

# SILRES® BS 168 – pH ADJUSTER FOR WATER-BORNE WALL PAINTS

On average, adults in industrialized countries spend up to 22 hours every day in closed rooms. Most of them are unaware that they are breathing in harmful substances: according to the EU Joint Research Centre, indoor air is much more polluted with chemicals than outdoor air. One reason is the widespread use of volatile organic compounds (VOCs) in construction coatings, such as flooring, wall paints and furniture. Exposure to VOCs can lead to serious health issues, such as irritated airways and eyes, allergies, headaches, concentration difficulties, and fatigue.

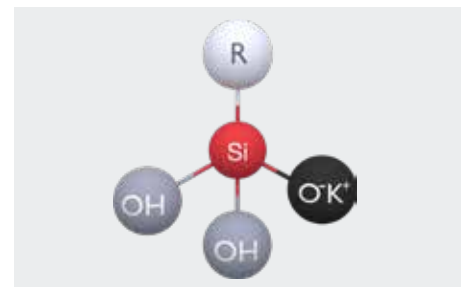
Traditional pH adjusters based on ammonia or organic amine fall into the VOC category and often emit highly irritating odors. The organic volatiles released by the coatings as they dry adversely affect users' health and pose a threat to the environment. They are also harmful to workers involved in the production of coatings.

Responding to growing concerns over health, safety and the environment, coating manufacturers are banking on a new generation of pH adjusters to meet their requirements.

These requirements have now been met with SILRES® BS 168, a versatile silicone-based pH adjuster developed by WACKER.

Compared with traditional pH adjusters, SILRES® BS 168 is a low-odor product that has lower levels of organic volatiles and improves the coating's water and scrub resistance.

It is ideal for a wide range of water-borne coating systems, especially low-odor and low-VOC interior paints and plasters.



Chemical structure of the silicone-based pH adjuster.

Properties	Value
Appearance	Clear to slightly turbid liquid
Solids content (wt%, approx.)	55
Density at 25°C (g/cm <sup>3</sup> , approx.)	1.4
pH, approx.	14
Solvent	Water

**Note:** These figures are only intended as a guide and should not be used in preparing specifications.

	NH <sub>3</sub> H <sub>2</sub> O	NaOH (10%)	Organic Amine	SILRES® BS 168
Low odor	✗ Highly irritating	✓ Yes	✗ Characteristic odor	✓ Yes
Low emissions (VOC, amine, ammonia, etc.)	✗ No	✓ Yes	✗ No	✓ Yes
Improves paint performance	✓ Yes	✗ No	✓ Yes	✓ Yes

**Environmentally Friendly**

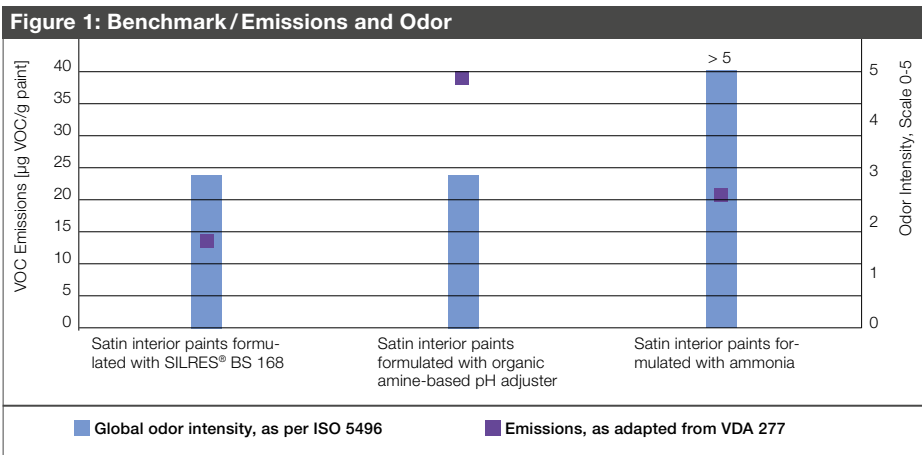
SILRES® BS 168 is low in VOCs compared with standard pH adjusters, such as ammonia and organic amines (Figure 1). The VOC emissions were determined by an in-house method which is based on the VDA 277 standard and entails 3 days' curing at room temperature and 50 % relative humidity. The lower viscosity of SILRES® BS 168 additionally improves the dispersibility of pigments during the manufacture of water-borne coatings. This reduces the consumption of dispersants.

**Low Odor**

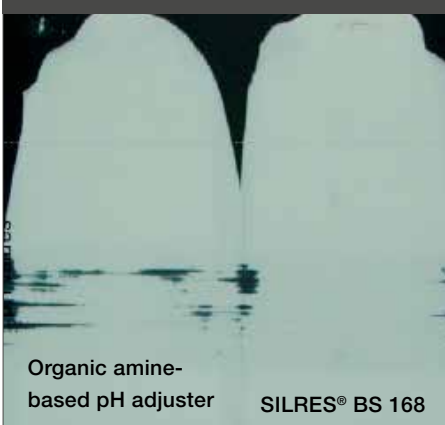
SILRES® BS 168 can be used to formulate low-odor paints that outperform standard pH adjusters, such as ammonia. Figure 1 shows the odor intensity of interior paints (in liquid form), analyzed in accordance with ISO 5496. It can be seen that the paint formulated with SILRES® BS 168 offers the best combination of performance, in terms of odor and emissions.

**Performance Improvement**

SILRES® BS 168 boosts the water resistance of water-borne coatings. This is because SILRES® BS 168 self-crosslinks to form three-dimensional hydrophobic networks which prevent water from penetrating into the coating. Compared with sodium hydroxide and ammonia, SILRES® BS 168 improves wet scrub resistance. It even outperforms coatings formulated with organic amine-based pH adjusters (see Figure 2).



**Figure 2: SILRES® BS 168 Improves Wet Scrub Resistance**



**Better Cost-Efficiency**

As it is a highly efficient pH adjuster, SILRES® BS 168 is effective in small doses.

For most water-borne coating systems, the recommended dosage of SILRES® BS 168 is 0.1% – 0.2 % of the total weight

of the paint. It can be increased in high-acidity systems (e.g. vinyl acetate-acrylate and vinyl acetate-ethylene systems).

**At a Glance**

SILRES® BS 168 has been developed by WACKER for a new generation of construction coatings. Compared with traditional pH adjusters, it:

- Improves the performance of a coating
- Is low odor and environmentally friendly
- Achieves better cost-efficiency

**Typical Applications**

Matt and satin interior wall paints	●●●
Ceiling paints	●●●
Low-odor and low-VOC paints and plasters	●●●
Interior plasters	●●
Silicate-based paints and plasters	●●
Exterior paints and plasters	●

Suitable ● Recommended ●● Highly recommended ●●●

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