

TERATE® HT 5349

DESCRIPTION

Terate® HT 5349 polyol is an aromatic polyester polyol of high functionality specifically engineered for use in polyurethane (PUR) closed-cell spray foams for both wall and roof insulation applications that require a fire-resistance rating. The recommended use level in such spray foam formulation is between 35 - 65% in the B-side polyol blends.

PROPERTIES

Production Analysis	Specification	Typical
Acid Number, mg KOH/g	≤ 2.0	1.3
Hydroxyl Number, mg KOH/g	295 - 315	305
Water Content, %	≤ 0.15%	0.05
Viscosity at 25° C	8500 - 12500	10000
Functionality		2.45

TECHNOLOGY

Terate® HT polyol technology delivers burn performance in industry flammability testing: forming char with minimal shrinkage and high weight retention while improving ease of processing during rigid foam production; and improved adhesion to various substrates, including cold adhesion for spray applications.

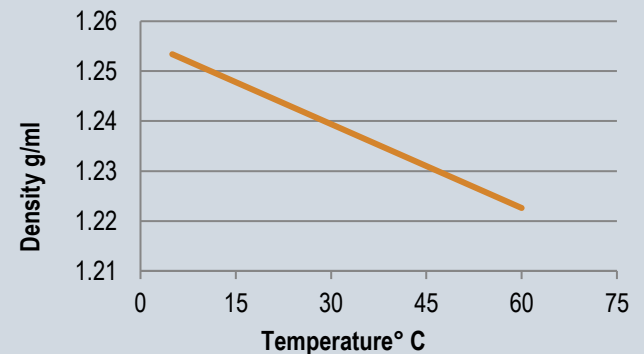
Terate® HT 5349 is designed to provide additional benefits specifically for closed-cell spray foam formulations.

Enhanced solubility with either HFC-245fa or HCFO-1233zd blowing agents

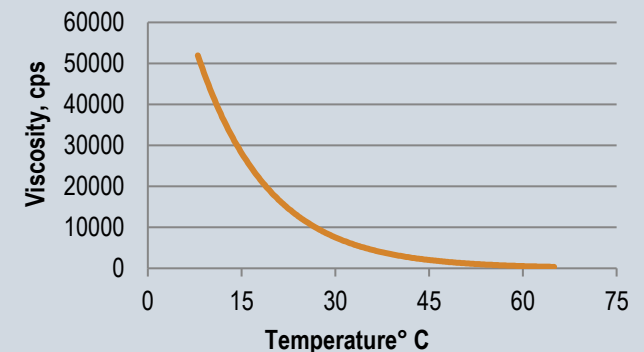
Formulation flexibility to achieve fire-resistance performance using a variety of B-side components

Insulation performance and compressive strength equivalent to industry leading closed-cell spray polyurethane foam systems

TERATE® HT 5349 Specific Gravity – Temperature Data



TERATE® HT 5349 Viscosity – Temperature Data



STORAGE AND HANDLING

TERATE® HT 5349 polyol is a stable material which can be stored and handled in carbon steel, stainless steel, or fiberglass tanks, or in tanks made from other conventional construction materials. Storage temperatures should be kept below 60°C (140°F) to maintain product integrity. It is also recommended that storage vessels and process tanks be blanketed with dry air (min. -40°F/C bulb) or nitrogen to prevent uptake of atmospheric moisture.

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TYPICAL 2-POUND DENSITY SPRAY FORMULATION FOR WALL INSULATION

The following starting formulations provide a guide for 2-pound density spray insulation foams. Terate® HT 5349 polyol is suitable of using either HFC-245fa or HCFO-1233zd as blowing agents. With a carefully selected catalyst package, Terate® HT 5349 polyol showed an acceptable reactivity profile in accelerated aging test with 1233zd blowing agent. ASTM E-84 Class A rating can also be achieved in Steiner tunnel test.

Formulation ID	245fa Formulation	1233zd Formulation
Terate® HT 5349	45	45
Polyether polyols	25	25
Flame retardants	12	12
Silicon surfactant	1	1
Catalysts	4	5
Additive	2	1
Water	2	2
HFC-245fa	9	
HCFO-1233zd		9
B-side properties		
Viscosity (cps, 25°C)	860	840
Cup Test (10 °C, 90 grams)		
Cream time (s)	8	9
Gel time (s)	16	17
Tack-free time (s)	20	20
End of rise time (s)	24	21
Foam properties¹		
Core density (pcf)	2.28	2.27
R-value (ft ² ·°F·hr/(Btu.in))	TBD	TBD
Compressive strength (psi)		
Parallel	30	26
Perpendicular	7	18
Steiner Tunnel Test (ASTM E-84)²		
Flame Spread Index	< 15	< 15
Smoke Developed Index	≤ 350	≤ 350

¹ These physical property values are typical for this material as applied at our development facility under controlled conditions. SPF performance and actual physical properties will vary with differences in application (i.e. ambient conditions, process equipment and settings, material throughput, etc). As a result, these published properties should be used as guidelines solely for the purpose of evaluation.

² The numerical flame spread index and smoke developed index may not reflect hazards presented by this or any other material under actual fire conditions.

INDUSTRY LEADERSHIP

For more than 40 years, INVISTA has been an innovative leader in the aromatic polyester polyols market. INVISTA's TERATE® brand polyols are used in the production of rigid foams with improved flammability and physical properties, and are backed by expert technical support around the world.

INVISTA offers a comprehensive line of aromatic polyester polyols with a variety of functionalities and equivalent weights. This allows formulation flexibility in achieving the range of physical and flammability properties required of polyurethane and polyisocyanurate foams.

FOR MORE INFORMATION:

Email us at TERATE@INVISTA.com or call us:

NORTH AMERICA
800-441-3893

EUROPE
+49-69-305-85550

ASIA-PACIFIC
+86-21-63876666-2659

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