VINIDEX PTY LTD
PRODUCT APPRAISAL REPORT PA 1626

PVC-U DWV PIPE AND FITTINGS FOR NON-PRESSURE APPLICATIONS

AS/NZS 1260:2009 PVC-U PIPES AND FITTINGS FOR DRAIN, WASTE AND VENT APPLICATION

Publication Date: 24 August 2017
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<td>Peer review</td>
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Peer Reviewers

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<th>Name/Title</th>
<th>Organisation</th>
<th>Date</th>
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<tr>
<td>Alan Whittle, WSAA Contractor</td>
<td>WSAA</td>
<td>24/8/2017</td>
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<td>Product Appraisal Technical Advisory Group</td>
<td>WSAA</td>
<td>26/6/2017</td>
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<tr>
<td>Carl Radford, Product Appraisal Manager</td>
<td>WSAA</td>
<td>5/6/2017</td>
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Overview of WSAA

The Water Services Association of Australia (WSAA) is the peak industry body representing the urban water industry. Our members provide water and sewerage services to over 20 million customers in Australia and New Zealand and many of Australia's largest industrial and commercial enterprises.

Based around our vision of 'customer driven, enriching life', WSAA facilitates collaboration, knowledge sharing, networking and cooperation within the urban water industry. We are proud of the collegiate attitude of our members which has led to industry-wide approaches to national water issues.

WSAA can demonstrate success in the standardisation of industry performance monitoring and benchmarking, as well as many research outcomes of national significance. The WSAA Executive retains strong links with policy makers and legislative bodies and their influencers, to monitor emerging issues of importance to the urban water industry.

WSAA was formed in 1995 as a non-profit organisation to foster the exchange of information between industry, government and the community, and to promote sustainable water resource management.

The urban water industry is committed to anchoring its services to customers' values, and to enrich communities where water services have broad economic, environmental and social values. In line with this our main activities focus on four areas:

1. influencing national and state policies on the provision of urban water services and sustainable water resource management
2. promoting debate on environmentally sustainable development and management of water resources and the community health requirements of public water supplies
3. improving industry performance and establishing benchmarks and industry leading practices for water service processes; and
4. fostering the exchange of information on education, training, research, water and wastewater management and treatment and other matters of common interest.

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## CONTENTS

1 EXECUTIVE SUMMARY ........................................................................................................ 5
   1.1 Recommendations ........................................................................................................ 6

2 THE APPLICANT ......................................................................................................................... 6
   2.1 The Supplier .................................................................................................................. 7
   2.2 The Manufacturer ......................................................................................................... 7

3 THE PRODUCT ......................................................................................................................... 7

4 SCOPE OF THE APPRAISAL .................................................................................................. 9

5 APPRAISAL CRITERIA .............................................................................................................. 9
   5.1 Quality Assurance Requirements .................................................................................. 9
   5.2 Performance Requirements ......................................................................................... 9

6 COMPLIANCE WITH APPRAISAL CRITERIA ........................................................................ 9
   6.1 Compliance with Quality Assurance Requirements ....................................................... 9
   6.2 Compliance with Performance Requirements ............................................................. 10

7 FITTING INSTRUCTIONS, TRAINING AND INSTALLATION .................................................. 10

8 PRODUCT MARKING ............................................................................................................ 10

9 PACKAGING AND TRANSPORTATION ................................................................................ 11

10 PRODUCT WARRANTY ......................................................................................................... 11

11 WATER AGENCY EXPERIENCE WITH THE PRODUCT OR FIELD TESTING REPORT ...... 11

12 DISCUSSION .......................................................................................................................... 11

13 OUTCOMES OF EXPERT PANEL PRODUCT REVIEW ......................................................... 11

14 LIFE EXPECTANCY ............................................................................................................... 12

15 FUTURE WORKS .................................................................................................................. 12

16 DISCLAIMER ......................................................................................................................... 12
   16.1 Issue of Report ............................................................................................................ 12
   16.2 Limits on Reliance on Information and Recommendations ...................................... 12
       16.2.1 Disclaimer of liability .......................................................................................... 12
       16.2.2 Need for independent assessment .................................................................... 13
   16.3 No Updating .................................................................................................................. 13
   16.4 No Warranty .................................................................................................................. 14

APPENDIX A– PRODUCT LITERATURE ....................................................................................... 15

APPENDIX B - QUALITY CERTIFICATIONS ............................................................................. 18

APPENDIX C - WSAA PRODUCT SPECIFICATION .................................................................. 38

APPENDIX D - SUPPLIER CONTACTS ...................................................................................... 40

APPENDIX E - NATA LABORATORY TEST RESULTS AND QC REPORTS ............................... 41
1 EXECUTIVE SUMMARY

Vinidex is an Australian manufacturer of thermoplastic pipe and fittings systems. Vinidex manufactures and distributes plastic piping systems used in the transportation of fluids, energy and data for infrastructure development, agriculture, mining and building. Founded in 1960, Vinidex now has factories and distribution centres located in Sydney, Wagga Wagga, Melbourne, Brisbane, Toowoomba, Townsville, Launceston, Perth, Adelaide and Darwin.

Vinidex is a member of the ALIAxis group of companies with headquarters in Brussels, Belgium. ALIAxis is a global producer of plastic pipe and fittings systems for building, infrastructure, plumbing, rural and industrial markets.

The Vinidex range of PVC-U DWV pipe and fittings is manufactured by Vinidex at facilities throughout Australia, all of which are covered by a third party certified ISO 9001 Quality Management System.

Vinidex has been granted StandardsMark licence for the PVC-U DWV range of pipe and fittings by SAI Global for compliance with AS/NZS 1260:2009 “PVC-U pipes and fittings for drain, waste and vent application”. The Certification Certificates are attached in Appendix B. The range of pipe included in this appraisal is listed in Section 4 and in Appendix B of this report.

This appraisal applies to DWV pipe in diameters ranging from DN100 to DN375 extruded at the Perth, Melbourne, Brisbane and Sydney Vinidex factories. The pipes are made with either solvent cement or elastomeric seal joints in plain wall and sandwich construction. Sandwich construction pipes are offered in either solid or foam core configurations in the pipe stiffness range of SN4 to SN10 in accordance with AS/NZS 1260.

The Vinidex PVC-U DWV pipe and fittings are intended for the conveyance of wastewater in buried and above ground applications.

The complete Vinidex PVC-U DWV product range includes:

- PVC-U pipe (plain wall and sandwich construction) in both solvent cement and elastomeric seal joint in diameters ranging from DN32 to DN475. Sandwich construction pipes are offered in either solid or foam core.
- PVC-U injection moulded fittings are available with both solvent cement and elastomeric seal joint
- PVC-U fabricated fittings also available in both solvent cement and elastomeric seal joint.

The products are used in both the plumbing and municipal sectors.

Elastomeric seals are supplied by both Hultec and Gulf Rubber. Solvent cement and priming fluid are supplied by RLA Polymers Pty Ltd. Quality Management (ISO 9001) and third party product certification, details have been provided. Details are given in Appendix B.

Vinidex injection moulded DWV fittings manufactured to AS/NZS 1260 are classified as SN6 and in accordance with the Standard are suitable for use in systems up to and including SN16 plain wall or sandwich construction pipe.

PVC-U DWV piping systems have a long history of satisfactory performance in Australia and the Vinidex PVC-U DWV range, if correctly installed, can reasonably be expected to have a service life in excess of 100 years before major rehabilitation is required. Pipe life expectancy can vary with the quality of installation workmanship, system operating conditions, operating environment and other site-specific factors.
1.1 Recommendations

It is recommended that WSAA members and associates, subject to any specific requirements of the member or associate, accept or authorise the Vinidex range of PVC-U DWV pipes (plain wall, solid core sandwich construction and foam core sandwich construction), as detailed in this report, for use in non-pressure wastewater applications provided pipeline design, installation, acceptance testing etc. are in accordance with the relevant WSAA codes, Australian Standards and manufacturer’s installation requirements.

2 THE APPLICANT

Vinidex is a major Australian manufacturer of thermoplastic pipe and fittings systems. Vinidex manufactures and distributes plastic piping systems used in the transportation of fluids, energy and data for infrastructure development, agriculture, mining and building. Founded in 1960, Vinidex now has factories and distribution centres located in Sydney, Wagga Wagga, Melbourne, Brisbane, Toowoomba, Townsville, Launceston, Perth, Adelaide and Darwin.

On the 1st August 2014, Vinidex was acquired by the Aliaxis group of companies. The Aliaxis Group is a leading global manufacturer and distributor of primarily plastic fluid handling systems used in residential and commercial construction, as well as in industrial and public infrastructure applications. Vinidex is now wholly owned by Aliaxis Australia Holdings Pty Ltd.

Key Aliaxis Group facts:

- Head office in Brussels, Belgium
- Family owned
- €2.9 billion annual revenue
- Presence in 40 countries
- Over 100 manufacturing and commercial entities
- Employs 15,700 people around the world
2.1 The Supplier
Vinidex Pty Ltd ABN 42 000 664 942

2.2 The Manufacturer
Vinidex Pty Ltd

3 THE PRODUCT

<table>
<thead>
<tr>
<th>TABLE 1 PRODUCT RANGE TO WHICH THIS ASSESSMENT IS APPLICABLE</th>
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<tbody>
<tr>
<td><strong>Product</strong></td>
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<tr>
<td>--------------</td>
</tr>
<tr>
<td>Plain wall pipes</td>
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<tr>
<td>Solid core sandwich construction pipes</td>
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<td>Foam core sandwich construction pipes</td>
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More detail of the product range and manufacturing sites nominated as part of this appraisal are tabulated in Table 2, below.

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Further detail is provided in the StandardsMark Schedules.

The Vinidex range of PVC-U DWV pipe and fittings are manufactured by Vinidex at manufacturing facilities throughout Australia and the company has been granted StandardsMark certification for the PVC-U DWV range of pipe and fittings by SAI Global for compliance with AS/NZS 1260:2009 “PVC-U pipes and fittings for drain, waste and vent application”. The Certification Certificates Schedules are attached. The complete Vinidex range of PVC-U DWV range also includes:

- PVC-U pipe (plain wall and sandwich construction) with either solvent cement or elastomeric seal joint in diameters ranging from DN32 to DN475. Sandwich construction pipes are offered in either solid or foam core.
- PVC-U injection moulded fittings in both solvent cement and elastomeric seal joint configurations.
- PVC-U fabricated fittings in both solvent cement and elastomeric seal joint configurations.

The Vinidex PVC-U DWV pipes in sizes ≥ DN100 are supplied in stiffness classes SN4 to SN10 in accordance with Table 1.1 of AS/NZS 1260 and are used both the plumbing and municipal sectors of the industry.

The Vinidex PVC-U DWV range has long history of successful installations throughout Australia. The first edition of AS 1260 for PVC-U pipes and fittings for sewerage applications was published in 1974 so that over 40 years’ experience has been acquired with the product. More recently, improvements in manufacturing technologies have enabled Vinidex to introduce material efficient pipe products for both pressure and non-pressure applications.

In the late 1990’s, sandwich construction PVC-U pipe technology was introduced to Australia, which consists of an inner and outer layer of solid virgin PVC-U material and an intermediate layer of either foamed (foam core) or solid (solid core) PVC-U material. The benefits of this technology are three-fold:

1. It provides a means to recycle PVC-U scrap material, thus avoiding waste PVC-U material going to landfill;
2. It reduces the environmental footprint of the products; and
3. It provides commercial benefits to the manufacturer and end-user.

This PVC-U sandwich construction technology (foam core and solid core) is now considered best manufacturing practice and enables organisations such as Vinidex to achieve Best Environmental Practice certification as well as Green Star compliance.
4 SCOPE OF THE APPRAISAL
The range of PVC-U DWV pipe included in this appraisal is listed in Section 4 above. In addition, Vinidex has a comprehensive range of fittings and plumbing products as listed in the StandardsMark Schedules. More information is available from the SAI Global website and company catalogues.

5 APPRAISAL CRITERIA

5.1 Quality Assurance Requirements
The WSAA Product Appraisal Technical Advisory Group accepts PVC-U DWV range of pipe and fittings manufactured in compliance with AS/NZS 1260:2009 “PVC-U pipes and fittings for drain, waste and vent application” and duly certified by means of an ISO Type 5 product certification scheme undertaken by a JAS-ANZ accredited Certification Assessment Body (CAB) or by an international accreditation system recognised by JAS-ANZ.

The manufacturer is generally expected to have a production management and control system that has been duly accredited in accordance with AS/NZS ISO 9001 as a prerequisite to undergoing a product certification audit.

5.2 Performance Requirements
The Vinidex PVC-U DWV range of DN100 to DN375 pipe has been appraised for compliance with AS/NZS 1260:2009.

Appraisal criteria are also determined by the WSAA Infrastructure Products and Materials Network and regularly reviewed to ensure that the criteria reflect the requirements of WSAA members.

The following Product Specification is also relevant to this application:

WSA PS-230 Polyvinylchloride, Unplasticised (PVC-U) Pipes and Fittings for Non-Pressure Applications – Sewerage and Drainage

Copies of the above Product Specification can be found in Appendix C or downloaded from the WSAA website.

6 COMPLIANCE WITH APPRAISAL CRITERIA

6.1 Compliance with Quality Assurance Requirements
The Vinidex range of pipe PVC-U DWV and fittings is manufactured under a Quality Management System certified as fulfilling the requirements of ISO 9001, Certificate Registration Number QEC0570, issued in Australia by SAI Global, the International Certification Network which is accredited by JAS-ANZ. This certificate was originally issued on 19th February 1991 and is currently valid until 14th September 2018.

The scope of the QEC certificate includes the Vinidex sites at the following locations: Smithfield NSW, Wagga Wagga NSW, Berrimah NT, Bohle Qld, Charlton Qld, Coopers Plains Qld, Edinburgh SA, Launceston Tas, Notting Hill Vic, Sunshine Vic and O’Connor WA. This includes the Perth, Melbourne, Sydney and Brisbane manufacturing sites referred to in Section 3 above, that is Brisbane, Sydney, Melbourne and Perth.

Vinidex supplies elastomeric seals and solvent cements – priming fluids for jointing its range of DWV PVC pipes and fittings. Elastomeric seals are produced by Hultec and Gulf Rubber and solvent cements and priming fluids by RLA Polymers Pty Ltd. All three companies have accredited ISO 9001 quality systems and third party product certification. Details of the certificates are included in Appendix B.
6.2 Compliance with Performance Requirements
The ISO Type 5 Certificate of Conformity (StandardsMark) for product compliance with AS/NZS 1260 provides confidence that the Vinidex PVC-U DWV range of pipe and fittings are manufactured for compliance with the nominated standards and requirements. In addition, a number of NATA endorsed and Quality Control test reports have been reviewed. These confirm the products tested comply with the dimensional, pipe stiffness, impact resistance, interface pressure and joint performance requirements of AS/NZS 1260. Additionally the solid and foam core sandwich construction pipes have been successfully tested for ring flexibility as required for structured wall pipes according to Clause 3.2.5 of AS/NZS 1260.

7 FITTING INSTRUCTIONS, TRAINING AND INSTALLATION
PVC-U DWV pipes and fittings have been used in Australia for many years. Experience in handling and installing the products is well established. Additionally design and installation instructions are provided in:

AS/NZS 2032 Installation of PVC pipe systems.
AS/NZS 2566.1 Buried flexible pipelines Part 1: Structural design.
AS/NZS 2566.2 Buried flexible pipelines Part 2: Installation.

WSAA recommends that for overall design, installation, pipeline testing and installer training requirements for PVC-U DWV pipeline systems agencies refer to WSA 02-2014 Gravity Sewerage Code of Australia available from the bookshop at the WSAA web site www.wsaa.asn.au.

Satisfactory completion of a recognised PVC pipeline installer training program is a recommended pre-requisite for all PVC pipeline installers and supervisors.

Additional product information and installation instructions together with technical information is available at the Vinidex website. Refer to Appendix A for additional information.

8 PRODUCT MARKING

The Vinidex PVC-U DWV range of pipe and fittings are product certified and are marked in accordance with the requirements of AS/NZS 1260:2009, that is, PVC-U DWV pipes are marked in accordance with as per the following:

- Manufacturer’s name or registered trademark, or both.
- Nominal size in the form ‘DN100’, or ‘100’ as appropriate.
- The letters ‘PVCU’.
- The letters ‘DWV’.
- For structural wall pipes of sandwich construction the letters ‘SC’.

NOTE: Vinidex also adds the letters ‘FDWV’ for foam core sandwich construction DWV pipe and ‘SDWV’ for solid core sandwich construction DWV pipe.

- Class in the form SN4, SN6, SN8, SN10 or SN16, as applicable, in sizes 100 and above.
- Date of manufacture, in the form 170615 (i.e., the 15th of June 2017), as appropriate.
- Identification of place of manufacture. The manufacturer’s code is acceptable, e.g. P1.
• The number of the Standard, i.e., AS/NZS 1260.
• For pipes classified as best environmental practice PVC, the letters ‘BEP PVC’ or the words ‘BEST ENVIRONMENTAL PRACTICE PVC’.
• Standards Mark symbol – II) I>>>>>l
• Licence Number: LNxxxx as appropriate
• WaterMark symbol: W.

Example PVC-U DWV Pipe

[9323714546963] 19601 VINIDEX BEP PVC {Long Life Recyclable PVC Logo} PHONE 13 11 69 DWV 150 PVCU SN8 {WaterMark Logo} || Lic. No. 1014 AS/NZS 1260 BL03 [0] 170326 16:07

9 PACKAGING AND TRANSPORTATION

The Vinidex range of DN100 to DN375 PVC-U DWV pipes are packed in crates. Fittings are packed in cartons as required and are labelled as described above in the Product Marking.

10 PRODUCT WARRANTY

The products are covered by the normal commercial and legal requirements of the Competition and Consumer Act 2010 (Cth), which covers manufacture to the relevant standard, and details of Vinidex warranty is included in their terms and conditions of sale.

11 WATER AGENCY EXPERIENCE WITH THE PRODUCT OR FIELD TESTING REPORT

A field testing report of the Vinidex PVC-U DWV range of pipe and fittings has not been submitted as this range is a mature and widely installed product.

12 DISCUSSION

The Vinidex PVC-U DWV range has long history of successful installations throughout Australia. The first edition of AS 1260 for PVC-U pipes and fittings for sewerage applications was published in 1974 so that over 40 years’ experience has been acquired with the product. More recently, improvements in manufacturing technologies have enabled Vinidex to introduce material efficient pipe products for both pressure and non-pressure applications.

In the late 1990’s, sandwich construction PVC-U pipe technology was introduced to Australia, which consists of an inner and outer layer of solid virgin PVC-U material and an intermediate layer of either foamed (foam core) or solid (solid core) PVC-U material. The benefits of this technology are three-fold:

• It provides a means to recycle PVC-U scrap material, thus avoiding waste PVC-U material going to landfill;
• It reduces the environmental footprint of the products; and
• It provides commercial benefits to the manufacturer and end-user.

This PVC-U sandwich construction technology (foam core and solid core) is now considered best manufacturing practice and enables organisations such as Vinidex to achieve Best Environmental Practice certification as well as Green Star compliance.

13 OUTCOMES OF EXPERT PANEL PRODUCT REVIEW

Comments received by members of the Expert Panel during the peer review period have been addressed in this version of the Report.

COPYRIGHT
14 LIFE EXPECTANCY

The preface of AS/NZS 1260 advises it should be noted that, by convention, plastics pipe systems are often designed on the basis of 50 years extrapolated test data. This is established international practice but is not intended to imply the service life of drainage pipes is limited to 50 years. For correctly manufactured and installed systems, the actual life cannot be predicted, but can logically be expected to be well in excess of 100 years before major rehabilitation is required.

Experience in Australia with PVC-U sanitary drains and sanitary plumbing now exceeds 40 years.

15 FUTURE WORKS

No future works items have been identified

16 DISCLAIMER

This Product Appraisal Report (Report) is issued by the Water Services Association of Australia Limited on the understanding that:

This Report applies to the product(s) as submitted. Any changes to the product(s) either minor or major shall void this Report.

To maintain the recommendations of this Report any such changes shall be detailed and notified to the Product Appraisal Manager for consideration and review of the Report and appropriate action. Appraisals and their recommendations will be the subject of continuous review dependent upon the satisfactory performance of products.

WSAA reserves the right to undertake random audits of product manufacture and installation. Where products fail to maintain appraised performance requirements the appraisal and its recommendations may be modified and reissued. Appraisal reports will be reviewed and reissued at regular intervals not exceeding five (5) years.

The following information explains a number of very important limits on your ability to rely on the information in this Report. Please read it carefully and take it into account when considering the contents of this Report.

Any enquiries regarding this report should be directed to the Program Manager, Carl Radford, Phone: 03 8605 7601 email carl.radford@wsaa.asn.au.

16.1 Issue of Report

This Report has been published and/or prepared by the Water Services Association of Australia Limited and nominated Project Manager and peer group of technical specialists (the Publishers).

The Report has been prepared for use within Australia only by technical specialists that have expertise in the function of products such as those appraised in the Report (the Recipients).

By accepting this Report, the Recipient acknowledges and represents to the Publisher(s) and each person involved in the preparation of the Report that the Recipient has understood and accepted the terms of this Disclaimer.

16.2 Limits on Reliance on Information and Recommendations

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This Report does not contain all information that a person might require for the purposes of assessing any product discussed or appraised within it. The product appraisal criteria used in preparing this Report may not address all relevant aspects of the Product.

Recipients should seek independent evidence of any matter which is material to their decisions in connection with an assessment of the Product and consult their own advisers for any technical information required. Any decision to use the Product should take into account the reliability of that independent evidence obtained by the Recipient regarding the Product.

Recipients should also independently verify and assess the appropriateness of any recommendation in the Report, especially given that any recommendation will not take into account a Recipient's particular needs or circumstances.

WSAA has not evaluated the extent of the product liability and professional indemnify insurance that the provider of the product maintains. Recipients should ensure that they evaluate the allocation of liability for product defects and any professional advice obtained in relation to the product or its specification including the requirements for product liability and professional indemnity insurance.

16.3 No Updating

Neither the Publisher(s) nor any person involved in the preparation of this Report [has] [have] any obligation to notify you of any change in the information contained in this Report or of any new information concerning the Publisher(s) or the Product or any other matter.
16.4 No Warranty

The Publisher(s) do[es] not, in any way, warrant that steps have been taken to verify or audit the accuracy or completeness of the information in this Report, or the accuracy, completeness or reasonableness of any recommendation in this Report.
APPENDIX A – PRODUCT LITERATURE

The following brochure can be downloaded from the Vinidex website: VIN297 PVC Non Pressure DWV SCJ [2Mb]

PVC NON-PRESSURE

DWV SEWER PIPE & FITTINGS

AS/NZS 1260

SOLVENT CEMENT JOINT
The following brochure can be downloaded from the Vinidex website: VIN296 PVC Non Pressure DWV RRJ [503Kb]
The following brochure can be downloaded from the Vinidex website:
VIN102 EPD PVC Non-Pressure Pipes and Conduits used in Buildings [1Mb]
**APPENDIX B - QUALITY CERTIFICATIONS**

Copies of the following Quality Certification Certificates are available for downloading from the WSAA ‘Members Only’ Product Appraisal Technical Advisory Group Portal Website.

### TABLE B1 VINIDEX PTY LTD QUALITY - MANAGEMENT SYSTEMS

VINIDEX PTY LTD (covers all sites)  
O’Connor, WA, Bohle, QLD, Notting Hill, VIC, Sunshine, VIC, Smithfield, NSW, Smithfield, NSW, Bohle, QLD, Coopers Plains, QLD, Berrimah, NT, South Launceston, TAS, Wagga Wagga, NSW, Edinburgh, SA, Charlton, QLD, Darlinghurst, NSW

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<td>19 February 1991</td>
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### TABLE B2 VINIDEX PTY LTD – PRODUCT CERTIFICATION

Manufacturing Plant - Smithfield NSW

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### TABLE B3 VINIDEX PTY LTD – PRODUCT CERTIFICATION

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<th>Coopers Plains Qld</th>
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<tbody>
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### TABLE B4 VINIDEX PTY LTD – PRODUCT CERTIFICATION

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### TABLE B5 VINIDEX PTY LTD – PRODUCT CERTIFICATION

<table>
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</table>
TABLE B6 BEST ENVIRONMENTAL PRACTICE PVC CERTIFICATION

Coopers Plains Qld, Smithfield NSW, Sunshine Vic and O’Connor WA.
(Attach all QA system certificates in full including schedules and last audit report)

<table>
<thead>
<tr>
<th>Product Standard/Spec.</th>
<th>AS/NZS 1260</th>
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<tbody>
<tr>
<td>Confirmation No.</td>
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TABLE B7 RLA POLYMERS PTY LTD QUALITY– MANAGEMENT SYSTEMS

RLA Polymers Pty Ltd
Kilsyth Victoria

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<td>SAI GLOBAL</td>
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<td>Current date of certification</td>
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TABLE B8 RLA POLYMERS PTY LTD – PRODUCT CERTIFICATION

RLA Polymers Pty Ltd
Kilsyth Victoria

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### TABLE B9 THAI DUONG JOINT STOCK COMPANY (HULTEC VIETNAM) QUALITY–MANAGEMENT SYSTEMS

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### TABLE B10 THAI DUONG JOINT STOCK COMPANY (HULTEC VIETNAM) – PRODUCT CERTIFICATION

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<td>Issued Date</td>
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<td>Expires</td>
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### TABLE B11 GULF RUBBER AUSTRALIA PTY LTD QUALITY–MANAGEMENT SYSTEMS

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<td>First date of certification</td>
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<td>18 May 2015</td>
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<td>Expiry date of certification</td>
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## TABLE B12 GULF RUBBER AUSTRALIA PTY LTD – PRODUCT CERTIFICATION

| GULF RUBBER AUSTRALIA PTY LTD QUALITY– MANAGEMENT SYSTEMS  
THONG NHAT RUBBER COMPANY RUTHIMEX REVESBY NSW  |
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<td><strong>Expires :</strong></td>
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Complete schedules for all Product Certification Certificates are included on the WSAA members only portal
This is to certify that:

Vinidex Pty Ltd
ABN 42 000 854 942
Level 4 26 College Street Darlinghurst NSW 2010 AUSTRALIA
(Refer to Attachment to Certificate of Registration dated 28 April 2016 for additional certified sites)

operates a

QUALITY MANAGEMENT SYSTEM

which complies with the requirements of

ISO 9001:2008

for the following scope

The design, manufacture and distribution of polyethylene, polypropylene and unplasticised PVC pipes, conduits and associated fittings for the water supply, sewerage, drainage, electrical, mining, gas, rural and communications industries.

Certificate No: QEC0570

Issued: 28 April 2016
Expires: 14 September 2018

Originally Certified: 19 February 1991
Current Certification: 26 April 2016

Heather Mahon
Acting Head of Policy, Risk and Certification

Copyright

Registered by:
SAI Global Certification Services Pty Ltd ACN 128 715 650 680 George Street Sydney NSW 2000 Australia with SAI Global Limited 680 George Street Sydney NSW 2000 Australia ("SAI Global") and subject to the SAI Global Terms and Conditions for Certification. While all due care and skill was exercised in carrying out the assessment, SAI Global accepts responsibility only for proven negligence. This certificate remains the property of SAI Global and must be returned to SAI Global upon its request. To verify that this certificate is current please refer to SAI Global On-Line Certification register at http://www.saiglobal.com.
These sites are registered under Certificate No: QEC0570 issued on 28 April 2016.

Vinidx Pty Ltd
ABN 42 000 894 942

Extrusion 254 Woodpark Road Smithfield NSW 2164 AUSTRALIA
Injection Moulding 254 Woodpark Road Smithfield NSW 2164 AUSTRALIA
101 Byrnes Road Wagga Wagga NSW 2650 AUSTRALIA
3848 Marjorie Street Berrima NT 0828 AUSTRALIA
49 Enterprise Street Bohle QLD 4818 AUSTRALIA
14 Enterprise Street Bohle QLD 4818 AUSTRALIA
Lot 2, Witmack Road Charlton QLD 4350 AUSTRALIA
224 Musgrave Road Coopers Plains QLD 4108 AUSTRALIA
9 - 11 Kauma Avenue Edinburgh SA 5111 AUSTRALIA
5 Thistle Street South Launceston TAS 7249 AUSTRALIA
Unit 1 10 Duerrin Street Notting Hill VIC 3168 AUSTRALIA
231 - 245 St Albans Road Sunshine VIC 3020 AUSTRALIA
Sainsbury Road O’Connor WA 6163 AUSTRALIA

These registrations are dependent on Vinidx Pty Ltd maintaining their scope of registration to ISO 9001:2008.
SAI Global hereby grants:

Vinidex Pty Ltd
ABN 42 900 684 942

Extrusion, 254 Woodpark Road, Smithfield, NSW 2164, Australia

StandardsMark Licence

Manufactured to:
AS/NZS 1250:2009 - PVC-U pipes and fittings for drain, waste and vent application

"the StandardsMark Licensee" the right to use the STANDARDSMARK as shown below only in respect of the goods described and detailed in the Schedule which are produced by the Licensee or on behalf of the Licensee* and which comply with the appropriate Standard referred to above as from time to time amended. The Licence is granted subject to the rules governing the use of the STANDARDSMARK and the Terms and Conditions for certification and licence. The Licensee covenants to comply with all the Rules and Terms and Conditions.

Certificate No: SMK1246

Issued: 29 June 2016
Expires: 28 July 2021
Originally Certified: 28 July 1993
Current Certification: 29 June 2016

Paul Simpson
Global Policy Risk and Certification Manager

* For details of manufacture, refer to the licensee.
The STANDARDSMARK is a registered certification trademark of SAI Global Limited (ACN 059 644 642) and is issued under licence by SAI Global Certification Services Pty Limited (ACN 108 716 866) ("SAI Global"") 660 George Street, Sydney NSW 2000, GPO Box 5420 Sydney, NSW 2001. This certificate remains the property of SAI Global and must be returned to SAI Global upon its request. Refer to www.saglobal.com for the list of product models.
SAI Global hereby grants:

**Vinindex Pty Ltd**

ABN 42 300 664 042

224 Muegravo Road, Coopera Plains, QLD 4108, Australia

**StandardsMark Licence**

Manufactured to:

AS/NZS 1260:2009 - PVC-U pipes and fittings for drain, waste and vent application

*The StandardsMark Licensee* the right to use the **STANDARDSMARK**, as shown below only in respect of the goods described and detailed in the Schedule which are produced by the Licensee or on behalf of the Licensee* and which comply with the appropriate Standard referred to above as from time to time amended. The Licence is granted subject to the rules governing the use of the **STANDARDSMARK** and the Terms and Conditions for certification and licence. The Licensee covenants to comply with all the Rules and Terms and Conditions.

**Certificate No:** SMKP1014

**Issued:** 10 August 2016  
**Expires:** 9 August 2021  
**Originally Certified:** 10 August 2011  
**Current Certification:** 10 August 2016

Paul Simpson  
Global Policy Risk and Certification Manager

*For details of manufacture, refer to the licence*

The **STANDARDSMARK** is a registered certification trademark of SAI Global Limited (A.C.N. 059 844 644) and is issued under licence by SAI Global Certification Services Pty Limited (ACN 131 716 966) (“SAI Global”) 960 George Street, Sydney NSW 2000, GPO Box 6420 Sydney NSW 2001. This certificate remains the property of SAI Global and must be returned to SAI Global upon its request.

Refer to www.saiglobal.com for the list of product modes.
SAI Global hereby grants:

Vinidex Pty Ltd
ABN 42 000 064 942
Sainsbury Road, O’Connor, WA 6163, Australia

StandardsMark Licence

Manufactured to:
AS/NZS 1260:2009 - PVC-U pipes and fittings for drain, waste and vent application

"the StandardsMark Licensee" the right to use the StandardsMark as shown below only in respect of the goods described and detailed in the Schedule which are produced by the Licensee or on behalf of the Licensee and which comply with the appropriate Standard referred to above as from time to time amended. The Licensee is granted subject to the rules governing the use of the StandardsMark and the Terms and Conditions for certification and licence. The Licensee covenants to comply with all the Rules and Terms and Conditions.

Certificate No: SMKP1075

Issued: 10 August 2016
Expires: 9 August 2021

Originally Certified: 10 August 2011
Current Certification: 10 August 2016

Paul Simpson
Global Policy Risk and Certification Manager

* For details of manufacture, refer to the licence

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COPYRIGHT
SAI Global hereby grants:

Vinidx Pty Ltd
ASN 42 000 664 942

231 – 245 St Albans Road, Sunshine, VIC 3020, Australia

StandardsMark Licence

Manufactured to:
AS/NZS 1260:2009 - PVC-U pipes and fittings for drain, waste and vent application

The StandardsMark Licensee the right to use the STANDARDSMARK as shown below only in respect of the goods described and detailed in the Schedule which are produced by the Licensee or on behalf of the Licensee and which comply with the appropriate Standard referred to above as from time to time amended. The Licence is granted subject to the rules governing the use of the STANDARDSMARK and the terms and conditions for certification and licence. The Licensee covenants to comply with all the rules and Terms and Conditions.

Certificate No: SMKP1079

Issued: 10 August 2016
Expires: 9 August 2021

Originally Certified: 10 August 2011
Current Certification: 10 August 2016

Paul Simpson
Global Policy Risk and Certification Manager

* For details of manufacture, refer to the licensee

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BEST ENVIRONMENTAL PRACTICE

ApprovalMark International hereby grants:

VINIDEX PTY LIMITED
224 MUSGRAVE RD, COOPERS PLAIN, QLD 4108
254 WOODPARK RD, SMITHFIELD, NSW 2164
234 ST ALBAN RD, SUNSHINE VIC 3020
SAINS BURY RD, O’CONNOR WA 6163

Best Environmental Practice - PVC
Evaluated to:
AS/NZS 1254: 2010 – PVC-U Pipes and fittings for stormwater and surface water applications
AS/NZS 1260: 2009 – PVC-U Pipes and fittings for drain, waste and vent applications
AS/NZS 1477: 2008 – PVC-U Pipes and fittings for pressure applications
AS/NZS 4441: 2008 - Oriented PVC (PVC-O) pipes for pressure applications (Smithfield & Coopers Plain Site only)
AS/NZS 4765: 2007 – Modified PVC (PVC-M) for pressure applications
AS/NZS 2053:2 2001 – Conduits and fittings for electrical installations Part 2 Rigid plain conduits and fittings of insulating material

Complies with the requirement of Best Environmental Practice – PVC as per the relevant Australian Standard and Best Practice Guidelines for PVC in the Build Environment as per specified in the Green Building Council Literature Review and Best Practice Guidelines for the Life Cycle of PVC Building Product document. The Manufacturer’s Technical Documentation have been reviewed and found to comply with the following:

• Manufacture of PVC Resin
• Manufacture and end of life management of PVC products
• Use of PVC Recyclate in PVC products

Any changes introduced to above requirements shall immediately be reported to ApprovalMark International in order to examine the validity of the certificate.

Certificate No. BEP-PVC 570

Issued: 11th February 2016
Expires: 20th February 2018

Originally Certified: 20th February 2012
Current Certification: 20th February 2016

Certification Manager
John PRASAD
CERTIFICATE OF CONFORMITY

ApprovalMark International hereby grants:

THAI DUONG JOINT STOCK COMPANY
Lot A 6B-CN, My Phuoc 3 Industrial Park
Ben Cat District, Binh Duong Province
VIETNAM

Evaluated to:
AS 1646 - 2007 Elastomeric seals for waterworks purposes

The ISO Type 5 licensee shall comply with all the terms and conditions as stipulated by the governance of the operating rules of ISO Type 5 scheme, and shall comply with standard requirement at all times including when standard is amended. The ISO Type 5 license only covers the product which is identified in the product schedule.

Certificate No. AMI 74510

Issued: 10th February 2013
Expires: 10th February 2018

John PRASAD
Certification Manager

ApprovalMark Certification

COPYRIGHT
**Product Schedule**

Thai Duong Joint Stock Company  
Lot A 6B-CN, My Phuoc 3 Industrial Park  
Ben Cat District, Binh Duong Province,  
Vietnam

**ISO Type 5 Certificate of Conformity**

Evaluated to:  
AS 1646: 2007 - Elastomeric seals for waterworks purposes

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<td>CNL EPDM</td>
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<td>BCDY GASKET, GATE VALVE</td>
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<td>HUITEC</td>
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<td>10th February 2013</td>
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## Product Schedule

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<th>Model Name</th>
<th>Brand Name</th>
<th>Product Description</th>
<th>Endorsement Date</th>
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<tr>
<td>88900100</td>
<td>Ipex DWV Pan Collar</td>
<td>HULTEC</td>
<td>n/a</td>
<td>10th February 2013</td>
</tr>
<tr>
<td>65600225</td>
<td>Riser Gap Rubber Ring</td>
<td>HULTEC</td>
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<td>10th February 2013</td>
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<td>89000025</td>
<td>SWV PLUG WASHER</td>
<td>HULTEC</td>
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<td>10th February 2013</td>
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<tr>
<td>88990100</td>
<td>Pancollar Seal  - Vx</td>
<td>HULTEC</td>
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<td>10th February 2013</td>
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<tr>
<td>88561xxx</td>
<td>POLY SBR</td>
<td>HULTEC</td>
<td>50 - 375</td>
<td>10th February 2013</td>
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<tr>
<td>88551xxx</td>
<td>VINYL IRON SBR</td>
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<td>10th February 2013</td>
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<tr>
<td>88991xxx</td>
<td>ULTRA RUB SBR</td>
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<tr>
<td>88975xxx</td>
<td>VINITTE SBR ( Sewer )</td>
<td>HULTEC</td>
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<td>10th February 2013</td>
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<tr>
<td>88401xxx</td>
<td>POLY PRO RING SBR</td>
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<td>113</td>
<td>A1 Sureseal NBR</td>
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<td>9224xxx</td>
<td>REPAIR MAT ( 80 )</td>
<td>HULTEC</td>
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<td>9124xxx</td>
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<td>100mm DWV</td>
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<tr>
<td>1012041</td>
<td>O RING (41mm x 8.5mm )</td>
<td>HULTEC</td>
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<tr>
<td>1012062</td>
<td>O RING (62mm x 11mm )</td>
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<td>1019005</td>
<td>LIP SEAL RING SMALL</td>
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<td>1019009</td>
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<td>10110xx</td>
<td>TAP / BAND TAPITE NUT</td>
<td>HULTEC</td>
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<td>77</td>
<td>SPRING HYDRAUL WASH R FLAT</td>
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<tr>
<td>7720bx</td>
<td>GRIPTITE EPDM</td>
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<td>80 - 600</td>
<td>10th February 2013</td>
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<tr>
<td>7722bx</td>
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<tr>
<td>7740bx</td>
<td>MECHANICAL JOINT EPDM</td>
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<td>AL MP3 Flange</td>
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<td>AL 755 STG</td>
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<td>Hultec Sewer SBR</td>
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<td>88952xxx</td>
<td>Epoxy TEGRA Seal SBR</td>
<td>HULTEC</td>
<td>100 - 600</td>
<td>31st August 2016</td>
</tr>
</tbody>
</table>

---

Certificate No: AMI 74510

The models identified above in the schedule are endorsed for ISO Type 5 application only.
This is to certify that:

Gulf Rubber Australia Pty Ltd
ABN 13 118 010 263
12-13 Green Street Revesby NSW 2212 AUSTRALIA

operates a
QUALITY MANAGEMENT SYSTEM

which complies with the requirements of
ISO 9001:2008

for the following scope

The design and manufacture of elastomeric, thermoplastic and moulded rubber
and rubber to metal moulded components.

Certificate No: QEC23575

Issued: 18 May 2015
Expires: 14 May 2018

Originally Certified: 26 November 1998

Samer Chabouk
Head of Policy, Risk and Certification

Paul Butcher
Global Head – Assurance Services
WaterMark
Level 1
Certificate of Conformity
Australian Certification Services Pty Ltd grants to the WaterMark User:

RLA Polymers Pty Ltd
Trading as RLA Polymers Pty Ltd

the right to use the WaterMark as shown above in conjunction with the Certificate No. on product/s as identified in the WaterMark Schedule and as listed on the WaterMark database [www.atc.gov.au/product-certification] which have been shown to comply with the relevant Standard/s and level of certification referred to below. The WaterMark User is granted a licence to use the WaterMark subject to the rules governing the use of the WaterMark.

Product Type: Solvent Cements and Priming Fluids
Evaluated to: AS/NZS 3879:2011 Solvent cements and priming fluids for PVC (PVC-U and PVC-M) and ABS and ASA pipes and fittings

Issue Date: 21st July 2017
Initial Issue Date: 17th March 2016
Expiry Date: 16th March 2021

Certificate No.: 25224

This certificate remains the property of Australian Certification Services Pty Ltd
WaterMark Level 1 certification is a conformity assessment scheme based on ISO Guide 67 (system 5)
SAI Global hereby grants:

Gulf Rubber Australia Pty Ltd
ABN 13118010263

Thong Nhat Rubber Company Ruthimex
12-13 Green Street, Revesby, NSW 2212, Australia

StandardsMark Licence

Manufactured to:
AS 1546-2007 - Elastomeric seals for waterworks purposes

"the StandardsMark Licensee" the right to use the STANDARDSMARK as shown below only in respect of the goods described and detailed in the Schedule which are produced by the Licensee or on behalf of the Licensee* and which comply with the appropriate Standard referred to above as from time to time amended. The Licence is granted subject to the rules governing the use of the STANDARDSMARK and the Terms and Conditions for certification and licence. The Licensee covenants to comply with all the Rules and Terms and Conditions.

Certificate No: SMK20133

Issued: 15 December 2014
Expires: 9 December 2018

Originally Certified: 10 December 2003
Current Certification: 15 December 2014

Samer Chaouki
Head of Policy, Risk and Certification

* For details of manufacture, refer to the licensee.

The STANDARDSMARK is a registered certification trademark of SAI Global Limited (A.C.N. 059 644 042) and is issued under license by SAI Global Certification Services Pty Limited (ACN 116 136 904) (“SAI Global”) 600 George Street Sydney NSW 2000, Suite 5420 Sydney NSW 2001. This certificate retains the property of SAI Global and must be returned to SAI Global upon its request. Refer to www.saiglobal.com for the list of product models.

COPYRIGHT
Certificate

Standard

01 100 106571 and 01 104 106571

Certificate Holder:
THAI DUONG JOINT STOCK COMPANY
(HULTEC VIETNAM)
Lot A-6B-CN, My Phuoc 3 Industrial Park,
Chanh Phu Hoa Ward, Ben Cat Town,
Binh Duong Province, Vietnam

Scope:
Manufacture of Technical Rubber Products

Proof has been furnished by means of an audit that the requirements of ISO 9001:2008 and ISO 14001:2004 are met.

Validity:
The certificate is valid from 04.09.2015 until 03.09.2018.

18.08.2015

TÜV Rheinland Cert GmbH
Am Grauen Stein - 51109 Köln

www.tuv.com

TÜV Rheinland
Precisely Right.
CERTIFICATE OF REGISTRATION

This is to certify that:

RLA Polymers Pty Ltd
ABN 89 004 709 915
215 Colchester Road Kilsyth VIC 3137 AUSTRALIA

operates a
QUALITY MANAGEMENT SYSTEM

which complies with the requirements of
ISO 9001:2015

for the following scope

The development, formulation, manufacture and stockholding of adhesives, sealants, industrial compounds, coatings, carpet underlay and ancillary products.

Certificate No: QMS41509

Issued: 20 April 2017
Expires: 30 April 2020

Originally Certified: 20 May 2015
Current Certification: 16 April 2017

Nicole Grantham
General Manager SAI Global Certification Services

Registered by:
SAI Global Certification Services Pty Ltd (ACN 109 718 899) 430 George Street Sydney NSW 2000, Australia with SAI Global Limited 606 George Street Sydney NSW 2000 Australia ("SAI Global") and subject to the SAI Global Terms and Conditions for Certification. While all due care and skill were exercised in carrying out this assessment, SAI Global accepts responsibility only for proven negligence. This certificate remains the property of SAI Global and must be returned to SAI Global upon request. To verify that this certificate is current please refer to SAI Global On-line Certification register at www.saiglobal.com
APPENDIX C - WSAA PRODUCT SPECIFICATION

WATER SERVICES ASSOCIATION of Australia

PRODUCT SPECIFICATION

WSA PS - 230 POLYVINYLCHLORIDE, UNPLASTICISED (PVC-U) PIPES AND FITTINGS FOR NON-PRESSURE APPLICATIONS – SEWERAGE AND DRAINAGE

230.1 SCOPE

This specification covers PVC-U non-pressure pipes and fittings, including solvent cements and priming fluids, for use in gravity sewerage and drainage.

230.2 REQUIREMENTS

(a) PVC-U pipes and fittings shall comply with AS/NZS 1260:2017.

(b) PVC-U pipes and fittings shall be marked ‘BEP PVC’ or the words ‘BEST ENVIRONMENTAL PRACTICE PVC’.

(c) Pipes shall be Stiffness Class SN8 (for DN 150 and above) and SN10 (for DN 100).

(d) Fittings shall be Stiffness Class SN8 or higher.

(e) Joints:


(ii) Solvent cement and priming fluid for use with tapered socketed fittings shall be Type N³ or Type G³ complying with AS/NZS 3879:2011.

(iii) Solvent cement for use with parallel socketed fittings shall comply with manufacturer’s requirements.

(iv) A threaded spigot and socket joint with an elastomeric sealing ring system that accommodates tensile and compressive loads to manufacturer’s requirements.³

230.3 QUALITY ASSURANCE

(a) PVC-U non-pressure pipes and fittings shall have product certification (ISO Type 5) to AS/NZS 1260:2017. The ISO Type 5 Product Certification Scheme shall meet the criteria described in WSA TN-08⁴.

(b) Elastomeric joint seals shall have product certification (ISO Type 5) to AS 1646:2007 and AS 681.1:2008 (EN 681-1:1996).

(c) Solvent cements shall have product certification (ISO Type 5) to AS/NZS 3879:2011.

(d) All products shall be marked in accordance with the conformity assessment body’s requirements.

230.4 AGENCY OR PROJECT SPECIFIC REQUIREMENTS

| Limitations on wall construction (plain wall, ribbed, solid core sandwich construction or foam core sandwich construction) |
| Joint type (elastomeric seal or solvent cement or threaded spigot and socket joint) |

UNCONTROLLED IF PRINTED

File Name: WSA_PS_230_05 Copyright Issue: 05 June 2017
Doc Name: Product Specifications for Products & Materials Page 1 of 2

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### WATER SERVICES ASSOCIATION of Australia

<table>
<thead>
<tr>
<th>with an elastomeric seal</th>
<th>Alternative pipe stiffness Class (e.g. SN16)</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Alternative elastomeric material for joint seals (e.g. NBR)</td>
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</tbody>
</table>

**NOTES:**

1. Type N is used for joining PVC pipe systems with tapered/interference fit joints which will not be subjected to internal pressure or other applications where high bond strength is not required.

2. Type G is used for joining PVC and ABS pressure or non-pressure pipes where parallel/no or low interference fit joints are used and where a high bond strength and ability to fill small gaps is required.

3. Restrained joint and seal ring systems are designed to accommodate tensile and compressive loads, installation using trenchless methods where pipes may be "pushed" or "pulled" into place depending on the installation methodology.


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**File Name:** WSA_P6_230_05  
**Copyright:** Issue: 05  
**June 2017**  
**Doc Name:** Product Specifications for Products & Materials  
**Page: 2 of 2**  
**COPYRIGHT**
APPENDIX D - SUPPLIER CONTACTS

For orders, product enquiries, technical information, delivery and order status please contact Vinidex customer service.

PHONE: 13 11 69
FAX: 13 24 43
EMAIL: sales@vinidex.com.au

or contact your State sales office:

Queensland: qldsales@vinidex.com.au
Victoria: vicsales@vinidex.com.au
Western Australia: wasales@vinidex.com.au
New South Wales: nswsales@vinidex.com.au

For all other enquiries please contact our administration office;

PHONE: (02) 8278 0500
FAX: (02) 8278 0552
EMAIL: info@vinidex.com.au
APPENDIX E - NATA LABORATORY TEST RESULTS AND QC REPORTS

Name of the NATA accredited laboratory to be mentioned with the Accreditation No.

NATA Report 1141 Pressure test on RRJ foam core SC DN150 SN8 pipe.
NATA Report 1142 Liquid infiltration test on RRJ foam core SC DN150 SN8 pipe.
NATA Report 1143 Interface pressure and contact width test on RRJ foam core SC SN8 pipe.
NATA Report 1144 Ring flexibility test on RRJ foam core SC SN8 pipe.
NATA Report 1145 Ring flexibility test on RRJ solid core SC SN8 pipe.

QC Report dated 170324 on plain wall DN150 DWV pipe including dimensions and impact resistance.
QC Report dated 170209 on plain wall DN150 DWV pipe including dimensions, impact resistance and pipe stiffness.
QC Report dated 161125 on foam core SC DN150 DWV pipe including dimensions, impact resistance and pipe stiffness.
QC Report dated 170213 on foam core SC DN150 DWV pipe including dimensions, impact resistance and pipe stiffness.
QC Report dated 160709 on solid wall SC DN150 DWV pipe including dimensions, impact resistance and pipe stiffness.
QC Report dated 161115 on solid wall SC DN150 DWV pipe including dimensions, impact resistance and pipe stiffness.

QC Summary report (xls file) for solid wall DWV pipe on the period 27/12/16 to 27/3/17.
QC Summary report (xls file) for foam core SC DWV pipe on the period 24/10/16 to 16/2/17.
QC Summary report (xls file) for solid core SC DWV pipe on the period 7/7/16 to 16/11/16.