ALBERDINGK BOLEY

Technology Information

Polymers based on renewable resources

ALBERDINGK BOLEY

Content

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ALBERDINGK BOLEY in a nutshell

 Leading international manufacturer of environmentally friendly water-based binders and oils with unique properties to refine, refurbish, bind and protect multiple types of substrates	 Medium sized, privately owned company > 250 million Euro group turnover in 2021 > a partner to our customers for 250 years	 > 500 employees
 Dynamic, Innovative and flexible Pioneers in biobased polymer dispersions	 Dispersions: Acrylic, Vinyl acetate, Polyurethane and hybrid dispersions Oils: Linseed oil, Castor oil, Derivatives	 Locations: • Krefeld, Germany • Kerpen, Germany • Leuna, Germany • Treviso, Italy • Greensboro, USA • Shenzhen, China • Zhuhai, China

For more information about ALBERDINGK BOLEY and our product offerings, visit www.alberdingk-boley.de.

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Introduction

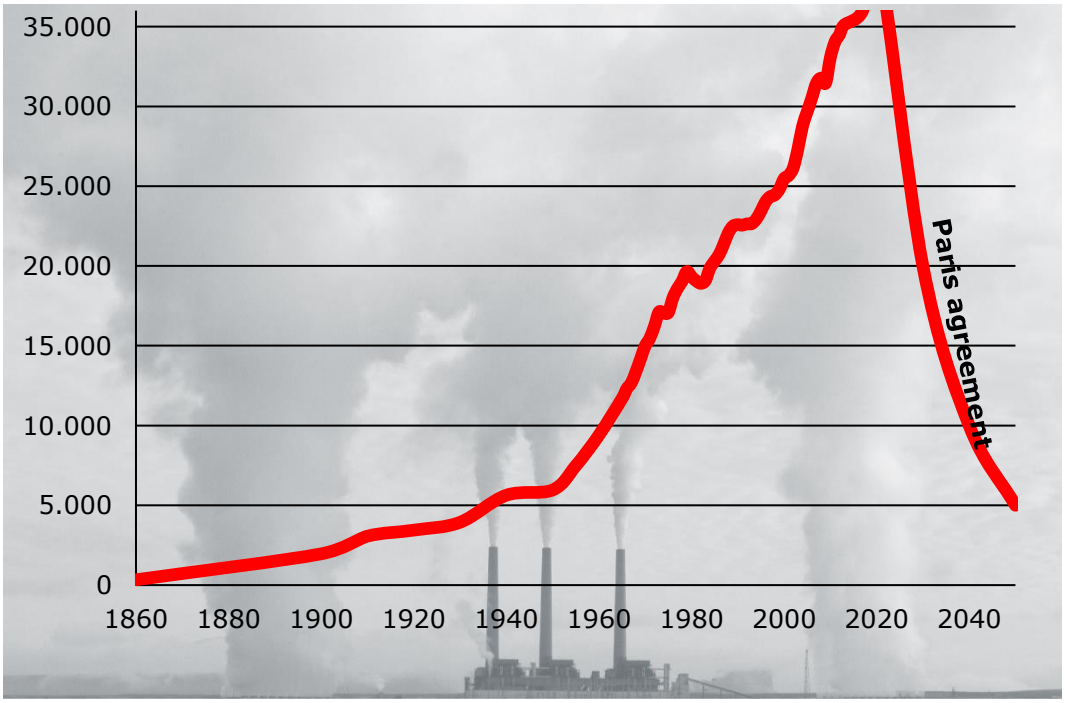
ALBERDINGK BOLEY has 250 years tradition of producing linseed and castor oils and their derivatives.

As pioneers for biobased polymers, we already patented the first polyurethane dispersion based on castor oil in the 1990s and launched a whole range of 100% polyols based on castor oil in the early 2000s.

Every industry sector is currently looking for environment-friendly products. Driving forces are the good commercialisation and also economic benefits.

In this brochure we want to focus on the products based on renewable resources instead of pointing out our efforts on saving energy and waste, which is in our opinion self-evident for a company certified according to ISO 50000:2011.

Global CO_2-Emissions in million tons



➡ Immediate action from every stakeholder is required to meet the Paris Agreement.

As supplier of binders for paints & coatings, ALBERDINGK BOLEY can contribute in the global CO_2 emission reduction by enhancing the already existing portfolio of renewable resource based products.

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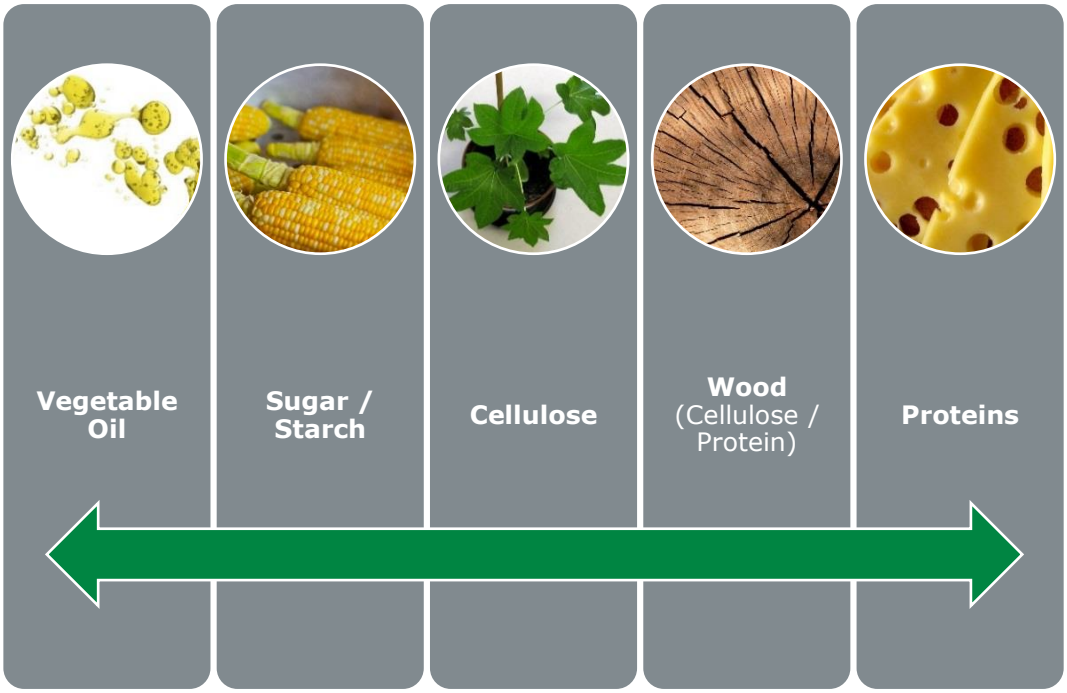
Which kinds of renewable resources are theoretically possible



ALBERDINGK BOLEY uses polyaddition and radical emulsion polymerization as manufacturing methods for the production of water-based binders.

Therefore renewable resource based precursors need to be reactive in the a.m. processes – this excludes a couple of the a.m. raw materials.

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Challenges in using renewable resources

Direct competition with food production	• Corn • Palm Oil
Indirect competition with food production	• Use of area suitable for food production
No competition with food production	• Castor Oil • Waste material
Loss of wildlife habitat	• Palm Oil

Different ways to use renewable resources in chemical processes

Direct Use	• Castor Oil • Linseed Oil
Use after modification	• HCO • Ethoxilated Castor Oil
Conversion by fermentation	• "ABE"-Fermentation
Conversion by conventional process	• Steam cracker • Syngas

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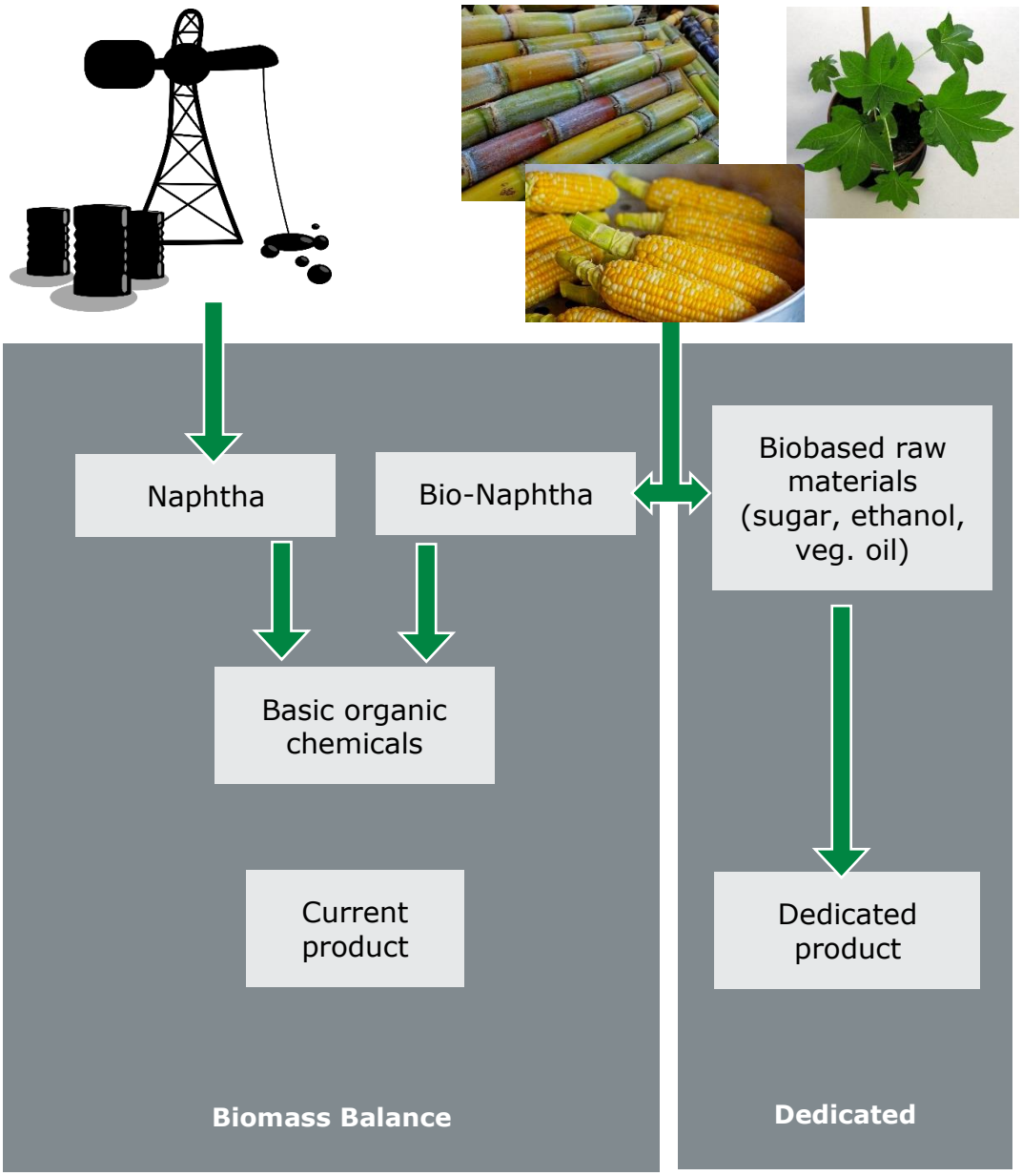
Biomass balance vs. dedicated production with renewable resources:



The biomass balance approach offers a convenient way to incorporate renewable materials in the process stream. Biomaterials are used to manufacture Bio-Naphta which is then used in "ordinary" chemical feedstock production.

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The main advantage is that the final product remains unchanged despite the use of renewable resources. However, the final product may not even contain one renewable carbon atom since this is a statistical approach.

The supplier uses an equivalent of renewable raw material per purchased ton of bio mass balance product.

Since it's a statistical method as products made from biomass and crude oil are manufactured in the same plant, a certified process of surveillance with an independent 3rd party needs to be implemented.

Binder-producer and paint-manufacturer will need to be certified accordingly.

Learn more:

https://www.iscc-system.org/

https://www.tuv.com/world/en/iscc-international-sustainability-and-carbon-certification.html

ALBERDINGK BOLEY is currently preparing for an ISCC-certification.

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Current ALBERDINGK® products based on renewable resources

Biobased products for wood coatings

Raw Material Base	Product	Renewable Content [% on solids]	Application	Characterisation
Castor Oil	**CUR 991**	39	Flooring / furniture	Hard
	CUR 920	55	Flooring / furniture	Hard
Linseed Oil	**LUR 3**	55	Exterior stains	Hard
	LUR 10	36	Flooring / furniture	Very hard
	OP 100	89	Flooring / furniture	For penetration into wood
	OP 105	100	Flooring / furniture	As diluent for **OP 100**
Biobased monomer	**U 8500**	21	Hardwood flooring	Hard
	UC 8600	6	Pigmented furniture	Stain- and scratch resistant
The following Alberdingk® products will be available in a short term:				
Biobased monomer	**Ren AC 8700**	42	Flooring / furniture	Hard
	Ren AC 8742	23	Pigmented furniture	Hard
	Ren AC 9630	21	High quality furniture	Hard
	Ren UC 9044	44	Flooring / furniture	Hard

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Biobased products for architectural coatings

Raw Material Base	Product	Renewable Content [% on solids]	Application	Characterisation
Castor Oil	**CUR 751**	57	Wallpaint	Soft
	CUR 2021	40	Flat-roof coatings	Soft
	ALBODUR® Products	60 - 95	Miscellaneous	100% polyols
Biobased monomer	**Ren AC 5605**	21	Interior & exterior paints	Soft
	Ren AC 8403	32	Metal / concrete coatings	Hard
	Ren U 178	77	Flat-roof coatings	Soft
	Ren U 228	68	Flat-roof coatings	Soft, high resistances
	Ren U 400 N	66	Waterproofing, exterior paints	Medium hard
The following Alberdingk® products will be available in a short term:				
Biobased monomer	**Ren AC 8003**	45	Plasters & facade paints	Soft
	Ren AC 8025	38	Scrub resistant wallpaints	Soft
	Ren AS 7900	40	Low-VOC-wallpaints	Soft

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Biobased products for packaging & film coatings & printings

Raw Material Base	Product	Renewable Content [% on solids]	Application	Characterisation
Biobased monomer	**Ren AC 5605**	21	Printing & packaging	Soft
	Ren U 4000	55	Primer for film coatings (e.g. BOPP)	Soft
The following Alberdingk® products will be available upon request:				
Biobased monomer	**Ren AFU 4200**	59	Primer for film coatings	Soft
	Ren U 355	75	Heat Seal applications	Medium hard
	Ren U 400 N	66	Primer for film coatings	Medium hard
	Ren U 460	56	Heat Seal applications	Medium hard
	Ren U 4101	64	Primer for film coatings	Tacky
	Ren U 4500	43	Primer for film coatings	Soft, hydrazine-free
	Ren U 4020	34	Blister coatings	Soft

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Biobased products for textile & leather coatings

Raw Material Base	Product	Renewable Content [% on solids]	Application	Characterisation
Castor Oil	**CUR 2021**	40	Pigmented textile coatings	Soft
Biobased monomer	**Ren U 178**	77	Base- & topcoats	Soft
	Ren AC 5605	21	Leather basecoats	Soft
	Ren U 228	68	Base- & topcoats	Soft, high resistances
	Ren U 400 N	66	Base- & topcoats	Medium hard
	Ren U 4101	64	Adhesion primer for hydrophobic leather	Tacky

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Biobased products for metal coatings

Raw Material Base	Product	Renewable Content [% on solids]	Application	Characterisation
Biobased monomer	**Ren AC 8403**	32	Metal coatings	Hard
	Ren AC 8003	45	Metal coatings	Medium hard

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Biobased products for adhesive applications

Raw Material Base	Product	Renewable Content [% on solids]	Application	Characterisation
Biobased monomer	**Ren U 228**	68	Heat activated adhesives, lamination	Soft
	Ren U 355	75	Heat Seal applications	Medium hard
	Ren U 400 N	66	Primer for film coatings	Medium hard
	Ren U 460	56	Heat Seal applications	Medium hard
	Ren U 4000	55	Adhesion primer	Soft
	Ren U 4101	64	Adhesion promotion	Tacky
	Ren U 4020	34	Blister coatings	Soft

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Future projects with renewable content

Enhance the ALBERDINGK® portfolio based on dedicated renewables

- ALBERDINGK BOLEY is constantly working on the development of novel castor and linseed oil based dispersions as well as polyols for various applications such as e.g. leather finish, textile coatings, architectural paints, construction, printing and packaging.
- Many polyurethane dispersions can immediately be produced based on polyols which are manufactured from biological sources instead of mineral oil.
- ALBERDINGK BOLEY is currently working intensively to enhance the portfolio of acrylate dispersions based on dedicated, renewable biobased monomers.

Implementation / Certification of the Biomass-Balance concept

ALBERDINGK BOLEY is currently preparing for the implementation / ISCC-certification of the biomass balance concept.

Information on availability of biobased development products

- Please note that many biobased raw material are still short in supply and may have longer lead times, therefore availability of ALBERDINGK® products can vary.
- In case of identical chemical backbone (example **U 400 N** vs **Ren U 400 N**) testing can be done with the standard grades and "Ren" samples may only be required for final ^{14}C analysis / commercial orders
- Examples of biobased development products shall not indicate availability of large sample quantities!
  This will improve over time and we will keep our partners updated.

You haven't found the product, you're looking for?
Please talk to us!

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