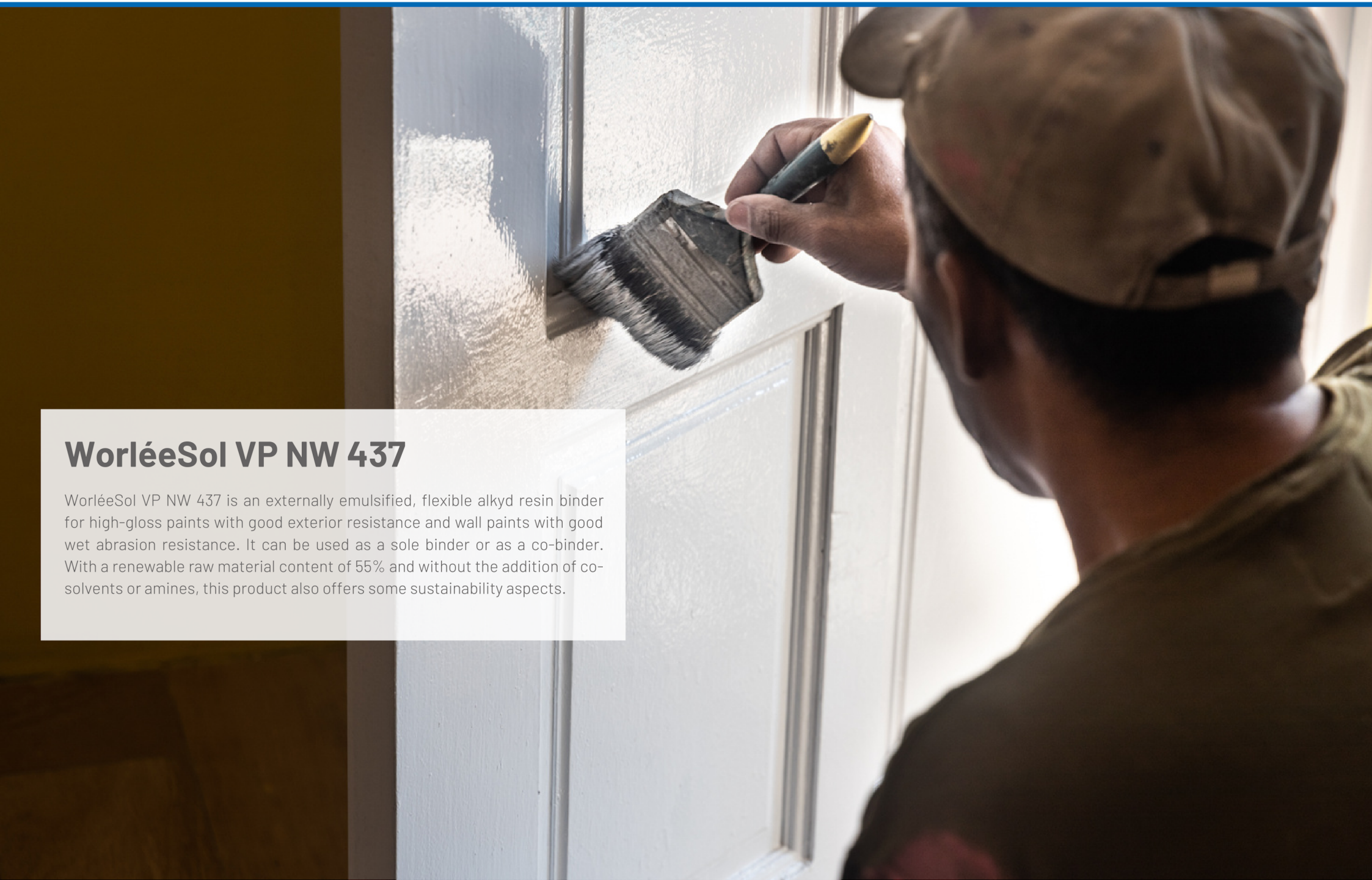


WorléeSol VP NW 437

WorléeSol VP NW 437 is an externally emulsified, flexible alkyd resin binder for high-gloss paints with good exterior resistance and wall paints with good wet abrasion resistance. It can be used as a sole binder or as a co-binder. With a renewable raw material content of 55% and without the addition of co-solvents or amines, this product also offers some sustainability aspects.

Applications and properties

WorléeSol VP NW 437 is an externally emulsified alkyd resin type. The external emulsification is achieved by using an emulsifier mixture of anionic and non-ionic types for optimal stabilisation. It allows the elimination of amines and co-solvents, which are needed, for example, for water-thinnable alkyd resins, also increasing the VOC. In addition, this technology allows a higher non-volatile content - in this case 60%.

The oil content with 37% at the edge to the medium oil alkyd resin type provides relatively fast drying for this technology. A very high gloss is typical for this product group.

WorléeSol VP NW 437 is mainly intended for use as a sole binder in high-gloss waterborne interior and exterior paints. However, it can also be easily combined with WorléeSol E 150 W or other urethanised alkyd resin emulsions. In addition, the product has been successfully tested in a wall-paint formulation.

Technical data

Property	
Non-volatile matter, 1h/125°C, DIN EN ISO 3251	60% ± 2
Oil content	approx. 37%
Viscosity, Rheometer, 20°C, C 60/2°, 5s-1	2,000 - 6,000 mPa.s
Density, 20°C, DIN EN ISO 2811-1	1.090 g/cm^3
Appearance	Milky liquid
Delivery form	60% in water

Areas of application

Painting and architectural coatings

High gloss and good outdoor resistance

High-gloss decorative coating

WorléeSol VP NW 437 allows the production of coatings with very high gloss. Due to the external emulsification, it is recommended to grind in water and then add the alkyd emulsion to avoid unnecessary foam stabilisation. For this purpose, we use WorléeDisperse 8400 W as dispersing additive and WorléeAdd 6226 as a millbase defoamer.

The use of siccatives is recommended – cobalt has the greatest effect on pendulum hardness development, but is also the most concerning. When comparing manganese and iron, the iron siccative showed less yellowing with similar hardness development.

Of particular note is the high gloss of the formulation without the addition of organic solvents. In addition, despite the external emulsification, this coating dries within one working day under moderate drying conditions.

WorléeSol VP NW 437 shows sufficient flexibility for application on wood for outdoor use. For testing, several coated spruce panels were laid out on the weathering stand. After more than one year of outdoor weathering, the surface continued to show an attractive appearance.

Picture: Coated wooden spruce boards after one year of outdoor weathering

Pos.	Product	Delivery form	%	Function
1	Water		8.10	
2	Rheovis PE 1320		1.00	Thickener
3	Rheovis PU 1214		0.30	Thickener
4	**WorléeAdd 6226**	100%	0.10	Defoamer
5	**WorléeDisperse 8400 W**	50% in water	1.25	Wetting agent
6	Kronos 2190		24.00	Pigment
7	Water		2.95	
8	**WorléeSol VP NW 437**	60% in water	50.00	Binder
9	Rheovis PU 1214		1.00	Thickener
10	Borchi Oxy Coat 1101		0.30	Siccative
11	Tego Airex 901 W		0.30	Defoamer
12	Water		10.70	
	Total		**100.00**	

Property		
Viscosity	Krebs Stromer, 20 °C	approx. 110 KU
pH-value		6.0 - 7.0
Density	20 °C	approx. 1.29 g/cm³
VOC-content (calculated)	excl. water	approx. 15 g/l
	incl. water	approx. 6 g/l
100 µm wet film on glass		
Dust free		approx. 10 min
Tack free		approx. 6 h
Pendulum hardness	after 1 week	approx. 26 s
Gloss 20° / 60°	after 1 week	approx. 90 / 96 GU

Flexibility and good wet abrasion resistance

Wall paint

WorléeSol VP NW 437 is a flexible binder and was therefore also tested in a wall-paint formulation. Here, the relatively high solid content of 60% is an advantage, because more water is thus available for the millbase and, if desired, additionally for rinsing.

Even with a small amount of WorléeSol VP NW 437 of 11.5%, a wet abrasion resistance class 2 could be achieved.

The lower amount of binder used compared to the high-gloss formulation allows the reduction of defoamer and siccative.

WorléeSol NW 437 as a combination partner

Flexibilization

The first combination tests were carried out with the in-house PU-modified alkyd resin emulsions. Good compatibility with WorléeSol E 330 W and WorléeSol E 150 W was found.

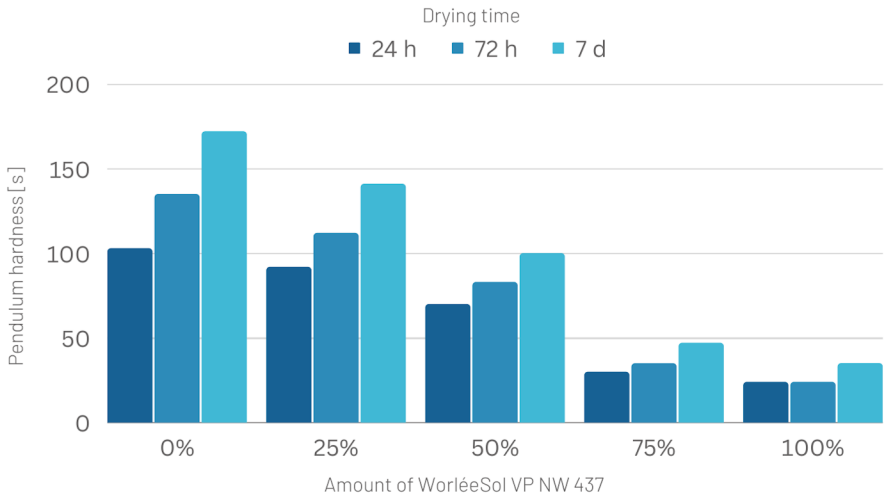
A combination with acrylic dispersions allows harder films. At the same time, WorléeSol VP NW 437 reduces the necessary amount of film-forming aids. The use in hybrid clear coats is rarely possible due to slight turbidity.

For very hard PU dispersions, WorléeSol VP NW 437 can also be used as a flexibilizing component. As a combination partner, WorléePUD VP 1011 was used.

Pos.	Product	Delivery form	%	Function
1	Water		26.80	
2	Wekcelo ME 60000 R		0.30	Thickener
3	Tego Disperse 755 W		1.10	Wetting agent
4	**WorléeAdd 6410**	30% in water	0.20	Defoamer
5	Kronos 2190		10.00	Pigment
6	Omyacarb 5 GU		29.40	Filler
7	Omyacarb 2 GU		17.90	Filler
8	Micro Mica W1		1.80	Filler
9	**WorléeSol NW 437**	60% in water	11.50	Binder
10	**WorléeAdd 6410**	30% in water	0.30	Defoamer
11	Borchi Oxy Coat 1101		0.20	Siccative
12	Rheovis PE 1320		0.30	Thickener
13	Rheovis PU 1214		0.10	Thickener
	Total		**100.00**	

Property		
Viscosity Krebs Stormer	20°C	110-120 KU
pH - value		7.0-8.0
Non-volatile portion	calculated	ca. 67%
Density	20°C	ca. 1.64 g/cm^3
Hiding power	according to DIN EN ISO 13300	class 2
Wet abrasion resistance	according to DIN EN ISO 13300	class 2

Hardness development



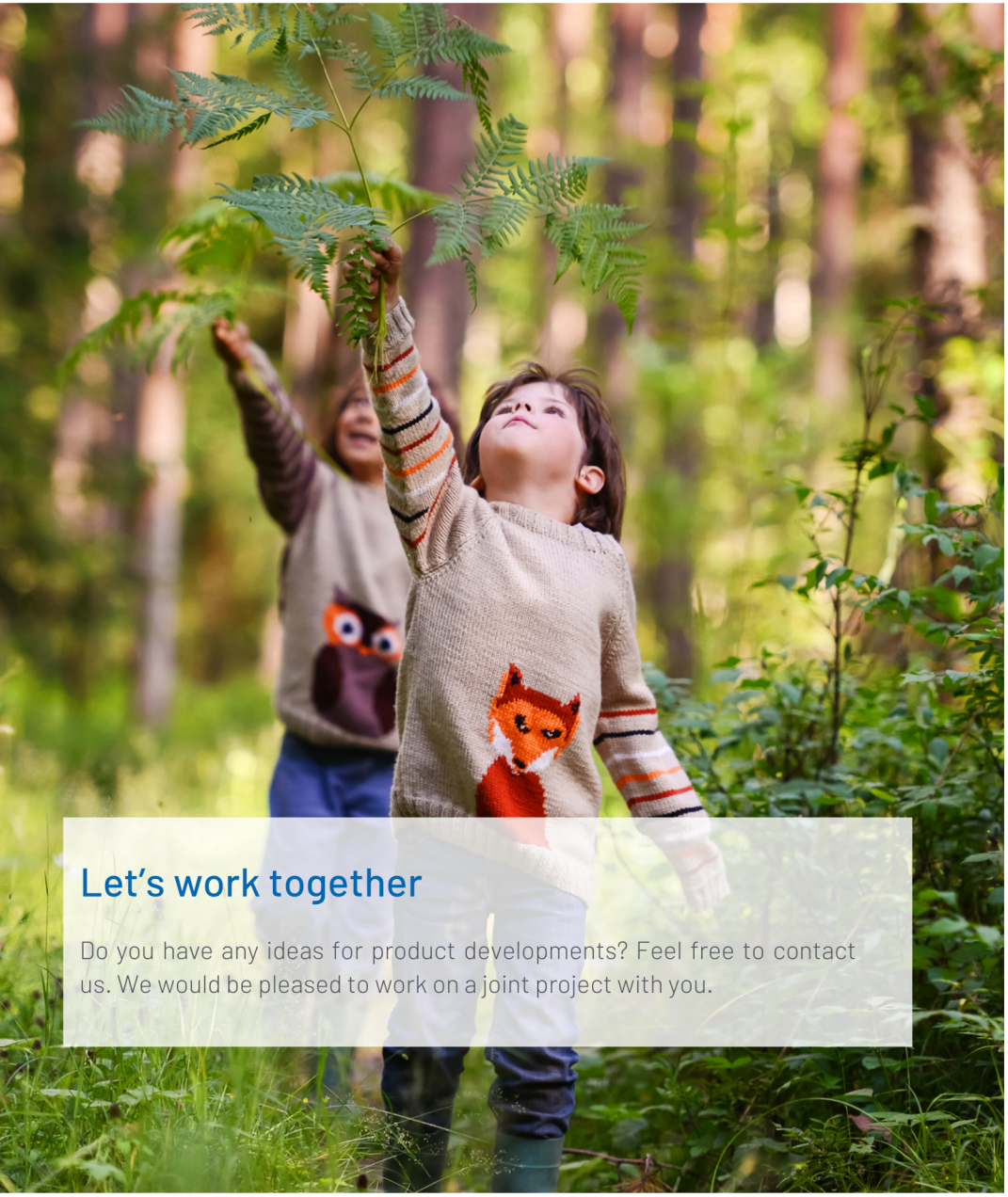
Sustainability of WorléeSol VP NW 437

For the development of WorléeSol VP NW 437, the issue of sustainability was also taken into account. Thus, tall oil fatty acid was selected as the oil component for this waterborne alkyd emulsion. Tall oil fatty acid is not only renewable, but also does not compete with food crops, as it is a by-product of pulp production.

The product has an overall proportion of renewable raw materials of 55% based on the solids content.

Key facts

- High gloss
- High solid (60%)
- High flexibility
- Good outdoor resistance



Let's work together

Do you have any ideas for product developments? Feel free to contact us. We would be pleased to work on a joint project with you.

Sustainable product development

The development of sustainable products has accompanied us for a very long time. Even without legal or societal pressure, it has always been our ambition to offer better and more durable products and solutions for a wide range of applications. Developing high-quality products in collaboration with our customers remains our primary focus.

Over the decades, we have gained a lot of experience in developing various resin technologies based on different raw materials to make products more sustainable from different perspectives. Sustainable product development must ultimately benefit the environment and society, but also take into account economic aspects.

The entire supply chain must benefit. Already in our proven developments, we can take many of these different aspects into account and make resins and additives even more sustainable. For example, we can determine factors such as the proportion of renewable raw materials, the proportion of secondary raw materials, regionality and longevity, the hazard potential of our products, and the competition of our raw materials with the food industry.

Technologically, we are well positioned with our creative departments in research, development and application technology to continue to move towards sustainable products in collaboration with our customers and partners. Every new development is related to sustainability factors such as climate change and resource conservation.

Our corporate values by which we act

Since our founding in 1851, the principle of sustainability with its three core themes of economy, ecology and social issues has been at the heart of our corporate philosophy. As a family business, Worlée-Chemie is committed to social responsibility and fair dealings with business partners and employees. We are committed to forward-looking and prudent environmental protection as well as preventive and comprehensive occupational health and safety as a corporate goal.

We are convinced that the natural resources of water, air and soil must be treated with care as part of our responsible actions. In this way, the ecosystem of which we are a part can be preserved as the basis of our living conditions for future generations. This also applies in particular to the economical and efficient use of energy and natural resources.

We stand by our responsibility for safety in production, storage and transport. We ensure that our products are handled conscientiously along the entire value chain.

Compliance with human rights due diligence is part of our company's self-image. Integrity, fairness, responsibility and a high degree of transparency are the basis for a trusting and long-term business relationship. We expect our suppliers to adhere to these principles in the wider supply chain and to recognise our Supplier Code of Conduct or provide an equivalent guideline.

Waterborne systems
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