HUNTSMAN

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VITROX®

Technology Data Sheet

VITROX® tunable snap cure technology

TECHNOLOGY OVERVIEW

VITROX® tunable snap cure technology is a two-component (polyol blend and MDI), formulated polyurethane system used for the production of composite resin at low, medium and high glass transition temperatures.

VITROX® tunable snap cure technology has been designed to be used with a variety of reinforcement substrates including: carbon fiber; cardboard/paper core; glass fiber/mats and natural fibers.

VITROX® tunable snap cure technology may be used in a variety of composite applications which include: load floors; seat pans; suspension arms; leaf springs; bonnets/hoods (engine covers); floor units; B-pillars; IP beams; body-in-white frames; battery covers; driveshafts; wheel rims; and CNG/LPG tanks.

VITROX® tunable snap cure technology may be used with a variety of manufacturing methods including: resin-transfer moulding (RTM); spray application; open-pour moulding and filament winding.

Key features of the **VITROX® tunable snap cure technology** include: robust processability; availability of an internal mould release; tunable open time/pot life; and paintability/bondability, high resin toughness at given glass transition temperature and chemical resistance of the parts.

CHEMICAL PROPERTIES

The table below summarizes the typical chemical properties of the two system components:

Typical Chemical Properties of System Components		
Property	**VITROX® polyol blend**	**VITROX® MDI**
Physical Appearance	Slightly opaque liquid	Brown liquid
Brookfield Viscosity at 25 ºC, cP	100 - 650	75 - 525
Specific Gravity at 25 ºC	1.09	1.23

TEST PLAQUE PROPERTIES

The following table summarizes the typical physical properties of a 20cm x 20cm x 0.4cm test plaque made with this system per the cure conditions detailed in the previous section:

Typical Mechanical Properties of a 20cm x 20cm x 0.04cm Test Plaque				
Reinforcement: no reinforcement, properties are on neat cured resin				
Physical Property	**Test Method**	**V-135**	**V-180**	**V-225**
Flexural modulus, GPa	ASTM D-790	3.19	2.89	3.08
Flexural yield strength, MPa	ASTM D-790	No yield	No yield	No yield
Flexural break strength, MPa	ASTM D-790	137	102	144
Flexural strain at yield, %	ASTM D-790	No yield	No yield	No yield
Flexural strain at failure, %	ASTM D-790	9.5	14.2	6.1
Tensile modulus, GPa	ASTM D-638	2.99	2.78	3.23
Tensile yield strength, MPa	ASTM D-638	No yield	No yield	No yield
Tensile break strength, MPa	ASTM D-638	89	98	63
Tensile strain at yield, %	ASTM D-638	No yield	No yield	No yield
Tensile strain at failure, %	ASTM D-638	8.5	7.6	2.3
Notched Izod, N/m	ASTM D-256	2626	1926	634
Specific gravity	ASTM D-792	1.23	1.23	1.23
Tg by DMA E' onset, °C	ASTM D-7028	135	180	225

RECOMMENDED CURE CONDITIONS

The table below provides the recommended cure conditions for the mixed resin systems:

Recommended Cure Conditions			
Cure Conditions*	**V-135**	**V-180**	**V-225**
Cure time	30 minutes at 180 °C	30 minutes at 180 °C	30 minutes at 180 °C
Post cure time	None required	None required	30 minutes at 220 °C

*Mold / part design dependent

AVAILABILITY

The polyol blend and MDI system components of **VITROX® tunable snap cure technology** are available in drums, totes (IBCs) and tank trucks.

HANDLING AND STORAGE

The polyol blend component of **VITROX® tunable snap cure technology** should be protected from water loss by keeping the container sealed.

The MDI components of **VITROX® tunable snap cure technology** will react with water which will lead to the formation of insoluble urea and carbon dioxide gas. This reaction can result in pressure build-up inside closed containers. Therefore, extreme care must be taken to ensure all containers used to store this product remain free of moisture and under a nitrogen atmosphere. This product may freeze on exposure to temperatures below 10 °C (50 °F). It is recommended that this product be stored between 16 °C (60 °F) and 38 °C (100 °F).

HEALTH AND SAFETY CONSIDERATIONS

The polyol blend and MDI system components of **VITROX® tunable snap cure technology** are both reactive materials and care should be taken when handling them to prevent ingestion, inhalation and contact to the skin and eyes. For detailed safety and health information, refer to each product's material safety data sheet (MSDS) for this product, the *Keeping on the safe side of MDI* brochure and the advisory bulletin *Safety, storage and handling procedures for medium functionality isocyanates*.

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For Your Protection

HEALTH AND SAFETY
The Safety and Health information in this data sheet does not contain sufficient detail for safe handling in all cases. For detailed safety and health information refer to the Material Safety Data Sheet for this product.
EMERGENCY CALLS: Huntsman Emergency Response Center: 800-328-8501, 409-722-8381
CHEMTREC - Spills, Leak, Fire 800-424-9300 (in USA and Canada)
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