Braskem Solvents

Braskem

Braskem

Positioned as the largest resin producer in the Americas and the world's leading biopolymer producer, we believe in the chemistry and plastics' transformation power and in the responsible use to improve the people's lives.

Circular Economy

Braskem's positioning on the circular economy

1. Work with our clientes and value to design new products that increase efficiency, recycling and reuse
2. Use of science based tools, such as LCA, to select the better impact option in terms of economny,n socil and invironmental impacts
3. Invest in the development of new renewable products to support circular economy at the beginning of the value chain.
4. Measure and communicate recycling and recovery indicators for plastic packaging materials.
5. Develop new Technologies, business model and systems for improving the recycling chain and recovering the material
6. Engage partnership in understanding, preventing and solving the mismanagement plastics residues, especially the problem of debris in oceans
7. Encourage consumers' engagement for recycling and recovery programs through education to promote the value of plastic waste the economy
8. Support public policies to improve solid waste management and recycling chain, especially of plastic waste

Braskem Solvent Business

Committed with the innovative and sustainable solutions development, and aligned with the Braskem's circular economy goals, the Braskem solvent Business developed two new sustainable solvents, the first one, the HE-70S, made from renewable source and the other one, Hexane RC, the first Braskem's recycled solvent.

Solvents Application Laboratory

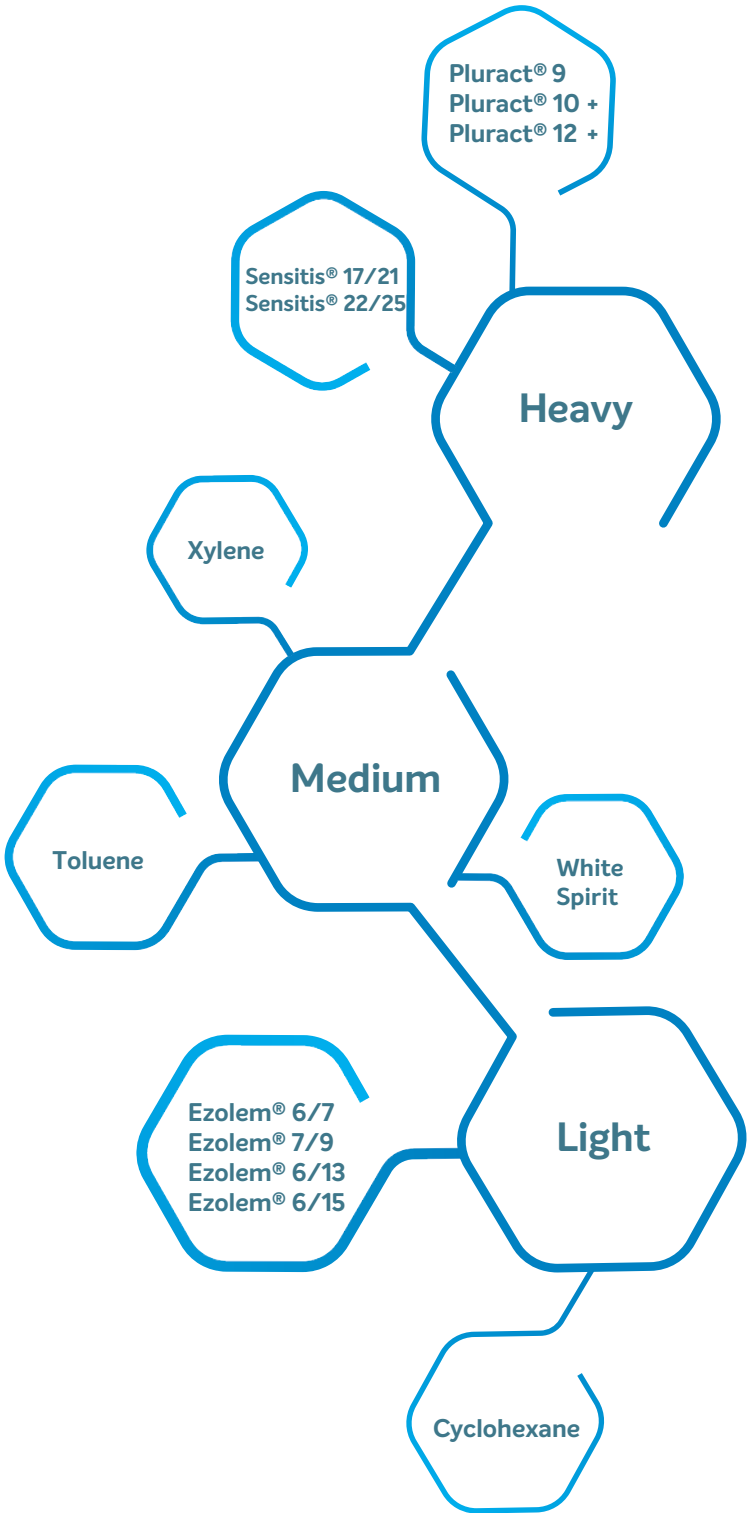
The Solvents Application Laboratory holds everything our clients needs to improve their products performance and competitiveness alying great technology to our complete Solvent portfolio

In order to provide tailor maid solutions to our Clients, Braskem's Labs are ready to provide a large spectrum of analysis and services.

Among the several analysis you may find in our Laboratoy:

- Hansen Solubility Parametes evaluation for resins and solvent systems
- Relative evaporation rate (R.E.R)
- Application Tests
    - Specular Gloss
    - Dynamic Viscosity
    - Hardness
    - Hard Drying Time
    - Adhesion (cross cut)
    - Flash point
    - Distillation Range
    - Specific Mass
    - Surface Tension

Hydrocarbon Solvent



Heavy Solvents

Low relative evaporation rates, to last longer.

Application Areas

- Solvent borne Coatings and Varnishes
- Thinners
- Pesticides
- Casting Resins
- Cosmetics, metalworking, household and cleanners.

Medium Solvents

High solvence with equilibrate relative evaporation rate

Application Areas

- Solvent borne Coatings and Varnishes
- Thinners
- Adhesives and Sealants
- Pesticides

Light Solvents

High relative evaporaion rates for high productivitie

Application Areas

- Solvent Borne Coatings and Barnishes
- Adhesives and Sealants
- Vegetal Oil Extraction
- Ethanol dehydration

Sustainable Solvents

HE-70s

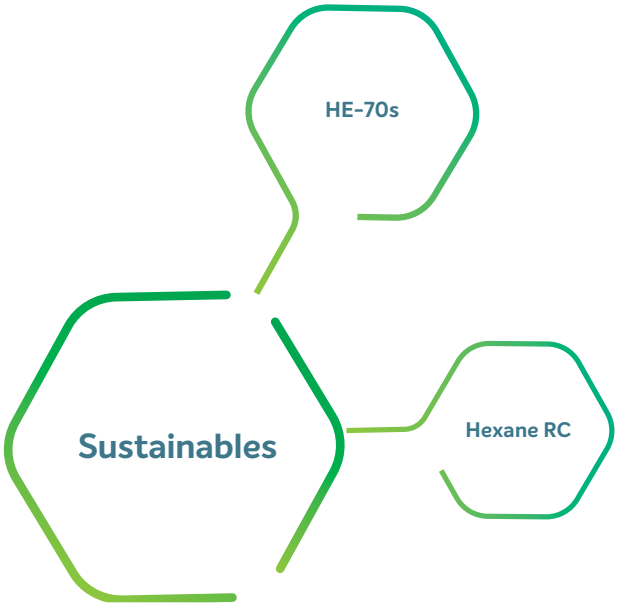
Braskem's first solvent produced from renewable source.

Sustainable, low carbon footprint solvent, with outstanding perfornce. High relative evaporation rate (R.E.R.), low density and low surface tension.

Produced from ethanol, with 36% of renewable carbon content certified according to ASTM-D6866.

Non-carcinogenic, non-mutagenic solvent

Very low carbon footprint: 0,37 kg CO2eq./kg product



Hexane RC

Braskem's first reclycled solvent

Compromised to transforming linear economy into circular economy in the productive chain in which we are active, we developed our first recycled solvent, the Hexane RC.

Originated from our polyolefin production process, Recycled Hexane is an aliphatic hydrocarbon solvent and can be used by the following markets: rubber, adhesives, among others.

In addition to undergoing strict quality controls and have a technical specification with the main features of the product, this solvent is treated before its commercialization.

Therefore, we close the productive process having the maximum utilization of raw material with reduced waste generation.

Solvents Table

SOLVENTS	RELATIVE EVAPORATION RATE (BUTYL ACETATE = 100)	HANSEN SOLUBILITY PARAMETERS (J/CM3)1/2			SOLUBILITY (%W/W) AT 200C		FLASH POINT (OC)
		δ D	δ P	δ H	SOLVENT IN WATTER	WATER IN SOLVENT	CLOSED CUP
KETONE							
Acetone	520	15.5	10.4	7.0	COMPLETE	COMPLETE	-18.0
Acetophenone	3	19.6	8.6	3.7	0.55	1.65	82.2
Cyclehexanone	31	17.8	6.3	5.1	2.3	8	46.7
Diacetone Alcohol	12	15.8	8.2	10.8	COMPLETE	COMPLETE	54.0
Diisobutyl Ketone	21	16.0	3.7	4.1	0.05	0.75	48.9
Isophorone	2	16.6	8.2	7.4	1.2	4.3	84.4
Methyl n-Amyl Ketone	40	15.1	7.5	7.1	0.43	1.5	47.2
Methyl Ethyl Ketone	340	16.0	9.1	5.1	27	12.5	-3.3
Methyl Isoamyl Ketone	53	16.0	5.7	4.1	0.5	1.2	41.1
Methyl Isobutyl Ketone	255	15.3	6.1	4.1	1.7	1.9	13.3
ALCOHOL							
n-Butyl Alcohol	46	15.9	5.7	15.8	7.9	20.1	35.0
Cyclehexanol	6	17.4	4.1	13.5	0.13	11.78	67.7
Ethanol	150	15.8	8.8	19.4	COMPLETE	COMPLETE	8.9
2-Ethyl-1-Hexanol	2	15.9	3.3	11.9	0.1	2.6	77.3
Isobutanol	62	15.1	5.7	16.0	9.5	16.9	27.8
Isopropanol	135	15.7	6.1	16.4	COMPLETE	COMPLETE	12.0
Methanol	181	15.1	12.3	22.3	COMPLETE	COMPLETE	11.1
Methyl Isobutyl Carbinol	29	13.0	7.5	10.4	1.64	6.53	41.1
n-Propanol	89	16.0	6.8	17.4	COMPLETE	COMPLETE	15.0
ESTER							
Amyl Acetate	45	15.3	3.3	6.9	0.2	0.9	25.0
n-Butyl Acetate	100	15.8	3.7	6.3	0.7	1.6	22.2
Cyclehexyl Acetate	15	16.8	9.8	8.2	1.44	0.2	57.8
Ehtyl Acetate	430	15.8	5.3	7.2	8.7	3.3	-3.3
Methoxy Propyl Acetate	35	14.9	4.7	6.1	19.8	3.21	45.5
2-Ethyl Hexyl Acetate	4	14.7	6.3	5.3	0.03	0.55	83.5
Butyl Glycol Acetate (BGA)	4	14.0	8.2	8.6	1.5	1.7	76.1
Methyl Acetate	660	15.5	7.2	7.6	24.5	8.2	-9.5
Ehtyl Glycol Acetate (EGA)	20	15.9	4.7	10.6	23.8	6.5	29.0
Methyl Glycol Acetate	33	14.7	9.8	9.0	18.21	7.47	43.8
Butyl Diglycol Acetate (BDGA)	0.14	14.0	8.2	8.6	6.5	3.7	102.0
Ehtyl Diglycol Acetate (EDGA)	0.63	14.3	9.0	9.4	9.15	4.92	95.0
Isobutyl Acetate	145	15.1	3.7	6.3	0.75	1.64	25.0
Isopropyl Acetate	355	15.3	3.1	7.0	2.9	1.8	5.5
n-Propyl Acetate	226	15.7	4.3	6.7	2.3	2.6	15.0
Methyl Lactate	26	15.1	7.6	13.4	COMPLETE	COMPLETE	58.0
Ethyl Lactate	22	15.0	6.3	12.2	COMPLETE	COMPLETE	61.0
Dibasic Ester Mixture	8	17.2	6.3	9.4	3.4	5.6	100.0
GLYCOL ETHER							
Butyl Glycol Ether (BG)	6	15.9	5.1	12.3	COMPLETE	COMPLETE	60.0
Ethyl Glycol Ether (EG)	39	16.2	9.2	14.3	COMPLETE	COMPLETE	48.4
Methyl Glycol Ether	58	16.2	9.2	16.4	COMPLETE	COMPLETE	41.6
Butyl Diglycol Ether (BDGE)	0.35	15.9	7.0	10.6	COMPLETE	COMPLETE	101.0
Butyl Diglycol Ether (EDGE)	1.3	16.2	9.2	12.3	COMPLETE	COMPLETE	95.1
Methyl Diglycol Ether	2	16.2	7.8	12.7	COMPLETE	COMPLETE	83.1
Isobutyl Glycol Ether	11	15.5	6.1	16.7	COMPLETE	COMPLETE	52.7
PM - E.M.M.P.G.(1)	71	15.3	7.9	13.9	COMPLETE	COMPLETE	34.0
DPM - E.M.M.D.P.G.(2)	3	15.9	7.8	11.2	COMPLETE	COMPLETE	74.4
GLYCOL							
Monoehtylene Glycol (MEG)	<1	17.0	11.0	36.0	COMPLETE	COMPLETE	112.7
Diethylene Glycol (DEG)	<0.1	16.2	14.7	20.4	COMPLETE	COMPLETE	143.0
Monopropylene Glycol (MPG)	<1	11.8	13.3	24.9	COMPLETE	COMPLETE	124.0
Dipropylene Glycol (DPG)	<0.1	12.2	10.2	17.3	COMPLETE	COMPLETE	131.2
Hexylene Glycol (HGL)	<1	15.7	8.4	17.8	COMPLETE	COMPLETE	93.8
ALIPHATIC HYDROCARBONS							
Ezolem® 6/7 (Aliphatic 6/7)	790	15.4	0.0	0.6	IMMISCIBLE	IMMISCIBLE	-22.0
Ezolem® 7/9 (Aliphatic 7/9)	655	15.7	0.0	0.5	IMMISCIBLE	IMMISCIBLE	<10.0
Ezolem® 6/13 (Aliphatic 6/13)	447	15.1	0.0	0.1	IMMISCIBLE	IMMISCIBLE	<20.0
Ezolem® 6/15 (Aliphatic 6/15)	442	15.6	0.0	0.3	IMMISCIBLE	IMMISCIBLE	-38.0
Ezolem® 6/17 (Aliphatic 6/17)	473	15.6	0.0	0.5	IMMISCIBLE	IMMISCIBLE	<20.0
White Spirit	39	16.2	0.0	0.4	IMMISCIBLE	IMMISCIBLE	28.0
AROMATICS HYDROCARBONS							
Toluene	209	18.0	1.4	2.0	IMMISCIBLE	IMMISCIBLE	4.5
Xylene	72	17.8	1.2	2.1	IMMISCIBLE	IMMISCIBLE	30.0
Pluract® 9 (AB9)	23	17.6	1.9	2.2	IMMISCIBLE	IMMISCIBLE	40.0
Pluract® 10+ (AB10)	30	17.1	1.4	1.1	IMMISCIBLE	IMMISCIBLE	61.0
Pluract® 12+ (AB12)	0.2	16.1	0.7	0.4	IMMISCIBLE	IMMISCIBLE	80.0
HS-100	45	18.1	1.2	1.2	IMMISCIBLE	IMMISCIBLE	44.0
HYDROGENATED							
Cyclehexane	425	16.8	0.0	0.2	IMMISCIBLE	IMMISCIBLE	-20.0
Sensitis® 17/21 (Isoparaffin 17/21)	8	15.4	0.0	0.0	IMMISCIBLE	IMMISCIBLE	52.0
Sensitis® 22/25 (Isoparaffin 22/25)	0.5	15.6	0.0	0.0	IMMISCIBLE	IMMISCIBLE	90.0
ETHER							
HE-70s	700	14.4	3.7	3.3	3.7	2.8	<10.0

(1) Monomethyl Ether from Propylene Glycol
(2) Monomethyl Ether from Dipropylene Glycol
*Density 20/4oC

SOLVENTS	DESTILLATION RANGE AT 760 MMHG	DENSTIY (20/200C)	VAPOR PRESSURE		CAS NUMBER
			mmHg	°C	SOLVENT IN WATTER
KETONE					
Acetone	55.6–56.6	0.790	184.5	20	67–64–1
Atetophenone	196–202	1.030	0.28	20	98–86–2
Cyclehexanone	153–571	0.948	4.6	25	108–94–1
Diacetone Alcohol	155–175	0.940	1.23	20	123–42–2
Diisobutyl Ketone	163–173	0.810	4	30	108–83–8
Isophorone	215–220	0.923	0.43	25	78–59–1
Methyl n-Amyl Ketone	150–154	0.810	7	30	110–43–0
Methyl Ethyl Ketone	78–81	0.805	90.96	25	78–93–3
Methyl Isoamyl Ketone	141–148	0.812	4.5	20	110–12–3
Methyl Isobutyl Ketone	114–117	0.800	15.7	20	108–10–1
ALCOHOL					
n-Butyl Alcohol	116–118	0.809	5.5	20	71–36–3
Cyclehexanol	120–162	0.968	80	25	108–93–0
Ethanol	78.3–78.5	0.790	40	19	64–17–5
2-Ethyl-1-Hexanol	183–185	0.830	30	98	104–76–7
Isobutanol	107–109	0.806	10	22	78–83–1
Isopropanol	81–83	0.785	44	25	67–63–0
Methanol	64–65	0.791	100	21	67–56–1
Methyl Isobutyl Carbinol	130–133	0.808	2.8	20	108–11–2
n-Propanol	96–98	0.803	20.8	25	71–23–8
ESTER					
Amyl Acetate	140–150	0.875	28.5	20	123–92–2
n-Butyl Acetate	124–127	0.883	15	25	123–86–4
Cyclehexyl Acetate	174–178	0.969	7	30	622–45–7
Ehtyl Acetate	76–78	0.901	100	27	141–78–6
Methoxy Propyl Acetate	140–150	0.966	27.4	20	108–65–6
2-Ethyl Hexyl Acetate	192–205	0.871	0.4	20	103–09–3
Butyl Glycol Acetate (BGA)	188–192	0.940	0.35	20	112–07–2
Methyl Acetate	53–59	0.933	400	40	79–20–9
Ehtyl Glycol Acetate (EGA)	150–160	0.974	2	20	111–15–9
Methyl Glycol Acetate	142–145	1.006	2	20	110–49–6
Butyl Diglycol Acetate (BDGA)	235–250	0.985	0.1	20	124–17–4
Ehtyl Diglycol Acetate (EDGA)	214–221	1.011	0.1	20	112–15–2
Isobutyl Acetate	116–119	0.871	13.0	20	110–19–0
Isopropyl Acetate	84–90	0.870	60.59	25	108–21–4
n-Propyl Acetate	99–103	0.888	25.1	20	109–60–4
Methyl Lactate	131–153	1.090	3.4	20	27871–49–4
Ethyl Lactate	140–163	1.030	2.2	20	687–47–8
Dibasic Ester Mixture	200–230	1.090	0.1	20	95481–62–2
GLYCOL ETHER					
Butyl Glycol Ether (BG)	169–173	0.901	0.76	20	111–76–2
Ethyl Glycol Ether (EG)	132–173	0.931	5.29	25	110–80–5
Methyl Glycol Ether	124–125	0.966	6.2	20	109–86–4
Butyl Diglycol Ether (BDGE)	220–235	0.955	0.02	20	112–34–5
Butyl Diglycol Ether (EDGE)	198–204	0.989	0.13	25	111–90–0
Methyl Diglycol Ether	188–198	1.021	0.25	25	11–77–3
Isobutyl Glycol Ether	157–162	0.893	1.09	20	4439–24–1
PM - E.M.M.P.G.(1)	117–125	0.919	11.80	25	107–98–2
DPM - E.M.M.D.P.G.(2)	184–193	0.951	0.40	26	34590–94–8
GLYCOL					
Monoehtylene Glycol (MEG)	193–201	1.115	0.06	20	107–21–1
Diethylene Glycol (DEG)	242–250	1.118	0	20	111–46–6
Monopropylene Glycol (MPG)	185–189	1.038	0.07	20	57–55–6
Dipropylene Glycol (DPG)	228–236	1.023	0.01	20	25265–71–8
Hexylene Glycol (HGL)	196–199	0.922	0.05	20	107–41–5
ALIPHATIC HYDROCARBONS					
Ezolem® 6/7 (Aliphatic 6/7)	58–72	0.700*	--	--	--
Ezolem® 7/9 (Aliphatic 7/9)	70–95	0.720*	--	--	--
Ezolem® 6/13 (Aliphatic 6/13)	60–135	0.690*	--	--	8006–61–9
Ezolem® 6/15 (Aliphatic 6/15)	50–200	0.720*	133.54	20	68919–15–3
Ezolem® 6/17 (Aliphatic 6/17)	60–170	0.720*	300.02	37.8	--
White Spirit	125–235	0.760*	35.8	20	68477–39–4
AROMATICS HYDROCARBONS					
Toluene	110–112	0.870*	22	20	108–88–3
Xylene	136–143	0.860*	9.6	25	1330–20–7
Pluract® 9 (AB9)	156–170	0.880*	2.1	25	64742–95–6
Pluract® 10+ (AB10)	180–230	0.860*	--	--	64742–94–5
Pluract® 12+ (AB12)	200–350	0.890*	--	--	717–74–8
HS-100	152–154	0.860*	3.22	20	98–82–8
HYDROGENATED					
Cyclehexane	78–82	0.780*	95	20	110–82–7
Sensitis® 17/21 (Isoparaffin 17/21)	170–210	0.750*	--	--	68551–18–8
Sensitis® 22/25 (Isoparaffin 22/25)	218–255	0.780*	--	--	68551–20–2
ETHER					
HE-70s	72–73	0.740*	--	--	637–92–3

(1) Monomethyl Ether from Propylene Glycol
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*Density 20/4oC

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