

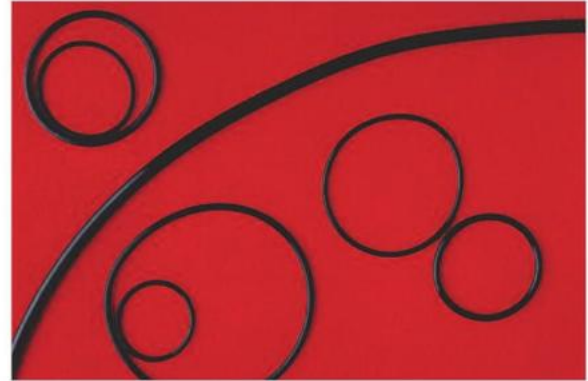


# CHEMRAZ<sup>®</sup> 605

## SEALING SOLUTIONS

Chemraz<sup>®</sup> 605, a perfluoroelastomer, is ideally suited for challenging fluid handling applications. A high-temperature compound with superior compression set resistance, physical properties and excellent chemical resistance, it excels in demanding static and semi-dynamic applications. Chemraz 605 exhibits unparalleled performance with hot amines, steam and water and functions well in increased temperatures ranging from -4°F to 500°F (-20°C to 260°C).

Available in O-rings, gaskets and many other custom shapes, Chemraz 605 possesses a broad chemical resistance range. The 605 compound is suitable for use in a wide variety of media including acids, caustics, aldehydes, esters, ethers, aromatics, hot water, steam, amines, methanol, ketones, TBA and MTBE.



## FEATURES & BENEFITS

- High-temperature capability
- Excellent compression set resistance
- Broad chemical compatibility for use with a wide range of harsh solutions

## APPLICATIONS

- Mechanical seals
- Pump housings
- Reactors
- Sampling/metering equipment
- Mixers
- Compressors
- Controls/instrumentation
- Valves
- Sprayers/dispensers
- Diaphragms
- Couplings

| TYPICAL PROPERTIES*                  |             |                                |
|--------------------------------------|-------------|--------------------------------|
| Physical Properties                  | ASTM Method | Typical Value                  |
| Color                                |             | Black                          |
| Specific Gravity                     | D792        | 1.99                           |
| Hardness, Type A, Points             | D2240       | 80                             |
| Mechanical                           |             |                                |
| Elongation @ Break, %                | D1414       | 145                            |
| Modulus @ 50% Elongation, psi (MPa)  | D1414       | 420 (2.9)                      |
| Modulus @ 100% Elongation, psi (MPa) | D1414       | 1,310 (9)                      |
| Tensile Strength @ Break, psi (MPa)  | D1414       | 2,500 (17.2)                   |
| Thermal                              |             |                                |
| Service Temperature Range, °F (°C)   |             | -4°F to 500°F (-20°C to 260°C) |

\* Note: Unless otherwise indicated, all tests are performed on (-214) O-rings.

Statements and recommendations in this publication are based on our experience and knowledge of typical applications of this product and shall not constitute a guarantee of performance nor modify or alter our standard warranty applicable to such products.



# CHEMRAZ<sup>®</sup> 615

## SEALING SOLUTIONS

Greene, Tweed's Chemraz<sup>®</sup> 615 exhibits outstanding high-temperature properties, with a temperature range from 0°F to 615°F (-18°C to 324°C). Chemraz 615's chemical resistance and low compression set characteristics combine to out perform tin-cured perfluoroelastomers.

Chemraz 615 shows lower compression set at high temperatures and a higher retained sealing force than other perfluoroelastomers available.

Because Chemraz 615 allows for the use of higher process operating temperatures, it is ideal for a range of markets, from chemical process to petroleum refining. This superior perfluoroelastomer performs well in a variety of fluids such as inorganic and organic chemicals, acids, reagents, heat transfer fluids and hydrocarbons.

Chemraz 615 is available in standard O-rings and custom shapes for a range of equipment, from pumps and valves to agitators and mixers, from mechanical seals and process control instruments to heat exchangers and diagnostic equipment.

## FEATURES & BENEFITS

- Low compression set at continuous temperatures up to 615°F (324°C)
- Ability to handle severe thermal cycles, meaning longer life and lower downtime costs
- Does not stick at high temperatures
- Superior service life in a variety of media, including heat transfer oils
- Excellent chemical resistance



## APPLICATIONS

- Mechanical seals
- Process control instruments
- Heat exchangers
- Valves
- Agitators & mixers
- Pumps
- Couplings

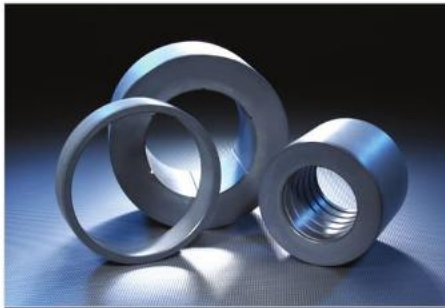
| TYPICAL PROPERTIES                   |             |                               |
|--------------------------------------|-------------|-------------------------------|
| Physical Properties                  | ASTM Method | Typical Value                 |
| Color                                |             | Black                         |
| Specific Gravity                     | D297        | 2.02                          |
| Hardness, Shore A, Points            | D2240       | 80                            |
| Mechanical                           |             |                               |
| Elongation @ Break, %                | D1414       | 170                           |
| Modulus @ 50% Elongation, psi (MPa)  | D1414       | 400 (2.8)                     |
| Modulus @ 100% Elongation, psi (MPa) | D1414       | 1,000 (6.9)                   |
| Tensile Strength @ Break, psi (MPa)  | D1414       | 1,700 (11.7)                  |
| Thermal                              |             |                               |
| Service Temperature Range, °F (°C)   |             | 0°F to 615°F (-18°C to 324°C) |

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# AR<sup>®</sup>HT COMPOSITE BUSHINGS

## Outperform Carbon Components in Abrasive Applications



### CUSTOMER

- Global Paper Products and Packaging Company

### CHALLENGE

- Experienced frequent operational disruptions due to brittle carbon bushings
- Sought a more stable bushing solution for easier installation and reliable operation

### SOLUTION

- Greene, Tweed ARHT thermoplastic bushings

### RESULTS

- Simplified bushing installation
- Significantly increased reliability
- Increased MTBF from 2 months to over 15 months

*Greene, Tweed leveraged its innovative AR<sup>®</sup>HT composite material to offer a leading manufacturer of paper products and packaging a superior bushing solution within its Viking LL 125 pumps. Our ARHT bushings offered this customer easy installation, increased MTBF (mean time between failure), and significantly reduced cost of ownership.*

### CHALLENGE

Our customer, a global paper products and packaging company, utilizes Viking LL 125 pumps to apply the latex coating required to protect and color its packaging products. These pumps offer the customer a robust pumping solution with infrequent failure – with one specific exception. The pumps' bushings, manufactured from inherently brittle and easily broken carbon material, caused frequent operational interruptions. When the carbon bushings failed and required replacement, the fragile components often broke during installation. During routine maintenance, if a pump's bushings were removed for other repair requirements, they often crumbled during removal and had to be replaced. In addition, vibrations caused by premature bushing failures contributed to mechanical seal failures, leading to dangerous product leakage. These multiple component issues led to added pump downtime, as well as increased maintenance and inventory costs.

### SOLUTION

To solve this customer's challenges, Greene, Tweed utilized its proprietary ARHT thermoplastic material developed specifically for bushings, bearings and wear rings for pumps handling abrasive media. The ARHT bushings provide outstanding chemical, thermal shock and impact resistance, making it an ideal replacement for the brittle carbon bushings. The solution combines excellent abrasive resistance, good dry run capability and superior vibration dampening characteristics with no hydrolysis or swell.

### RESULTS

By installing Greene, Tweed's ARHT bushings in its Viking pumps, the customer has achieved simplified bushing installation and significantly increased reliability, boosting the MTBF from 2 months to over 15 months. Because the new bushings handle abrasive materials and vibration better than the legacy carbon material, the customer has reduced maintenance costs through lower instances of seal failure. In addition, the customer is now able to reuse the ARHT bushings if they are removed for other maintenance needs, realizing a lower total cost of ownership.

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# WR<sup>®</sup>300

## THERMOPLASTIC COMPOSITE

WR<sup>®</sup>300 is a carbon-fiber reinforced compression molded PEEK<sup>™</sup> often selected by pump manufacturers and users for pump bushings and case or impeller wear rings. Maximum service life is achieved in clean, lubricated and/or moist environments.

WR300 allows the pump user to increase pump efficiency by running tighter wear ring clearances while decreasing potential pump damage when pumps are cavitated or experience radial bearing failures.

## FEATURES

- Excellent chemical resistance
- Nongalling/nonseizing properties
- Low coefficient of friction
- Impact resistance
- Thermal shock resistance

## AVAILABILITY

Greene, Tweed's CPI/MRO group maintains common wear ring and bushing billet sizes in inventory. Outer billet diameters range from 1 in. to 33 in. (2.5 cm to 84 cm), and lengths of up to 8 in. (20 cm) are possible.

## LIMITATIONS

WR300 should not be used in abrasive medias or in press-in applications above 275°F (135°C).



| TYPICAL PROPERTIES   |             |  |
|--|-------------|--|
| Physical Properties  | ASTM Method | Typical Value                                      |
| Color  |             | Black  |
| Specific Gravity   | D792        | 1.43   |
| Hardness, Shore D, Points  | D2240       | 93   |
| Hardness, Rockwell M, Points   | D785        | 106  |
| Mechanical   |             |  |
| Compressive Strength, psi (MPa)  | D695        | 29,300 (200)                                       |
| Elongation @ Break, %  | D638        | 1.8  |
| Flexural Modulus, ksi (MPa)  | D790        | 1,580 (10,900)                                     |
| Flexural Strength, psi (MPa)   | D790        | 30,700 (210)                                       |
| Tensile Modulus, ksi (MPa)   | D638        | 1,570 (10,800)                                     |
| Tensile Strength @ Break, psi (MPa)  | D638        | 19,400 (130)                                       |
| Thermal  |             |  |
| Coefficient of Thermal Expansion, 15.3 x 10 <sup>-6</sup> in/in/°F, (mm/mm/°C) (73°F to 290°F/23°C to 143°C) |             | 15.3 x 10 <sup>-6</sup> (27.5 x 10 <sup>-6</sup> ) |
| Heat Distortion Temperature @ 264 psi (1.8 MPa), °F (°C)   | D648        | 600°F (316°C)                                      |
| Maximum Service Temperature, °F (°C)   |             | 275°F (135°C)                                      |

*Statements and recommendations in this publication are based on our experience and knowledge of typical applications of this product and shall not constitute a guarantee of performance nor modify or alter our standard warranty that shall be applicable to such products.*

# TOMBO NO. 9082

## – PTFE THREAD SEAL TAPE



### PREMIUM INDUSTRIAL GRADE TAPE

A product of Nichias Corporation, Japan; a pioneer in the areas of Thermal Insulation and Gasket Materials.



Properly processed products made from PTFE resins can qualify for use in contact with food products.

Polytetrafluoroethylene (PTFE) is virtually inert to all chemicals except elemental fluorine and molten alkali metals.

#### Description

The TOMBO Premium Industrial Grade Tape is a special high density PTFE Thread Seal Tape designed for industrial chemical applications.

The high density of the TOMBO Premium Industrial Grade Tape reduces the possibility of chemical seepage.

Common PTFE thread sealing tape is highly porous due to the tapes being stretched after extrusion. The high porosity of these tapes allow chemical compounds to permeate through the voids in the tape. This is not permissible as leakage of chemicals will pose a potential health and environmental hazard.

The TOMBO Premium Industrial Grade Tape will not break, tear or split easily during wrapping. Therefore, it is suitable for joints with both coarse and fine threads.

#### Direction For Use

For pipes with coarse threads, 50% overlap of TOMBO Premium Industrial Grade Tape is recommended to ensure pipe threads are properly wrapped.

1. Place end of TOMBO Premium Industrial Grade Tape on pipe thread 1/8" (2mm) from end of pipe.
2. Wrap tape around pipe stretching slightly to pull tape into threads.
3. Slight overlap on the starting turn.
4. Cover all threads and pull hard to tear the tape.
5. Assemble joint

#### Characteristic & Applications

- Provides tight seal; permits easy disassembly
- Flame resistant
- Self lubricating; rethreads worn away threads
- No curing time required
- Chemically inert and withstands solvents.
- Conformance to MIL SPEC A-A-58092

#### Product Specifications

Composition: Min. 99.5% PTFE  
Tape Colour: White  
Thickness: 0.09mm (+/-10%)  
Density: 1.2g/cm<sup>3</sup> (+/-0.1g/cm<sup>3</sup>)  
Temp. Range: -100°C ~ + 260°C  
Pressure Range: For usage on pipe threads of liquid systems of 2,000psig or less.

# CERTIFICATIONS

**QEC CERTIFICATION**



**CERTIFICATION**  
**Occupational Health & Safety Management System**  
**Certificate of Approval**  
 This is to certify that the OHSMS of  
**Khong Lieng Trading Co. Pte Ltd**  
 102 Neythal Rd  
 Singapore 628590

Has been assessed and found to meet the requirements of  
**BS OHSAS 18001:2007**

This certificate is valid for the following scope of operations  
 Fabrication & Supply of all kinds of Quality Gaskets.  
 Supply of Quality Sealing Materials

**CERTIFICATION**

Authorised by:  **R N Cooke**  
 Director

Date of Certificate Issue: 12 May 2018  
**Certificate Valid Until: 11 March 2021**  
Recertification audit before 11 March 2021. Certificate valid till June 2021.  
 This certificate is the property of SN Registrars (Holdings) Limited and remains valid  
 subject to satisfactory annual surveillance audits.

SN Registrars (Holdings) Limited  
 Registration House, 22b Church Street,  
 Rushden, Northamptonshire,  
 NN10 9YT, UK  
 Tel: +44 (0) 1933 383261  
 Email: enquiries@qec.co.uk  
 Web: www.qec.co.uk  
 Company Number: 07659067

Certificate Number: QEC 72104292/11/Q Rev: 001




**QEC CERTIFICATION**



**CERTIFICATION**  
**Quality Management System**  
**Certificate of Approval**  
 This is to certify that the QMS of  
**Khong Lieng Trading Co. Pte Ltd**  
 102 Neythal Rd  
 Singapore 628590

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Authorised by:  **R N Cooke**  
 Director

Date of Certificate Issue: 11 June 2018  
**Certificate Valid Until: 31 May 2021**  
Recertification audit before 31 May 2021. Certificate valid till June 2021.  
 This certificate is the property of SN Registrars (Holdings) Limited and remains valid  
 subject to satisfactory annual surveillance audits.

SN Registrars (Holdings) Limited  
 Registration House, 22b Church Street,  
 Rushden, Northamptonshire,  
 NN10 9YT, UK  
 Tel: +44 (0) 1933 383261  
 Email: enquiries@qec.co.uk  
 Web: www.qec.co.uk  
 Company Number: 07659067

Certificate Number: QEC 27915654/11/Q Rev: 001






Singapore Environment Institute



An Institute of  
 National Environment Agency

**CERTIFICATE**

This is to certify that

\_\_\_\_\_

has successfully completed the course of study and passed the  
 prescribed examination of

Basic Ionising Radiation Safety (General)

Examination Date: 22 June 2017

  
**DIRECTOR**  
 SINGAPORE ENVIRONMENT INSTITUTE  
 NATIONAL ENVIRONMENT AGENCY  
 REPUBLIC OF SINGAPORE

Certificate No: E170000209G

*Certificate of Attendance*

This is to certify that

\_\_\_\_\_

has successfully completed the  
 Operation Training on  
**Oxford Vulcan Smart**

conducted by NDT Instruments Pte Ltd,  
 On May 2017

The training course covered:  
 Overview of Vulcan Smart,  
 Safety features, functions, analyse method,  
 File creation and data management,  
 Surface Preparation.

Trainer:  




The Business of Science™

# CERTIFICATIONS



| WELDING PROCEDURE SPECIFICATION ( WPS )   |   |      |  |  |         |  |  |        |  |  |   |  |  |   |  |  |           |  |  |                    |  |  |      |  |  |            |  |  |     |  |  |      |  |  |      |  |  |      |  |  |      |  |  |                                  |  |  |
|---|---|------|--|--|---------|--|--|--------|--|--|---|--|--|---|--|--|-----------|--|--|--------------------|--|--|------|--|--|------------|--|--|-----|--|--|------|--|--|------|--|--|------|--|--|------|--|--|----------------------------------|--|--|
| QW-482  | (Section IX, 2015, ASME Boiler & Pressure Vessel Code) Page 1 of 2  |      |  |  |         |  |  |        |  |  |   |  |  |   |  |  |           |  |  |                    |  |  |      |  |  |            |  |  |     |  |  |      |  |  |      |  |  |      |  |  |      |  |  |                                  |  |  |
| Company Name: <b>KHONG LIENG TRADING CO PTE LTD</b>   | By: <b>Mr. Zainal Bin Hassan</b>  |      |  |  |         |  |  |        |  |  |   |  |  |   |  |  |           |  |  |                    |  |  |      |  |  |            |  |  |     |  |  |      |  |  |      |  |  |      |  |  |      |  |  |                                  |  |  |
| Welding Procedure Specification No: <b>KL-WPS-01</b>  | Date: <b>27 Sept 2017</b> Rev. <b>0</b>   |      |  |  |         |  |  |        |  |  |   |  |  |   |  |  |           |  |  |                    |  |  |      |  |  |            |  |  |     |  |  |      |  |  |      |  |  |      |  |  |      |  |  |                                  |  |  |
| Supporting Procedure Qualification No: <b>KL-PQR-01</b>   | Date: <b>27 Sept 2017</b> Rev. <b>NA</b>  |      |  |  |         |  |  |        |  |  |   |  |  |   |  |  |           |  |  |                    |  |  |      |  |  |            |  |  |     |  |  |      |  |  |      |  |  |      |  |  |      |  |  |                                  |  |  |
| Welding Process(es): <b>GTAW</b>  | Type: <b>MANUAL</b>   |      |  |  |         |  |  |        |  |  |   |  |  |   |  |  |           |  |  |                    |  |  |      |  |  |            |  |  |     |  |  |      |  |  |      |  |  |      |  |  |      |  |  |                                  |  |  |
| (MANUAL /SEMI-AUTOMATIC /FULLY AUTOMATIC)   |   |      |  |  |         |  |  |        |  |  |   |  |  |   |  |  |           |  |  |                    |  |  |      |  |  |            |  |  |     |  |  |      |  |  |      |  |  |      |  |  |      |  |  |                                  |  |  |
| Joints ( QW 402 )<br>Joint Design: <b>Square-Butt Groove</b><br>Backing: ( Yes / No ) <b>Yes</b><br>Backing Material ( Type ): <b>Weld Metal</b><br>( Metallic / Non metallic / Nonfusing / others )  |   |      |  |  |         |  |  |        |  |  |   |  |  |   |  |  |           |  |  |                    |  |  |      |  |  |            |  |  |     |  |  |      |  |  |      |  |  |      |  |  |      |  |  |                                  |  |  |
| Base Metals ( QW 403 )<br>P-No. <b>8</b> Group No. <b>1</b> to <b>8</b> P-No. <b>8</b> Group No. <b>1</b><br>Specification type and grade: <b>ASTM A240, SS316L (ISO 15608) or Equivalent</b><br>to<br>Specification type and grade: <b>ASTM A240, SS316L (ISO 15608) or Equivalent</b><br>Thickness Range Groove: <b>1.5mm to 6.0mm</b> Fillet: <b>ALL</b><br>Pipe Dia Range: <b>NA</b> Fillet: <b>NA</b><br>Max Pass Thickness ≤ 1/2 in (13mm) Yes ( X ) No ( )<br>Any other: <b>NA</b> |   |      |  |  |         |  |  |        |  |  |   |  |  |   |  |  |           |  |  |                    |  |  |      |  |  |            |  |  |     |  |  |      |  |  |      |  |  |      |  |  |      |  |  |                                  |  |  |
| Filler Metals ( QW 404 )<br>Spec. No. ( SFA ):<br>AWS Class:<br>F. No.<br>A No.<br>Size of filler metal:<br>Filler Metal Product Form:<br>Supplemental Filler Metal:<br>Thickness Range Groove:<br>Fillet:<br>Electrode flux ( Class ):<br>Flux Type:<br>Flux Trade Name:<br>Consumable Insert:<br>Others:  | <table border="1"> <thead> <tr> <th>GTAW</th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>SFA-5.9</td> <td></td> <td></td> </tr> <tr> <td>ER316L</td> <td></td> <td></td> </tr> <tr> <td>6</td> <td></td> <td></td> </tr> <tr> <td>8</td> <td></td> <td></td> </tr> <tr> <td>1.0mm Dia</td> <td></td> <td></td> </tr> <tr> <td>Bare (Solid Cored)</td> <td></td> <td></td> </tr> <tr> <td>N.A.</td> <td></td> <td></td> </tr> <tr> <td>Max. 6.0mm</td> <td></td> <td></td> </tr> <tr> <td>ALL</td> <td></td> <td></td> </tr> <tr> <td>N.A.</td> <td></td> <td></td> </tr> <tr> <td>N.A.</td> <td></td> <td></td> </tr> <tr> <td>N.A.</td> <td></td> <td></td> </tr> <tr> <td>N.A.</td> <td></td> <td></td> </tr> <tr> <td>Kuang Tai KTS-316L or Equivalent</td> <td></td> <td></td> </tr> </tbody> </table> | GTAW |  |  | SFA-5.9 |  |  | ER316L |  |  | 6 |  |  | 8 |  |  | 1.0mm Dia |  |  | Bare (Solid Cored) |  |  | N.A. |  |  | Max. 6.0mm |  |  | ALL |  |  | N.A. |  |  | N.A. |  |  | N.A. |  |  | N.A. |  |  | Kuang Tai KTS-316L or Equivalent |  |  |
| GTAW  |   |      |  |  |         |  |  |        |  |  |   |  |  |   |  |  |           |  |  |                    |  |  |      |  |  |            |  |  |     |  |  |      |  |  |      |  |  |      |  |  |      |  |  |                                  |  |  |
| SFA-5.9   |   |      |  |  |         |  |  |        |  |  |   |  |  |   |  |  |           |  |  |                    |  |  |      |  |  |            |  |  |     |  |  |      |  |  |      |  |  |      |  |  |      |  |  |                                  |  |  |
| ER316L  |   |      |  |  |         |  |  |        |  |  |   |  |  |   |  |  |           |  |  |                    |  |  |      |  |  |            |  |  |     |  |  |      |  |  |      |  |  |      |  |  |      |  |  |                                  |  |  |
| 6   |   |      |  |  |         |  |  |        |  |  |   |  |  |   |  |  |           |  |  |                    |  |  |      |  |  |            |  |  |     |  |  |      |  |  |      |  |  |      |  |  |      |  |  |                                  |  |  |
| 8   |   |      |  |  |         |  |  |        |  |  |   |  |  |   |  |  |           |  |  |                    |  |  |      |  |  |            |  |  |     |  |  |      |  |  |      |  |  |      |  |  |      |  |  |                                  |  |  |
| 1.0mm Dia   |   |      |  |  |         |  |  |        |  |  |   |  |  |   |  |  |           |  |  |                    |  |  |      |  |  |            |  |  |     |  |  |      |  |  |      |  |  |      |  |  |      |  |  |                                  |  |  |
| Bare (Solid Cored)  |   |      |  |  |         |  |  |        |  |  |   |  |  |   |  |  |           |  |  |                    |  |  |      |  |  |            |  |  |     |  |  |      |  |  |      |  |  |      |  |  |      |  |  |                                  |  |  |
| N.A.  |   |      |  |  |         |  |  |        |  |  |   |  |  |   |  |  |           |  |  |                    |  |  |      |  |  |            |  |  |     |  |  |      |  |  |      |  |  |      |  |  |      |  |  |                                  |  |  |
| Max. 6.0mm  |   |      |  |  |         |  |  |        |  |  |   |  |  |   |  |  |           |  |  |                    |  |  |      |  |  |            |  |  |     |  |  |      |  |  |      |  |  |      |  |  |      |  |  |                                  |  |  |
| ALL   |   |      |  |  |         |  |  |        |  |  |   |  |  |   |  |  |           |  |  |                    |  |  |      |  |  |            |  |  |     |  |  |      |  |  |      |  |  |      |  |  |      |  |  |                                  |  |  |
| N.A.  |   |      |  |  |         |  |  |        |  |  |   |  |  |   |  |  |           |  |  |                    |  |  |      |  |  |            |  |  |     |  |  |      |  |  |      |  |  |      |  |  |      |  |  |                                  |  |  |
| N.A.  |   |      |  |  |         |  |  |        |  |  |   |  |  |   |  |  |           |  |  |                    |  |  |      |  |  |            |  |  |     |  |  |      |  |  |      |  |  |      |  |  |      |  |  |                                  |  |  |
| N.A.  |   |      |  |  |         |  |  |        |  |  |   |  |  |   |  |  |           |  |  |                    |  |  |      |  |  |            |  |  |     |  |  |      |  |  |      |  |  |      |  |  |      |  |  |                                  |  |  |
| N.A.  |   |      |  |  |         |  |  |        |  |  |   |  |  |   |  |  |           |  |  |                    |  |  |      |  |  |            |  |  |     |  |  |      |  |  |      |  |  |      |  |  |      |  |  |                                  |  |  |
| Kuang Tai KTS-316L or Equivalent  |   |      |  |  |         |  |  |        |  |  |   |  |  |   |  |  |           |  |  |                    |  |  |      |  |  |            |  |  |     |  |  |      |  |  |      |  |  |      |  |  |      |  |  |                                  |  |  |

| CUTECH QUALITY SOLUTIONS PTE LTD  |  |             |                    |                    |         |     |      |    |          |     |      |    |           |     |      |    |                |  |             |    |  |
|---|--|-------------|--------------------|--------------------|---------|-----|------|----|----------|-----|------|----|-----------|-----|------|----|----------------|--|-------------|----|--|
|   | 404-32C, 99A Building, 2 Jooong East Street 21, Singapore 059601<br>Phone: 65933005, 65650187 Fax: 65055892<br>Website: www.cutechgroup.com<br>E-mail: epc@cutech.com.sg<br>Registration number: 20120708H |             |                    |                    |         |     |      |    |          |     |      |    |           |     |      |    |                |  |             |    |  |
|   |  |             |                    |                    |         |     |      |    |          |     |      |    |           |     |      |    |                |  |             |    |  |
| <h1>NDT CERTIFICATE</h1>  |  |             |                    |                    |         |     |      |    |          |     |      |    |           |     |      |    |                |  |             |    |  |
| <b>Certificate No: PT/L2/024/2017</b><br><i>as per</i><br><b>AMERICAN SOCIETY FOR NONDESTRUCTIVE TESTING</b>  |  |             |                    |                    |         |     |      |    |          |     |      |    |           |     |      |    |                |  |             |    |  |
| Certificate issued to: _____  |  |             |                    |                    |         |     |      |    |          |     |      |    |           |     |      |    |                |  |             |    |  |
| <i>New Certification is based on his Written Examination, Practical as detailed below in accordance with the requirements of CUTECH written Practice for "Training, Examination and Certification of NDT Personnel" in compliance with the ASNT Recommended Practice SNT-TC-1A (2016) edition.</i>  |  |             |                    |                    |         |     |      |    |          |     |      |    |           |     |      |    |                |  |             |    |  |
| Method : <b>Liquid Penetrant Testing</b><br>Level : <b>II</b><br>Type : <b>Visible Dye</b><br>Technique : <b>Solvent Removable</b><br>Category : <b>Weldments, Raw materials</b><br>Material : <b>All Metals</b>  | Training Venue : <b>CUTECH</b><br>Education : <b>Diploma</b><br>Work Experience : <b>1 Year</b><br>Training Hours : <b>16 Hrs</b><br>Date of Issue : <b>17/10/2017</b><br>Valid Until : <b>16/10/2022</b>  |             |                    |                    |         |     |      |    |          |     |      |    |           |     |      |    |                |  |             |    |  |
| <table border="1"> <thead> <tr> <th></th> <th>Weightage</th> <th>% Mark</th> <th>Minimum % Required</th> </tr> </thead> <tbody> <tr> <td>General</td> <td>1/3</td> <td>90.0</td> <td>70</td> </tr> <tr> <td>Specific</td> <td>1/3</td> <td>85.0</td> <td>70</td> </tr> <tr> <td>Practical</td> <td>1/3</td> <td>83.0</td> <td>70</td> </tr> <tr> <td>Composite Mark</td> <td></td> <td><b>86.0</b></td> <td>80</td> </tr> </tbody> </table> |  | Weightage   | % Mark             | Minimum % Required | General | 1/3 | 90.0 | 70 | Specific | 1/3 | 85.0 | 70 | Practical | 1/3 | 83.0 | 70 | Composite Mark |  | <b>86.0</b> | 80 |  |
|   | Weightage  | % Mark      | Minimum % Required |                    |         |     |      |    |          |     |      |    |           |     |      |    |                |  |             |    |  |
| General   | 1/3  | 90.0        | 70                 |                    |         |     |      |    |          |     |      |    |           |     |      |    |                |  |             |    |  |
| Specific  | 1/3  | 85.0        | 70                 |                    |         |     |      |    |          |     |      |    |           |     |      |    |                |  |             |    |  |
| Practical   | 1/3  | 83.0        | 70                 |                    |         |     |      |    |          |     |      |    |           |     |      |    |                |  |             |    |  |
| Composite Mark  |  | <b>86.0</b> | 80                 |                    |         |     |      |    |          |     |      |    |           |     |      |    |                |  |             |    |  |
| Physical Examination:<br><table border="1"> <tr> <td>Near Vision</td> <td>OK</td> </tr> <tr> <td>Colour Vision</td> <td>OK</td> </tr> </table>  | Near Vision  | OK          | Colour Vision      | OK                 |         |     |      |    |          |     |      |    |           |     |      |    |                |  |             |    |  |
| Near Vision   | OK   |             |                    |                    |         |     |      |    |          |     |      |    |           |     |      |    |                |  |             |    |  |
| Colour Vision   | OK   |             |                    |                    |         |     |      |    |          |     |      |    |           |     |      |    |                |  |             |    |  |
| <br><b>Manickam Thirumal Murugan</b><br>Director - Training<br>ASNT NDT Level III<br>ET, RT, UT, MT, PT Cert No:198184  |  |             |                    |                    |         |     |      |    |          |     |      |    |           |     |      |    |                |  |             |    |  |



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