HOLMAN PLUMBING

BPIR Summary

Prepared November 2023

> Stormwater U-PVC Fittings

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Stormwater U-PVC Fittings manufactured to AS/NZS 1254

Name	Stormwater U-PVC Fittings
Line	Unplasticized Polyvinyl Chloride U-PVC Fittings manufactured to AS/NZS 1254
Identifier	HOLMAN Industries Stormwater AS/NZS 1254

Holman PVC-U Stormwater Fittings are designed for and suitable for use in Stormwater and surface water applications. Stormwater fittings are intended for use above and below ground including exposure to direct sunlight.

Unplasticized Polyvinyl Chloride is the predominant material used in pipelines systems applications in Australia. The economic advantages are publicly documented well accepted by the industry. They are lightweight, resistant to a wide variety of chemicals, do not support combustion (fittings are approved for multi-storey plumbing in conjunction with approved fire stop collars).

PVC-U pipes and fittings are impervious to bacterial and fungal attacks and are not subject to electrolytic or galvanic corrosion.

All parts assemble easily using either solvent cement or rubber seal rings to accommodate thermal expansion/ contraction or ground movement.

Relevant building code clauses

B2 Durability — B2.3.1 (a)

F2 Hazardous building materials — F2.3.1

G13 Foul water — G13.3.1, G13.3.2

Compliance

All Holman Industries Certifications and Licences are available for download at the HOLMAN Website under the following link: Plumbing Supplier - Australian Made & Accredited - Holman Industries

- AS/NZS 1254 ISO Type 5 - Licence No. 70007
- AS/NZS 1254 ISO Type 5 - Licence No. 70040
- AS/NZS 4020:2018 – Licence No. AMI-TT-74772
- Best Environmental Practice (BEP) Licence No. 78003
- Best Environmental Practice (BEP) Licence No. 78006
- ISO 9001:2015 Licence No. QMS-21388

All Type Testing documents are strictly confidential, information is retained with our Certification Assessment Body (CAB) responsible for compliance and licencing and may only be released by application by formal written request. Holman Industries reserves the right to deny access at company discretion.

Contact Details

Manufacture location (Australia)	11 Walters Drive, Osborne Park, WA 6017 Australia U 1-2/68 Lisgar Street, Virginia, QLD 4014 Australia U4/90 Quinns Hill Road East, Stapylton, QLD 4207 Australia
Legal and trading name of manufacturer	BOOKLEAF as Trustee for the EDEN Unit Trust T/A Holman Industries
Manufacturer address for service	11 Walters Drive Osborne Park WA 6017 Australia
Manufacturer location (Overseas)	Shanghai Xinguanghua Plastic Industry Co T/A Zhejiang Vicpic Plastic Industry Co. Ltd – No 3699 Yuanjiang Road, Minghuang, Shanghai, China Yonggao Co. Ltd – No. 2 Daixi Road, Huangyan Economic Development Zone, Taizhou, Zhejiang China
Legal and trading name of importer	BOOKLEAF as Trustee for the EDEN Unit Trust T/A Holman Industries
Manufacturers website	**www.holmanindustries.com.au**

Product Limitations

Effect of Low Temperature	The impact resistance of PVC-U pipe and fittings decreases with the reduction in ambient temperature; therefore, extra care should be exercised if installations are carried out at ambient temperature near 0° C.
Effect of Elevated Temperatures	PVC-U fittings have a softening point of approximately 80° C. As the material has a low thermal conductivity. The recommended maximum continuous operational temperature for PVC-U pipe systems is 60°C. This limitation refers to the complete pipe wall being at 60°C and would also apply to continuous flow of a fluid at 60°C.
Specialised Applications	PVC-U pipe and fittings systems are more than adequate for normal domestic applications in low and multi-rise dwellings. For intermittent flow, the fluid temperature can be higher due to the low thermal conductivity of PVC. In these circumstances, the duration and volume of the discharge will determine the maximum temperature, which should be assessed in terms of an average thermal limitation of 60°C across the pipe wall thickness.

Product Advantages

Light weight	The light weight of Holman PVC-U stormwater fittings can lead to significant handling advantages
High Flow Rates	Products smooth inner bores and lack of internal projections ensure optimum hydraulic capacity over the long-term life of the pipeline system.
Flammability	PVC-U is highly resistant to and does not support combustion. PVC-U is extremely difficult to ignite and will not propagate a fire.
Non- Conductivity	PVC-U does not conduct electricity and is not subject to galvanic or electrolytic action.
Tree root Resistance	Solvent Weld joints which are installed with compliance to AS/NZS 2032 and AS/NZS 3500 have excellent resistance to intrusions from tree roots which may result in blockages or infiltration in other industry pipeline systems. Elastomer seal joints which are installed with compliance to AS/NZS 2032 and AS/NZS 3500 are designed with a higher interface pressure which provide a high resistance to tree root intrusions.
Low installation costs	The light weight of Holman PVC-U stormwater fittings integrate easily with commonly used PVC-U stormwater pipeline systems at various lengths to reduce installation costs.

Chemical resistance

The well documented optimal chemical resistance of PVC-U to acid alkalis, oxidising and reducing agents make it particularly suitable for a wide range of industrial and domestic applications. In general PVC-U is resistant to most oils, fats, alcohols, and aromatic-free petrol, but is unsuitable for use with aromatic and chlorinated hydrocarbons, esters and ketones which can ultimately lead to swelling and softening of the material/s.

Impact Resistance

The impact resistance of PVC is reduced at lower temperatures. Under impact loading, PVC exhibits a transition between ductile behaviour at room temperature and brittle behaviour as the temperature is reduced. The ductile to brittle transition temperature is dependent on formulation. For some grades, impact strength at -20°C is approximately half that at +20°C.

Provision for expansion and contraction

Consideration must be given to thermal expansion and contraction in situations where the installation temperature differs from the operation temperature, or where thermal variation is likely during operation and maintenance. The coefficient of thermal expansion is 7 x 10-5/ °C which means that for example, a pipe system which is installed at 20°C, and then cooled down to -10°C during operation, will contract by approximately 2.10mm for every metre in length. Pipe design systems shall ensure that thermal movement does not result in a significant “bending moment” at the rigid connections or to bends and tees. Refer to AS/NZS 2032 – Installation of PVC pipe systems, for guidance on provision for thermal movement.

Installation requirements

Significant advantages of PVC-U Stormwater pipe and fittings systems is the products light weight and ease of handling. This reduces both in trench labour as the pipe and fittings systems can be installed without the use of sophisticated machinery.

Stormwater pipelines rely on gravity to achieve an adequate flow of fluids, therefore the design grade along the length of the pipeline must be maintained and must adhere to specifications between inspection positions. The installer must ensure that the pipeline system is installed by following guidelines set out in AS/NZS 3500 – “National Plumbing Standard” and AS/NZS 2032 – “Installation of PVC-U pipe systems” as applicable.

Special Considerations

Workmanship and correct procedures are critical for solvent joints to assure joint durability, solvent jointing should only be carried out in dry conditions above an ambient temperature of 5°C, by appropriately trained personnel. Solvent cement jointing is a welding fusion process and not a gluing process. Priming fluid and solvent cements work by softening the intended surfaces. When they are brought together at the jointing stage, the two PVC surfaces chemically bond together.

It is important that the spigot provides an interference fit into the socket. Do not attempt to make a joint that does not achieve an interference fit when dry.

In some cases, the actual area of contact between the spigot and the socket may only be a few millimetres. The spigot end must be cut square to ensure an adequate joint. Before proceeding, visually inspect the spigots and sockets to make sure they are not cracked or damaged.

Jointing Methods

PVC-U pipelines are designed to be easily assembled. Stormwater Solvent Weld (SWJ) pipes and fittings can be fully in an above trench application. SWJ Stormwater pipe and fittings systems may not be lowered into the trench until the solvent cement has completed the initial set stage.

Solvent Weld joint

Only Solvent Cement and Priming Fluids that are manufactured to AS/NZS 3879 “Solvent Cements and Priming Fluids for PVC (PVC-U and PVC-M) and ABS pipe and fittings” are recommended.
To achieve a strong and leak free joint Installers shall:

1. Select the correct solvent cement for the intended application/s
2. Select the correct pipe for the application and the correct fitting/s using the relevant Holman Product Catalogue
3. Follow jointing steps 1 to 8 carefully in jointing instructions. Shortcuts will result in poor joints that are likely to leak or cause system failures.

Solvent Weld Jointing Instructions – Step 1 to 8

*** Do not work with hot pipes and fittings or on hot windy days without providing adequate protection to the pipes and fittings from the wind.*
When not in use always keep lid on solvent cement to minimise evaporation. DO NOT use solvent if over 12 months old.

Step 1 – Cut spigot square and deburr

Cut the spigot as square as possible using a mitre box and hacksaw or power saw where applicable. Remove all swarf and burrs from both inside and outside edges with a sharp knife, file, or using sandpaper. Swarf and burrs which are left behind will wipe or remove the solvent cement and prevent proper joining. Also, swarf left behind may dislodge and jam taps and valves.

Step 2 – Check alignment

Check and ensure the pipe and spigot or fittings are properly aligned. Adjustments or alterations must be made prior to applying the solvent cement so the joint is not compromised at the welding stage.

Step 3 – Mark Clearly

Mark the spigot by using a pencil or marker only, at a distance equivalent to the internal depth of the socket. Do not score or damage the surface of the pipe or fitting.

Step 4 – Clean and soften the surface

Thoroughly clean the inside of the socket and area between the pencil (witness) mark and the spigot end with a clean, lint free cotton cloth dipped in priming fluid (defer from using any synthetic material). This removes dirt and grease and will soften the PVC surface. Attention: Do not brush or pour the priming fluid onto the jointing surface.

** Holman Industries recommends the use of protective gloves. If contact with skin occurs, wash affected area with soap and water immediately.*

Step 5 – Coat socket first – then spigot

Apply a thin and uniform coat of solvent cement onto the internal surface of the socket. Ensure that solvent build up does not occur in the root area of the socket. A pool of solvent cement in the root area of the socket will severely weaken the pipe or fitting. Next apply a uniform coat of solvent cement to the external surface of the spigot up to the pencil mark (witness) mark.

Step 6 – Assemble and hold for 30 seconds

Quickly assemble the joint before the solvent cement starts to set, by pushing the spigot squarely and firmly as far as the pencil (witness) mark, ending with a quarter turn to ensure the cements spreads evenly in the joint. Hold the joint in position for a minimum of thirty (30) seconds without any movement.

Step 7 – The welding stage

Wipe of any excess solvent cement from outside of the joint and where possible, from the inside of the joint. Do not disturb the joint for at least a further five (5) minutes, movement may break the initial welding bond.

Step 8 – Curing and testing

The “cure time” ensures the joint will achieve sufficient strength to allow for testing by internal pressure or vacuum. The minimum cure time for solvent weld joints in DWV pipes and fittings is twenty-four (24 hours)

Handling and Storage

While PVC-U pipes and fittings are light and easy to handle, careless handling may result in unnecessary damage. Pipes and fittings should not be dropped or thrown onto hard surfaces or allowed to come into contact with sharp objects that could inflict deep scratches.

Bowing or distortion

- Pipes and fittings can distort under high applied loads due. This may be caused by not being properly supported or stacking incorrectly. This can be aggravated at high ambient temperature and long-term storage.
- Heat sources should be avoided to reduce the risk of distortion.
- If pipes are stored outdoors for more than 12 months, they should be protected by for example, hessian or white shade cloth in a manner that allows ventilation and avoids heat build-up. Fittings are to be stored indoors only, up to the installation stage.

Responsible person

As the responsible person as set out in Regulation 3, I confirm that the information supplied in this declaration is based on information supplied to the company as well as the company’s own processes and is therefore to the best of my knowledge, correct.

I can also confirm that Holman Industries manufactured Drain, Waste and Vent (DWV) U-PVC Fittings are not subject to a warning on ban under s26 of the Building Act.

Signed for and on behalf of :

Mauro Meloni
National QA and Technical Compliance Manager
November 2023