AEROBEL

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Technical Data Sheet

POLYVOX®

100% bio-based premium quality glue

Technical Description

Polyvox®: The Future of Adhesives
Polyvox® stands as the world's first and only 100% bio-based, two-component thermosetting binder, setting a new benchmark in sustainability, with zero toxicity, non-hazardous and up to 15 times less CO2. Specifically engineered as a direct competitor to all petrochemical based adhesives, Polyvox® delivers unparalleled quality proving that going green doesn't mean compromising on performance.

Key properties
- 2 component cross-linked thermoset biopolymer
- Water-resistant
- Chemically resistant to most chemicals: acids, aromatic hydrocarbons, most organic solvents
- Non-toxic
- Non-hazardous
- Curable to a flexible to (semi-)rigid resiliient material

Applications

Polyvox® **as a glue**
Composite Boards:
Polyvox® binds composite boards with various fibers, aggregates, and mineral powders, providing enhanced structural integrity and flexibility.
Flooring Insulation:
Implemented as an in-situ sprayed glue paired with an EPS bead, Polyvox® forms a robust flooring insulation layer, optimizing energy efficiency.
Recycling and Construction:
As a glue for forming recycled bricks, Polyvox® paves the way for sustainable construction practices and maintains structural

Polyvox® as a coating
Floor Finishing:
Challenging traditional epoxy and polyurethane options, Polyvox® offers an eco-friendly alternative for in-situ sprayed floor finishing.
Surface coating:
e.g. metal, wood, plastics, textile, paper,..
Moulding and Shaping:
Used as a resin for diverse moulding and shaping applications, Polyvox® supports the construction and consumer goods industries with precision and reliability achieving a compressive strength of 5-9 MPa.

Properties

Component A
Appearance pale yellow Gardner colour max. 4.5
Density at 25°C [g/l]: 1050
Viscosity at 25°C [mPa.s) 1100-1300
Biobased carbon content [%]: 100

Component B
Appearance viscous yellow-orange liquid
Density at 25°C [g/l]: 1450
Viscosity at 25°C [mPa.s]: 50000
Viscosity at 80°C [mPas]: 900-1100
Biobased carbon content [%]: 100

Shelf life and storage conditions

Polyvox® has a shelf life of at least 12 months after production if stored in a closed and controlled frost-free environment out of direct sunlight in its original and sealed packaging. Component A may form "clouds" due to the solidifying point. However, this can be reversed by heating up to around 40-50°C, without affecting the properties. Component B may crystallize over time. Similarly to component A this can be reversed by heating to around 120°C. When in usage component B can only be heated twice.

Disclaimer: This information is believed to be correct. However, this should not be accepted as guarantee and no statement should be construed as a recommendation for any use which would violate any patent rights.

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Usage

The quantity of **Polyvox®** depends on the unique formulation and requirements of the specific end-product.

Preparation and conditioning of the components Polyvox® is supplied as a two-component system. Component A is a low-viscosity, oily liquid, while Component B is a significantly more viscous, honey-like substance. To ensure homogeneous mixing and consistent processing, both components must be pre-heated prior to use. Both A and B should reach a temperature of 60 – 70 °C (minimum 60 °C). At this temperature range, the viscosity of both components drops to approximately 500 – 1,000 mPa·s, allowing them to be combined under comparable flow conditions.
Component A must appear fully translucent before use. Adequate heating will normally achieve this. If Component A remains cloudy, apply additional heating and, if required, gentle stirring until a clear appearance is obtained.

Packaging Polyvox® is available in the following standard packaging formats:
- Component A: 200 L drums or small tins / buckets for manual processing
- Component B: 60 L drums or small tins / buckets for manual processing

Manual mixing (small volumes) Once both components have reached the specified temperature and viscosity:
1. Add Component B to Component A, preferably while stirring. As Component B is the more viscous component, it may alternatively be easier to add Component A into Component B to ensure that all of B is fully incorporated.
2. Mix vigorously for 30 – 60 seconds.
3. Mixing is complete when a clear colour change is observed: the mixture shifts from translucent yellow to an opaque white or cream colour, indicating proper dispersion of both components.

Additives such as quartz aggregates (e.g. for flooring applications), pigments, natural particles, defoamers, stabilisers or anti-sagging agents may be incorporated into the system. It is strongly recommended to pre-blend these additives into Component A before adding Component B (the cross-linker), as this provides sufficient working time to achieve a homogeneous dispersion. During manual mixing of small volumes, a mild exothermic reaction may be observed; this is normal.

Automated application (large volumes) For drum-scale processing (200 L / 60 L), Polyvox® can be applied using dedicated equipment. Two machine configurations are available:

1. High-pressure, high-temperature spray unit — equipped with a dosing system that meters Components A and B directly from their drums and transfers them through heated hoses, keeping both components separate up to the spray gun. Mixing takes place in the mixing chamber of the gun under pressure, producing the desired spray pattern for surface coating or particle coating (e.g. binding EPS beads or aggregates). The gun can be fitted with a static mixer attachment in place of the spray nozzle, delivering a bulk flow of pre-mixed Polyvox® — ideal for moulding and casting applications.
2. Heated dosing unit with mixing head and mixing arm — designed for larger throughput volumes and continuous processes. The mixing arm can be integrated directly into reactor pots, screeding machines, conveyor belts or similar in-line production equipment.

Mixing ratio For all applications, whether manual or automated, the **standard mass ratio is 70 : 30** (Component A : Component B), i.e. 70 wt% A and 30 wt% B. This ratio may be adjusted for specific applications.

For further information, or to deviate from the standard mixing ratio, please contact your local authorized distributor or Aerobel directly.

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