

BAYDUR® 646

Product Information

Structural Foam RIM System

Product Code: U646

Description

Baydur 646 is a rigid polyurethane structural foam system used in the reaction injection molding (RIM) process. The system is supplied as two reactive liquid components: Component A is a polymeric diphenylmethane diisocyanate (PMDI), and Component B is a formulated polyol system containing no CFC- or HCFC-blowing additives.

The Baydur 646 system is used to produce foam cores for composite applications, such as water skis, wake boards, snow boards, and various components for the transportation and marine markets. As with any product, use of the Baydur 646 system in a given application must be tested (including field testing, etc.) in advance by the user to determine suitability.

Typical Properties* of System

Property	ASTM Test Method (Other)	Unit	Density			
			15 pcf	20 pcf	25 pcf	30 pcf
0.250-in Thickness						
Specific Gravity	D 792		0.24	0.32	0.40	0.48
Hardness	D 2240	Shore Scale	28 D	37 D	46 D	55 D
Mold Shrinkage	(Bayer)	%	0.3–0.5	0.3–0.5	0.3–0.5	0.3–0.5
Tensile Strength at Break	D 638	lb/in ²	560	880	1,200	1,740
Tensile Elongation at Break	D 638	%	7	7	7	7
Flexural Modulus	D 790	lb/in ²	32,000	44,000	67,000	83,000
Flexural Strength	D 790	lb/in ²	950	1,200	2,000	2,400
Compressive Strength	D 695	lb/in ²	430	880	1,150	1,500
Charpy Impact	(Bayer)	ft-lb/in ²	1.8	2.5	3.5	4.2
0.500-in Thickness						
Specific Gravity	D 792		0.24	0.32	0.40	0.48
Hardness	D 2240	Shore Scale	30 D	39 D	49 D	55 D
Tensile Strength at Break	D 638	lb/in ²	550	900	1,100	1,500
Tensile Elongation at Break	D 638	%	9	9	9	9
Flexural Modulus	D 790	lb/in ²	27,000	36,000	64,000	75,000
Flexural Strength	D 790	lb/in ²	1,000	1,300	2,400	2,900
Compressive Strength	D 695	lb/in ²	275	550	1,100	1,500
Charpy Impact	(Bayer)	ft-lb/in ²	1.9	2.5	3.8	4.3

* These items are provided as general information only. They are approximate values and are not part of the product specifications.

Typical Properties* of Components

Property	Isocyanate (Component A)	Polyol (Component B)
Appearance	Dark brown to black liquid	Amber liquid
Specific Gravity at 25°C	1.24	1.08
Viscosity at 25°C, mPa·s	200	1,200
Flash Point, PMCC, °C	199	123
NCO, %	31.5	–
Water, Wt. %	–	1.05
Hydroxyl Number, mg KOH/g	–	370

Processing Conditions

Molding Parameters*	
Material Temperature, °C (°F)	29–38 (84–100)
Mold Temperature, °C (°F)	50–60 (122–140)
Hand Mix Reactivity at 25°C:	
Cream Time, sec	30–40
Gel Time, sec	65–75
Tack-Free Time, sec	77–85
Free-Rise Density, lb/ft ³	5–7
Machine Reactivity at 30°C:	
Cream Time, sec	10–20
Gel Time, sec	30–40
Tack-Free Time, sec	50–60
Free-Rise Density, lb/ft ³	5–7
Polyol Nucleation:	
Specific Gravity	0.80–0.90
Typical Cure Time, min:	
0.500-in Thickness	4–5
Typical Molded Density, lb/ft ³	10–30
Mixing Ratio, Iso/Polyol, 110 Index:	
By Weight	110/100

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Note: The information contained in this bulletin is current as of June 2000. Please contact Bayer Corporation to determine whether this publication has been revised.

Bayer Corporation

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Storage and Handling

Isocyanate Component – Component A (PMDI isocyanate) will react with moisture and must be stored in tightly closed containers to prevent contamination with moisture and foreign materials, which can adversely affect processing. It will react slowly with water to form polyureas and liberate CO₂ gas, which may cause sealed containers to expand and rupture. Storage temperature should be maintained between 18° and 30°C (64° and 86°F).

Polyol Component – Component B (polyol) is hygroscopic and may absorb water. Containers must be kept closed and protected from moisture and foreign materials, which can adversely affect processing. Storage should be maintained at ambient temperature.

Health and Safety Information

Appropriate literature has been assembled which provides information concerning the health and safety precautions that must be observed when handling Baydur 646 system components. Before working with these products, you must read and become familiar with the available information on their hazards, proper use, and handling. This cannot be overemphasized. Information is available in several forms, e.g., material safety data sheets and product labels. Consult your Bayer Corporation representative or contact Bayer's Product Safety and Regulatory Affairs Department in Pittsburgh, Pa.