



Solvents

Braskem

Discover Braskem's Solvents. The solution for your business.

- Broad portfolio of solvents with high performance in the solubility of chemical compounds
- Development of custom solutions to obtain the best cost-benefit tradeoff
- Flexible solvent supply logistics from various production units
- Delivery nationwide



Key Applications



Braskem's solvents are used to make products that help improve people's lives through chemistry.

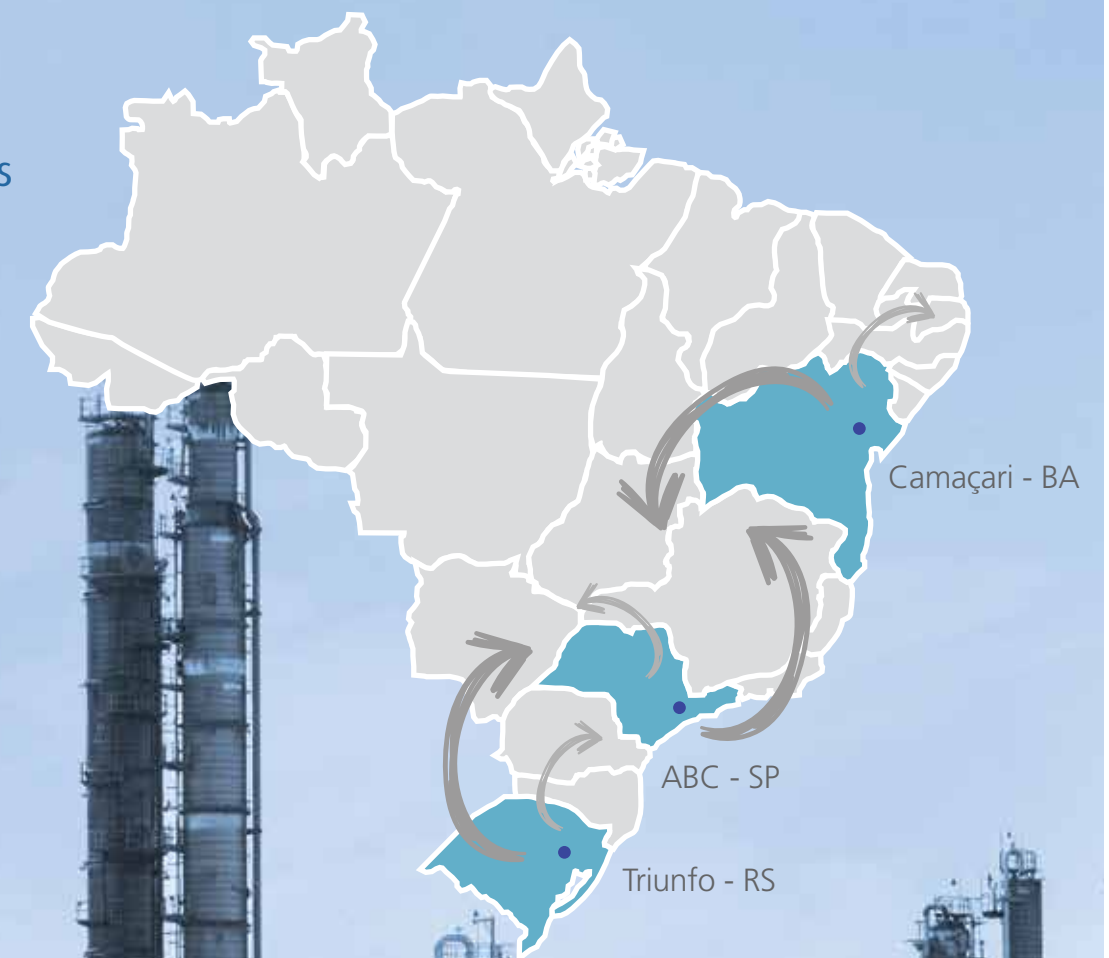
Solvents in numbers

20
PRODUCTS

200 kta
VOLUME

3,000
CLIENTS*

R\$ **700** MM
IN ANNUAL SALES



Braskem's Industrial Area (Camaçari, Bahia)

*Clients served by Braskem and its Authorized Distributors

Solvents Portfolio

Braskem's has a portfolio of solvents for a wide array of applications that includes aromatic, aliphatic and hydrogenated solvents.

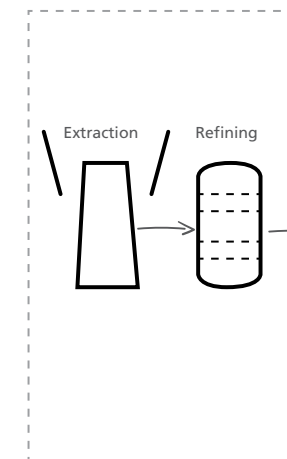


Production Process

Braskem's solvents are made from petrochemical naphtha and other raw materials through cracking and catalytic reforming processes. The products are purified through successive fractioning columns and reactors to obtain highly pure solvents.

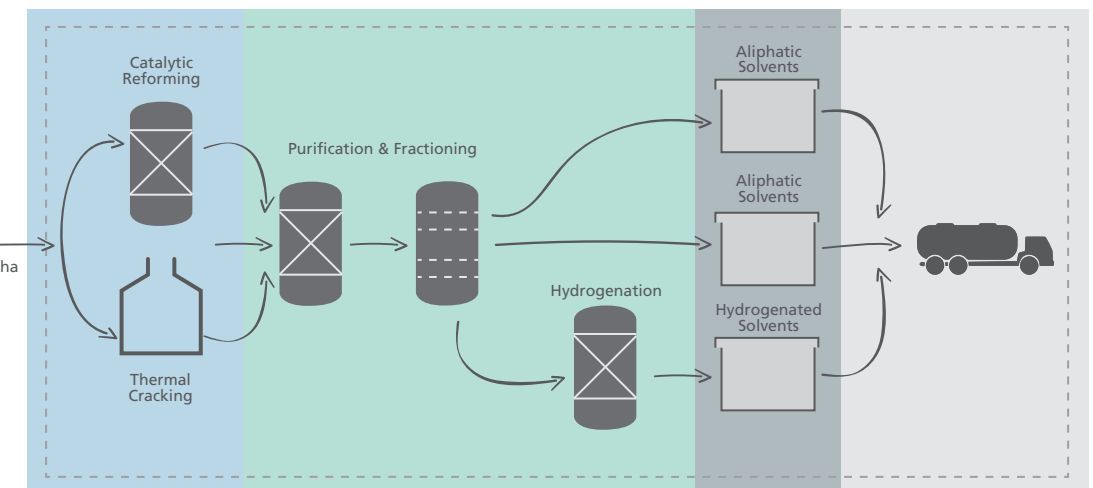


CRUDE OIL EXTRACTION AND REFINING



* Simplified flow

PETROCHEMICAL INDUSTRY BASIC PETROCHEMICALS UNIT (UNIB)



Technology & Innovation

Braskem has a highly qualified **technical team** formed by process and technology engineers who research **new solutions** for meeting **Client's needs**.



Paints

Solvents are indispensable for making paints, since they dissolve resins and keep the vehicle, pigments and additives in homogeneous suspension.

Proper solvent use facilitates paint application and ensures excellent film formation free of defects. Braskem offers a series of solvents for this market that enable Clients to develop optimal formulations.



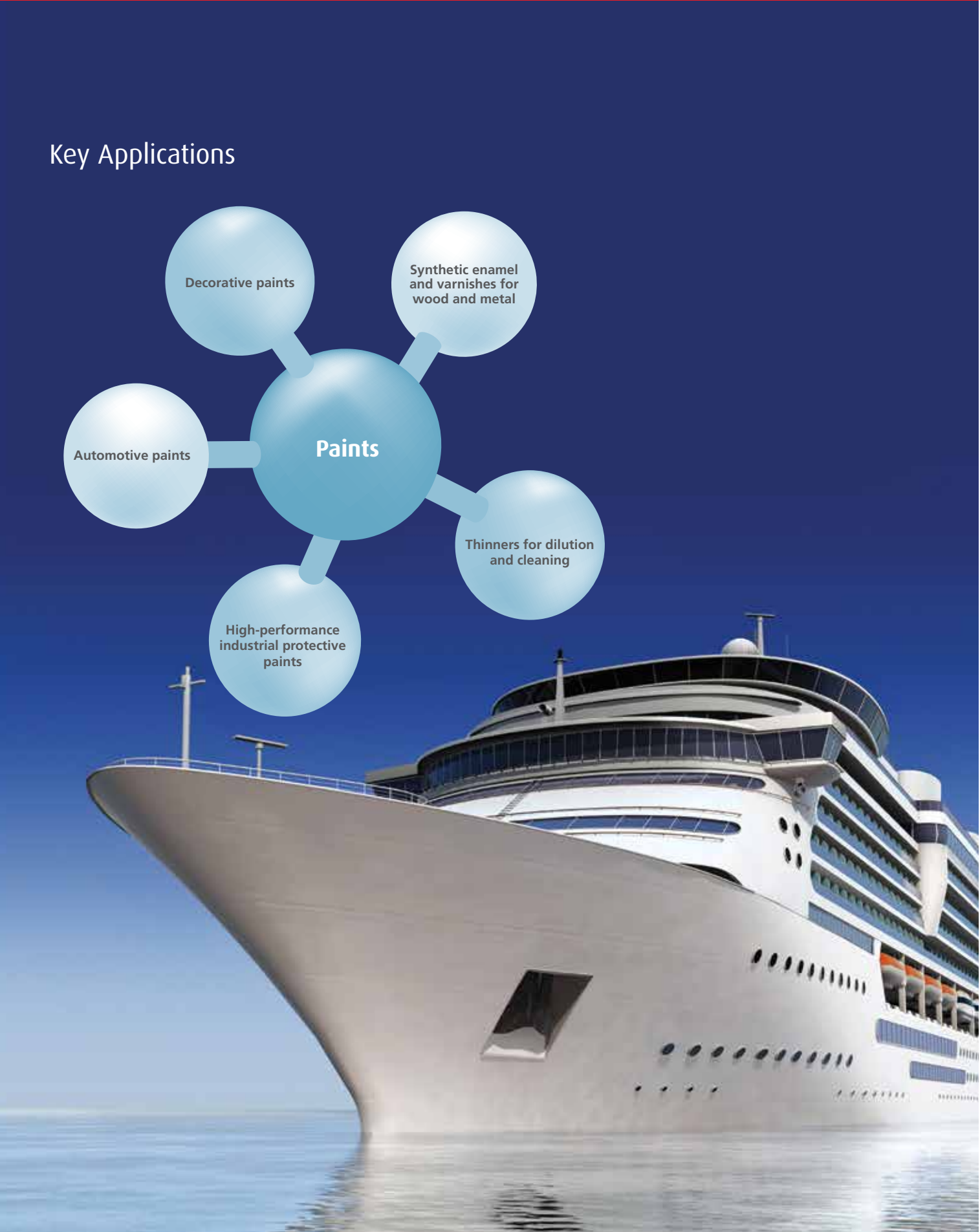
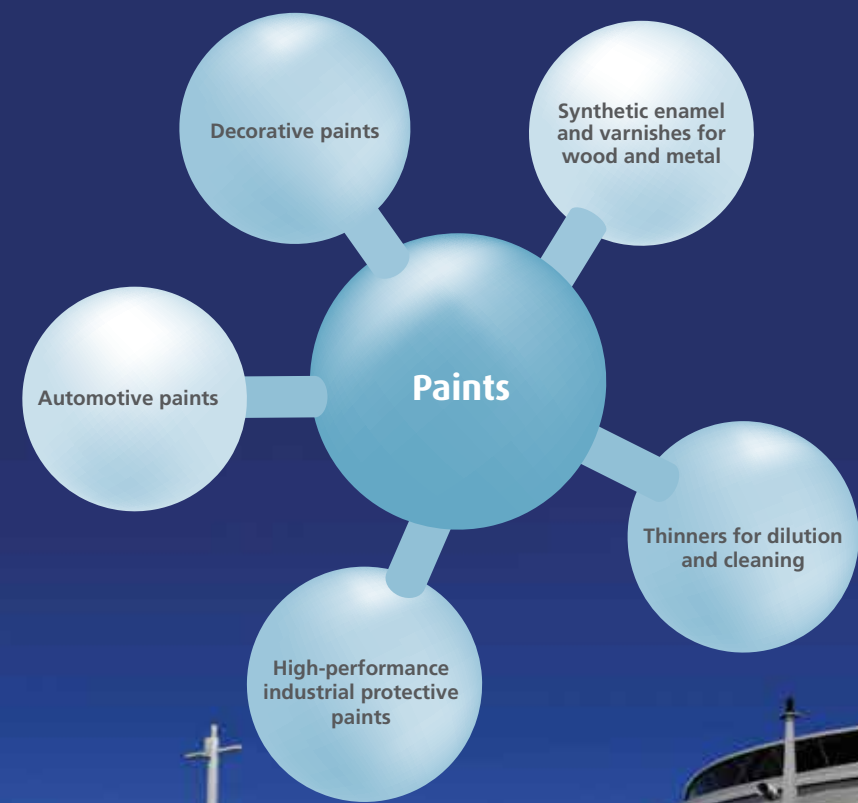
Key Benefits

- Superior solvency power
- Excellent cost-benefit tradeoff
- High performance
- Meets the quality standards of the most demanding markets

Classification	Product	Characteristics
Light Solvents	ALIPHATIC 6/13 ALIPHATIC 6/15 ALIPHATIC 6/17 CYCLOHEXANE	► Minimizes film sagging due to proper viscosity adjustment and pigment stratification in the film surface that leads to changes in paint color
Medium Solvents	TOLUENE XYLENE TURPENTINE	► The medium evaporation rate promotes the formation of a high quality film free of defects
Heavy Solvents	AB09 AB10 AB10+ AB12+	► Flash point above 40 °C ensures safe handling ► The low evaporation rate promotes film formation with good leveling, appearance and gloss, and free of defects, such as blushing, blistering and entrapment of air bubbles ► Act as an evaporation retardant

Braskem also offers its hydrocarbon resin Unilene® for paint applications.

Key Applications

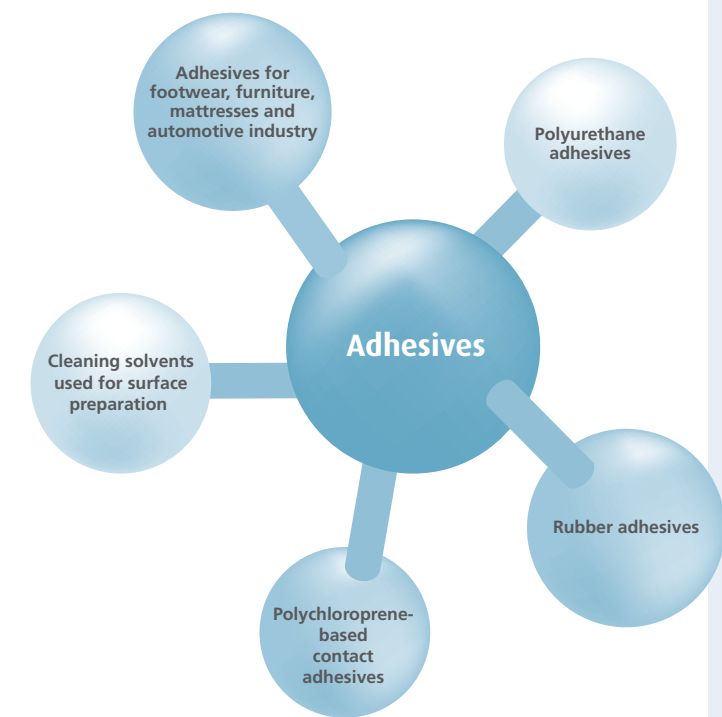


Adhesives

Braskem has a wide range of solvents for a variety of industrial adhesive formulations.

Solvents are used in adhesive formulations to improve application characteristics by adjusting viscosity and optimizing curing times based on the characteristics of each production process.

Key Applications



Aliphatic 6/7

Aliphatic solvent with a narrow distillation range that is purified through hydrogenation and fractionation, resulting in lower odor and color.

Toluene

High-performance and versatile solvent for various types of adhesives. Its proper use in footwear adhesives does not affect occupational exposure.

Classification	Product	Characteristics
Aromatic	TOLUENE XYLENE	<ul style="list-style-type: none"> ► High solvency power for a wide variety of resins ► High versatility for gluing a wide variety of substrates ► Used as a heavy solvent for adjusting curing time ► Its high solvency power allows it to be used as a cleaning solvent for preparing surfaces to improve adherence to the substrate
Aliphatic	ALIPHATIC 6/7 ALIPHATIC 7/9 ALIPHATIC 6/13 ALIPHATIC 6/15 ALIPHATIC 6/17	<ul style="list-style-type: none"> ► Mixture of paraffinic and naphthenic hydrocarbons with 6 to 9 carbon atoms ► Excellent cost-performance tradeoff ► Offers superior flexibility in formulations
Hydrogenated	CYCLOHEXANE	<ul style="list-style-type: none"> ► High-solvency naphthenic solvent ► High level of purity, with a low concentration of aromatic compounds

Braskem also offers PIB and UNILENE® for adhesive applications.

Agribusiness

Braskem's solvent line includes products especially for agribusiness applications such as pesticides, vegetable oil extraction and ethanol dehydration.

Our solvents feature solvency capacity for most of the main active ingredients used in pesticides, which facilitates product application and reduces loss from evaporation. They also easily dissolve vegetable oils and are highly efficient in ethanol dehydration.



Market Segment	Product	Characteristics
Pesticides	XYLENE AB09 AB10 AB10+ AB12+	<ul style="list-style-type: none"> ► High solvency power for most of the key active ingredients used in agrichemicals ► Low evaporation rate, which reduces loss from evaporation ► AB10, AB10+ and AB12+ have flash points above 60 °C, which improves handling safety
Vegetable Oil Extraction	ALIPHATIC 6/7	<ul style="list-style-type: none"> ► Excellent cost-benefit tradeoff for vegetable oil extraction ► High capacity for dissolving vegetable oils ► Narrow distillation range
Ethanol Dehydration	ALIPHATIC 7/9 CYCLOHEXANE	<ul style="list-style-type: none"> ► Cyclohexane is a highly pure solvent produced by the complete hydrogenation of benzene and features a narrow distillation range that confers stability to the ethanol dehydration process ► Aliphatic 7/9 offers an cost-benefit tradeoff for anhydrous ethanol production and can be used as an alternative to cyclohexane ► The use of both reduces the level of occupational exposure risks in anhydrous ethanol production

Special line of hydrogenated solvents

Braskem offers a special line of highly pure and high-performance hydrogenated solvents with very low concentrations of aromatic compounds.

Isoparaffins are produced by rigorous hydrogenation processes that ensure odorless and colorless solvents, giving them exceptional characteristics compared to other solvents on the market.

This line of solvents features four distillation ranges so you can choose the ideal solvent for a wide range of applications.

Special Line of Hydrogenated Solvents:

- Isoparaffin 3/16
- Isoparaffin 13/15
- Isoparaffin 17/21
- Isoparaffin 22/25

Applications



The low concentration of aromatic compounds, transparency and lack of odor make this Braskem solvent line even more people and environmentally friendly.

Table of Properties

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)
AROMATICS									
TOLUENE	0,87	110	-	4	-	10	209	< 0,1	< 20
XYLENE	0,86	136	143	17	-	12	73	< 0,02	< 20
AB09	0,88	156	170	40	-	14	23	< 0,01	< 20
AB10	0,86	180	240	60	-	27	3	< 0,01	< 20
AB10+	0,86	180	230	60	-	27	3	< 0,01	< 20
AB12+	0,89	200	350	80	-	33	0,2	< 0,01	< 5 (*)
HS-100	0,86	152	-	39	-	14	45	< 0,01	< 10
ALIPHATIC									
ALIPHATIC 6/7	0,70	58	72	< 10	55	-	790	< 0,1	< 10
ALIPHATIC 7/9	0,72	70	95	< 10	48	-	655	< 0,1	< 20
ALIPHATIC 6/13	0,69	60	135	< 20	69	-	447	< 0,05	< 30
ALIPHATIC 6/15	0,72	50	200	< 20	51	-	442	< 0,1	< 30
ALIPHATIC 6/17	0,72	60	170	< 20	62	-	473	< 0,1	< 20
AGUARRÁS	0,76	135	235	≥ 28	57	-	39	< 0,01	< 30
HYDROGENATED									
CYCLOHEXANE	0,78	78	82	-20	32	-	425	< 0,1	< 5
ISOPARAFFIN 3/16	0,71	35	160	< 10	75	-	122	< 0,01	< 5
ISOPARAFFIN 13/15	0,72	130	150	20	76	-	94	< 0,01	< 5
ISOPARAFFIN 17/21	0,75	170	210	52	83	-	8	< 0,002	< 5
ISOPARAFFIN 22/25	0,78	218	255	90	89	-	0,5	< 0,002	< 5

(*) Scale according to ASTM D-1500

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