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Installation of door frames with polyurethane foam

FACTSHEET



Installation of door frames with polyurethane foam

GLOBAL LEADER IN ADHESIVE TECHNOLOGIES

Bostik is one of the largest adhesive and sealant companies. Worldwide, we employ some 6,000 people in 50 countries across five continents. Our customers come from diverse markets, most notably the industrial manufacturing, construction and consumer sectors.

SMART INNOVATIONS

Our smart identity is underpinned by innovation. We pursue innovation vigorously, applying the latest technological advances to developing 'smart' adhesives. Our archives are laden with examples of Bostik technologies that have disrupted markets - from potato starch-based wallpaper paste to elastic attachment adhesive for diapers.

Today, our commitment to innovation is as strong as ever. We innovate with our customers through a global R&D network, comprising three international Smart Technology Centres and 11 regional centres. And we differentiate our business through this investment. That's why in 2014, 15% of Bostik sales came from products launched in the previous three years.

GENERAL INFORMATION

Interior door frames are made of materials such as wood, aluminium, steel and UPVC. Traditional door frames are installed by using mechanical fixings. This method is time consuming and requires craftsmanship. Therefore, more often now, interior door frames are installed by using polyurethane foam.

TYPES OF POLYURETHANE FOAM

Polyurethane foams can be distinguished into one and two component systems.

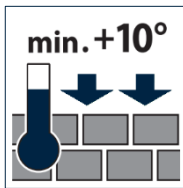
- A one component polyurethane foam is extruded from an aerosol can, using a dosing gun or a straw. The aerosol can (with dosing gun) must be shaken thoroughly so the different components are well mixed. The foam can then be extruded by the propellants inside the can. After application, the polyurethane foam will expand and cure under influence of moisture of the substrate and the air, in combination with temperature. There are multiple grades of polyurethane foam available like: flexible, fire-retardant, winter grade, and high yield foams.
- In a two component polyurethane aerosol foam the basic components and the hardener are separated from each other, but are supplied in one can. Different packaging systems with different activation systems are available on the market. The most common activation system is a can with a twist mechanism at the bottom, which, by twisting, brings the basic components and the hardener together. Another activation system available works by using a plastic pin or key which is placed into the can for activation. After activating the can, the reaction is triggered by shaking thoroughly, the foam will cure homogeneously without influence of moisture.



1. CONDITIONS

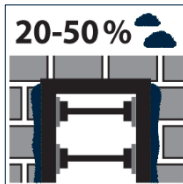
A. Surface temperature:

- The minimum temperature of the adhesion surface must be minimum +10°C
- If necessary, use air heater to assure this minimum temperature of +10°C



B. Humidity:

- The optimum humidity during application and curing is between 20 and 50%
- If the humidity level is above the 60%:
 - Dry with air blower
 - Apply at later stage



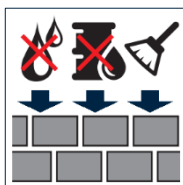
2. SUBSTRATES

A. Substrate condition:

- The surface must be dry, clean and free of dust and grease
- Remove fine dust with an industrial vacuum cleaner

B. Very porous substrates:

- gypsum blocks or aerated concrete or similar pre-treat with pu primer



3. INSTALLATION

A. Weight of the door < 40 kg:

- Apply at least 6 foam attachment points (i.e. at least 3 per frame side) in the area of the lock and the hinges over the entire frame width
- The proportion of foam area per frame must be at least 30% of the total frame length

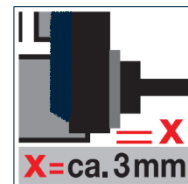
B. Weight of the door > 40 kg:

- Full foaming and additional mechanical fastening!



C. Floor clearance

- Joint height approx. 3 mm to the floor
- seal the connection with a permanently elastic sealant
- Frames don't like wet feet!



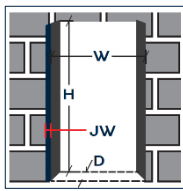
4. JOINT WIDTH (JW)

A. Optimum joint width

- Most optimum joint width is between 8 and the 25 mm

B. Joint width < 8 mm and > 25 mm

- Expand or reduce joint width (e.g. by screwing on battens)



5. STORAGE

A. Important: store cans correctly!

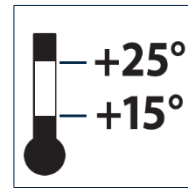
- Store the can always upright in cool and dry conditions and protect against overheating – danger of bursting can



6. APPLICATION TEMPERATURE

A. Can temperature

- The optimum temperature of the contents of the can is between +15°C and + 25°C



B. What if

- The temperature is > +25°C:
Cool down the can
- The temperature is < +25°C:
 1. Place can in warm room/area for 4-6 hours with cardboard box
 2. Warm cans in thermo box or warm water bath without additional heat sources
 3. **Do not place in or in ovens of hotplates – risk of explosion!**

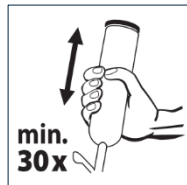
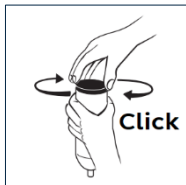
Note:

The most common causes of incorrect use of the 2K foam are too low can temperature, below +15°C and/or incorrect activation of the can! This could lead to an undesirable result immediately or later.

7. ACTIVATION AND SHAKING

A. Activation of the can

- The correct activation of the can is to keep the valve down (can upside down)
- Turn the turntable clockwise until it can't be turned further
- Shake vigorously at least 30 times immediately after activation
- Apply the full can content immediately



Note:

If the can has been shaken correctly the sprayed foam will have a homogeneous colour.

8. OPEN TIME

A. Applying within open time

- Apply the activated and shaken polyurethane foam within 5 till maximum 8 minutes, with the valve pointed downwards and empty the can completely



9. FIXATION TIME

A. Activation of the can

- Make sure you fixate, as shown at the pictogram, for at least for **1 hour!!**



Note:

Do not remove the struts within the hour to avoid deformation of the door frames!

10. FILLING THE WHOLE CAVITY

A. Finishing

- Make sure you fill the openings in between the door frame and the wall with a one component foam, for a proper sound and thermal insulation and to assure that there will no unwanted air draft
- When the PU foam has fully cured and any excess material has been cut away, the frame can be further finished by placing the trims and carrying out work as prescribed by the door and frame supplier

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