

**FORM CRPV-2A RECOMMENDED FORM FOR QUALIFYING THE LAMINATE DESIGN AND THE LAMINATE PROCEDURE SPECIFICATION USED IN MANUFACTURING COMPOSITE REINFORCED PRESSURE VESSELS** Page \_\_\_\_ of \_\_\_\_  
**As required by the Provisions of the ASME Boiler and Pressure Vessel Code, Section VIII, Division 3**

Qualification Test Report No. \_\_\_\_\_

Laminate Procedure Specification No. \_\_\_\_\_

A change in any of the essential variables denoted by an asterisk below requires a new Laminate Procedure Specification

\*Fiber \_\_\_\_\_  
(Manufacturer and Designation)

\*Sizing or Finish \_\_\_\_\_  
(Manufacturer and Designation)

\*Resin \_\_\_\_\_  
(Type, Manufacturer, and Designation)

\*Curing Agent \_\_\_\_\_  
(Type, Manufacturer, and Designation)

Curing Agent/Resin Ratio \_\_\_\_\_

Viscosity of Resin System \_\_\_\_\_ (min.) to \_\_\_\_\_ (max.) @ \_\_\_\_\_

\*Manner of Impregnation \_\_\_\_\_  
(Prepreg., Wet Wind, Postpreg.)

\*Percent Fiber by Weight in Composite \_\_\_\_\_  
[See Note (1)]

\*Variables of Winding Process [See Note (2)] \_\_\_\_\_

Helix Angle \_\_\_\_\_ (measured on cylinder between axis and band path)

Circumferential Band Density \_\_\_\_\_ end/unit length.

Circumferential Band Width \_\_\_\_\_

Tension: Per Strand (End), Roving, or Band (specify which) \_\_\_\_\_ per \_\_\_\_\_

Method of Control \_\_\_\_\_ Program \_\_\_\_\_

Layer Sequence \_\_\_\_\_  
[See Note (2)]

\*Primer \_\_\_\_\_  
(Type, Manufacturer, and Designation)

Primer Application Method \_\_\_\_\_

\*Primer Curing Schedule \_\_\_\_\_ for \_\_\_\_\_ hr \_\_\_\_\_ min

Exterior Treatment (Non-Structural, Describe) \_\_\_\_\_

Fiber Type	Fiber Form	Manufacturer	Manufacturing No.
Material No. 1 _____	_____	_____	_____
Material No. 2 _____	_____	_____	_____

\*Inner Liner \_\_\_\_\_  
[Material, Grade, and Thickness. See Note (1)]

\*Liner Size and Configuration \_\_\_\_\_  
(O.D.) (Length) (Cylindrical, Spherical, Other)

Laminate Strength \_\_\_\_\_ Method of Measurement \_\_\_\_\_  
(If other than ASTM D2290)

Interlaminar Shear Strength \_\_\_\_\_

Acoustic Emission Test Report Number \_\_\_\_\_

**NOTES:**

- (1) Where a range of values or a tolerance applies, state the applicable range or tolerance.
- (2) Use O to indicate full layer of circumferential windings (down and back), include number of passes.  
 Use o to indicate half layer of circumferential windings (single pass).

\*Laminate Curing Schedule \_\_\_\_\_ for \_\_\_\_\_ hr \_\_\_\_\_ min  
 (temperature) \_\_\_\_\_ for \_\_\_\_\_ hr \_\_\_\_\_ min  
 (temperature)

Manner of Measuring Temperature: Oven Air \_\_\_\_\_ Wrong Surface \_\_\_\_\_

Vessel Head \_\_\_\_\_ Other (Describe) \_\_\_\_\_

\*Barcol Hardness \_\_\_\_\_  
(Use a separate sheet to record individual readings and their location [See Note (1)])

Laminate Thickness \_\_\_\_\_  
(Use a separate sheet to record individual readings and their location [See Note (1)])

\*Volumetric Expansion \_\_\_\_\_

Gel Time \_\_\_\_\_ min Peak Exothermic Temperature \_\_\_\_\_

Minimum Temp. Cycle Test: \_\_\_\_\_ from \_\_\_\_\_ to \_\_\_\_\_ @ \_\_\_\_\_ maximum test temperature  
(no. of cycles)

Maximum Temp. Cycle Test: \_\_\_\_\_ from \_\_\_\_\_ to \_\_\_\_\_ @ \_\_\_\_\_ minimum test temperature  
(no. of cycles)

Burst Pressure \_\_\_\_\_ Qualification Pressure \_\_\_\_\_

Mode of Failure \_\_\_\_\_

Cathodic Disbondment Test Results \_\_\_\_\_

Qualification:

Qualification Vessel Designation Number \_\_\_\_\_

Design Report Number \_\_\_\_\_

Original Qualification Report Number \_\_\_\_\_

If Requalification, Requalification Report Number \_\_\_\_\_

ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 3 \_\_\_\_\_  
(Year)

We certify that the statements in this Specification are correct:

Date \_\_\_\_\_, \_\_\_\_\_ Signed \_\_\_\_\_

By \_\_\_\_\_

Certificate of Authorization Number (U3) \_\_\_\_\_ Expires \_\_\_\_\_

Certificate of Authorization Number (RP) \_\_\_\_\_ Expires \_\_\_\_\_

**CERTIFICATION BY SHOP INSPECTOR  
OF QUALIFICATION OF LAMINATE DESIGN AND LAMINATE PROCEDURE SPECIFICATION**

Laminate Procedure Specification of \_\_\_\_\_ at \_\_\_\_\_

for \_\_\_\_\_ process of manufacturing vessel(s) described in

User's Design Specification Number \_\_\_\_\_ and

Manufacturer's Design Report Number \_\_\_\_\_

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and employed by \_\_\_\_\_ of \_\_\_\_\_

have inspected the pressure vessel and witnessed tests described in the Qualification Test Report of the Laminate Design and Procedure Specification and state that, to the best of my knowledge and belief, the Manufacturer has constructed this part in accordance with the ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 3, and the Laminate Design and Procedure Specification being qualified. By signing this certificate, neither the Inspector nor the Inspector's employer makes any warranty, expressed or implied, concerning the design or procedure covered by this Qualification Test Report. Furthermore, neither the Inspector nor the Inspector's employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date \_\_\_\_\_ Signed \_\_\_\_\_ Commissions \_\_\_\_\_  
(Authorized Inspector) (National Board Authorized Inspector Commission number)