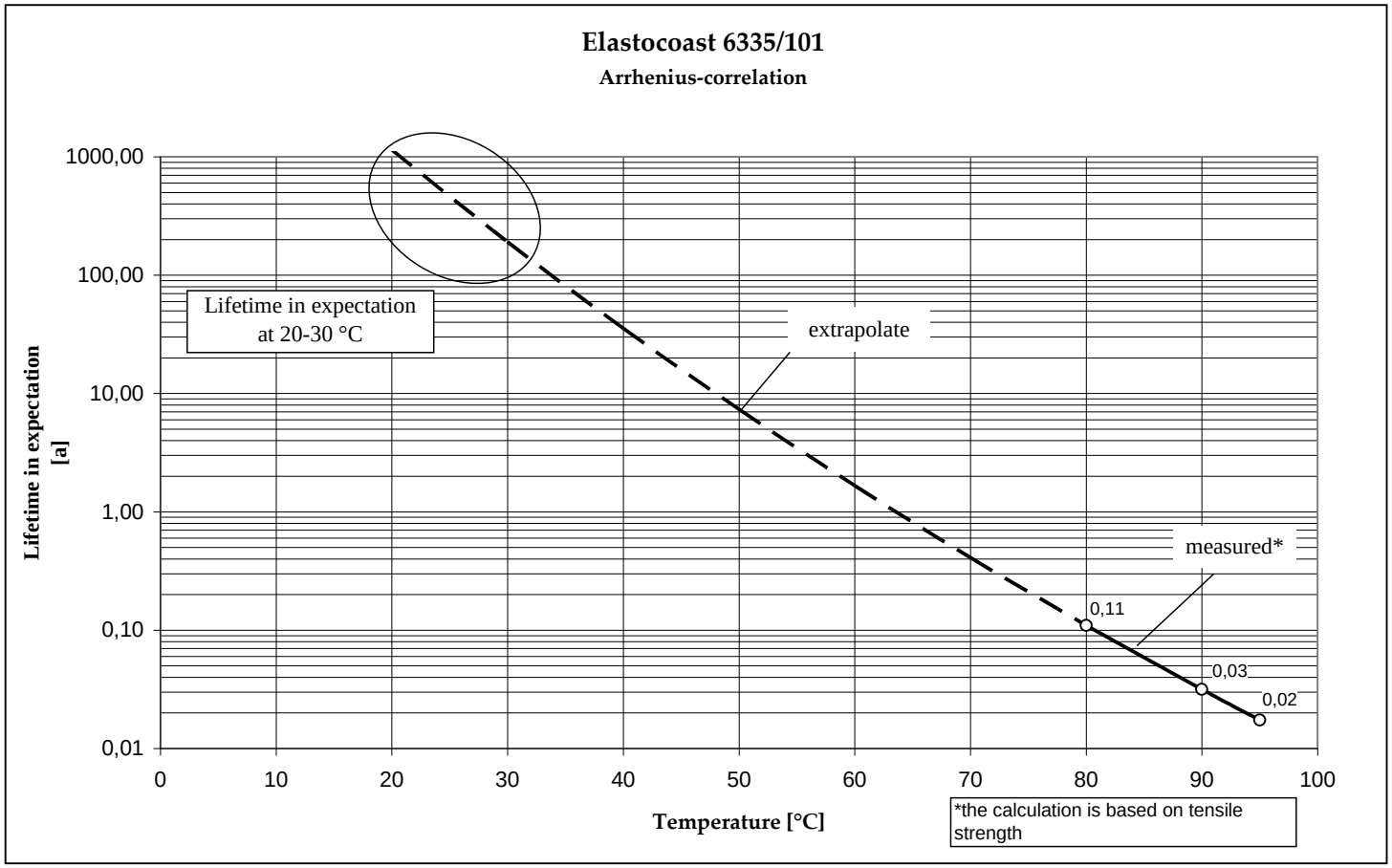
Elastocoat C 6335/101

150 years

BASF
We create chemistry

EN 1501-2- For concrete and repair products (Coatings)		
Impact resistance	Class 3	
Adhesion strength-pull off test (with trafficking)	>=2.0	
Resistance to severe chemical attack (10% acetic acid)	Class 2	
Permeability to $C0_2$	>50	
Capillary absorption and permeabiity to water	<0.1	
Abrasion resistance	<3	
Permeability to water vapour	Class 1	
Slip/Skid resistance	Class 3	
Elastocoat C 6335/101 meets the performance requirements according to the EN 1504-2 standard. CE marking		

Hydrolysis Life Expectation
Arrhenius Correlation



Other spray systems

- Elastocoat C 6385/101
  - Aromatic fast set system
    - Improved fire performance, Bfl-s1
    - Very comparable to Elastocoat C 6335/101 from a mechanical property and processing standpoint.
- Elastocoat C 6335/113
  - Aromatic, 30 seconds
  - Shore A 60
  - Developed for anti-skid layers

Other spray systems

- Elastocoat C 6335/114
  - Higher abrasion resistant version of Elastocoat C 6335/101
  - Fast set, aromatic
- Elastocoat C 6335/134
  - Higher hardness, Shore D 60
  - Fast set, aromatic

Other spray systems

- Elastocoat C 6330/103
  - Aliphatic, fast set
    - 1st referance job in Russia
    - Presidential palace roof job, approx 10 tonnes
- Elastocoat C 6335/133
  - Intermediate grade
    - Shore A 85
    - Geltime 15 seconds

Other systems
Slow

- Elastocoat C 6330/101
  - Repair / patch material
  - Geltime 5 – 6 minutes
  - Small < 0,5 m^2 surface areas
  - IPDI prepol, safety !
- Elastocoat C 6430/100
  - Polyaspartic, aliphatic
  - 15 minute potlife, 90 minute “walkable”
    - Topcoat
    - Direct to concrete application

Other products
Primers etc

- Mastertop P 617
  - Epoxy primer, concrete, standard
- Mastertop P 617RC
  - Epoxy primer, concrete, fast
- Mastertop P 684
  - Wash primer, steel, thin film
- Mastertop P 691
  - Solvented urethane, inter-layer bond primer

Other products
Primers etc

- Mastertop P 621
  - Epoxy primer, concrete, fresh concrete
- Mastertop P 660
  - Urethane primer, asphalt
- Elastocoat C 6601/106
  - Urethane primer, asphalt
- Elastocoat C 6431/102
  - Anti skid layer with aggregate

What do you need ?

Discussion
Questions
Remarks

We create chemistry