KANEKA
KANEKA BELGIUM NV

The Dreamology Company
—Make your dreams come true—

KANEKA MS POLYMER

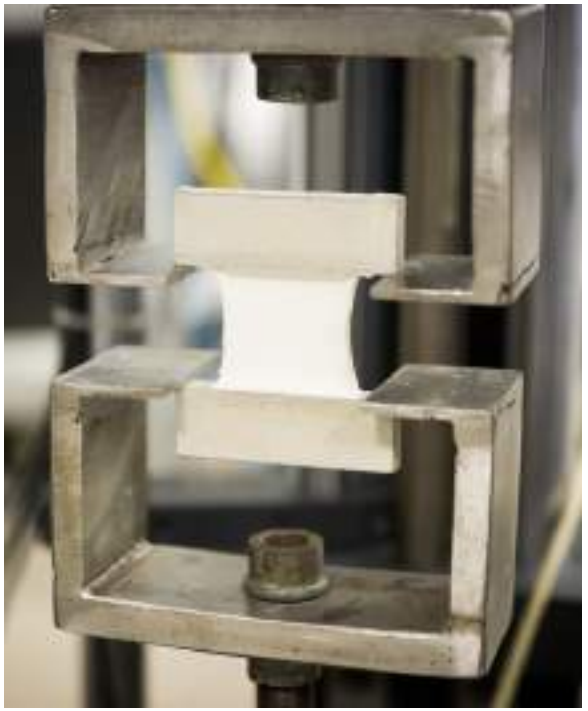
Innovative polymers for sealing and bonding future buildings.

RamSpec

3rd of October 2018

Outline

- **Kaneka Corporation**
- **Kaneka Belgium NV**
- **MS Polymer™**
  - ❑ Chemistry
  - ❑ Portfolio
  - ❑ Processing
- **Applications**
- **Conclusion**



CORPORATE OVERVIEW

COMPANY NAME

Kaneka Corporation
President
Mamoru Kadokura

ESTABLISHED

01 September 1949

NET SALES

596 (4,5)
Billion JPY (€)

KANEKA CORPORATION

HEAD OFFICE

Japan, Osaka & Tokyo

BUSINESS OPERATIONS

Europe, Americas, Asia (outside of Japan) and Oceania

EMPLOYEES

9.666
(incl. consolidated subsidiaries)

4 SOLUTIONS UNITS

Materials / Health Care /
Quality of Life / Nutrition

DATA

(as of 31 March 2018)

Kaneka's Global Network

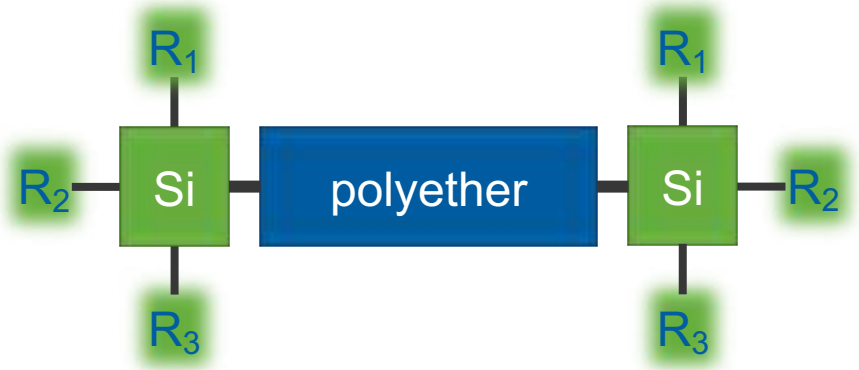
Kaneka Belgium NV

- ✓ **Established:** 1970
- ✓ **Turnover:** 316 M€ (2018)
- ✓ **Employees:** 350 (2018)
- ✓ **Size:** 260 000 m²
- ✓ **Business Units:** Liquid Polymers – Kaneka MS Polymer™
  Expanded Plastics – Eperan™
  Modifiers & Processing Aids – Kane Ace™

MS Polymer™

- ✓ Primary raw material used for producing sealants, adhesives and coatings
- ✓ Since 1978 on the market
- ✓ The pioneer and market leader in the field of hybrid polymers

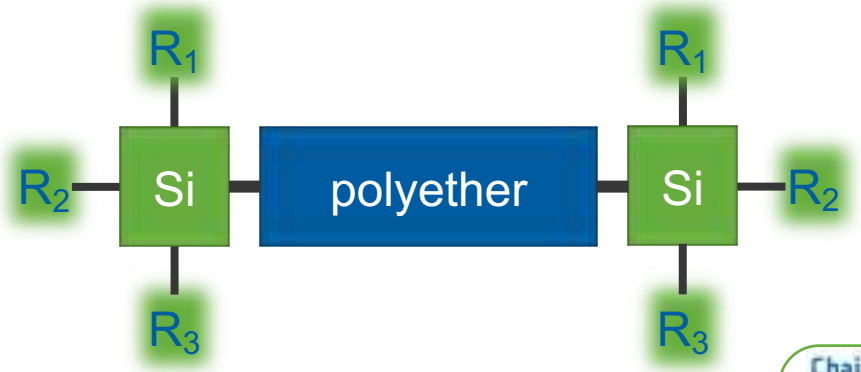
MS Polymer™ Chemistry

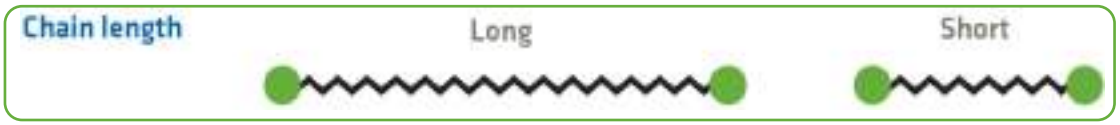


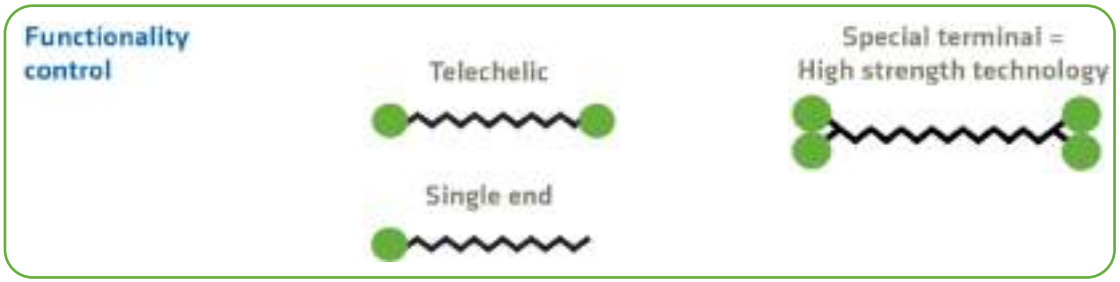
$R_1 = R_2 =$ OCH_3
$R_3 =$ CH_3
} dimethoxysilyl MS Polymer™ ➔ DMS

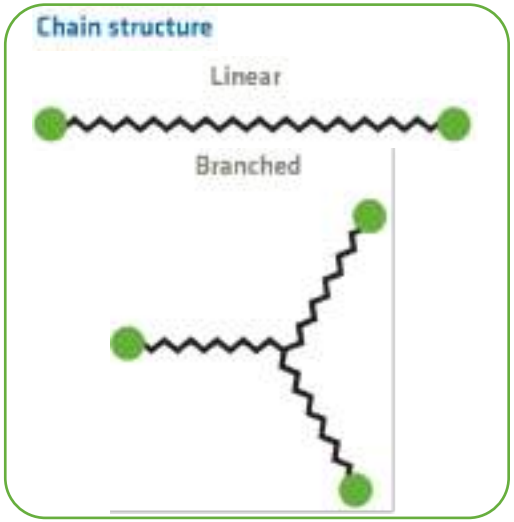
$R_1 = R_2 = R_3 =$ OCH_3
} trimethoxysilyl MS Polymer™ ➔ TMS

MS Polymer™ Chemistry



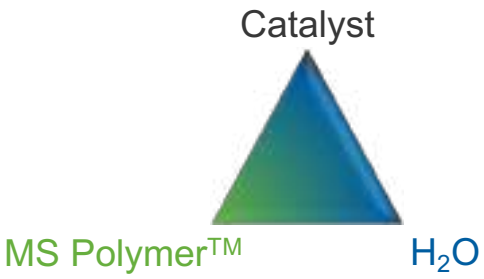






MS Polymer™ Chemistry

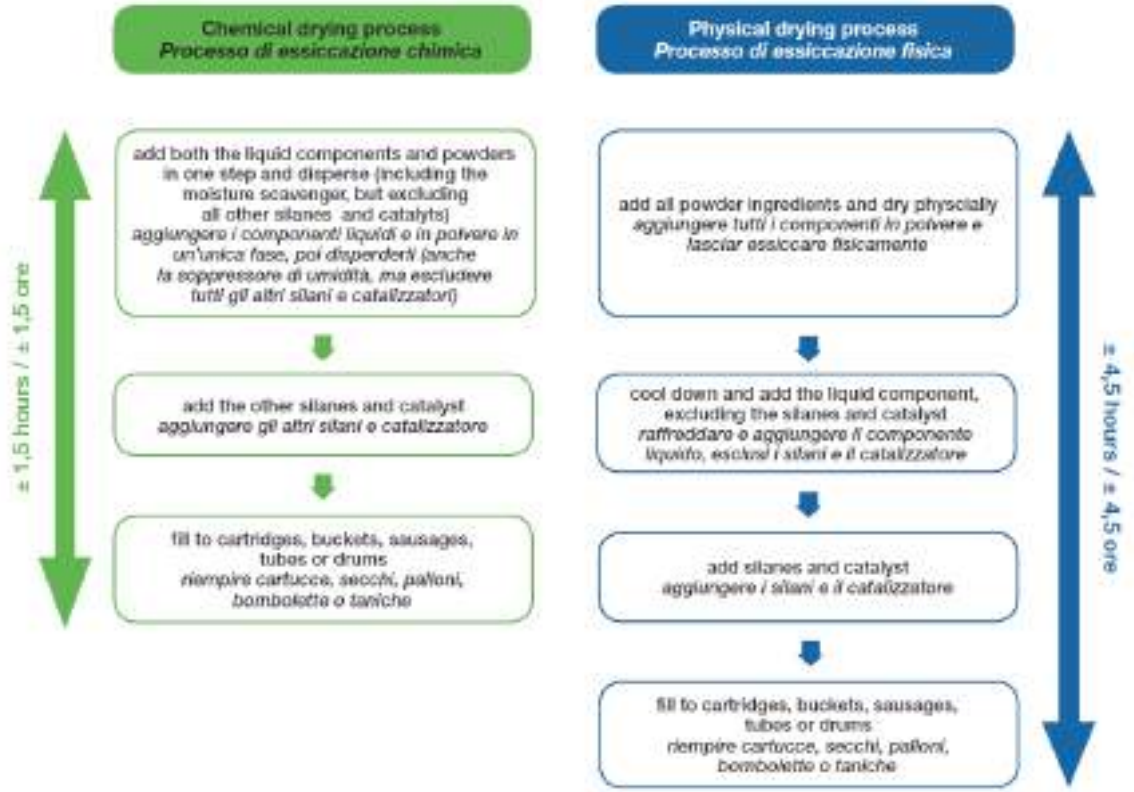
- Step 1: **Hydrolysis** of methoxysilyl with moisture in environment and initiated by catalyst
- Step 2: **Condensation** of silanol with methoxysilyl



MS Polymer™ Portfolio

TECHNOLOGY	GRADE NAME	TECHNOLOGY	GRADE NAME
Dimethoxysilyl MS Polymer™ (DMS-MS)	S203H S303H S227 S327 SAX220 SAX260 SAX350 SAX400	**Trimethoxysilyl** MS Polymer™ (TMS-MS)	SAX510 SAX520 SAX530 SAX580 SAX590
Dimethoxysilyl MS Polymer™ acryl modified (MAX)	MAX602 MAX923 MAX951	**Trimethoxysilyl** MS Polymer™ acryl modified (MA)	MA451 MA452 MA480 MA850
Dimethoxysilyl MS Polymer™ (DMS-MS) Reactive Diluents	SAT010 SAX015 SAT145		
High strength **dimethoxysilyl** MS Polymer™ (HS-DMS)	SAX750	High strength **trimethoxysilyl** MS Polymer™ (HS-TMS)	SAX575
		High strength **trimethoxysilyl** MS Polymer™ acryl modified (HS-A TMS)	MA490

MS Polymer™ Processing



Applications

Construction

- Façade sealant
- Panel bonding
- Flooring adhesives
- Glazing sealant
- Railway sealant
- Weather barrier coating
- Waterproofing
- ...

Industry

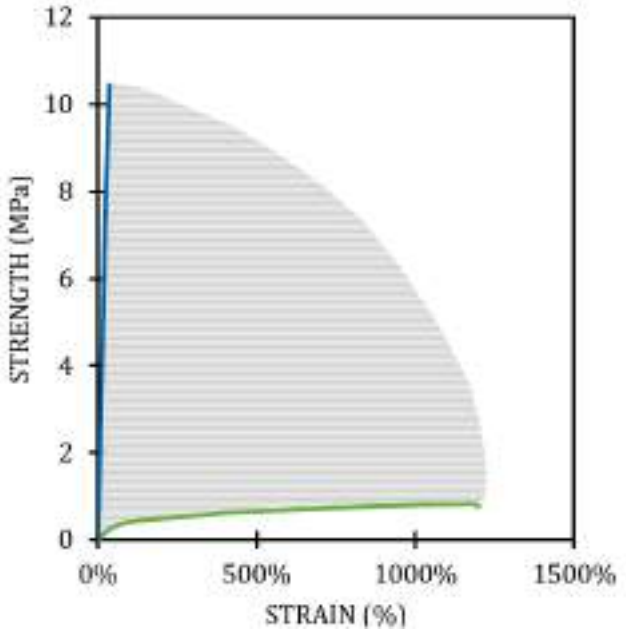
- Automotive sealant
- Panel bonding
- Marine sealant
- Civil engineering
- Solar energy modules
- ...

Consumer/DIY

- Multi-purpose sealant
- Multi-purpose adhesive
- ...

Specialty

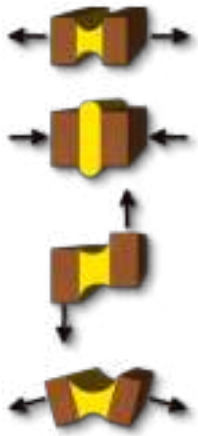
- New polymer technologies
- Future-proof applications
- ...

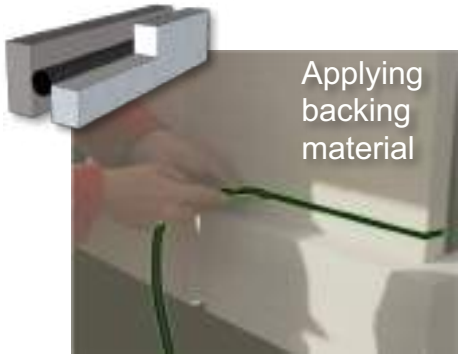


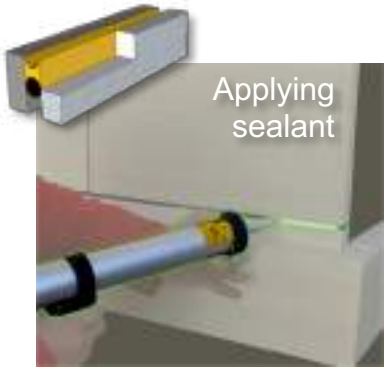
Applications: Low Modulus Sealant

- CE-marking construction sealants (2013)
- EN 15651-1 to 15651-5 (ISO 11600-25LM)

STANDARD	DESCRIPTION	LM CONCEPT (A (pr) / B (npr))
ISO 8339	Tensile properties	0,37 / 0,33
ISO 7389	Elastic recovery	76 / 85
ISO 8340	Tensile properties at maintained extension	NF / NF
ISO 9047	adhesion/cohesion at variable temperatures	NF / NF
ISO 10590	Adhesion/cohesion after water immersion	NF / NF







Applications: Liquid Waterproofing

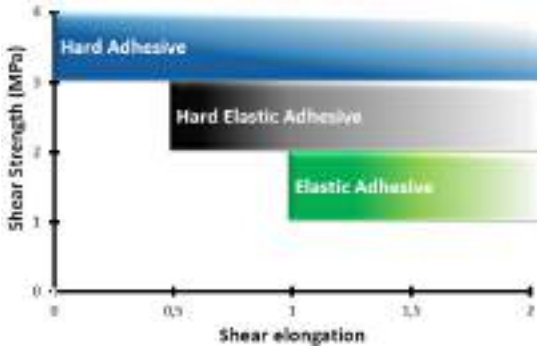
- Wet rooms, balconies, terraces and roof
- Roof according to ETA approval (EOTA)

Roof waterproofing example from the market	
Working life	W2 (10y)
Climatic zone	M (moderate)
Imposed loads	P1
Roof Slope	S1 – S4
Lowest surface temperatures	TL3 (-20°C)
Highest surface temperatures	TH3 (80°C)

Applications: Parquet Adhesives

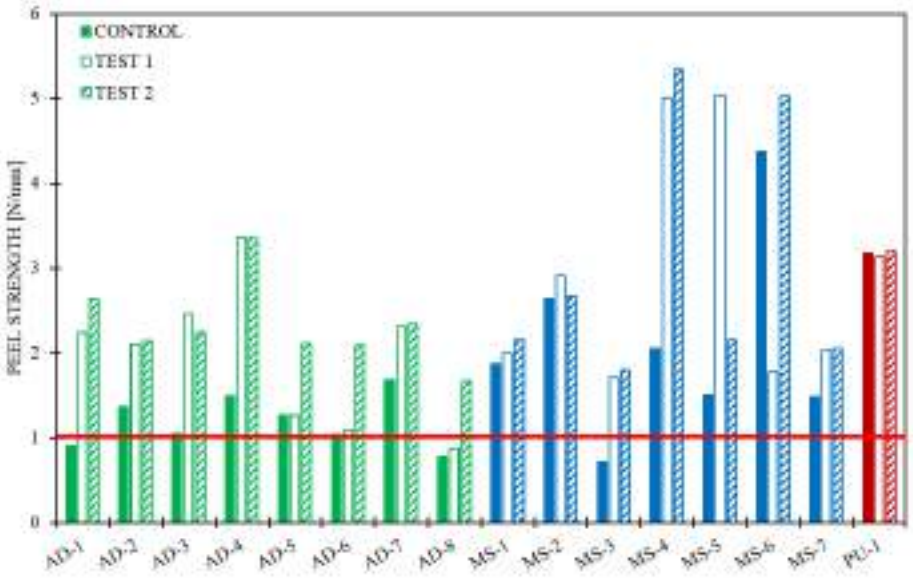
- Concepts for all three classes of ISO17178:2013
- Plasticiser free, non-tin, blue angel, …

PROPERTY	PARAMETER	UNIT	EPA	HEPA	HPA
VISCOSITY (plate-plate)	0,1 s^{-1}	Pa.s	1070	1702	1312
	5 s^{-1}		83	86	81
	10 s^{-1}		63	59	61
SKIN FORMATION	hh:mm		1:10	1:17	0:50
HARDNESS	Shore A		52	74	76
LAP SHEAR **3d / 28d**	LSS	MPa	1,5 2,2	2,2 3,6	3,06 3,94
	Shear Elongation	mm mm^{-1}	4,4 4,1	2,6 2,5	2,91 3,03
	Failure mode	-	CF CF	CF CF	CF CF

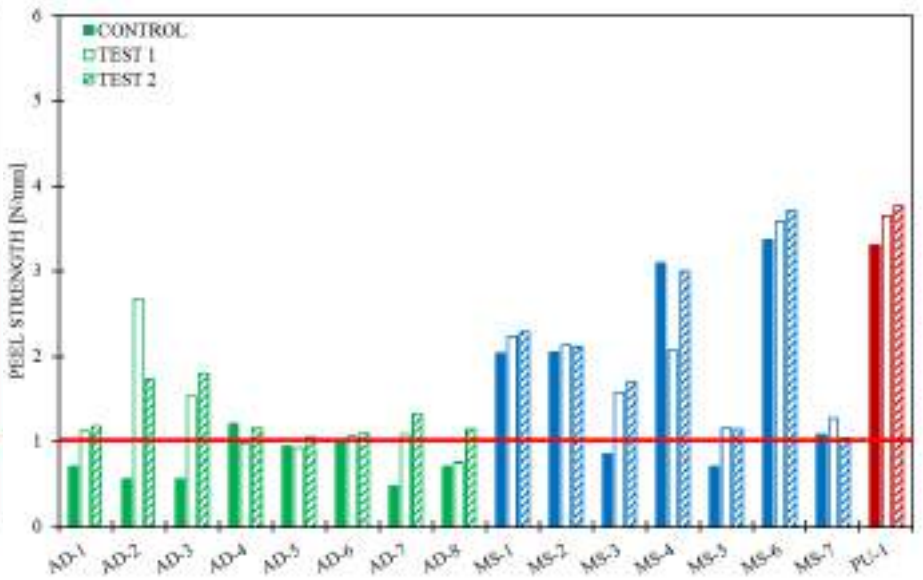


Applications: LVT Adhesives

- EN14259:2017 Adhesives for floor covering
- Good adhesion to broad range of plastics



Plywood



Fibre reinforced cement

Conclusion

- MS Polymer™ = future proof
- Wide range of solutions available
- Environmental friendly alternative to existing technologies
  - ✓ **No Isocyanates**
  - ✓ **No Solvents**
  - ✓ **PVC, Silicone and detergent free**
  - ✓ **Allow label free formulations**
  - ✓ **Very low emission**

Products on the market certified according:

Emicode EC1R^{PLUS}
M1 (Finland)
Blue Angel (Germany – no phthalates, specific catalyst, …)
Indoor Air Comfort Gold (Eurofins)
…

KANEKA BELGIUM NV

The Dreamology Company
—Make your dreams come true—

We highly appreciate your trust in Kaneka MS-Polymer®!

Marketing, R&D and Technical Service of Kaneka Belgium