AUSTHANE AUE 276

Rigid Low Density Polyurethane Foam System

Product Description

AUSTHANE AUE276 is a two pack flame retarded low density rigid polyurethane foam system, producing foam with a nominal Free-Rise Density of 34 - 36 kg/m³.

AUSTHANE AUE276 is formulated as a general purpose pour/ injection foam system that can be 'hand-mixed' and can also be processed through PU injection machines at 1 : 1 by Volume.

AUE276 Polyol is formulated with ***ecomate***® - a Zero ODP[1], Zero GWP[2], and VOC[3] exempt Blowing Agent.

The **AUSTHANE AUE276 System** produces a stable foam system when used in 'free rise' applications.

Recommended Product Applications

- in marine `buoyancy' applications in cavity / compartment / void filling for boats, wave-skis, canoes etc., with moulded fibreglass / aluminium / steel hull materials.
- in building panels, moulding / void filling applications where low weight and increased stiffness / stability are required.
- in thermal insulation in cold and hot applications, for contact surface temperatures ranging from **- 30°C** to **+ 85°C**.
- for pour-in-place or injection use by either 'hand' mixing or machine processing.

System Processing Recommendations

- refer to the **' Guide to Hand-Mixing AUSTHANE Rigid Pour / Moulding Foam Systems - October 2009 '** for assistance in the use of this product.
- refer to the Material Safety Data Sheets for information on storage and safe handling of both components.
- **Mix Ratio by Weight**

  100 Parts by Weight **AUE 276 POLYOL** to 115 Parts by Weight **ECOISO-GP Isocyanate**

- **Laboratory Reactivity Profile / Free Rise Density @ 20°C**
  [Laboratory QA Foam Cup Test based on 215 gm of System].

Mix Time	20	seconds
Cream Time	40 - 46	seconds
Gel Time	175 - 185	seconds
Tack Free Time	220 - 240	seconds
Free Rise CORE Density	34 - 36	kg/m³

- **Liquid Properties of AUE 276 System Components @ 25°C**

	AUE276 Polyol	ECOISO-GP Isocyanate
Appearance	Clear Amber Liquid	Dark Brown liquid
Viscosity [Brookfield 3/30]	600 ± 50 cPs	200 ± 50 cPs
Specific Gravity [gm/ml]	1.08	1.24

[1] **ODP** = Ozone Depletion Potential
[2] **GWP** = Global Warming Potential
[3] **VOC** = Volatile Organic Compound

Product Physical and Technical Data

Closed Cell Content [@ 39.2 kg/m²]		> 98 %
Compressive Stress at 10% **deformation**		
Foam Test Density	**Parallel to Rise**	**Perpendicular to Rise**
39.2 kg / m³	> 235 kPa	> 135 kPa
43.4 kg / m³	> 285 kPa	> 185 kPa
Dimensional Stability of AUE276 System at 39.2 kg/m³ (based on AS 2489.6)		
Dimensional Change	**7 days exposure at – 20°C**	**7 days exposure at 90°C**
Length	Nil	Nil
Width	Nil	Nil
Thickness	Nil	Nil
Thermal Conductivity - Aged k factor > 0.025 W/m.K The Aged **k** factor of PU foam is effected by the exposure conditions / application of the foam, the actual temperature range of exposure over time and the density of the in-situ foam. Specific technical guidance needs to be obtained in regard to this aspect of polyurethane foam.		

Guide to Use | Processing Instructions

- refer to the **' Guide to Hand-Mixing AUSTHANE Rigid Pour / Moulding Foam Systems - October 2009 '**.
- the **AUSTHANE AUE276** System is designed to produce a nominal "free-rise" foam of > 34 kg/m³ 'core' density when the components are mixed at the correct component MIX RATIO of 100 : 115 by weight using the recommended processing conditions.
- variations from recommended temperatures of the components and process conditions will affect the in-situ moulded density of the system.
- warming all mould / contact surfaces to 30 - 40°C will give the best results.
- the in-situ density will be influenced by the configuration of the cavity in which the foaming process takes place.
- restrictions to the flow / expansion of the foam will result in increased in-situ density.

Component Storage Conditions

- Store both components' pails / drums inside at 15 - 25°C away from sources of radiated heat.
- Keep the pails / drums stored on standard type pallets, off cold concrete floors.
- Ensure any partly used pails / drums are properly sealed.
- If intending to store partly used pails / drums for longer than 1 month then purge the ullage space above the liquid surface with Nitrogen or Dry Air.

ABYC Marine 'Buoyancy' Test Results

ABYC Standard Test Method – Section 8.10 – Materials - Immersion in 5% Trisodium Phosphate Solution	
Water Temperature	25 - 29°C
Immersion Time	Up to 30 days
Sample Density	42 kg / m³
% Volume Change after 30 days **ABYC Standard is a Maximum of 5%**	**+ 1.4 % = PASS**
% Volume Solution Up-take [w/v]	12.3 kg / m³
Change in Buoyancy Effect [No ABYC Standard]	
after 72 hours: - 2.1 %	after 30 days: - 2.4 %
Surface Absorption Rate after 30 days Immersion	
311 grams per square metre of exposed surface	
Water Absorption – AUS Test – see Note 1	
Water Temperature	25 - 29°C
Exposure Time	Up to 30 days
Sample Density	39 kg / m³
% Volume Change after 30 days **No ABYC Standard**	No change
% Volume Water Up-take [w/v]	11.6 kg / m³
Change in Buoyancy Effect [No ABYC Standard]	
after 72 hours: - 1.2 %	after 30 days: - 1.8 %
Surface Absorption Rate after 30 days Immersion	
293 grams per square metre of exposed surface	

Note 1 **Testing in Tap Water does not form part of the ABYC Test requirements.**

Notes regarding ABYC Marine 'Buoyancy' Testing

Under the ABYC [1] Standards, **Section H-8 –BUOYANCY IN THE EVENT OF SWAMPING** sets out in **Section 8.10 - Materials**, the properties of materials that can be used in nominated sections of the boat.

In Section 8.10.3 - Performance Specifications this sets out the requirements for Flotation material installed in and outside the engine compartment.

Section 8.10.3.1 states

"Flotation material installed in an engine compartment less than 12 inches [.30m] above the lowest point where liquid can collect in that compartment [area A in Figure 16] when the boat is in its static floating position must not reduce in volume by more than five percent after being immersed in any of the following liquids for 30 days at 84°F [29°C]. [See the note following H-8.10.3.2.3] "

Section 8.10.3.2 states

"Flotation material installed outside the engine compartment [this includes inside the hull of outboard boats] less than four inches above the lowest point where liquid can collect in that compartment [area B in Figure 16] when the boat is in its static floating position must not reduce in volume by more than five percent after being immersed in any of the following liquids for 24 hours at 84°F [29°C] [See the note following H-8.10.3.2.3] "

[1] Under Items H - 8.10.3.1.3 and H - 8.10.3.2.3, the nominated Test Liquid is a five percent aqueous solution of Trisodium Phosphate. This solution is generally referred to as a 'Bilge Cleaner'.

Limitations and Hazards

- In all external exposure and some internal applications the PU foam surface must be protected from weathering / physical deterioration by:
  - the application of a selected elastomeric membrane coating , typically acrylic, polyurethane or bituminous types.
  - the application of fibreglass / Polyester Resin FRP skin.
  - the application of metal sheeting or other weatherproof treatment.
- In specific temperature and humidity conditions the effects of water vapour 'drive' must be considered in system design and application requirements.
- Special precautions need to be taken in regard to system design and specification under possible water vapour condensation temperature conditions, or in conditions where high levels of water vapour/high humidity conditions may occur.
- When spraying or pouring, excessive thickness should not be applied in a single application as the exotherm of the reaction may lead to spontaneous combustion, excessive pressure build up or thermal expansion from the significant heat developed in the foaming reaction.
- **A**ll polyurethane & polyisocyanurate foams may present a fire hazard in certain applications if exposed to fire and/or excessive heat e.g. welding, and cutting torches, in the presence of oxygen / air.

Health and Safety

Before using this Polyurethane System please refer to the MATERIAL SAFETY DATA SHEETS for both the Components for information on the correct handling procedures for these products and the Safety Issues and Hazards associated with their use.