



**Top-quality
painting.**

PWIS/LABS-conformity with products from Belimo

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BELIMO[®]

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Our services at a glance

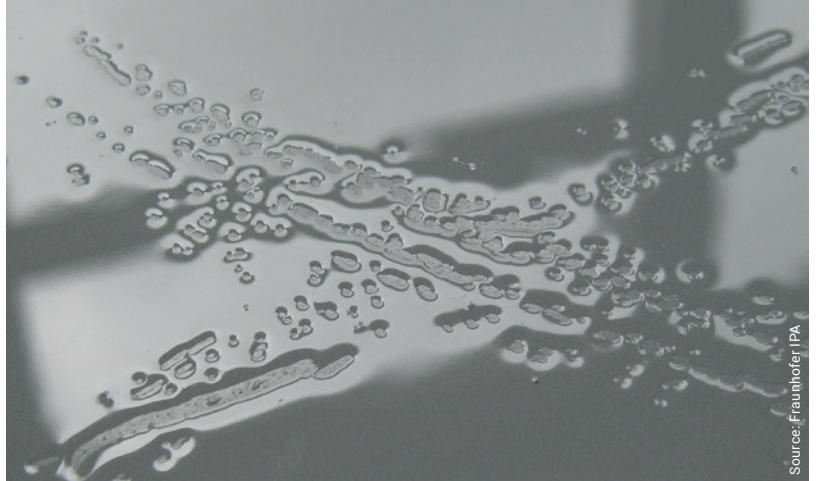
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PWIS – paint-wetting impairment substances

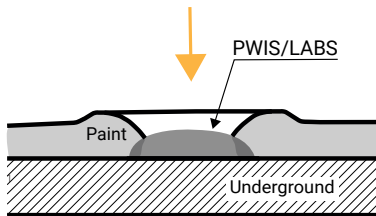
Problem



Coating defects caused by PWIS

Paint-wetting impairment substances (PWIS) can lead to major coating defects when processing paints. Even in small quantities, craters or large-area wetting impairments, for example, can form, which impair the quality of the coating. Rework, rejects or even a production stop can be the result.

Cause



Source: VDMA-Oberflächentechnik (VDMA Surface Technology)

The cause of paint wetting impairments is contamination of the surface to be painted, the paint or the paint supply system.

Paint-wetting impairment substances are omnipresent in everyday life and can also be spread through the air. Whether or not a substance impairs paint wetting depends on its interaction with the coating system, the surface to be painted and the ambient conditions. PWIS cannot therefore be clearly assigned to specific substances or substance groups, which is why freedom from silicone is not the same as PWIS/LABS-conformity.

Paint-wetting impairment substances are e.g.:

- Silicones and silicone-containing substances
- Paraffine, graphite
- Fatty acid esters
- High molecular weight polyglycols
- Oils, fats, fatty acids
- Non-ferrous metals
- ...

They can, for example, be contained in the following products:

- Adhesives and sealants
- Release agents and plasticisers
- Lubricants and cleaning agents
- Cables and tubes
- Clothes and watches
- Cosmetics and hairspray
- ...

Fields of application

Depending on the field of application of a product, the requirements for its PWIS/LABS-conformity may be different. In the automotive industry, this topic has been in the spotlight for years, but by its very nature it is relevant to all painting companies.



Powder coating process in paint shops



Automated painting process in the automotive industry

The solution – plasma treatment

Cleaning process



Low-pressure plasma system

At Belimo, a downstream cleaning process is used after the product has been produced, which guarantees PWIS/LABS-conformity in accordance with VDMA 24364.

The products are freed from paint-wetting impairment substances in a low-pressure plasma system. This process cleans all component surfaces, including the tiniest gaps and spaces and the insides of hollow bodies.

The reliability of the product cleaning was tested by an independent institute and confirmed with the corresponding PWIS/LABS-conformity.

Environmental and surface protection

This modern process makes it possible to dispense with the use of cleaning agents that are harmful to the environment and health. Surfaces that react sensitively to solvents are thus protected.

PWIS/LABS-conformity according to VDMA 24364

Belimo offers its customers a selected product range, which, after this plasma treatment, complies with PWIS/LABS-conformity requirements according to VDMA 24364 (Test Class C1) and is therefore approved for use in zone II. This helps our customers to avoid coating errors during painting.

Test classes and important notes

Defined test classes according to VDMA 24364

Test class	Sample extraction	Solvent
A1	Flushing Over all product surfaces	Butyl acetate
B2	Flushing Over all relevant product surfaces The tested surfaces shall be described in the report	Preferred: Butyl acetate Possible: Isopropanol, if the product is dissolved or damaged by butyl acetate
C1	Dry wipe With new test specimens in each case	–

Further information: VDMA standard sheet 24364 under 5.1 to 5.3.

Delivery times

The path to PWIS/LABS-conformity extends the delivery time of our products by up to 5 weeks. Please take this into account for your scheduling in order to avoid project delays. Therefore, please get in touch with your local Belimo contact person as soon as possible.

Return

We kindly ask for your understanding that PWIS/LABS-compliant products cannot be returned due to their additional surface treatment.

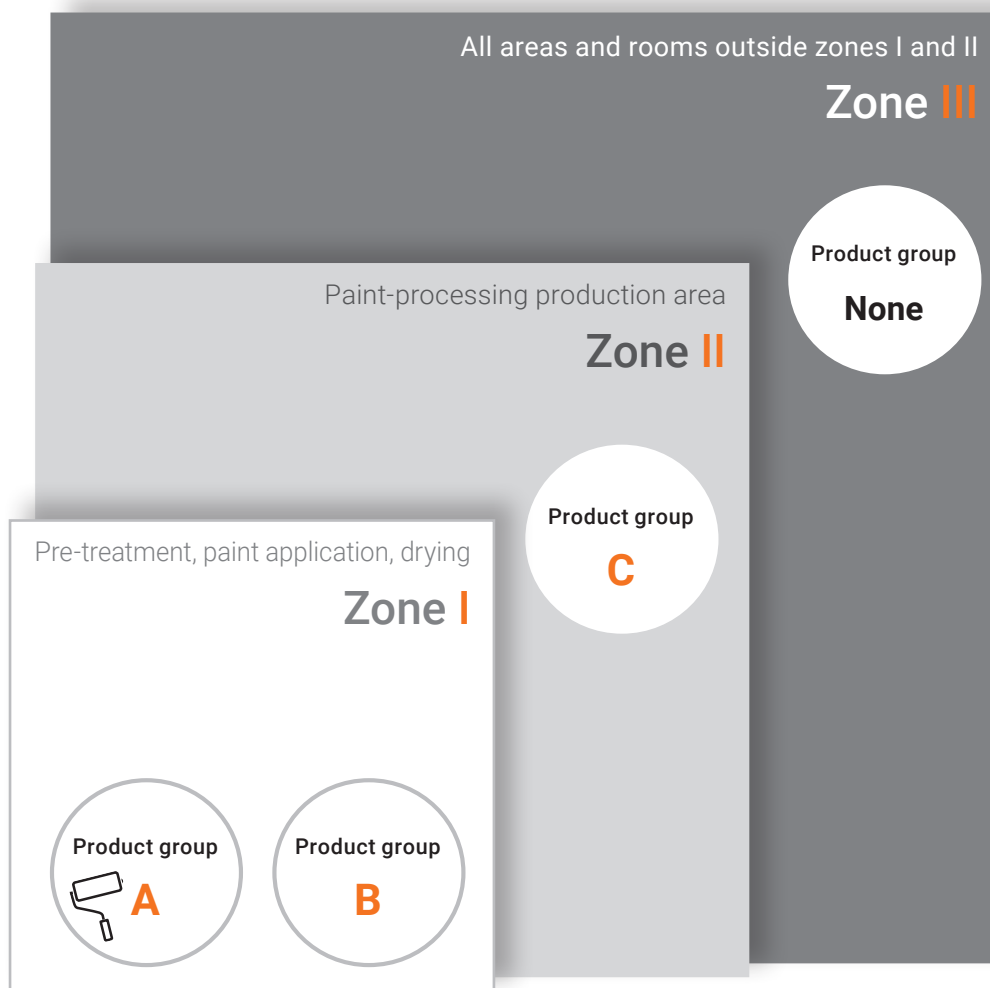
Packaging

The PWIS/LABS supplementary sheet in the packaging must be observed to ensure PWIS/LABS-conformity in further use. Once the inner packaging has been opened, the proper handling of the products is the responsibility of the customer.



Note: The picture may differ from the delivered product.

PWIS/LABS zones and product groups



Note: Product groups S and T cannot be assigned to any zone (see descriptions in table on next page).

Requirements according to VDMA 24364

The standard sheet VDMA 24364 defines the requirements for PWIS/LABS testing, taking into account the intended field of application, the intended use of a product, and a classification into product groups.

Allocation of zones and product groups

Work areas in paint processing facilities are classified according to PWIS/LABS zones and product groups. The picture above shows the schematic structure of such a plant.

Product groups

Products that come into contact with the paint, solvent, or surfaces to be painted. These include, for example, ring pipes for paints and solvents, tubes, sandpaper, pigs, spray heads and suction pads for lifting body parts before painting.

A

Products that convey liquid media that come into contact with the surfaces to be painted, e.g. for humidification.

Note: Usually used in zone I.

Products that are not classified in A, which convey gaseous media, as well as other products that only come into indirect contact with the surfaces to be painted, the paint, or the solvent.

B

These include, among others, the compressed air-carrying components, robots, air filters used in air recirculation systems and in areas where solvent condensation is to be expected.

Note: Usually used in zone I.

Products that are not classified in A or B.

These include, among other things, the entire control of the painting process and air-carrying products, including air filters for cleaning the supply and extract air from fresh-air-driven painting processes.

C

Note: Usually used in zone II.

Products that are not classified in A, B or C.

S

Products that can be carried over to zone I or II or applied to the surface to be painted.

T

Products that are used at higher temperatures, e.g. in the drying area.

Zones





		PWIS/LABS relevance *
I	This zone includes all pre-treatment, coating application and drying areas.	High
II	This zone is located within the paint-processing production area, but outside zone I.	Medium
III	This zone is part of operations, but outside the paint-processing production area.	None

* The assignment of a product group to a zone is usually possible for stationary products, but should be checked in individual cases. In the case of mobile products, it must be taken into account that they can basically be used in different zones.









PWIS/LABS-compliant products

Below you can see the current Belimo products that have passed the necessary upstream tests and can achieve PWIS/LABS-conformity in accordance with VDMA 24364 with the aid of the downstream cleaning process.

Air damper actuators






Actuator type	Nominal torque	Nominal voltage		Control			El. connection	
		24 V	230 V	Open/close, 3-point	Modulating	SPDT auxiliary switch	Cable	Terminals
Rotary actuators								
	LM..A-LA	■	■	■			■	
	LM..A-S-LA	■	■	■			■	
	LM..A-S-TP-LA	■	■	■		1x		■
	LM230ASR-LA LM24A-SR-LA	■	■		■		■	
	LM230ASR-TP-LA LM24A-SR-TP-LA	■	■		■			■
	LM..A-TP-LA	■	■					■
	NM..A-LA	■	■	■			■	
	NM..A-S-LA	■	■	■		1x	■	
	NM230ASR-LA NM24A-SR-LA	■	■		■		■	
	NM230ASR-TP-LA NM24A-SR-TP-LA	■	■		■			■
	NM..A-S-TP-LA	■	■	■		1x		■
	NM..A-TP-LA	■	■	■			■	
	SM..A-LA	■	■	■			■	
	SM..A-S-LA	■	■	■		1x	■	
	SM230ASR-LA SM24A-SR-LA	■	■		■		■	
	SM230ASR-TP-LA SM24A-SR-TP-LA	■	■		■			■
	SM..A-S-TP-LA	■	■	■		1x		■
	SM..A-TP-LA	■	■	■			■	
	GM..A-LA	■	■	■				■
	GM24A-SR-LA	■			■		■	
	GM24A-SR-TP-LA	■			■			■
	GM..A-TP-LA	■	■	■			■	

Air damper actuators

Actuator type	Nominal torque	Nominal voltage			Control			EI connection: cable
		24 V	230 V	24...230 V	Open/close, 3-point	Modulating	SPDT auxiliary switch	
Rotary actuators, fail-safe								
	LF.-LA							
	LF.-S-LA	4 Nm					1x	
	LF24-SR-LA							
	NFA-LA ¹⁾							
	NFA-S2-LA ¹⁾						2x	
	NF24A-LA	10 Nm						
	NF24A-S2-LA						2x	
	NF24A-SR-LA							
	NF24A-SR-S2-LA						2x	
	SFA-LA ¹⁾							
	SFA-S2-LA ¹⁾						2x	
	SF24A-LA	20 Nm						
	SF24A-S2-LA						2x	
	SF24A-SR-LA							
	SF24A-SR-S2-LA						2x	
	GK24A-1-LA	40 Nm						
	GK24A-SR-LA							
Fast running rotary actuators								
	TMC..A-LA							
	TMC..A-S-LA	2 Nm					1x	
	TMC230ASR-LA TMC24A-SR-LA							
	LMC..A-LA							
	LMC230A-S-LA	5 Nm					1x	
	LMC24A-SR-LA							
	NMC24A-MP-LA	10 Nm						
	SMC24A-MP-LA	20 Nm						
Very fast running rotary actuators								
	LMQ24A-LA	4 Nm						
	LMQ24A-SR-LA							
	NMQ24A-LA	8 Nm						
	NMQ24A-SR-LA							
	SMQ24A-LA	16 Nm						
	SMQ24A-SR-LA							





¹⁾ Ultrawide range: Nominal voltage AC 24...240 V / DC 24...125 V

Valve actuators



Actuator type	Nominal torque	Nominal voltage		Control			El. connection: cable
		24 V	230 V	Open/close, 3-point	Modulating	Communicative, parametrisable	
Rotary actuators							
	LR..A-LA	■	■	■			■
	LR24A-KNX-LA	■				■	■
	LR24A-MOD-LA	■			■	■	■
	LR24A-MOD-J6-LA	■				■	■
	LR24A-MP-LA	■				■	■
	LR24A-SR-LA	■			■		■
	LR24A-SZ-LA	■			■		■
	LRC24A-SR-LA	■			■		■
	LRC24A-SZ-LA	■			■		■
	NR..A-LA	■	■	■			■
	NR24A-KNX-LA	■				■	■
	NR24A-MOD-LA	■			■	■	■
	NR24A-MOD-J6-LA	■				■	■
	NR24A-MP-LA	■				■	■
	NR24A-SR-LA	■			■		■
	NR24A-SZ-LA	■			■		■
	NRC24A-SR-LA	■			■		■
	NRC24A-SZ-LA	■			■		■
	SR..A-LA	■	■	■			■
	SR230A-SR-5-LA		■		■		■
	SR24A-MOD-LA	■			■	■	■
	SR24A-MP-LA	■				■	■
	SR24A-SR-LA	■			■		■
	SR24A-SR-TP-LA ¹⁾	■			■		■
	SR24A-SZ-LA	■			■		■
SRC24A-SR-LA	■			■		■	

¹⁾ Electrical connection: Terminals


Valve actuators

Actuator type	Nominal torque	Nominal voltage: 24 V	Control				EI. connection: cable					
			Open/close	Modulating	SPDT auxiliary switch	Communicative, parametrisable						
Rotary actuators, fail-safe												
	4 Nm	■	■	■	■	■	■					
								LRF24-MP-O-LA	■	■	■	■
								LRF24-SR-LA	■	■	■	■
	10 Nm	■	■	■	■	■	■					
								NRF24A-MP-LA	■	■	■	■
								NRF24A-SR-LA	■	■	■	■
								NRF24A-SR-O-LA	■	■	■	■
								NRF24A-SR-S2-LA	■	■	2x	■
								NRF24A-SR-S2-O-LA	■	■	■	■
								NRF24A-SZ-LA	■	■	■	■
								NRF24A-SZ-O-LA	■	■	■	■
								NRF24A-SZ-S2-LA	■	■	2x	■
								NRF24A-SZ-S2-O-LA	■	■	■	■
	20 Nm	■	■	■	■	■	■					
								SRF24A-S2-LA	■	■	■	■
								SRF24A-MOD-LA	■	■	■	■
								SRF24A-MOD-O-LA	■	■	■	■
								SRF24A-SR-LA	■	■	■	■
								SRF24A-SR-O-LA	■	■	■	■
								SRF24A-SR-S2-LA	■	■	2x	■
								SRF24A-SR-S2-O-LA	■	■	■	■
								SRF24A-SZ-LA	■	■	■	■
								SRF24A-SZ-O-LA	■	■	■	■
SRF24A-SZ-S2-LA	■	■	2x	■								
SRF24A-SZ-S2-O-LA	■	■	■	■								
Very fast running rotary actuators												
	4 Nm	■	■	■	■	■	■					
								LRQ24A-SZ-LA	■	■	■	■
	8 Nm	■	■	■	■	■	■					
								NRQ24A-SR-LA	■	■	■	■
NRQ24A-SZ-LA	■	■	■	■	■	■						


Energy valves

Actuator type	DN	PN	Rp	G	V _{nom}	Nominal voltage: 24 V	Control			
							Modulating	Communicative, parametrisable	El. connection: cable	
Energy valves, fail-safe										
	EV015R2+KBACL-LA	15	25	1/2"	3/4"	0.42 l/s	■	■	■	■
	EV020R2+KBACL-LA	20	25	3/4"	1"	0.69 l/s	■	■	■	■
	EV025R2+KBACL-LA	25	25	1"	1 1/4"	0.97 l/s	■	■	■	■
	EV032R2+KBACL-LA	32	25	1 1/4"	1 1/2"	1.67 l/s	■	■	■	■
	EV040R2+KBACL-LA	40	25	1 1/2"	2"	2.78 l/s	■	■	■	■
	EV050R2+KBACL-LA	50	25	2"	2 1/2"	4.17 l/s	■	■	■	■
	EV065F+KBAC-LA US	65				8 l/s	■	■	■	■
	EV080F+KBAC-LA US	80				11.3 l/s	■	■	■	■
	EV100F+KBAC-LA US	100		Flange ASME/ANSI class 250		20 l/s	■	■	■	■
	EV125F+KBAC-LA US	125				31.2 l/s	■	■	■	■
	EV150F+KBAC-LA US	150				45 l/s	■	■	■	■


Characterised control valves

	Valve type	DN	PN	RP	K_{vs} [m ³ /h]
Characterised control valves, 2-way					
	R2015-.-S1-LA	15	40	1/2"	0.25...6.3
	R2020-.-S2-LA	20	40	3/4"	4.0...8.6
	R2025-.-S2-LA	25	40	1"	6.3...16
	R2032-.-S3-LA	32	25	1 1/4"	16
	R2040-.-S3-LA	40	25	1 1/2"	16...25
	R2050-.-S4-LA	50	25	2"	25...40

Characterised control valves, 3-way

	R3015-.-S1-LA	15	40	1/2"	0.4 ...2.5
	R3020-.-S2-LA	20	40	3/4"	4.0...6.3
	R3025-.-S2-LA	25	40	1"	6.3...10
	R3032-.-S3-LA	32	25	1 1/4"	16
	R3040-.-S3-LA	40	25	1 1/2"	16...25
	R3050-.-S4-LA	50	25	2"	25...58

Characterised control valves, 6-way *

	R3015-1P3-1P3-B2LA	15	16	1/2"	1.3
	R3020-4-4-B2-LA	20	16	3/4"	4
	R3025-6P3-6P3-B3LA	25	16	1"	6.3

* Note: Other valve types upon request.

Electrical accessories

	Type	
	S2A-LA	Auxiliary switches 2x SPDT

Our services at a glance

Several steps are necessary until a product achieves PWIS/LABS-conformity. We want to make it as easy as possible for our customers and take over all services, from production to delivery of the correctly packaged PWIS/LABS-certified products.



Testing

The necessary upstream tests are carried out by an independent testing institute to determine whether a product is PWIS/LABS-compliant and in which zones it may be used.



Treatment

The product is cleaned in a low-pressure plasma system.



Marking

Product and packaging are marked with a label that is also PWIS/LABS-compliant.



Packaging

Each PWIS/LABS-cleaned product is specially packed individually. A supplementary sheet describes the correct handling of the products.



Declaration of Conformity

A corresponding declaration of conformity is available for our PWIS/LABS-compliant products.

Further documentation

Belimo documents

- Flyer: “Top-quality painting.”
- Technical data sheets
- Tender texts
- Supplementary sheet: “PWIS/LABS-cleaned”
- Declaration of Conformity: “PWIS/LABS-compliant products from Belimo”

Specialist documents

- Standard sheet VDMA 24364
- VDMA guide for practical application

All information can be found at:

www.belimo.com/LABS



All inclusive.

Belimo as a global market leader develops innovative solutions for the controlling of heating, ventilation and air-conditioning systems. Damper actuators, control valves, sensors and meters represent our core business.

Always focusing on customer value, we deliver more than only products. We offer you the complete product range for the regulation and control of HVAC systems from a single source. At the same time, we rely on tested Swiss quality with a five-year warranty. Our worldwide representatives in over 80 countries guarantee short delivery times and comprehensive support through the entire product life. Belimo does indeed include everything.

The "small" Belimo devices have a big impact on comfort, energy efficiency, safety, installation and maintenance.

In short: Small devices, big impact.



5-year warranty



On site around the globe



Complete product range



Tested quality



Short delivery times



Comprehensive support



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