

# Combined strengths for customized parquet glue solutions



## Technical Details

Huntsman Polyurethanes, a global manufacturer of MDI, and Alberdingk Boley – a leading European supplier of water-based binders and 100% polyols – have teamed up to develop new concepts for parquet adhesive solutions according to EN 14293:2006.

This unique partnership provides customers with access to versatile bonding solutions that can be engineered to achieve specific qualities for an array of industrial applications, depending on formulator needs.

### SUPRASEC®

The adaptability of Huntsman Polyurethanes' MDI technology makes it possible to embed specific properties in an adhesive, enabling it to meet many different end-use requirements.

In order to adjust the application viscosity, reactivity and other properties of the formulated bonding system, custom prepolymers can be tailor-made on request.

### ALBODUR®

Alberdingk Boley's ALBODUR® polymerization technology is equally flexible. It can aid the creation of special features that fulfill the needs of numerous industries that require adhesives, but also elastomer and coating systems. Custom made polyols can be developed by request.

With an assortment of isocyanate and polyol blends available across respective Huntsman Polyurethanes and Alberdingk Boley portfolios, the adhesive options presented through this partnership are numerous. To demonstrate the breadth of specific properties that can be achieved within a derived adhesive, details of several ALBODUR® and SUPRASEC® isocyanates are listed below:

	SUPRASEC® 1007	SUPRASEC® 2330	SUPRASEC® 2632	SUPRASEC® 2647
NCOv (%)	6,8	32,2	32,1	32,6
Viscosity (mPa.s @ 20C)	5500	40	30	25
Specific gravity (g/ml)	1,08	1,20	1,17	1,21
Av. functionality	2,0	2,3	2,1	2,2

Fig 1: SUPRASEC® product range

	ALBODUR® 901	ALBODUR® 912
OH (%)	5,62	6,29
Viscosity (mPa.s @ 20C)	800 - 1100	800 - 1000
Acid No (mg KOH/g)	< 2	< 2
Specific gravity (g/ml)	0,98	0,98
Av. functionality	2,1	2,3

Fig 2: ALBODUR® product range



The most important criteria to fulfill the EN 14923:2006 norm for parquet glues can be met by passing the following three tests successfully:

## 1. Traction:

Based on EN 14293:2006 norm for parquet glue homologation

- 50/50/10 mm samples
- Glued on normalized concrete according to EN 1323
- Apply glue to concrete
- Then apply to oak substrate.

- Then add a 2 kg load within 60 seconds  
**> SUPRASEC® 2330 is highly recommended**
- Curing = seven days (gluing traction clamps can be removed after six days)
- Traction at force increasing of 250 N+\_ 50 N/seconds until break **> 50 mm/min.**

## 2. Lap shear resistance:

### Lap shear resistance: Type

Two categories:

Soft: If lap shear of 2 mm or more without break  
 Rigid: Break before 2 mm

- Sample: oak 140/23/8 mm
- Thickness: 1 mm
- Speed traction: 20 mm/min
- Gluing surface: 600 mm<sup>2</sup>
- Ten samples.

### Lap shear resistance: Curing

Two curing options:

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### Lap shear resistance: Requirements

1) Rigid adhesives (< 2 mm shear)

- Curing A mode: lap shear minimum 3.5 MPa
- Curing B mode: 3 MPa (This approach was used in our test).

2) Flexible adhesives (> 2 mm shear)

- Lap shear > 0.5 MPa
- See start formulation.

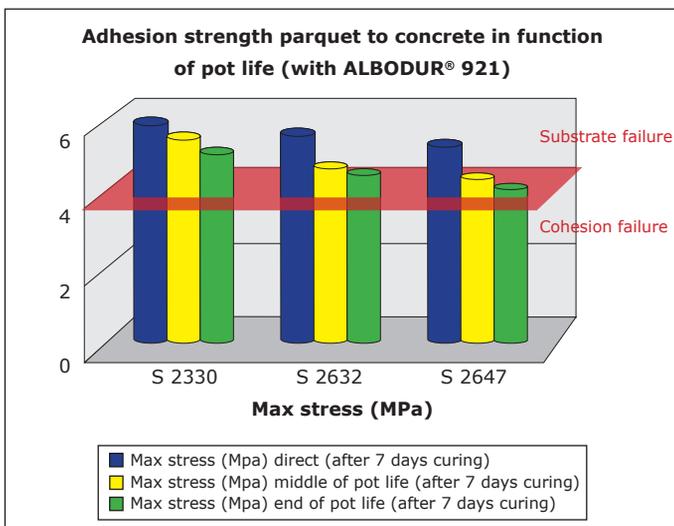


Fig 3: Adhesion strength

Start FORMULATION	rigid	flex
Component A - Polyolformulation	%	%
ALBODUR® 916	21	28
ALBODUR® 921	14	
ALBODUR® 901		19
Chalk	59.9	46.6
Zeolite	3.4	4.1
Fumed silica	1.7	2.3
	100	100

	rigid	flex
Component B - Hardener	%	%
SUPRASEC® 2330 - 2632 - 2647	16/16/15.7	
SUPRASEC® 1007		95



### 3. Open time measurement:

- Maximal open time is minimum time needed to achieve minimum requirements 3.5 or 0.5 MPa
- However, to have a more general idea, the pot life is taken as the viscosity build-up until 10.000 mPa.s @ 25°C.

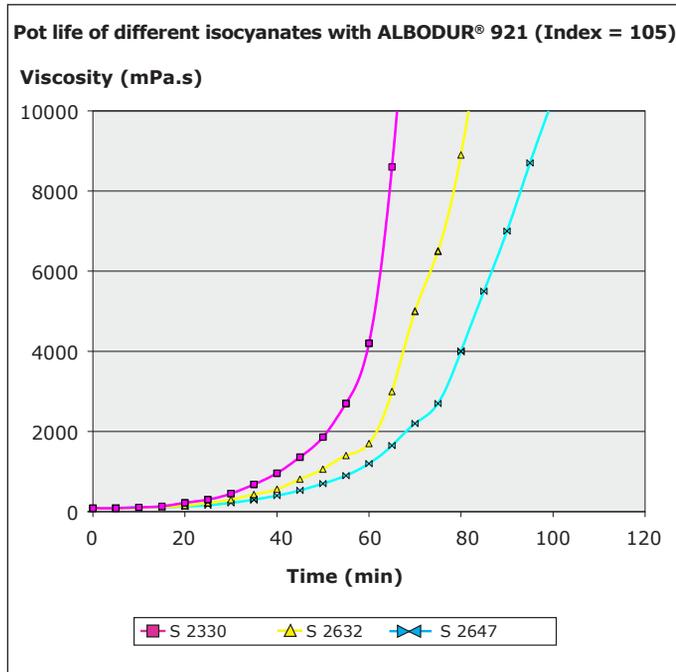


Fig 4: Pot life

### Conclusion:

In summary, the key benefits of our system are:

- Tailor-made solutions combining technical support from both partners
- System partly based on renewable resources
- Pot life adjustable, depending on requirements
- Advantages in bonding strength / lap shear resistance.

By selecting the correct combination of SUPRASEC® isocyanates and ALBODUR® polyols, formulators can improve specific physical / mechanical properties, creating a wider application window than is currently possible with solutions available to the existing parquet glue market.

To support this decision-making process, Huntsman Polyurethanes and Alberdingk Boley work closely with their customers, providing practical, hands-on advice regarding formulation, processing and handling requirements so the correct outcomes can be realized in adhesive development.

**Alberdingk Boley GmbH** is a leading German producer of water-based binders for coatings and finishes of all substrates. Originally established in 1828, Alberdingk Boley is the leading European supplier of castor oil and linseed oil as well as its derivatives. Thanks to their broad range of applications, water-based polyurethane and acrylate dispersions today form the basis of the company's product portfolio. Launched in 2005, the new generation of

ALBODUR® 100% polyols, based on renewable resources, successfully combines the company's vast background in oleochemicals with its state-of-the-art technologies for polymerization. Based in Krefeld (Germany) and with facilities in Kerpen (Germany), Greensboro (USA) and Shenzhen (China), the independent, privately-owned company operates worldwide. In 2011, 300 employees generated a turnover of approx. € 190 M.

## Worldwide network for unrivalled customer service

The combined expertise and global reach of Huntsman Polyurethanes and Alberdingk Boley is of significant benefit to polyurethanes customers and formulators around the world.

### Alberdingk Boley contact details:

ALBODUR® range: [albodur@alberdingk-boley.de](mailto:albodur@alberdingk-boley.de)  
More information about Alberdingk Boley and the complete product range can also be found on the company's website at: [www.alberdingk-boley.de](http://www.alberdingk-boley.de)

For more information about Huntsman Polyurethanes please contact:  
**ACE@huntsman.com** or go to: [www.huntsman.com](http://www.huntsman.com)

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Originally known for pioneering innovations in packaging and, later, for rapid and integrated growth in petrochemicals, Huntsman has approximately 12,000 employees and operates from multiple locations worldwide. The Company had 2011 revenues of over \$11 billion.

For more information about Huntsman, please visit the company's website at: [www.huntsman.com](http://www.huntsman.com)



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