REICHHOLD

PRODUCT BULLETIN

May 2009

Hydrex® 100 33350 SERIES

100% Vinyl Ester Laminating Resin

DESCRIPTION

Hydrex® 100 33350 are a series of pre-promoted, thixotropic, vinyl ester resins suitable for fabricating small to large FRP structures with high production rates at room temperature. Hydrex® 100 33350 resins are formulated for curing at room temperature with ***standard methyl ethyl ketone peroxide without foaming***. They are suitable for either hand-lay-up or spray-up.

APPLICATION

Hydrex® 100 33350 series of resins were developed for fabricationing small to large FRP structures where high productons rates at room temperature are required. Typical parts are: fiberglass tooling, marine or spa skin coats and or complete laminates.
Not recommended for fuel storage.

FEATURES	BENEFITS
• Versatile	• Premium resin for tooling applications • Versions available for marine skincoat, bulk build and acrylic bonding • Lower exotherm versions for thicker laminates
• Low water absorption rate	• Superior blister resistance
• High strength and toughness	• Excellent resistance to impact, thermal and de-molding cracks
• Tack free surface	• Faster lamination and build-up of layers
• Improved profile	• Minimized print-through for smooth surfaces
• Wets out reinforcements rapidly	• Minimized voices and resin-starved areas • Easy maintenance of resin-to-glass ratio
• High heat distortion temperature	• Retention of physical properties at elevated temperatures
• Stable Thixotropic	• Resistance to sagging and draining
• SPC/SQC controlled	• Consistent performance, batch to batch

919-990-7500 • 800-448-3482 • P.O. Box 13582, Research Triangle Park, NC 27709 USA • 2400 Ellis Road, Durham, NC 27703 USA • www.reichhold.com

TYPICAL PROPERTIES

TYPICAL NOMIAL LIQUID PROPERTIES[1] @ 25°C

VERSION	% Styrene RCI 18-003A	VISCOSITY* CPS RCI 18-021	THIX INDEX RCI 18-021	GEL TIME** MINUTES RCI 18-***	GEL TO PEAK RCI 18-***	PEAK EXOTHERM°F/°C RCI 18-***	COLOR, LIQUID RCI 18-043
33350-00	55	525	3.0	26.5	16.0	349 / 176	amber/opaque
33350-15	55	525	3.0	22.5	11.0	349 / 176	amber/opaque
33350-27	55	525	3.0	37.5	40.0	311 / 155	blue-amber/opaque
33350-99	55	525	3.0	37.5	40.0	311 / 155	amber/opaque

* Brookfield LVF, spindle #3 @ 60 rpm for versions 00, 15, 27 and 99

** with 1.25% by volume HP-90 per 100 gms resin for versions 00, 15, 27 and 99

*** RCI 18-050 for versions 00, 15, 27 and 99

Seta Closed Cup Flash Point of all Hydrex® 100 (33350) resin is 31.6 °C (89 °F)

Shelf Life is three months. Minimum shelf life performance refers to product in the original, unopened container. Shelf stability is affected by storage conditions. See the "Storage" section of this bulletin for further details.

TYPICAL MECHANICAL PROPERTIES[1] @ 25°C

	ASTM TEST	1/8" CLEAR CASTING
Barcol Hardness	D-2583-95	44
Heat Distortion Temperature, °C {°F}	D-648-72	116 {241}
Tensile Strength, psi	D-638-80	12,000
Tensile Modulus, kpsi	D-638-80	510
Tensile Elongation @ Break, %	D-638-80	4.0
Flexural Strength, psi	D-790-80	21,000
Flexural Modulus, kpsi	D-790-80	510
Compressive Strength @ Yield, psi	D-695-80	17,800
Water Absorption, 24 hrs. @ Room Temperature, %	D-570	0.17
Water Absorption, 2 hrs. @ 100°C, %	D-570	0.59

CURE CONDITIONS

Clear casting with 1.25% (volume) MEKP-900 cured overnight at room temperature, and post cured for 2 hours at 65.5°C (150°F) and then 2 hours at 121°C (250°F). Testing values reported are based upon catalyzation with DDM-9. Selection of another catalyst would require verification of values prior to production use.

[1] *Properties reported in this bulletin are typical of those obtained in controlled laboratory tests and may vary.*

APPLICATION

Hydrex® 100 33350 series of resins are pre-promoted to gel and cure at room temperature with the addition of methyl ethyl ketone peroxide initiator which will induce gel and cure at room temperature. As with all polyesters, rate and degree of cure are functions of initiator concentration and of temperature. Resin and work area should be between 24°C (75°F) and 35°C (95°F) to ensure satisfactory results. Initiator levels should be within a range of 1.0-2.5% based on weight of resin. The use of initiator levels outside of this range may result in an inadequate cure, with laminates exhibiting moderate to severe post-cure after de-molding. If different gel times are required, contact your Reichhold representative to determine alternative products available for special requirements.

Certain precautions are required to ensure proper secondary bond performance. Secondary bonding will be adversely affected in resin-rich areas or in laminates that have been exposed to heat or direct sunlight for an extended period of time. Contamination of the primary laminate (e.g., grinding dust, oil, moisture, waxes or release agents, etc.) will also adversely affect secondary bond performance. If any of these conditions occur, or if greater than 48 hours has elapsed, thorough sanding and cleaning of the substrate is recommended prior to secondary laminate application.

The type of glass reinforcement used will also affect secondary bond performance. A Reichhold representative will be happy to assist with selection of reinforcements.

STORAGE

To ensure maximum stability and maintain optimum resin properties, resins should be stored in closed containers at temperatures below 24°C/75°F and away from heat ignition sources and sunlight. Resin should be warmed to at least 18°C/65°F prior to use in order to assure proper curing and handling. All storage areas and containers should conform to local fire and building codes. Copper or copper containing alloys should be avoided as containers. Store separate from oxidizing materials, peroxides and metal salts. Keep containers closed when not in use. Inventory levels should be kept to a reasonable minimum with first-in, first-out stock rotation.

The shelf-life is 90 days for these resins when stored in-doors in closed, opaque containers at 75°F (24°C) out of direct sunlight. Storage conditions at higher temperatures or in direct sunlight will reduce the self-life and may also cause the resin to experience gel time and viscosity drift.

Additional information on handling and storing unsaturated polyesters is available in Reichhold's application bulletin "Bulk Storage and Handling of Unsaturated Polyester Resins." For information on other Reichhold resins or initiators, contact your sales representative or authorized Reichhold distributor.

As with any thixotropic resin, stratification of the thixotrope may occur in storage. Therefore, the resin should be agitated prior to use.
Air bubbling should not be used for mixing.

SAFETY

NEVER ADD METAL SALTS (PROMOTERS) OR PROMOTED RESINS TO A PEROXIDE. When adding peroxides to a resin solution; promptly and thoroughly mix the resulting product. Never add organic peroxides to a hot diluent or process. Prevent contamination with foreign materials, including without limitation, accelerators or promoters (such as dimethyl aniline, other amines, and cobalt compounds), heavy-metal oxides or salts (particularly those of cobalt, iron, and copper), strong acids, and sanding dusts. Use containers made of glass, polypropylene, Teflon®, polyethylene, or ceramic to prevent contamination of this material during its handling.

Read the Material Safety Data Sheet before handling, storing or using this product.

PACKAGING FORM

Non-returnable 55-gallon metal drums or 40,000 – 44,000 lb tank trucks.