



Solutions for adhesives and sealants



Braskem is a global chemical and petrochemical producer with a broad portfolio of thermoplastic resins and basic and performance chemicals. Its 8,000 Team Members work with an eye on the future to develop sustainable solutions in chemistry and plastics that improve people's lives.

The production of basic and performance chemicals, such as solvents and specialty products, is led by Braskem's Chemicals Business. With a global perspective, the Chemical Business is driven by the desire to help reinvent the various markets in which it operates. This means close and personalized service, building special partnerships with clients and a constant drive to develop innovative solutions.





Solutions for adhesives and sealants

Adhesives and sealants

Braskem's product portfolio for the adhesive and sealants market, includes high performance products for a wide variety of applications. See below our products:

Chemicals

Specialties

- Braskem PIB
- Braskem Unilene®

Plastics

- EVA
- PVC

Solvents

- Cyclohexane
- Toluene
- Xylene
- Braskem Pluract™
- Braskem Ezolem™
- Braskem Sensitis™

Braskem PIB

Non-toxic, Braskem PIB is certified by the National Sanitation Foundation (NSF) and meets requirements for adhesive and sealant applications for the cosmetics and food industries.

In production for more than 40 years, Braskem PIB has been constantly enhanced and is currently available in various grade options. These include medium-molecular weight grade, which is an excellent choice for adhesive and sealant applications.

Advantages of Braskem PIB in adhesives and sealants

Permanence

Non-drying even with the action of drying catalysts. Negligible loss of volatile material and weather-resistant.

Tackness

Inherent tack and adhesive properties.

Elasticity

Presents elasticity under a wide range of temperatures.

Barrier

Excellent water vapor and gas barrier properties.

Resistance

Weather, temperature and water resistant, remaining colorless and odorless. Non-curable polymer.

Non-toxic

Approved for contact with food products and does not irritate sensitive skin. Meets various requirements of the Food and Drug Administration (FDA) for food contact.

Insulating properties

Low electrical conductivity.

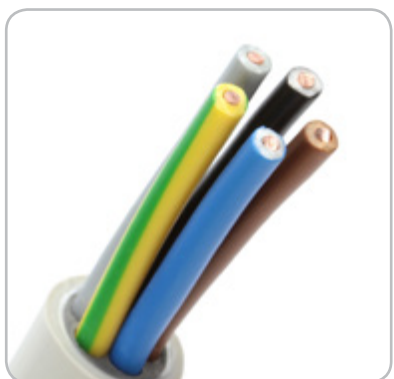
APPLICATIONS

Removable and pressure-sensitive tapes

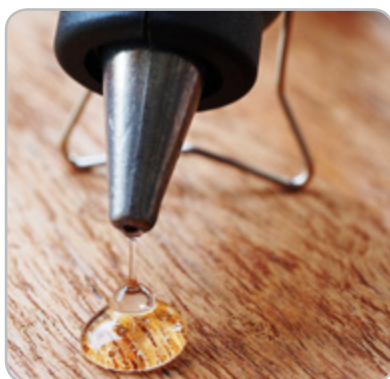




PSA



Electrical insulators



Hot melt adhesives

Properties	Average Molecular Weight	Viscosity at 37.8 °C	Viscosity at 100 °C	Color	Density at 20/4 °C	Ignition Point
Unit	Daltons	cSt	cSt	Pt-Co	-	°C
Test Method	SM 180-6	ASTMD-445	STMD-446	ASTMD-1209	ASTMD-4052	ASTMD-D92
Grades						
PIB 4	300	15	-	50	0.82	125
PIB 6	330	32	6	50	0.84	130
PIB 8	440	105	12	50	0.85	130
PIB 10	500	380	28	50	0.87	135
PIB 24	940	7000	210	30	0.8	200
PIB 32	1300	22000	700	30	0.90	220
PIB 122	2500	-	3200	30	0.91	240
PIB 128	2700	-	4400	30	0.91	255
PIB 240	4200	-	13000	30	0.92	280



Due to its excellent tack and adhesion, it is ideal for high-performance adhesive applications, as well as highly compatible with a wide range of polymeric materials.

Advantages of Braskem Unilene® in adhesives

Packaging



Solvent-based

- Soluble in most solvents
- Compatible with various polymers
- Water-repellent

Diapers



Hot Melt

- Excellent compatibility with EVA and a wide range of polymers
- Improves control of open time

Footwear



PSA

- Confers permanent tack and instant adhesion
- Compatible with SIS, SBS and other block copolymers
- Performance properties support applications in a wide variety of substrates

Properties		Softening Point	Gardner color	Acid Number
Unilene® C9 Aromatic Resin		ASTM D-6496	ASTM D-6166	ASTM D-974
Series A	A-80	75-86	max. of 7	< 0.10
	A-90	87-95	max. of 7	< 0.10
	A-100	96-105	6-max.	< 0.10
Series B	B-100	95-105	6-max.	< 0.10
	B-110	106-115	6-max.	< 0.10
	B-120	116-125	6-max.	< 0.10
Series BS	BS-130	126-135	max. of 5	< 0.10
	BS-140	136-145	max. of 5	< 0.10

Unilene® T 101 C5 Aliphatic Resin	ASTM Method	Units	Values
Softening point	D 6493	°C	95-98
Gardner color (50% resin solids in toluene)	D 6166	-	≤ 4
Acid number	D 974	mgKOH/g	< 0.1
Viscosity at 200 °C	D 3236	mPas	max. of 250
Molecular weight (GPC, Mw)	GPC		1800

Unilene® XT 100 C5-C9 Modified Aliphatic Resin	ASTM Method	Units	Values
Softening point	D 6493	°C	89-96
Gardner color (50% resin solids in toluene)	D 6166	-	≤ 3
Acid number	D 974	mgKOH/g	< 0.1
Molecular weight (GPC, Mw)	GPC		1700

Unilene® XT 100 C5-C9 Modified Aliphatic Resin	ASTM Method	Units	Values
Softening point	D 6493	°C	97-103
Gardner color (50% resin solids in toluene)	D 6166	-	≤ 1
Molecular weight (GPC, Mw)	GPC		2000



Solvents

Braskem Ezolem™, Braskem Sensitis™, Braskem Pluract™, Cyclohexane, Toluene and Xylene are Braskem solvents used in leading adhesive and sealant formulations, supporting adhesion and optimizing drying times.

Advantages of Braskem's Solvents in adhesives and sealants formulations

High solvency power

Braskem Pluract™, Toluene and Xylene solvents are ideal for adhesive applications in the furniture, footwear, construction and automotive industries.

- High solvency power
- Exceptional versatility
- Heavy solvent for adjusting curing time
- Excellent cleaning solvent

Versatility

The Braskem Ezolem™ line offers essential aliphatic solvents for adhesives and formulations used in the footwear industry.

- Excellent cost-benefit
- Superior flexibility in formulations
- High compatibility with resin-based polymers

Purity

With less color and odor, the hydrogenated solvents Braskem Sensitis™ and Cyclohexane are ideal for applications in silicone sealants.

- High-performance solvency
- High level of purity
- Low concentration of aromatic compounds

APPLICATIONS

Footwear

Mattresses

PVC piping adhesives

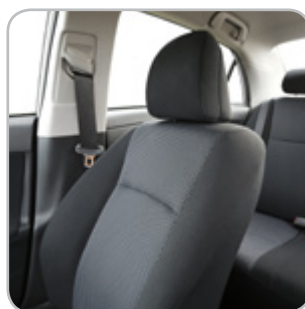
Furniture



Carpet



Silicon-based
sealants for tubing



Upholstery

Product	Density (20/ 4 °C)	Initial Boiling Point (°C)	Final Boiling Point (°C)	Flash Point (°C)	Aniline Point (°C)	Mixed Aniline Point (°C)	Evaporation Rate (butyl acetate – 100)	Benzene Concentration (%)	Color, Pt/Co Scale
AROMATIC									
TOLUENE	0.87	110	–	4	–	10	209	< 0.1	< 20
XYLENE	0.86	136	143	17	–	12	73	< 0.02	< 20
ALIPHATICS									
6/7 BRASKEM EZOLEM™	0.70	58	72	< 10	55	–	790	< 0.1	< 10
7/9 BRASKEM EZOLEM™	0.72	70	95	< 10	48	–	655	< 0.1	< 20
6/13 BRASKEM EZOLEM™	0.69	60	135	< 20	69	–	447	< 0.05	< 30
6/15 BRASKEM EZOLEM™	0.72	50	200	< 20	51	–	442	< 0.1	< 30
6/17 BRASKEM EZOLEM™	0.72	60	170	< 20	62	–	473	< 0.1	< 20
BRASKEM WHITE SPIRIT	0.76	135	235	> 28	57	–	39	< 0.01	< 30
HYDROGENATED									
3/16 BRASKEM SENSITIS™	0.71	35	160	< 10	75	–	122	< 0.01	< 5
13/15 BRASKEM SENSITIS™	0.72	130	150	20	76	–	94	< 0.01	< 5
17/121 BRASKEM SENSITIS™	0.75	170	210	52	83	–	8	< 0.002	< 5
22/25 BRASKEM SENSITIS™	0.78	218	255	90	89	–	0.5	< 0.002	< 5

Hot melt adhesives

Braskem's hot melt solutions are made from semi-amorphous resins with vinyl acetate, which confer good compatibility with other resins and combine well with thermoplastics.

The various types of resins provide solutions for a wide variety of hot melt adhesives, with different advantages. In addition to the types of adhesives made with EVA resins, they can also be combined with tackifying resins, polyethylene waxes, antioxidants, plasticized materials and other products to ensure adequate performance in each application.

Advantages

- 100% solid
- Compatible with hydrocarbon resins
- Low toxicity
- Rapid application (set time)
- Excellent adhesion time (short open time)
- Adequate for perforating various materials
- Control of adhesion line
- Moisture-resistant
- Requires low tack coefficient



Typical Properties		Melt Flow Rate (190 °C / 2,16 kg)	Vinyl Acetate Content	Density	Melting Point ^a	Vicat Softening Temperature ^a	Shore A Hardness ^a	Shore /d Hardness ^a	Tensile Strength at Break ^a	Break Elongation ^a
ASTM Method		D 1238	Braskem	D 1505 / D 792 ^a	D 3418	D 1525	D 2240	D 2240	D 638	D 638
Units		g/10 min	%	g/cm ³	°C	°C	-	-	MPa	%
EVA	HM728	6,0	28	0.950	77	49	80	25	-	-
		Base component for producing hot melt adhesives compatible with waxes and other materials								
	HM2528	25	28	0.950	75	46	79	23	-	-
		Base component for producing hot melt adhesives for packaging, bindings, carpets and other general applications.								
	HM150	150	20	0.940	83	46	83	27	-	-
		Base component for producing hot melt adhesives for packaging, bindings and other general applications. Compatible with waxes.								



PVC

Vinyl chloride and vinyl acetate copolymer

PVC copolymer resins are used to make adhesives for piping and fittings and PVC laminates and films.

Different K values (molecular weight) and acetate contents are offered for making any adjustments required by the application.

	CS 50/15 SM	CS 57/14 SM	CS 62/08 BM
K value	50	57	62
Acetate content limit	15%	14%	8%
Volatile content	≤ 1	≤ 1	≤ 1

