


Chin Lean Plastic Factory Sdn.
Bhd. was incorporated in the year 1979. The company starts with a humble beginning producing PVC hose and small diameter uPVC pipes for commercial use to a more sophisticated manufacturing facility producing a range of uPVC pipes, PVC hose, insert tubes and uPVC fittings both for projects as well as for commercial usage. Chin Lean Plastic Factory Sdn. Bhd. is located on a well planned, modern facilities with ample local workforce of more than 100 workers in a small town of Langkap in the state of Perak Darul Ridzuan.

The company involved in the manufacturing of quality uPVC
pipes during the early 90's with the receipts of Sirim certification for its product. The company's major market covers the whole of Peninsular Malaysia as well as Sabah and Sarawak, dealing with major hardware shop and also exports to neighbouring countries like Singapore and Brunei.

The company also has been supplying quality uPVC pipes to water management authorities like Lembaga Air Perak (L.A.P.) and SAJ Holding Sdn. Bhd. for the water reticulation projects. With our own fleet of lorry transport, the company is able to deliver our products to any corner of Peninsular Malaysia at the shortest possible time.

We produce uPVC pipes of consistent quality product with continuity as the company received certificate of Quality System and product certification as listed below:

1993 received product certification from SIRIM awards
2002 received ISO MS 9001:2000 from SIRIM QAS International Sdn. Bhd.




19


SPAN
SELLOC S-21 uPVC Bell-Mouth pipe is complied to MS628: Part 2: Section 2.1 with available diameter from 100 mm to 300 mm for water pressure application. Pipe designed has a very high performance with integrated system sealing where the seal and mandrel act together as a tool to form the pipe socket during manufacture. The main principal of the joint is the use of rubber sealing ring for good sealing purpose, easy and quickly to install. It is automatically compressed to form an effective seal when the spigot ends is insert into the socket.

## PRODUCT FEATURES

Application: Water supply
Product range:
DN 100 mm to DN 300 mm
Maximum working pressure:
9 bar to 15 bar.
Material: Unplasticized Polyvinyl Chloride (uPVC / PVC-U)
Length: 6 meter \& 5.8 meter (upon customer request)
Colour: Grey / Blue

## RUBBER TYPE

Rubber ring seal is made from material of black EPDM rubber (Ethylene Propylene Diene Monomer) complied to BS EN 681 with dual hardness seal consisting of:
Soft zone - The flexible rubber is designed with a combined compression and lip seal acting on both spigot and socket to maximize the seal effectively
rubber, bonded to flexible rubber to holds the seal firmly in place

## PRODUCT FUNCTION

The seal become part of socket

forming tool used to shape it's own seal groove reducing Irregularities and tolerances in the socket. The seal is Equally effectiveunderboth positive and negative pipe pressure (vacuum).

Under positive pressure rubber section is pressed forward, giving a still moreeffectiveseal. Thehigher pressure giving the greater sealing force.


Positive pressure


Negative pressure

Under negative pressure the rubber section pressed backwards, it expands radially and
seals effectively against both the socket and spigot. The sealing action of the front rubber edge prevents sand or soil from entering the seal.

## MARKING

Printing by inject printer as following identification (as shown at bottom of the page)

## ADVANTAGES

- Long life span
- Cost effective
- Lightweight
- No heavy equipment needed
- Fast and easy to assemble \& dismantle


## QUALITY ASSURANCE

Quality Management System complied to ISO 9001:2008 by SIRIM QAS International Sdn. Bhd. Certificate No.: AR 2643

## CERTIFICATION

This pipe certified by SIRIM QAS International Sdn. Bhd. since 1993 with certificate No.: PCOO7103

- Standard reference: MS628: Part 2. Section 2.1

| Certification Body Logo | Manufacturer Logo \& Name | Standard Reference | Nominal Diameter | Nominal Pressure | Material | License <br> No. | Date Shift \& Time | Machine No. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| RIM | CHINLE | S628 | 100MM | N12 | C P | 106 | 101A | 00 (8) |



## APPLICATION

uPVC telecommunication conduit are suitable for use in: High speed Broadband (HSBB), Closed-circuit television (CCTV) and fiber optic cable.

## PRODUCT FEATURES

Material : Unplasticized Polyvinyl Chloride (uPVC)
Size: 107mm
Colour: Black
Length: 6 meter with socket ended Joint: Solvent cement weld



CHINLEAN ${ }^{\circledR}$ uPVC conduit has smooth wall constructed to provide reliable mechanical protection to the telecommunication cables contained therein and is used in a wide range of underground installation. These conduit complied with standard of MS1034.

## MARKING

 intervals.
## MATERIAL PROPERTIES

Specific gravity: 1.4
Specific heat: 1000J/ $\mathrm{kg} /{ }^{\circ} \mathrm{C}$ Thermal conductivity:
$1.6 \mathrm{~W} / \mathrm{m} /{ }^{\circ} \mathrm{C}$ Coefficient of linear expansion:
$6 \times 10^{-5} \mathrm{~mm} / \mathrm{mm} /{ }^{\circ} \mathrm{C}$
Vicat softening point: $81^{\circ} \mathrm{C}$ Modulus of elasticity in bend: 3000N/mm²
Tensile strength at yield: $45 \mathrm{~N} / \mathrm{mm}^{2}$
Elongation at break: 80\%

All conduit are printed with used silk screen printer, the following details at approximately meter

## ADVANTAGES

- Efficient use of material
- Lighter weight per unit length
- Superior strength
- Long pipe lengths
- Improved handling and durability
- High performance and cost efficiency
- High impact strength
- Easy handling/ installation


## QUALITY ASSURANCE

Chin Lean Plastic has established the Quality Management System complied to ISO 9001:2008 assessed by SIRIM QAS International Sdn. Bhd. to ensure quality system and quality product fulfill to the requirements. Certificate No.: AR 2643

## CERTIFICATION

CHINLEAN ${ }^{\circledR}$ uPVC underground drainage and sewer pipe is certified by SIRIM QAS International Sdn. Bhd. certification body of Malaysian since 2002 with certificate No.: PC007108

- Standard reference: MS 1034.

|  | Outside <br> Diameter (D1) |  | Socket inside <br> diameter (D2) |  | Wall thickness (T) |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Nominal Size | Min. | Max. | Min. | Max. | Min. | Max. |  |  |  |  |  |  |
| 107 | 107.0 | 108.0 | 108.5 | 109.0 | 2.6 | 3.0 |  |  |  |  |  |  |
| All dimensions in millimeter $(\mathrm{mm})$ |  |  |  |  |  |  |  |  |  |  |  |  |



## APPLICATION

Pipes application for the conveyance of normal domestic effluents Including foul and surface water sewers.

## PRODUCT FEATURES

Material: Unplasticized Polyvinyl
Chloride (uPVC)
Colour: Golden Brow
Length: 6 meter \& 5.8 meter
Joint: Solvent cement weld

## MATERIAL PROPERTIES

Specific gravity: 1.4
Specific heat: $1000 \mathrm{~J} / \mathrm{kg} /{ }^{\circ} \mathrm{C}$

Coefficient of linear expansion: $6 \times 10^{-5} \mathrm{~mm} / \mathrm{mm} /{ }^{\circ} \mathrm{C}$



CHINLEAN ${ }^{\circledR}$ uPVC drainage and sewer is smooth internal and external wall pipes manufacturer with comply to MS979: Part 1 (BS 4660) for diameter up to 155 mm and MS979: Part 2 (BS 5481) for pipes diameter 200mm and above.

Vicat softening point: $79^{\circ} \mathrm{C}$ Modulus of elasticity in bend: 3000N/mm²
Tensile strength at yield: 45N/ $\mathrm{mm}^{2}$ Elongation at break: 80\%

## MARKING

All drainage and sewer pipes are printed, the following details at approximately meter intervals. The fittings has clearly and durably marked by moulded impression for each cavity of products.

## ADVANTAGES

High Impact Strength - to ensures a greater resistance to the rigorous pipe laying conditions.
Easy Handling / Installation - the ease of handling, installation and transport provide overall project savings.
Chemical Resistance - a high level of chemical resistance to the wide range of substances found in both effluent and contaminated soils.

Superior flow characteristics - it's very smooth bore and chemical resistance characteristics ensure no scale or built up corrosion, thus producing a high flow capacity.

## QUALITY ASSURANCE

Chin Lean Plastic is established the Quality Management System has been complies to ISO 9001: 2008 assessed by SIRIM QAS International Sdn. Bhd. to ensure quality system and quality product fulfill to the requirements. Certificate No.: AR 2643

## CERTIFICATION

CHINLEAN ${ }^{\circledR}$ uPVC underground drainage and sewer pipe is certified by SIRIM QAS International Sdn. Bhd. certification body of Malaysian since 1996 with certificate No.:

PC007102 (MS979: Part 2) and PC007105 (MS979: Part 1)



| Equal Single Branch (88 ${ }^{\circ}$ ) |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | Dimension (mm) |  |  |  |  |
| Nominal Size (DN) (mm) | D1 | L.1 | L.2 | Z1 | Z2 |
| 100 | 110.2 | 236 | 137 | 140 | 89 |
| 155 | 160.2 | 321 | 178 | 205 | 120 |


| $45^{\circ}$ Bend |  |  |  |
| :---: | :---: | :---: | :---: |
|  |  | Dimension (mm) |  |
| Nominal Size (DN) (mm) | D1 | L. | Z1 |
| 100 | 110.2 | 72 | 24 |
| 155 | 160.2 | 93 | 35 |
| 200 | 200.4 | 130 | 59 |


| Straight Coupling |  |  |  |
| :---: | :---: | :---: | :---: |
|  |  | Dimension (mm) |  |
| Nominal Size (DN) (mm) | D1 | Z1 |  |
| 100 | 110.2 | 100 | 4 |
| 155 | 160.2 | 120 | 4 |
| 200 | 200.4 | 200 | 4 |



| 'S' Trap ('U' Body) M/F |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | Dimension (mm) |  |  |  |  |
| Nominal Size (DN) (mm) | D1 | L.1 | L2 | Z1 | Z2 |
| 100 | 110.2 | 392 | 262 | 274 | 50 |

## uPVC Pressure Pipe with Solvent Cement Joint (SCJ)



## PIPE CATAGORIES

uPVC pressure pipes are specified by: Nominal size (DN): Measurement of out-side diameter of pipes in millimeter (mm)
Class of pipes: maximum working pressure in units Bar, MPa or Psi Type of joint: Solvent cement joints (SCJ)

## PRODUCT FEATURES

Main Application: Water supply Other application: Industrial use, telecommunication, electrical, mining Material: Unplasticized Polyvinyl Chloride (uPVC / PVC-U).
Product range: Supplied in plain end size DN 15 to DN 300mm or socket at one end for solvent weld connection for DN 80 mm to DN 300 mm Maximum working pressure: 6 bar to 15 bar for water supplier


CHINLEAN ${ }^{\circledR}$ uPVC Pressure pipes are superior material for water conveying system with higher internal pressure with major use in cold water service and industrial use. This piping system ranging sizes from DN 15 mm to DN 300 mm , in pressure ratings from 6 bar to 15 bar and high pressure up to 40 bar of Class 7. The pipes complied to standard of MS628: Part 1 (BS3505) and (BS3506).

and 22 to 40 for industrial use Working temperature:
uPVC pipe generally can be used at temperatures between $20^{\circ} \mathrm{C}$ to $50^{\circ} \mathrm{C}$. Temperature up to $60^{\circ} \mathrm{C}$ can be accommodated if at a reduced pressure rating and service life are acceptable
Length: 6 meter \& 5.8 meter (upon customer request)
Colour: Grey / Blue

## MARKING

Printing by inject printer, as following identification: Pressure pipes marked by inject printer, and fittings has clearly and durable marked by moulded impression for each cavity of products

| CLASSFIFICATION OF PIPES |  |  |  |
| :---: | :---: | :---: | :---: |
| Pressure | Maximum Working Pressure <br> (Bar / MPa / Psi) |  | Standard |
| Temperature | $20^{\circ} \mathrm{C}$ | $30^{\circ} \mathrm{C}$ |  |
| Pipes Class |  |  |  |
| Class B | 6/0.6 / 87 | 4.8 / 0.48 / 70 | MS 672 |
| PN 9 | 9/0.9/131 | $7.2 / 0.72 / 104$ | MS 628.1 |
| PN 12 | 12/1.2/174 | 9.6/0.96/139 | MS 628.1 |
| PN 15 | 15/1.5/218 | 12.0/1.2/174 | MS 628.1 |
| 15 mm | 40 / 4.0 / 580 | 32 / 3.2 / 464 | MS 672 |
| 20 mm | $32 / 3.2$ / 464 | 25.6/2.6/371 | MS 672 |
| ¢ | $32 / 3.2$ / 464 | 25.6/2.6/371 | MS 672 |
| © 32 mm | 28/2.8/406 | 22.4/2.2/325 | MS 672 |
| 40 mm | 25/2.5/363 | 20.0/2.0/290 | MS 672 |
| 50 mm | $22 / 2.2 / 319$ | 17.6/1.8/255 | MS 672 |

## QUALITY ASSURANCE

Quality Management System complied to ISO 9001:2008 by SIRIM QAS International Sdn. Bhd. Certificate No.: AR 2643
uPVC PRESSURE FITTINGS WITH SOLVENT CEMENT JOINT
A range of fitting manufactured is available for use with CHINLEAN ${ }^{\circledR}$ uPVC pressure pipes in the size as shown.

Standard Reference: MS628: Part 2: Section 2.1 (BS4346: Part 1)

| Certification Body Logo | Manufacturer Logo \& Name | Standard Reference | Nominal Diameter | Nominal Pressure | Material | License <br> No. | Date Shift \& Time | Machine No. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SIRIM | CHINLEAN | MS628:1 | 00MM | 12 u | C PC | 106 | 1101 A | 2:00 |

Pipes Dimension \& Product Range


| PIPES RANGE |  |  |  |
| :--- | :---: | :---: | :--- |
| Product Description | No. of Size | Size (mm) | Standard |
| Pipes (Plain End) |  |  |  |
| Class B | 6 | $80,100,155,200,250,300$ | MS 762 |
| PN 9 | 7 | $50,80,100,155,200,250,300$ | MS 628.1 |
| PN 12 | 10 | $32,40,50,65,80,100,155,200,250,300$ | MS 628.1 |
| PN 15 | 12 | $15,20,25,32,40,50,80,100,155,200,250,300$ | MS 628.1 |
| Class 7 | 5 | $15,20,25,32,40,50$ | MS 762 |
| Pipes (with Socket End) |  |  | MS 762 |
| Class B | 6 | $80,100,155,200,250,300$ | MS 628.1 |
| PN 9 | 6 | $80,100,155,200,250,300$ | MS 628.1 |
| PN 12 | 6 | $80,100,155,200,250,300$ | MS 628.1 |
| PN 15 | 6 | $80,100,155,200,250,300$ |  |



| PIPES DIMENSION |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Nominal Diameter (DN) |  | Outside Diameter (D) <br> No. of Size | Wallthickness T(mm) |  |  |  |  |
| mm | Inch |  | Class B (MS 762) | $\begin{gathered} \text { PN9 } \\ \text { (MS628.1) } \end{gathered}$ | $\begin{gathered} \text { PN12 } \\ \text { (MS628.1) } \end{gathered}$ | $\begin{gathered} \text { PN15 } \\ \text { (MS628.1) } \end{gathered}$ | Class 7 |
| 15 | 1/2" | 21.2-21.5 |  |  |  | 1.7-2.1 | 3.7-4.3 |
| 20 | 3/4" | 26.6-26.9 |  |  |  | 1.9-2.5 | 3.9-4.5 |
| 25 | $1 "$ | 33.4-33.7 |  |  |  | 2.2-2.7 | 4.5-5.2 |
| 32 | 11/4" | 42.1-42.4 |  |  | 2.2-2.7 | 2.7-3.2 | 4.8-5.5 |
| 40 | 11/2" | 48.1-48.4 |  |  | 2.5-3.0 | 3.1-3.7 | 5.1-5.9 |
| 50 | 2 " | 60.2-60.5 |  | 2.5-3.0 | 3.1-3.7 | 3.9-4.5 | 5.5-6.3 |
| 65 | $21 / 2^{\prime \prime}$ | 75.7-76.3* |  |  | 3.9-4.5 |  |  |
| 80 | $3 "$ | 88.7-89.1 | 2.9-3.4 | 3.5-4.1 | 4.6-5.3 | 5.7-6.6 |  |
| 100 | $4 "$ | 114.1-114.5 | 3.4-4.0 | 4.5-5.2 | 6.0-6.9 | 7.3-8.4 |  |
| 155 | $6 "$ | 168.0-168.5 | 4.5-5.2 | 6.6-7.6 | $8.8-10.2$ | 10.8-12.5 |  |
| 200 | 8" | 218.8-219.4 | 5.3-6.1 | 7.8-9.0 | 10.3-11.9 | 12.6-14.5 |  |
| 250 | 10" | 272.6-273.4 | 6.6-7.6 | 9.7-11.2 | 12.8-14.8 | 15.7-18.1 |  |
| 300 | 12" | 323.4-324.3 | 7.8-9.0 | 11.5-13.3 | 15.2-17.5 | 18.7-21.6 |  |
| * Dimension of outside diameter is complied to standard of JIS K 6741.84 |  |  |  |  |  |  |  |


| FITTINGS RANGE |  |  |
| :---: | :---: | :---: |
| Product Description | No. of Size | Size (mm) |
| 90 ${ }^{\circ}$ Elbow | 13 | 15, 20, 25, 32, 40, 50, 65*, 80, 100*, 155*, 200*, 250*, 300* |
| Reducing Elbow | 3 | 20x15, 25x20, $25 \times 20$ |
| P/T Elbow | 6 | 15, 20, 25, 32*, 40*, 50* |
| $45^{\circ}$ Elbow | 6 | 50*, 80*, 100*, 155*, 200*, 250* |
| Tee | 12 | 15, 20, 25, 32, 40, 50, 65*, 80*, 100*, 155*, 200*, 250* |
| Reducing Tee | 33 | $20 \times 15,25 \times 15,25 \times 20,32 \times 15,32 \times 20,32 \times 25,40 \times 15^{*}, 40 \times 20,40 \times 25,40 \times 32,50 \times 15^{*}, 50 \times 20,50 \times 25,50 \times 32,50 \times 40$, $65 \times 40^{\star}, 65 \times 50^{*}, 80 \times 25,80 \times 32,80 \times 40,80 \times 50,80 \times 65^{\#}, 100 \times 40^{*}, 100 \times 50,100 \times 80,155 \times 80^{*}, 155 \times 100^{*}, 200 \times 100^{*}$, $200 \times 155^{\#}, 250 \times 155^{F}, 250 \times 200^{F}, 300 \times 200^{F}, 300 \times 250^{F}$ |
| P/T Tee | 2 | 15, 20 |
| D/E Socket | 13 | 15, 20, 25, 32, 40, 50, 65*, 80, 100, 155*, 200F, 250F, $300{ }^{\text {F }}$ |
| Reducing Socket | 29 | $20 \times 15,25 \times 15,25 \times 20,32 \times 15,32 \times 20,32 \times 25,40 \times 15 *, 40 \times 20,40 \times 25,40 \times 32,50 \times 15^{*}, 50 \times 20,50 \times 25,50 \times 32,50 \times 40,65 \times 40^{*}$, $65 \times 50^{*}, 80 \times 50^{*}, 80 \times 65^{*}, 100 \times 50^{*}, 100 \times 80^{*}, 155 \times 80^{*}, 155 \times 100^{*}, 200 \times 100^{*}, 200 \times 155^{*}, 250 \times 155^{F}, 250 \times 200^{*}, 300 \times 200^{F}$, $300 \times 250^{\text {F }}$ |
| Valve Socket | 10 | 15, 20, 25, 32, 40, 50, 65*, 80, 100*, 155* |
| P/T Socket | 9 | 15, 20, 25, 32, 40, 50, 65*, 80, 100 |
| Tank Connector | 6 | $15,20,25,32,40,50$ |
| Jam Nut | 6 | 15, 20, 25, 32, 40, 50 |
| End Cap | 11 | 15, 20, 25, 32, 40, 50, 65*, 80, 100, 155*, 200* |
| Reducing Bush | 10 | 20x15, 25x15, 25x20, 32x25*, 40x25*, 40x32*, 50x25*, 50x32*, 50x40*, 100x80* |
| Plug | 8 | 15, 20, 25, 32, 40, 50, 80*, 100* |
| Flange | 9 | 40*, 50*, 65*, 80*, 100*, 155*, 200*, 250*, 300* |
| Pipe Clip | 8 | 15*, 20*, 25*, 32*, 40*, 50*, 80*, 100* |
| * Other source * Imp | ${ }^{\text {F Fabricate }}$ |  |

## uPVC Pressure Fittings Product Ranges



| Size (mm) |  |  |
| :---: | :---: | :---: |
| 15 | 25 | $40^{*}$ |
| 20 | $32^{*}$ | $50^{*}$ |


Reducing Tee

| Size (mm) |  |  |
| :--- | :--- | :--- |
| $20 \times 15$ | $50 \times 20$ | $100 \times 40^{*}$ |
| $25 \times 15$ | $50 \times 25$ | $100 \times 50$ |
| $25 \times 20$ | $50 \times 32$ | $100 \times 80$ |
| $32 \times 15$ | $50 \times 40$ | $155 \times 80^{*}$ |
| $32 \times 20$ | $65 \times 40^{*}$ | $155 \times 100^{*}$ |
| $32 \times 25$ | $65 \times 50^{*}$ | $200 \times 100^{*}$ |
| $40 \times 15^{*}$ | $80 \times 25$ | $200 \times 155^{*}$ |
| $40 \times 20$ | $80 \times 32$ | $250 \times 155^{F}$ |
| $40 \times 25$ | $80 \times 40$ | $250 \times 200^{*}$ |
| $40 \times 32$ | $80 \times 50$ | $300 \times 200^{F}$ |
| $50 \times 15^{*}$ | $80 \times 65^{*}$ | $300 \times 250^{F}$ |

 $25 \times 15$ 50x20 155×80* $25 \times 2050 \times 25$ 155×100* $32 \times 15$ 50×32 200×100* $32 \times 20$ 50x40 200×155* $32 \times 2565 \times 40^{*} 250 \times 155^{F}$ 40×15* 65×50* 250x200* $40 \times 2080 \times 50300 \times 200^{F}$ $40 \times 2580 \times 65^{\text {\# }} 300 \times 250^{\text {F }}$ $40 \times 32100 \times 50$
Reducing Socket


| Size (mm) |  |  |
| :---: | :---: | :---: |
| 15 | 25 | 40 |
| 20 | 32 | 50 |


| Size (mm) |  |  |
| :--- | :--- | :--- |
| $20 \times 15$ | $40 \times 20^{*}$ | $50 \times 40^{*}$ |
| $25 \times 15$ | $40 \times 25^{*}$ | $100 \times 80^{*}$ |
| $25 \times 20$ | $50 \times 25^{*}$ |  |
| $32 \times 25^{*}$ | $50 \times 32^{*}$ |  |

Reducing Bush


| Size (mm) |  |  |
| :---: | :---: | :---: |
| $15^{*}$ | $32^{*}$ | $80^{*}$ |
| $20^{*}$ | $40^{*}$ | $100^{*}$ |
| $25^{*}$ | $50^{*}$ |  |



## APPLICATION

NO. 70 Solvent Cement is suitable on all types of uPVC pipe applications of use like potable water pressure systems, irrigation, conduit, industrial pipe applications, sewer, drain, waste and vent systems.

## ADVANTAGES

- Superior bonding strength
- Fast Setting
- Waterproof Bonding


## SPECIFICATIONS

Colour: Transparent
Resin: PVC
Density: Approx. 0.96g/ml
Viscosity: 1,000cps @ $23^{\circ} \mathrm{C}$

## STANDARDS AND

 CERTIFICATION LISTINGSStandard; MS628: Part2: Section
2.2 (equivalent to BS 4346

Part 3). Certified by; SIRIM QAS International Sdn. Bhd. Certificate no. of: PC007118. Listed in List of local building material / product

CHINLEAN ${ }^{\circledR}$ No. 70 PVC Solvent Cement is clear colour, highly soluble fastdry, high strength and stable quality, designed for all classes of uPVC pressure pipes and fittings from 15 mm to 100 mm diameters. When it is used in uPVC pipes it will instantly dissolve and blend with the pipe to produce a film of 0.4 mm thick, so that the fitting gap will be strong and stable.
from IRKAM QA Services Sdn. Bhd.

## BRUSH SIZE

Up to 25 mm : Ø8mm round brush
32 to 50 mm : 1" flat brush
65 to 100 mm : 2" flat brush

## AVAILABILITY

NO. 70 PVC Solvent Cement is available in 500 g weight metal cans. 20 cans per carton box (508mm x $220 \mathrm{~mm} \times 225 \mathrm{~mm}$ )

## SAFETY \& FIRST AID DIRECTIONS

Avoid contact with eyes, skin and mouth. In case of contact with eyes, flush with water immediately for 15 minutes. Use in well ventilated area. Keep out of reach of children

## CAUTION

Do not decant or dilute, and the useful life of solvent cement can be conserved by replacing the lid or cap, as applicable immediately after each time of use.

## SHIPPING

Proper Shipping Name: Adhesive
Hazard Class: 3
Number: UN 1133
Label Required: Flammable Liquid

## STORE

Highly inflammable, keep away from heat source or naked flames. Store in dry and cool place.



Cut the pipe square and deburr


Using a clean brush apply a thin, uniform coat of CHINLEAN ${ }^{\circledR}$ No. 70 solvent cement to the both internal surface of socket, and then to the external surface (pic. 05) of the spigot up to the mark


Mark the spigot at a distance equal to the internal depth of the socket


Immediately push the spigot straight (DO NOT TWISTING) into the socket as far as the mark. Hold the jointing for 20 to 30 seconds


Using the clean cloth, wipe away all loose dirt and moisture from bonding surface


Installation - uPVC Bell-Mouth Pressure Pipe Joint (RRJ)


Each pipes should be checked to make sure free from scratch, sand, mud, foreign matter or other damage. Clean the spigot and socket end of pipes.


Lubricate the spigot by using correct lubricant, and DO NOT LUBRICATE THE RING or THE GROOVE



DO NOT REMOVE RUBBER SEALING RING from the groove of Bell-Mouth Pipe


Carefully align the pipes before attempting the thrust home. Push the spigot into the socket until the witness mark remins just visible. Jointing may be assisted by the use of a crowbar and block


Make sure the spigot have the the chamfer and witness mark


In this position clearance is automatically allowed for expansion and contraction, so do not push the pipe pass the witness mark

uPVC Bell-Mouth Pressure Pipe Joint

| Nominal Size <br> (DN) $(\mathrm{mm})$ | Outside Diameter | Wall Thickness (T) $(\mathrm{mm})$ |  |  | Insertion |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | PD | PN | PN 12 | PN 15 |  |
| 100 | $114.1-114.5$ | $4.5-5.2$ | $6.0-6.9$ | $7.3-8.4$ | 88 |
| 155 | $168.0-168.5$ | $6.6-7.6$ | $8.8-10.2$ | $10.8-12.5$ | 107 |
| 200 | $218.8-219.4$ | $7.8-9.0$ | $10.3-11.9$ | $12.6-14.5$ | 138 |
| 250 | $272.6-273.4$ | $9.7-11.2$ | $12.8-14.8$ | - | 168 |
| 300 | $323.4-324.3$ | $11.5-13.3$ | $15.2-17.5$ | - | 203 |

## TRENCHING AND BEDDING

uPVC pipe may be laid with the same as pipe of other materia, detail of trenching and embedment will vary depending on the soil condition, authorities body or type of project. The trench should be as narrow as practical, but should be still sufficient to allow the proper placing and compaction of bedding material to fill at the side of the pipes. Recommended minimum trench width by standard is 200 mm wider than outside diameter of pipes as showed in <table 12>.

Trench depth should be enough to allow for the bedding/underlay, pipes diameter and the minimum recommended pipes cover as showed in <table 13>. Particular attention should be given when the pipe passed under roadway or other load bearing structure.

## PIPE EMBEDMENT MATERIAL

The material of embedment should be free from sharp edges to avoid scratch of pipe, sand or granular material are strongly recommended.

The embedment divided by three zone (as showed in following typical cross-section figure):
Bedding or Underlay - The material directly under the pipe usually recommended 75 mm to 150 mm the thickness layer.
Side Support - The material directly beside the pipe and top of bedding with minimum 100 mm width are recommended.

Pipe Overlay - The material directly the top of the pipes the minimum 150 mm .

Typical Cross-Section of Trenching Pipe Installation

## RECOMMENDED TRENCH WIDTH

| Nominal Pipe (mm) | Trench Width (mm) |  |
| :---: | :---: | :---: |
|  | minimum | maximum |
| $80-100$ | 300 | 700 |
| $150-200$ | 450 | 800 |
| $225-400$ | 600 | 900 |


| RECOMMENDED COVER DEPTH |  |
| :--- | :---: |
| Loading | Cover (mm) |
| No vehicle loading | 300 |
| Vehicle loading: |  |
| Not a roadway | 450 |
| Sealed roadway | 600 |
| Under undersealed roadway | 750 |
| Construction equipment loading | 750 |
| Embarkment conditions | 750 |



## HANDLING AND STORAGE

The installation guideline according to standard of MS: 628:Part 3.
uPVC pipes are strong lightweight than metal pipe, the result easily to handling. More care should be taken to avoid unnecessary damage to the pipes or for the safety of the workers and during transporting, handling and storage.
Do not dropped or thrown onto hard surfaces which are free from surface irregularities such as stones, branches or other sharp projections during storage.

Please be sure to keep them away from petroleum product, solvent, greases and avoids to direct sunlight or high temperature.

## STACKING

Acceptable stacking height and distance between stack is usually depend on site condition. Adequate space should be allowed for transport equipment manoeuvre without causing damage.

Stacking Bundles - Timber crate containing pipes may be in stack up to 2 m in height and should be stacked timber to timber.

Stacking Individual Pipes - Stack should not exceed 7 layers in height with maximum 1.5 m and not more than 3 m width of the bottom layer. When using pyramid stacking the maximum height should not be more than 1 m .

## LAYING

Before laying, the pipes should be checked to ensure that:

- The pipe free from cut or scratches (if the surface layer with cut depth more than 1 mm should not be used in pressure applications)
- The inside of pipe is free from foreign matter
- The diameter and pressure rating (class) match with the requirement


Pyramid stacking method


MANUFACTURING PROCESS FLOW


| MATERIAL PROPERTIES |  |  |
| :--- | :---: | :---: |
| Property | Value | Unit |
| Specific gravity | 1400 | $\mathrm{~kg} / \mathrm{m}^{3}$ |
| Specific heat | 1000 | $\mathrm{~J} / \mathrm{kg} /{ }^{\circ} \mathrm{C}$ |
| Thermal conductivity | 1.6 | $\mathrm{~W} / \mathrm{m} /{ }^{\circ} \mathrm{C}$ |
| Coefficient of linear expansion | $6 \times 10^{-5}$ | $\mathrm{~mm} / \mathrm{mm} /{ }^{\circ} \mathrm{C}$ |
| Vicat softening point | 79 | ${ }^{\circ} \mathrm{C}$ |
| Modulus of elasticity in bend | 3000 | $\mathrm{~N} / \mathrm{mm}^{2}$ |
| Tensile strength at yield @ $20^{\circ}$ | 45 | $\mathrm{~N} / \mathrm{mm}^{2}$ |
| Elongation at break | 80 | $\%$ |

## QUALITY CONTROL PROCEDURE

These quality control procedures normally include:

- Raw materials, PVC compound, processing parameters in terms of temperature, pressure and energy input.
- Visual inspection and dimension of diameter, wall thickness and length.
- Production tests carried out one sample every 8 hours:

1) Impact Tests - to check the general toughness of the pipe and its ability to withstand the normal shocks which may be expected during handling, transportation and installation during normal use.
2) Longitudinal Reversion Tests - designed to show up any excessive built-in (residual) stresses in the pipes and fittings.
3) Tensile strength - to determine the strength over elongation characteristics of pipe material when applied tension force to the sample piece.

## ADVANTAGES

Corrosion Resistance - Sanitary drains generate significant volumes of Hydrogen Sulphide gas from bacterial action, which results in the generation of dilute Sulphuric and sulphurous acids especially in turbulent areas. PVC-u has excellent resistance to Sulphuric Acid.

Weather Resistance - SWV pipes and fittings provided long term UV protection when installed above ground because there have additive Titanium Dioxide inside the PVC compounded

Handling / Installation - The ease of handling, installation and transport provide overall project savings.
Flexibility - There is flexibility to cope with water \& soil movements, subsidence and expansive clays.
Superior flow characteristics - It's very smooth bore and chemical resistance characteristics ensure no scale or built up corrosion, thus producing a high flow capacity.
Easily Machined / Cut - It may be cut and machined with simple tools, ready for jointing, anywhere on the pipe barrel.
Chemical Resistance - PVC-u pipe has excellent resistance to a wide range of chemicals at ambient temperatures. PVC should not be used with aldehydes, ethers, esters, aromatics, chlorinated hydrocarbons, ketones, benzene mixtures or similar solvents.


CHINLEAN SWV pipe is a smooth external and internal surface with solid wall PVC-u pipe to give an extra rigid durable pipe system, manufactured and tested in accordance to MS 1063: 2000 (Equivalence to BS EN 1329-1)
This is a excellence piping system intended to be used for soil and waste discharge pipework to conveyance the domestic waste water at low and high temperature, ventilating and rainwater pipework within the building structure.

CHINLEAN SWV pipe specified by:

- Diameter
- Application area code


## Nominal Size (Pipes Diameter)

This is specified by their nominal diameter or size in millimeter, the size range covers from DN 36 mm to DN 315mm (see Dimension section)

## Application Area Code

All SWV pipes and fittings marked with code "B", "BD" and " $D$ to indicate the application area for which they are intended as follow:
" $B$ " Intended to use above ground inside the building, or for components outside the building fixed into the wall.
"BD" Intended for above ground use for both inside the building, or for components outside the building fixed into the wall and buried in building structures.
" $\boldsymbol{D}$ " For the area under and within 1 m from the building where the pipes and fittings are buried in ground and are connected to the underground drainage and sewerage system.

Note: "D" application area is recommended to use of Underground Sewerage Pipe (MS 979.1 \& MS 979.2 / BS 4660 \& BS 5841) as alternative

## Service Temperature

May be used to carry liquids when subjected to a continuous flow with maximum temperature of $76^{\circ} \mathrm{C}$. Intermittent discharges of up to $100^{\circ} \mathrm{C}$ may occur, provided that duration of less than 90 seconds is observed.

## Colour

The colour of pipes and fittings is classified by application area as follow:


| Part | Name |
| :---: | :--- |
| 1 | Vent Cowl |
| 2 | Boss Connector |
| 3 | Discharge Stack Pipe |
| 4 | Tubular Trap |
| 5 | Bottle Trap |
| 6 | Pipe Sleeve |
| 7 | Grating |
| 8 | Branch Discharge Pipe |
| 9 | Floor Gully Trap |
| 10 | Equal Single Branch |
| 11 | Ventilating Stack Branch |
| 12 | 'P' Trap |
| 13 | Branch Ventilating Pipe |
| 14 | Branch Discharge Pipe |
| 15 | 'P' Trap ('U' Body) |
| 16 | Swept Bend |
| 17 | Reducing Branch |
| 18 | Drain Pipe |



## Joint Systems

SWV systems provided the Solvent Cement Jointing (SCJ)


## Marking

All SWV pipes are marked by printer, the following details at approximately meter intervals. The SWV fittings has clearly and durably marked by moulded impression for each cavity of products.


## RELATED STANDARD REFERENCES

- MS 1063: 2000 - Plastics piping system for soil, ventilating and waste discharge (low and high temperature) within the building structure - PVC-u pipes and fittings
- MS 1402-1: 2006 Code of practice for sanitary system in buildings - Design
- BS EN 1329-1 (Revision of BS 4514 and BS 5255)
- Plastics piping system for soil, ventilating and waste discharge (low and high temperature) within the building structure - PVC-u pipes and fittings
- BS EN 12056-2: 2000 Gravity drainage system inside building - Sanitary pipework, layout and calculation


## QUALITY ASSURANCE

CHINLEAN Plastic is established the Quality Management System has been complies to ISO 9001:2000 assessed by SIRIM QAS International Sdn. Bhd. to ensure quality system and quality product fulfill to the requirements. Certificate No.: AR 2643

## CERTIFICATION

CHINLEAN SWV pipe is certified by SIRIM QAS International Sdn. Bhd. certification body of Malaysian since 1992 with certificate No.: PC007107 (Pipes) and PC007109 (Fittings)


Product Range

| Product Description | No. of Size | Size (mm) |
| :---: | :---: | :---: |
| Pipes |  |  |
| PVC-u SWV Pipe - Application Code ' B ' | 9 | 36, 43, 56, 82, 110, 160, 200, 250, 315 |
| PVC-u SWV Pipe - Application Code 'BD' \& 'D'* | 6 | 82, 110, 160, 200, 250, 315 |
| Fittings |  |  |
| $88^{\circ}$ Swept Bend | 6 | 36, 43, 56, 82, 110, 160 |
| $88^{\circ}$ Swept Bend with Inspection Opening I/O | 4 | 56, 82, 110, 160 |
| $45^{\circ}$ Bend | 9 | 36, 43, 56, 82, 110, 160, 200*, 250*, 315* |
| $45^{\circ}$ Bend with Inspection Opening I/O | 4 | 56, 82, 110, 160 |
| $90^{\circ}$ Bend | 5 | 82, 110, 200*, 250*, 315* |
| $90^{\circ}$ WC Connecting Bend M/F | 1 | 110 |
| $90^{\circ}$ WC Connecting Bend M/F with Inspection Opening I/O | 1 | 110 |
| Equal Single Branch ( $88^{\circ}$ ) | 9 | 36, 43, 56, 82, 110, 160, 200*, 250*, 315* |
| Equal Single Branch ( $88^{\circ}$ ) with Inspection Opening I/O | 5 | 43, 56, 82, 110, 160 |
| Reducing Branch ( $88^{\circ}$ ) | 8 | $110 \times 56,110 \times 82,160 \times 110,200 \times 110$ *, 200×160*, 250×160*, 250×200*, 315×160* |
| Reducing Branch ( $88^{\circ}$ ) with Inspection Opening I/O | 3 | 110×56, 110×82, 160×110 |
| 2-Way Junction ( $88^{\circ}$ ) | 3 | 56, 110, 200* |
| Reducing 2-Way Junction ( $88^{\circ}$ ) | 1 | 160x110 |
| $45^{\circ}$ 'Y' Branch | 3 | 56, 82, 110 |
| $45^{\circ} \times{ }^{\prime}$ ' Branch with Inspection Opening I/O | 3 | 56, 82, 110 |
| $45^{\circ}$ Reducing ' $Y$ ' Branch | 1 | 160×110 |
| $45^{\circ}$ Reducing Double ' $\gamma$ ' Branch | 1 | $160 \times 110$ |
| Straight Coupling | 9 | 36, 43, 56, 82, 110, 160, 200*, 250*, 315* |
| Bush Socket Reducer M/F | 7 | $\begin{aligned} & 43 \times 36,56 \times 36,56 \times 43,82 \times 56,110 \times 56 \text {, } \\ & 110 \times 82,160 \times 110 \end{aligned}$ |
| Level Invert Reducer F/F | 7 | $\begin{aligned} & 56 \times 36,82 \times 56,110 \times 56,11 \times 82,160 \times 110, \\ & 200 \times 110^{*}, 200 \times 160^{*} \end{aligned}$ |
| Concentric Reducer F/F | 7 | $\begin{aligned} & 56 \times 36,82 \times 56,110 \times 56^{*}, 110 \times 82,160 \times 110 \\ & 200 \times 160^{*}, 315 \times 200^{*} \end{aligned}$ |
| Pipe Sleeve | 4 | 56, 82, 110, 160 |
| Boss Connector | 5 | $82 \times 56,110 \times 56,110 \times 82,160 \times 82,160 \times 110$ |
| Vent Cowl | 4 | 56, 82, 110, 160 |
| Floor Gully Trap | 2 | 110x56, 110×82 |
| 'P' Trap | 3 | 56, 82, 110 |
| 'P' Trap with vent | 2 | $56 \times 36,110 \times 56$ |
| 'S' Trap | 1 | 110 |
| 'U' Body (M/F) | 1 | 110 |
| 'U' body with Inspection Opening I/O (M/F) | 1 | 110 |
| 'U' Body with Vent (M/F) | 1 | $110 \times 56$ |
| 'P' Trap ('U' Body) | 1 | 110 |
| 'P' Trap with Inspection Opening I/O ('U' Body) | 1 | 110 |
| 'S' Trap ('U' Body) (M/F) | 1 | 110 |
| 'S' Trap with Inspection Opening I/O ('U' Body) (M/F) | 1 | 110 |
| 'S' Trap with Vent ('U' Body) (M/F) | 1 | $110 \times 56$ |

* Other source \# This application area code is recommended to use of Underground Sewerage Pipe as (MS979.1/MS979.2) as alternative


| Nominal Size (DN) (mm) | Outside Diameter (D) | Wall Thick | pplication area | Length <br> (L) (m) |
| :---: | :---: | :---: | :---: | :---: |
|  |  | 'B' | 'BD' \& 'D'* |  |
| 36 | 36.2-36.5 | 3.0 | - | 4/6 |
| 43 | 42.8-43.1 | 3.0 | - | $4 / 6$ |
| 56 | 55.8-56.1 | 3.0 | - | $4 / 6$ |
| 82 | 82.4-82.8 | 3.0 | 3.0 | $4 / 6$ |
| 110 | 110.0-110.3 | 3.2 | 3.2 | 4 / 6 |
| 160 | 160.0-160.4 | 3.2 | 4.0 | 4/6 |
| 200 | 200.0-200.5 | 3.9 | 4.9 | 6 |
| 250 | 250.0-250.5 | 4.9 | 6.2 | 6 |
| 315 | 315.0-315.6 | 6.2 | 7.7 | 6 |



| Nominal Size <br> $(\mathrm{DN})(\mathrm{mm})$ | Dimension (mm) |  |  |  |
| :---: | :---: | :---: | :---: | :---: |


$88^{\circ}$ Swept Bend with


| Nominal Size <br> $(\mathrm{DN})(\mathrm{mm})$ | Dimension (mm) |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |
| 36 | 36.3 | 28 | Z1 | F3245UB |
| 43 | 42.9 | 32 | 10 | F4045UB |
| 56 | 55.9 | 41 | 13 | F5045UB |
| 82 | 82.6 | 62 | 19 | F8245UB |
| 110 | 110.2 | 72 | 24 | F11045UB |
| 160 | 160.2 | 93 | 35 | F16045UB |
| 200 | 200.3 |  |  | F20045UB |
| $250^{*}$ | 250.3 |  | F25045UB |  |
| $315^{*}$ | 315.3 |  | F31545UB |  |


$45^{\circ}$ Bend with
Inspection Opening (I/O)



| Nominal Size | Dimension (mm) |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $(\mathrm{DN})(\mathrm{mm})$ | D1 | L.1 | L2 | Z1 | Z2 |  |
| 110 | 110.2 | 104 | 85 | 56 | 59 | F110UWCCB |



| Nominal Size | Dimension (mm) |  |  |  |  |  | Code |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $(\mathrm{DN})(\mathrm{mm})$ | D1 | L.1 | L2 | Z1 | Z2 | F110WCCBH |  |
| 110 | 110.2 | 104 | 85 | 56 | 59 |  |  |



| Nominal Size (DN) (mm) | Dimension (mm) |  |  |  |  | Code |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | D1 | L. | L2 | Z1 | Z2 |  |
| 36 | 36.3 | 81 | 50 | 43 | 30 | F32UT |
| 43 | 42.9 | 97 | 56 | 53 | 34 | F40UT |
| 56 | 55.9 | 126 | 73 | 70 | 45 | F50UT |
| 82 | 82.6 | 192 | 117 | 106 | 74 | F82UT |
| 110 | 110.2 | 236 | 137 | 140 | 89 | F110UT |
| 160 | 160.2 | 321 | 178 | 205 | 120 | F160UT |
| 200* | 200.3 |  |  |  |  | F200UT |
| 250* | 250.3 |  |  |  |  | F250UT |
| 315* | 315.3 |  |  |  |  | F315UT |



| Nominal Size <br> $(\mathrm{DN})(\mathrm{mm})$ | D1 | L.1 | L.2 | Z1 | Z2 | Code |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 43 | 42.9 | 97 | 56 | 53 | 34 |  |
| 56 | 55.9 | 126 | 73 | 70 | 45 | F50UTD |
| 82 | 82.6 | 192 | 117 | 106 | 74 | F82UTD |
| 110 | 110.2 | 236 | 137 | 140 | 89 | F110UTD |
| 160 | 160.2 | 321 | 178 | 205 | 120 | F160UTD |



| Nominal <br> Size (DN) |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $(\mathrm{mm})$ | D1 | D2 | L.1 | L2 | Z1 | Z2 | Code |
| $110 \times 56$ | 110.2 | 55.9 | 200 | 94 | 102 | 65 | F11050UT |
| $110 \times 82$ | 110.2 | 82.6 | 200 | 114 | 102 | 70 | F11082UT |
| $160 \times 110$ | 160.2 | 110.2 | 276 | 176 | 160 | 118 | F160110UT |
| $200 \times 110^{*}$ | 200.3 | 110.2 |  |  |  |  | F200110UT |
| $200 \times 160^{*}$ | 200.3 | 160.2 |  |  |  |  | F200160UT |
| $250 \times 160^{*}$ | 250.3 | 160.2 |  |  |  |  | F250160UT |
| $250 \times 200^{*}$ | 250.3 | 200.3 |  |  |  |  | F250200UT |
| $315 \times 160^{*}$ | 315.3 | 160.2 |  |  |  |  | F315160UT |



| Nominal <br> Size (DN) | Dimension (mm) |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $(\mathrm{mm})$ | D1 | D2 | L.1 | L2 | Z1 | Z2 | Code |
| $110 \times 56$ | 110.2 | 55.9 | 200 | 94 | 102 | 65 | F11050UTD |
| $110 \times 82$ | 110.2 | 82.6 | 200 | 114 | 102 | 70 | F11082UTD |
| $160 \times 110$ | 160.2 | 110.2 | 276 | 176 | 160 | 118 | F160110UTD |



| Nominal Size | Dimension (mm) |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $(\mathrm{DN})(\mathrm{mm})$ | D1 | L.1 | L.2 | Z1 | Z2 |  |
| 56 | 55.9 | 126.0 | 146 | 70 | 90 | F502WJ |
| 110 | 110.2 | 236.0 | 274 | 140 | 178 | F110UCT |
| $200^{*}$ | 200.3 |  |  |  |  | F200UCT |



| $\begin{gathered} \text { Nominal } \\ \text { Size (DN) } \\ (\mathrm{mm}) \end{gathered}$ | Dimension (mm) |  |  |  |  |  | Code |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | D1 | D2 | L1 | L2 | Z1 | Z2 |  |
| $160 \times 110$ | 160.2 | 110.2 | 276 | 332 | 160 | 236 | 01102WY |

Reducing 2-Way Junction ( $88^{\circ}$ )


| Nominal Size | Dimension $(\mathrm{mm})$ |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Code |  |  |  |  |  |  |
|  | D1 | L.1 | L.2 | Z1 | Z2 | Cole |
| 56 | 55.9 | 136 | 98 | 80 | 70 | F5045YT |
| 82 | 82.6 | 202 | 146 | 116 | 103 | F8245YT |
| 110 | 110.2 | 256 | 188 | 160 | 140 | F110UYT |



| Nominal Size | Dimension $(\mathrm{mm})$ |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Code |  |  |  |  |  |  |
|  | D1 | L. | L. | Z1 | Z2 | F50UYTD |
| 56 | 55.9 | 136 | 98 | 80 | 70 | F82UYTD |
| 82 | 82.6 | 202 | 146 | 116 | 103 | F82UYYTD |
| 110 | 110.2 | 256 | 188 | 160 | 140 | F110UYTD |



| Nominal | Dimension (mm) |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Code |  |  |  |  |  |  |  |
|  | D1 | D2 | L. | L.2 | Z1 | Z2 |  |
| $160 \times 110$ | 160.2 | 110.2 | 276 | 233 | 160 | 175 | F160110DYT |



| Nominal Size <br> $(\mathrm{DN})(\mathrm{mm})$ | Dimension (mm) |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | D1 | D2 | L1 | Z1 |  |
|  | 42.9 | 36.3 | 21 | 2 | F4032UB |
|  | 55.9 | 36.3 | 27 | 8 | F5032UB |
|  | 55.9 | 42.9 | 27 | 5 | F5040UB |
|  | 82.6 | 55.9 | 42 | 14 | F8250UB |
|  | 110.2 | 55.9 | 47 | 19 | F11050UB |
| $110 \times 82$ | 110.2 | 82.6 | 47 | 4 | F11082UB |
| $160 \times 110$ | 160.2 | 110.2 | 58 | 10 | F160110UB |



| Nominal Size | Dimension (mm) |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $(\mathrm{DN})(\mathrm{mm})$ | D1 | D2 | L1 | Z1 |  |
| $56 \times 36$ | 55.9 | 36.3 | 62 | 15 | F5032CIR |
| $82 \times 56$ | 82.6 | 55.9 | 97 | 26 | F8250CIR |
| $110 \times 56$ | 110.2 | 55.9 | 110 | 34 | F11050CIR |
| $110 \times 82$ | 110.2 | 82.6 | 120 | 29 | F11082CIR |
| $160 \times 110$ | 160.2 | 110.2 | 137 | 31 | F160110CIR |
| $200 \times 110^{*}$ | 200.3 | 110.2 |  |  | F200110CIR |
| $200 \times 160^{*}$ | 200.3 | 160.2 |  |  | F200160CIR |



| Nominal Size (DN) (mm) | Dimension (mm) |  |  |  | Code |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | D1 | D2 | L1 | Z1 |  |
| $56 \times 36$ | 55.9 | 36.3 | 62 | 15 | F5032US |
| $82 \times 56$ | 82.6 | 55.9 | 92 | 21 | F8250US |
| 110x56* | 110.2 | 55.9 |  |  | F11056US |
| $110 \times 82$ | 110.2 | 82.6 | 112 | 21 | F11082US |
| $160 \times 110$ | 160.2 | 110.2 | 126 | 20 | F160110US |
| 200x160* | 200.3 | 160.2 |  |  | F200160US |
| 315x200* | 315.3 | 200.3 |  |  | F315200US |

* Other source \# This application area code is recommended to use of Underground Sewerage Pipe as (MS979.1/MS979.2) as alternative


Boss Connector


| Nominal Size (DN) (mm) | Dimension (mm) |  |  |  | Code |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | D1 | D2 | L. | Z1 |  |
| $82 \times 56$ | 82.6 | 55.9 | 72 | 43 | F8250UBC |
| $110 \times 56$ | 110.2 | 55.9 | 80 | 55 | F11050UBC |
| $110 \times 82$ | 110.2 | 82.6 | 94 | 55 | F11082UBC |
| $160 \times 82$ | 160.2 | 82.6 | 126 | 82 | F16082UBC |
| $160 \times 110$ | 160.2 | 110.2 | 138 | 82 | F160110UBC |


| Nominal Size |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| $(\mathrm{DN})(\mathrm{mm})$ | D1 | Dimension (mm) | Code |  |
| 56 | 55.9 | 70 | Z1 | F50UVC |
| 82 | 82.6 | 70 | 45 | F82UVC |
| 110 | 110.2 | 90 | 65 | F110UVC |
| 160 | 160.2 | 135 | 85 | F160UVC |
|  |  |  |  |  |


| Nominal <br> Size (DN) | Dimension (mm) |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| (mm) | D1 | D2 | L1 | L2 | Z1 | Z2 |  |
| $110 \times 56$ | 110.2 | 55.9 | 176 | 86 | 44 | 55 | F11050UFGT |
| $110 \times 82$ | 110.2 | 82.6 | 176 | 98 | 45 | 55 | F11082UFGT |


| Nominal Size | Dimension $(\mathrm{mm})$ |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Code |  |  |  |  |  |  |
|  | D1 | L1 | L2 | Z1 | Z2 | CoPTR |
| 56 | 55.9 | 233 | 183 | 174 | 84 | F50PTR |
| 82 | 82.6 | 427 | 205 | 332 | 115 | F82UPTR |
| 110 | 110.2 | 383 | 284 | 272 | 115 | F110UPTR |


| Nominal <br> Size (DN) | Dimension (mm) |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| (mm) | D1 | D2 | L.1 | L.2 | Z1 | Z2 | Code |
| $56 \times 36$ | 55.9 | 36.3 | 233 | 196 | 174 | 84 | F5032PTRV |
| $110 \times 56$ | 110.2 | 55.9 | 383 | 303 | 272 | 115 | F11050PTRV |


| Nominal Size | Dimension (mm) |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $(\mathrm{DN})(\mathrm{mm})$ | D1 | L.1 | L.2 | Z1 | Z2 |  |
| 110 | 110.2 | 450 | 275 | 333 | 53 | F110ST |

www.chinlean.com

' P ' Trap with Inspection Opening (I/O) ('U' Body)

As part of our continuous improvement, Chin Lean reserve the right to change specification without notice.


| Nominal Size | Dimension (mm) |  |  |  |  |  | Code |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $(\mathrm{DN})(\mathrm{mm})$ | D1 | L1 | L2 | Z1 | Z2 | F110USTB |  |
| 110 | 110.2 | 392 | 262 | 274 | 50 |  |  |


| Nominal Size | Dimension (mm) |  |  |  |  |  | Code |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $(\mathrm{DN})(\mathrm{mm})$ | D1 | L.1 | L.2 | Z1 | Z2 | F110USTBD |  |
| 110 | 110.2 | 392 | 302 | 274 | 50 |  |  |


| Nominal | Dimension (mm) |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Size (DN) | D1 | D2 | L1 | L2 | Z1 | Z2 |  |
| $(\mathrm{mm})$ | Dile |  |  |  |  |  |  |
| $110 \times 56$ | 110.2 | 55.9 | 392 | 296 | 274 | 50 | F11OSTBV |


$\square$ 4

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | - |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | - |  |  |  |  | - | - |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |


|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | - |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | - |  |  |  |  | - | - |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

$\square$

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | - |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | - |  |  |  |  | - | - |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |


|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | - |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | - |  |  |  |  | - | - |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

$\qquad$

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | - |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | - |  |  |  |  | - | - |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |


|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | - |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | - |  |  |  |  | - | - |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |



PVC－U PRESSURE PIPE
SIRIM certified：
－MS 628－1（BS－3505）
－MS 628－2－2．2（BS 4346－2）
Bell Mouth
－（BS 3506）
Application：
Piping system for water supply and industrial use

## PVC－U PRESSURE FITTINGS

Complied to：
－MS 628－2－2．2（BS 4346－1）
Application：
Fitting for water supply

PVC－U SOIL WASTE VENTILATING （SWV）PIPES
SIRIM certified：
－MS 1063 （BS EN1329．1－Revision of （BS 4514 \＆BS 5255）

## Application：

Piping system soil，waste and ventilating discharge within building structure


## PVC－U SOIL WASTE VENTILATING

 （SWV）FITTINGSSIRIM certified：
－MS 1063 （BS EN1329．1－Revision of （BS 4514 \＆BS 5255）

## Application：

Fittings for soil，waste and ventilating discharge within building structure

## PVC－U SEWERAGE PIPE

SIRIM certified：
－MS 979－1（BS 4660）\＆MS 979－2
（BS 5481）
Application：
Underground sewerage pipes


HIGH－DENSITY POLYETHYLENE （HDPE）PRESSURE PIPE
SIRIM certified：
－MS 1058－2

## Application：

HDPE piping system for water supply


PVC－U TELECOMMUNICATION
CABLES PIPE
SIRIM certified：
－MS 1034
Application：
Conduit for underground
telecommunication cables


POLYETHYLENE（PE）WATER TANK
SIRIM certified：
－MS 1225－1 \＆ 2
Application：
Cold water storage


POLYETHYLENE（PE）SEPTIC TANK
Complied to：
－CSA B66
Application：
Individual sewage treatment plant


CL POLYETHYLENE（PE）ROAD BARRIER，
HOARDING \＆ROAD CONE


PVC GARDEN HOSE
Complied
－BS 3746
Application：
Reinforcing hose and flexible hose

PVC／TPE INSERT TUBE（GASKET） GLAZING

SABAH DISTRIBUTOR：
KEKALBOLEH SDN BHD
（199901021248／496148－K）
（199901021248／496148－K）
Lot No．7，Lorong Perindustrian Kolombong Jaya， Pusat Perindustrian Kolombong Jaya，
Mile 5．5，Jalan Kolombong，
88450 Kota Kinabalu，Sabah
88450 Kota Kinabalu，Sabah
Tel／WhatsApp： $088-385555$
Tel／WhatsApp：088－385555／013－8867570
Website：kekalboleh．com
Website：kekalboleh．com

## CHIN LEAN PLASTIC FACTORY SDN．BHD．（009922－n）

Lot No．5005，Jalan Chui Chak， 36700 Langkap，Perak Darul Ridzuan，Malaysia．
$T+605-6593444$（3 lines）$\quad F+605-6593175$
E chinlean49922＠gmail．com／sales＠chinlean．com

## www．chinlean．com

