



# CYCOM<sup>®</sup> 754 Marine Product Range

## DESCRIPTION

Cycom<sup>®</sup> 754 has been developed to provide long out-life at ambient temperatures, combined with excellent mechanical properties generated at low cure temperatures.

Cycom<sup>®</sup> 754 is a modified epoxy resin which has been specifically developed for versatile cures under vacuum only conditions; it can also be cured under pressure if required.

The cure cycle can be adapted to suit the application, provided a full cure is eventually obtained – if a structure such as a hull needs to be cured in various stages, a partial cure can be done for the initial steps, provided the final laminate schedule undergoes a full cure cycle. This will not reduce the mechanical properties of the structure in any way.

FM<sup>®</sup> 754 is an adhesive film that has been developed to co-cure with the Cycom<sup>®</sup> 754 prepregs. It can also be used for secondary bonding applications where necessary.

## FEATURES AND BENEFITS

- Minimum 21 days out-life at ambient temperature
- Versatile cure from 70°C (160°F) upwards, depending on application
- Developed for vacuum only curing, but can also be cured under pressure
- Excellent handling characteristics
- Optimized flow and drape characteristics
- Low density epoxy formulation
- Available as unidirectional tape and fabric prepregs with a co-curable adhesive film

## Cure Cycle

The optimum cure cycle for the Cycom<sup>®</sup> 754 product range is as follows:

- Apply full vacuum from start
- Heat up rate 0.5 - 1°C/minute (1 - 3°F/min) for large structures (eg hull, deck, bulkheads), 1 - 2°C/minute (3 - 5°F/min) for smaller parts and flat laminates (depending on thickness)
- Heat to 50°C (125°F), hold for 1 to 3 hours, depending on application
- Heat up at same ramp rate to 75°C (170°F)
- Hold at 75°C (170°F) for 6 hours
- Cool under vacuum

A full evaluation on various cure cycles has been completed, with Tg values given below:

Cure Cycle	Dry Tg, °C (°F)
8 hours at 70°C (160°F) - no dwell	92.0 (198.0)
6 hours at 75°C (170°F) - no dwell	96.9 (207.0)
6 hours at 75°C (170°F) - 1 hour dwell at 50°C (125°F)	99.0 (210.0)
6 hours at 75°C (170°F) - 3 hour dwell at 50°C (125°F)	100.0 (212.0)
5 hours at 80°C (180°F) - no dwell	101.0 (214.0)
4 hours at 90°C (195°F) - 2 hour dwell at 50°C (125°F)	117.6 (243.7)

For all cure cycles, laminates are between 90 and 100% cured.

## PROPERTIES

All mechanical data generated to date has been completed on one grade of unidirectional tape only - further testing is in progress.

Cycom® 754 - 36% - HS - 200 - 300

Cure Cycle : 6 Hours at 75°C (170°F), no dwell

**Table 1 | Mechanical Properties**

Test Conditions	Mean Value
Tensile strength @ RT dry	2178 MPa/ 316ksi
Tensile modulus @ RT dry	121 GPa/ 17.5 msi
Compressive strength @ RT dry	1200 MPa/ 174ksi
Compressive strength @ 70°C dry	950 MPa/ 138 ksi
Compressive strength @ RT wet (1)	To be determined
Compressive modulus @ RT dry	120 GPa/ 17.4 msi
Compressive modulus @ 70°C dry	115 GPa/ 16.7 msi
Compressive modulus @ RT wet (1)	To be determined
Flexural strength @ RT dry	1585 MPa/ 230 ksi
Flexural strength @ 70°C dry	1001 MPa/ 145 ksi
Flexural strength @ RT wet (1)	To be determined
Flexural strength @ RT wet (2)	To be determined
Flexural modulus @ RT dry	115 GPa/ 16.7 msi
Flexural modulus @ 70° dry	113 GPa/ 16.4 msi
Flexural modulus @ RT wet (1)	To be determined
Flexural modulus @ RT wet (2)	To be determined
ILSS @ RT dry	70 MPa/ 10.2 ksi
ILSS @ 70°C dry	36 MPa/ 5.2 ksi
ILSS @ RT wet (1)	To be determined
ILSS @ 70°C wet (1)	To be determined
ILSS @ RT wet (2)	To be determined
ILSS @ 70°C wet (2)	To be determined
In plane shear strength @ RT dry	75 MPa/ 10.9 ksi
In plane shear modulus @ RT dry	3.8 GPa/ 0.55 msi

(1) - 1 month at 50°C/95% RH

(2) - 1 month in water at RT

A limited amount of testing has also been completed with the material cured at 70°C and 80°C:

Cure Cycle	Test Condition	Mean Value
<b>8 Hours at 70°C (160°F) - no dwell</b>	Comp strength @ RT dry	1150 MPa/ 167 ksi
	Flex strength @ RT dry	1675 MPa/ 243 ksi
	Flex modulus @ RT dry	103 GPa/ 15.9 msi
	ILSS @ RT dry	69.5 MPa/ 10.1 ksi
	ILSS @ RT wet (1)	TBD
<b>5 Hours at 80°C (180°F) - no dwell</b>	Comp strength @ RT dry	1100 MPa/ 160 ksi
	Flex strength @ RT dry	1616 MPa/ 234 ksi
	Flex modulus @ RT dry	100 GPa/ 14.5 msi
	ILSS @ RT dry	69.7 MPa/ 10.1 ksi
	ILSS @ RT wet (1)	TBD

1 - 1 month in water at RT  
TBD - Values to be determined

## PRODUCT HANDLING AND SAFETY

Cytec Industries Inc. recommends wearing clean, impervious gloves when working with potting compound to reduce skin contact and to avoid contamination of the product. Materials Safety Data Sheets (MSDS) and product labels are available upon request and can be obtained from [www.cytec.com](http://www.cytec.com) or any Cytec location supplying aerospace materials.

## DISPOSAL OF SCRAP MATERIAL

Disposal of scrap material must be in accordance with local, state, and federal regulations.

## CONTACT INFORMATION

### Global Product Referral

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