

Item Requirement

Product Name	<p>국문 : 한국형발사체 66L 복합재 고압탱크 경량 라이너</p> <p>영문 : 66L Liners for Composite Overwrapped Pressure Vessels of KSLV-II</p>
Model	AL6061-T6 66L Liner
Specific ation	<p>1. Requested Items</p> <p><input type="checkbox"/> <u>Seamless Al6061-T6 liners</u></p> <ul style="list-style-type: none"> ○ Quantity of delivered products : 60 EA <ul style="list-style-type: none"> ※ Minimum quantity of 50 should be guaranteed. ※ If the quantity of delivered products is less than 60, a refund must be offered as the amount of the unit price of liner (including that of shipping box) multiplied by the number of insufficient liners. ○ Additional two liners, besides the delivered products, have to be manufactured for use with destructive inspection and mechanical property test. <ul style="list-style-type: none"> ※ These liners will be overwrapped with a high-strength CFRP in a Korean company to make Type III high pressure vessels. <p>2. Requirements for Seamless Al6061-T6 liners</p> <ul style="list-style-type: none"> (1) The machining process is not allowed to be used on the outside surfaces of liners except both ports. (2) The shape and detailed dimensions of liner are given in the attached drawing. <ul style="list-style-type: none"> ○ The dome outer contour, the outer diameter, and the overall length can be modified according to the applicant's circumstances. But the final decision depends on KARI's judgment. (3) Weight \leq 8.1 kg (4) Capacity = 66L +2L/-0L (5) The thickness of cylinder wall = 2.0 ± 0.25 mm (0.078 ± 0.009 inch) <ul style="list-style-type: none"> ○ For all liners, 3 mutually equidistant points in the axial

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	<p>direction, 4 points (90° interval) in the round direction should be checked up. --> Total 12 points inspected</p> <div data-bbox="477 512 1142 860" data-label="Image"> </div> <p>Fig. 1. Thickness Measurement Points</p> <ul style="list-style-type: none"> • Ultrasonic thickness checker should be used. <ul style="list-style-type: none"> - Ultrasonic thickness checker should be calibrated with standard thickness specimen before check up. <p>(6) The thickness of dome area near to both ports ≥ 6.5 mm</p> <ul style="list-style-type: none"> ○ For all liners, 8 points (90° interval, both ports) in the round direction should be checked up. <ul style="list-style-type: none"> • It should be measured at the 80Φ point <ul style="list-style-type: none"> ※ 80Φ point: 40 mm away from the center of port. • Ultrasonic thickness checker should be used. <div data-bbox="1094 1173 1402 1523" data-label="Image"> </div> <p>Fig. 2. 80Φ Points</p> <p>(7) Outer Diameter = 361.0 ± 1.0 mm</p> <ul style="list-style-type: none"> ○ The above nominal value is preferred, but it can be changed between 355.0 mm and 380.0 mm according to the applicant's circumstances. <p>(8) Overall Length of Liner = 831.0 ± 2.0 mm</p> <ul style="list-style-type: none"> ○ The above nominal value is preferred, but it can be changed

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	<p style="text-align: center;">between 775.0 mm and 835.0 mm according to the applicant's circumstances.</p> <p>(9) Both Ports</p> <ul style="list-style-type: none"> ○ Length = 30.0 ± 3.0 mm ○ Inner Thread Spec. : 3/4"-16UNF-2B ○ Outer Thread Spec. : M30×1.0 ○ <u>Thread assembly tests</u> should be done with the standard 3/4"-16UNF-2B bolt and M30×1.0 nut. <p>(10) Requirements for Surface Conditions</p> <ul style="list-style-type: none"> ○ Inner surface <ul style="list-style-type: none"> • Stabbing marks, stains and other foreign substances are not allowed in operation. --> Endoscope inspection for all liners. ※ Surface treatment for corrosion protection is preferred. • Crack and surface dent are not allowed. --> PT test to ASTM E1417 for randomly selected 2 liners. ※ This is related to <i>No.(10) Destructive Inspection</i>. ○ Outer surface <ul style="list-style-type: none"> • Crack and surface dent are not allowed. --> PT test to ASTM E1417 for all liners <p>(11) Destructive Inspection</p> <ul style="list-style-type: none"> ○ <u>Randomly selected two liners</u> in the same production batch should be cut in half, and then inspected carefully. After destructive inspection, <u>two coupons should be taken from one half-liner</u> for the mechanical property tests. • A checklist for the destructive inspection <u>on all four half-liners</u> should include the following points <ul style="list-style-type: none"> (i) Dimension of liner cross section check up (ii) PT test to ASTM E1417 for inner surface

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	<p>(12) Requirements for Materials and Properties</p> <ul style="list-style-type: none"> ○ AL6061 --> T6 heat treatment <ul style="list-style-type: none"> • Yield Strength = over 260 MPa • Ultimate Strength = over 300 MPa • Elongation : 14%(2 inch Gage), 10%(24t×6t) • Hardness : Min. 85(Brinell), 50(Rockwell “B” scale) ○ Al liner material property test should be done <u>more than two coupons</u> taken from destructive inspection liners on every production batch. <ul style="list-style-type: none"> ※ This is related to <i>No.(10) Destructive Inspection</i>. <p>(13) Required Documents</p> <ul style="list-style-type: none"> ○ Drawings ○ Mil sheet or CoC of raw materials (AMS QQ-A-200/8 applied) ○ Heat treatment reports ○ Shape and dimension inspection reports (including Ultrasonic Thickness inspection reports) ○ Other inspection reports <ul style="list-style-type: none"> • PT inspection, Weight inspection etc. ○ Material property test reports ○ Other documents related with product assurance (PA) process (The list of required documents are to be determined by mutual agreement.) <p>(14) Shipping material</p> <ul style="list-style-type: none"> ○ Wooden box with foam cushions, individually packaged, which allows enough space so that the liner when overwrapped can still be packaged in the same box.

작성일자 : 2018. 7. 17