



Provisional Data Sheet

Laminating Resin

RenLam™ LY 113 / Ren[®] HY 5210 Slow or HY 5211 Medium or HY 5212 Fast Epoxy high temperature laminating system with speed control

Key properties

- Very low viscosity
- Variable speed control
- Excellent wetting out properties
- Temperature resistant up to 120°C
- Excellent inter-layer adhesion

Applications

- Wet lay-up laminating.
- Resin infusion technique.
- Very large tools can be easily built with the slow system.
- Laminated tool for RTM or RIM.
- Pre-preg lamination tools.

Product data

Property	Unit	RenLam LY 113	Ren HY 5210	Ren HY 5211	Ren HY 5212
Appearance Colour	visual	Liquid clear	Liquid Clear, pale yellow	Liquid Clear, pale yellow	Liquid Clear, pale yellow
Viscosity at 25°C	mPa s	700	120	600	350
Density	g/cm ³	1.16	1.01	1.1	1.01

Processing

Mix ratio	Parts by weight		
RenLam LY 113	100	100	100
Ren HY 5210	35		
Ren HY 5211		35	
Ren HY 5212			35

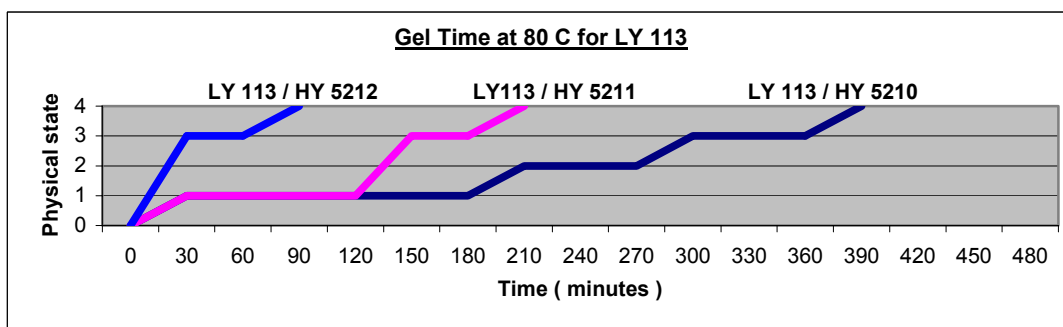
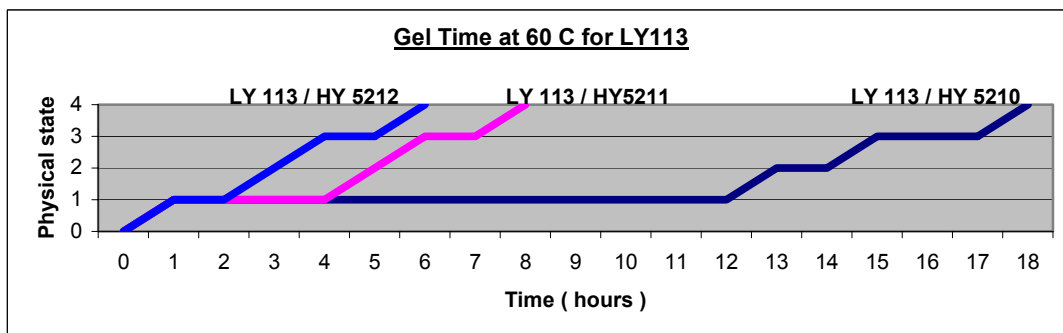
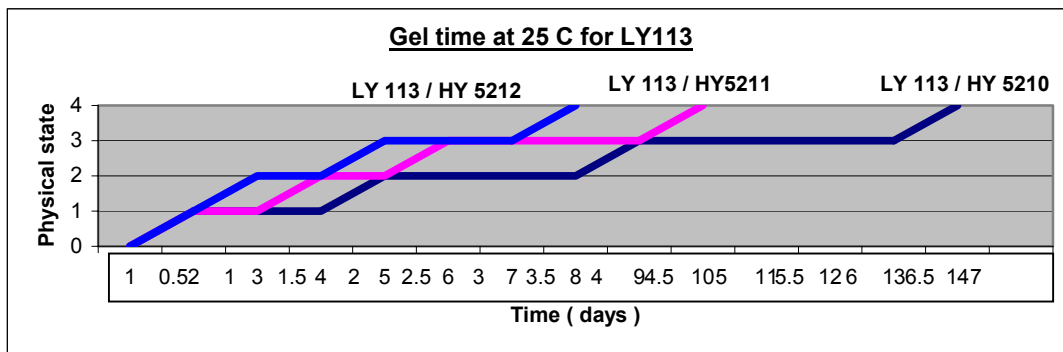
Mix the two components thoroughly in the ratio indicated, then impregnate each layer of cloth as it is laid up to construct the laminate.
Post-curing will improve final properties.

Properties

Resin/Hardener mix:	Volume	Unit	LY 113 HY 5210 Slow	LY 113 HY 5211 Medium	LY 113 HY 5212 Fast
Appearance			Pale amber	Pale amber	Pale amber
Viscosity at 25°C		mPa s	600	850	800
Pot life at 25°C	500 ml	hours	24	12	5
Gel time thin layer		hours	48	24	10
Time to tack thin layer		hours	96	48	24
Length of tack time		hours	48	48	24

After cure: 24 Room temperature +12 hours@40°C +2 hours@60°C + 2 hours@80°C + 2 hours@100°C + 12 hours@120°C and slowly cooled down to room temperature.

Density	ISO 1183	g/cm ³	1.1	1.1	1.1
Hardness	ISO 868	Shore	87 D	87 D	87D
Flexural strength	ISO 178	MPa	112	104	120
Flexural modulus	ISO 178	Mpa	2750	2700	3000
Deflection temperature	ISO 75	°C	120	120	120
T.g.	DSC	°C	137	134	135
Impact strength	Charpy	KJ / m ²	3.8	4.7	4.8



Key to physical state :-

- 0 = Mixing
- 1 = Liquid
- 2 = Gelled (point at which material has gelled in thin layer)
- 3 = Tack (system has tacked, perfect for another application of laminate)
- 4 = Cured hard (material has now completely hard but not cured)

Storage

The resin and hardeners described in this instruction sheet have the shelf lives shown provided they are stored at 6 - 28°C in a dry place and sealed containers, preferably those in which they are supplied.

Working conditions

The product should be used when in the temperature range 18-25°C.

Packaging

System	LY 113	HY 5210	HY 5211	HY 5212
Quantity and Weight				
Quantity and Weight				

Handling precautions

Caution

Huntsman Advanced Materials products are generally quite harmless to handle provided that certain precautions normally taken when handling chemicals are observed. The uncured materials must not, for instance, be allowed to come into contact with foodstuffs or food utensils, and measures should be taken to prevent the uncured materials from coming in contact with the skin, since people with particularly sensitive skin may be affected. The wearing of impervious rubber or plastic gloves will normally be necessary; likewise the use of eye protection. The skin should be thoroughly cleansed at the end of each working period by washing with soap and warm water. The use of solvents is to be avoided. Disposable paper - not cloth towels - should be used to dry the skin. Adequate ventilation of the working area is recommended. These precautions are described in greater detail in the Material Safety Data sheets for the individual products. These should be referred to for fuller information.

Vantico Limited

All recommendations for the use of our products, whether given by us in writing, verbally, or to be implied from the results of tests carried out by us, are based on the current state of our knowledge. Notwithstanding any such recommendations the Buyer shall remain responsible for satisfying himself that the products as supplied by us are suitable for his intended process or purpose. Since we cannot control the application, use or processing of the products, we cannot accept responsibility therefore. The Buyer shall ensure that the intended use of the products will not infringe any third party's intellectual property rights. We warrant that our products are free from defects in accordance with and subject to our general conditions of supply.

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