

AUSTRALIAN URETHANE SYSTEMS PTY LTD

# Product Data Sheet AUSTHANE AUE276 Rigid Low Density PU Foam System

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# **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/m<sup>3</sup>.

**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*<sup>®</sup> - a Zero ODP<sup>1</sup>, Zero GWP<sup>2</sup>, and VOC<sup>3</sup> 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 <u>contact</u> 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 Turts by Weight	10	115 Turts by Weight
100 Parts by Weight	to	115 Parts by Weight

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

20	seconds
40 - 46	seconds
175 - 185	seconds
220 - 240	seconds
34 - 36	kg/m³
	20 40 - 46 175 - 185 220 - 240 34 - 36

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

<sup>1</sup> **ODP** = Ozone Depletion Potential

<sup>2</sup> GWP = Global Warming Potential

<sup>3</sup> VOC = Volatile Organic Compound

# **Product Physical and Technical Data**

Closed Cell Content [@ 39.2 kg/m <sup>2</sup> ]		> 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/m <sup>3</sup> (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 Agod & factor > 0.025 W/m K				

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/m<sup>3</sup> '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.

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# **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		+ 1.4 % = PASS		
ABYC Standard is a Maximum of 5%				
% 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 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<sup>1</sup> 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 <u>installed in an engine compartment</u> less than 12 inches [.30m] above the lowest point where liquid can collect in that compartment [area A in <u>Fiqure 16</u>] 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 <u>installed outside the engine compartment</u> [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 <u>Figure 16</u>] 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] "

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

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# 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.
- All 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.

# EXCLUSION OF WARRANTIES

THESE SYSTEMS ARE NOT INTENDED FOR USE BY NON-PROFESSIONAL OR INEXPERIENCED DESIGNERS AND APPLICATORS.

The information presented in this Product Bulletin requires experience and background knowledge for correct interpretation and application.

The potential user must perform any pertinent tests in order to determine the product's performance and suitability in the intended application since determination of fitness of the product for any particular use is the responsibility of the buyer.

The data, information and suggestions covered in this data sheet, are given on the basis that the materials will be used correctly and professionally and at the sole risk of the user.

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