

**COMPARISON TABLE FOR  
BESSTEM EN 12200-1:2000 (BS4576) UPVC RAINWATER DOWNPIPE SYSTEM  
- VS -  
BS3505 OR JISK6741 UPVC PRESSURE PIPE SYSTEM ( FOR COLD WATER SUPPLY )**

DESCRIPTIONS		BESSTEM PRODUCT	BS3505 / JISK6741
1	Standard Comply	System made complied with the requirements of BS EN 12200-1 : 2000 (BS4576) Unplasticized Polyvinyl Chloride (uPVC) Rainwater Goods and Accessories.  It is suitable for internal and external installations.	Pipes are produced locally. But fittings sizes ranging from 150mm and above had to be imported from Japan or Taiwan under JIS standard. Mixing with Two ( 2 ) different standards.
2	Sizes and Color	Complete range of pipes and fittings for Seven ( 7 ) sizes :- 50, 82, 110, 160, 200, 250 & 315mm ( 2", 3", 4", 6", 8", 10" & 12" ) Produced in White Color for easy indentify as 'Non-Pressure Drainage Pipeworks.	Seven ( 7 ) sizes :- 50, 75, 100, 150, 200, 250 & 300mm ( 2", 3", 4", 6", 8", 10" & 12" ) Only One ( 1 ) Colour available = Grey
3	Various Type of Pipes for Different Applications	Four ( 4 ) different wall thickness categories :- Light Duty - for low-rise exposed ; Normal Duty - for high & low-rise exposed ; Medium Duty - for cast inside small column ; Heavy Duty - for cast inside RC column or pier / buried underground.	Too many class of thickness and pressure rating for :- a) BS3505 : Class B, C, D, E & 7. b) JIS K6741 : Class VU (AE), VP (AW). Confusing to choose the correct type of the uPVC pipe.
4	Fittings Design	Complete range of fittings for BS4576. Bend & Tee with 1° ~ 2° gradient flow ( 91° or 92° ). Various type of fittings for different angles like :- 91°, 112°, 135°.	Fittings are designed basically for pressurise cold water supply use. Elbow & Tee are 90° right angle. Limited type of fittings. Not suitable for drainage system.



DESCRIPTIONS		BESSTEM PRODUCT	BS3505 / JISK6741
5	Original Injection Moulded Fittings	<p>'BESSTEM' BS4576 fittings are made in one type of thickness. They can be use for Light to Heavy Duty type of the downpipes.</p> <p>The thickness of all the fittings are equivalent to BS3505 Class 'B' with a working pressure of 6 BAR.</p>	<p>Two (2) types of fittings are available :-</p> <p>a) JIS 6743 Pressure thickwall Class 'AW'</p> <p>b) JIS 6739 Non-pressurise drainage type. Class 'AE'</p> <p><b>All fittings must be re-fabricated manually for the socket dimension to suit for BS3505 pipes.</b></p> <p><b>( different in outside diameter )</b></p>
6	Pipe Sleeve - External Body with full length of thick and fine Ribs.	<p>Our Malaysia and U.K. Patent Granted product. For preventing water seepage along the smooth surface of the uPVC downpipe when inserting the RC floor slab. A Special Angle Ø160mm X 112° Pipe Sleeve is designed for bridge deck use.</p>	<p><b>Not available !</b> Need extra care and additional cost for water proofing installation.</p>
7	Domed Roof Outlet Grating - For Discharging Rainwater from RC Flat Roof or Metal Gutter	<p>Five ( 5 ) sizes are available :- 110, 160, 200, 250 &amp; 315mm</p> <p>This fitting with high dome grating is to prevent blockage and is strong enough to withstand normal foot traffic and is produced with added Ultra Violet ( UV ) stabilizers for longer life span when being exposed under direct sunlight.</p>	<p><b>Not avilable is this system !</b></p>
8	Access Pipe / Access Bend / Access Tee - System Accessible for Maintenance	<p><i>These fittings can be installed at any part of the downpipe with a big twist lock access door for cleaning and maintenance.</i></p> <p><i>The access door is flushed with the inner diameter for smoother flow and it will minimize the pipework blockage occur.</i></p>	<p>An access cleaning cap can be installed only at one end of the branch pipe.</p> <p><i>Some fabricated type of Access Pipe / Bend / Tee with a small cleaning cap is hollow and it form a empty hole to trapped more rubbish and caused the pipework get blockage faster and cost more for maintenance expenses .</i></p>



DESCRIPTIONS		BESSTEM PRODUCT	BS3505 / JISK6741
9	<b>Balcony Drainage Outlet -</b> For Discharging Rainwater from Balconies, Carpark & Corridors.	This Malaysia Patent Pending product is suitable for use in apartments and flats which the rainwater downpipe for exposed installation. It is easy to clean-up at the floor level instead of below floor maintenance.	Not available is this system !
10	<b>Balcony Horizontal Outlet Grating -</b> For Rainwater Downpipe conceal in the bricks wall ( box-up ).	This special designed fitting is highly recommended to be used in luxury condominiums and hotels. The vertical slotted grating flush with the bricks wall and looks neat and minimize blockage. Product Pending for Malaysia Patent Right.	Not available is this system !
11	<b>91° Bend with Spigot End -</b> To run the horizontal pipe closer to the RC floor slab.	This fitting with one end spigot end directly solvent welded into the pipe sleeve which casted inside the RC slab, it gives a higher clearance. Use this Bend it can reduce the width of center to center for an offset bend connection.	Not available is this system ! Bend come with both socket ends. At least 4" to 10" gap between the horizontal runner pipe and the RC floor slab.
12	<b>Vibration Absorbing Joint -</b> To aborb the vibration from the drainage pipework installed under the bridge deck towards the pier.	<i>New innovative product is to absorb the vibration from the deck when the heavy vehicle travel on the Elevated Highway or Bridges and caused the uPVC pipework damaged or give-way. The ' S ' profile rubber gasket is designed for quick and easy Instal-lation and is also excellent for weather resistance.</i>	Not available is this system ! By using a set of Rubber Flexible joint with 2 pcs of uPVC TS Flange to cater for the vibration will cost more and slow fastening the set by bolts and nuts also cost more on workmanship.
13	<b>Technical Support from Manufacturer.</b>	Fourteen ( 14 ) years experience in this system. Supplied more than 300 major projects in Malaysia and Oversea market. <b>Qualified Mechanical Engineers for technical support, design, R &amp; D, solving problem arised at project site. Product Warranty by ' BESSTEM ' .</b>	Pipes are produced locally by uPVC pipe manufacturer and Fittings imported by other local agent, two ( 2 ) different suppliers. <b>Technical Support by WHO ???</b> <b>Product Warranty by WHO ???</b>

" LET US SUPPORT USE MALAYSIAN PRODUCTS "

CTBS3505/0111/YKT/370/3



## **IMPORTANT NOTES FOR UPVC RAINWATER DOWNPIPE SYSTEM TO BE SPECIFIED IN THE ARCHITECTURAL / ENGINEERING DRAWINGS & TENDER DOCUMENTS (BQ)**

1. With effective from 28<sup>th</sup> February 2011 the **SIRIM QAS International Sdn. Bhd.** has suspended the renewal for **BS4576-Part 1:1989 uPVC Rainwater Pipes and Accessories** and it superseded by a New Standard for **BS EN 12200-Part 1:2000 Plastics Rainwater Piping Systems For Above Ground External Use - (PVC-U)**.

In "**BS EN12200-Part 1: 2000 and BS4576-Part 1 : 1970 & 1989**", the Maximum size of Pipe and Fitting for these Standards are Ø160mm (6"), of course it is only suitable for Europe countries, but as a tropical country like Malaysia the rainfall intensity of 300mm/hr base on a return period of 20 years ARI. Hence, other larger sizes of Pipes and Fittings to be added to form a **Complete Range of 7 sizes**, ranging from **50mm (2")**, **82mm (3")**, **110mm (4")**, **160mm (6")**, **200mm (8")**, **250mm (10")** and **315mm (12")** which widely used in Malaysia for high-rise buildings, shopping mall, bridges, elevated highway, LRT and many many more.

2. "**BESSTEM**" is the pioneer manufacturer in Malaysia who has the Complete Range of uPVC Pipes and Fittings for Rainwater Downpipe System and the **Pipes with various Type of Duties** to suit for different kinds of installation requirements :-

### **Types**

### **Standards**

- |   |                  |
|---|------------------|
| a) ' <b>Light Duty</b> ' – For low-rise building (below 2 storey) Exposed Installation. | (ii)             |
| b) ' <b>Normal Duty</b> ' – For Exposed Installation.                                   | (i), (iii) & (v) |
| c) ' <b>Medium Duty</b> ' – For Exposed and Casting in the small RC Column / Pier.      | (vi)             |
| d) ' <b>Heavy Duty</b> ' – For Casting in the RC Column or Buried Underground.          | (iv) & (vii)     |

**All these Pipes are made complied to the following 7 Standards :-**

- i) **BS4576-Part 1: 1970** Rainwater Goods and Accessories.
- ii) **BS4576-Part 1: 1989** Rainwater Goods and Accessories.
- iii) **BS EN12200-Part 1: 2000** Plastics Rainwater Piping Systems For Above Ground External Use.
- iv) **BS3505: 1975** uPVC Pressure Pipes for Cold Water Services - **Class 'D'** (with a Working Pressure of 12 Bar).
- v) **ISO3633: 1991 (E)** PVC-U Pipes '**Type B**' for Soil & Waste Discharge System.
- vi) **ISO4422: 1996 (E)** **SDR 26 PN10** PVC-U Pipes & Fittings for Water Supply (with a Working Pressure of 10 Bar).
- vii) **ISO4422: 1996 (E)** **SDR 21 PN12.5** PVC-U Pipes & Fittings for Water Supply (with a Working Pressure of 12.5 Bar).

3. Base on the above information given, '**Other Companies**' could have their own selection for different Country of Standards likes : DIN, MS, JIS, AS, SS & etc and chose Various Types of wall thickness for Pipes to form a complete range of Rainwater Downpipe System, in this case it will create a very difficult situation for the Architects / Consulting Engineer / Quantity Surveyors / Owners **to select the Correct and Proper Types of Pipes to be use.**



To avoid confusing or conflict between the Contractors and Architects / Engineers / Q.S *it is highly recommended to Specify "BESSTEM or Approved Equivalent To Manufacturer's Specifications"* for the entire tender documents (Bill of Quantities) and the Architectural or Engineering Drawings.

- This mean all the Pipe's Wall Thickness are strictly follows as stipulated in the Product Catalogue – it make easy and simplify just stated the Type of Pipe likes :- **Light / Normal / Medium & Heavy Duty.**

- Example : **BESSTEM BS EN12200 315mm Medium Duty**

If **WITHOUT** specifying the Product Brand Name than all the Pipes are recommended to Specify as **"BS EN12200 with Type of Duty and including the Pressure Rating or Wall Thickness"**.

Samples as show below :-

a) **BS EN12200 50mm ~ 160mm**

(For pipe sizes within the Standard Ø50 ~ 160mm for Exposed Installation).

b) **BS EN12200 110mm Light Duty with 2.2mm Wall Thickness**

(Ø110mm pipe for Low-rise Buildings Pipe Exposed Installation).

c) **BS EN12200 200mm Normal Duty with 4.9mm Wall Thickness**

(Ø200mm pipe for Exposed Installation).

d) **BS EN12200 160mm Medium Duty with 10 Bar Pressure Rating**

(For Pipe casting in the small size RC Column / Pier)

e) **BS EN12200 315mm Heavy Duty to PN12.5**

(For Pipe casting in the RC Column / Pier or Buried Underground)

**(With this type of specifications will end up more complicated and more care needed)**

4. "BESSTEM" has the most Complete Range of uPVC Rainwater Downpipe's **Fittings** to suit for various types of installation requirements. **Our Special Designed Fittings like :-**

- |  |                                      |
|--|--------------------------------------|
| ◆ Pipe Sleeve*   | ◆ Access Pipe                        |
| ◆ 112° / 159° Bend   | ◆ 112° 'Y' Tee                       |
| ◆ Bend with spigot end   | ◆ Domed Roof Outlet Grating          |
| ◆ Balcony Drainage Outlet*   | ◆ Balcony Horizontal Outlet Grating* |
| ◆ Vibration Absorbing Joint*   | ◆ 21° Slant Pipe Sleeve*             |
| ◆ Bends and Tee with Big Access Opening Door for easy cleaning and maintenance the pipework. (* Our Patented products) |                                      |

5. "BESSTEM" provide Technical Support advising suitable type of Fittings to be select / install for special critical condition at construction site. Special Customize Fabricated uPVC Fitting is available upon request.

6. "BESSTEM" *is offering a Five (5) Years Product Warranty\* for Complete Range of Pipes and Fittings supplied for the whole project.* (\* Terms and Conditions applied)

**" LET US SUPPORT TO USE MALAYSIAN PRODUCTS "**





No Lesen : PC001039

Licence No :

## LESEN PENSIJILAN BARANGAN

### *Product Certification Licence*



SIRIM QAS International Sdn. Bhd. dengan ini menganugerahkan kepada  
*SIRIM QAS International Sdn. Bhd. hereby grants to*

**BINA PLASTIC INDUSTRIES SDN. BHD.**  
**LOT 4844**  
**BALAKONG NEW VILLAGE INDUSTRIAL ESTATE**  
**43300, SERI KEMBANGAN**  
**SELANGOR, MALAYSIA**

Lesen untuk menggunakan Tanda Pensijilan di atas barangan  
*a licence to use the Certification Mark on*

**UNPLASTICIZED POLYVINYL CHLORIDE (PVC-U) RAINWATER PIPES**  
**FOR ABOVE GROUND EXTERNAL USE**

Please refer to detail in the **SCHEDULE**

sebagai mematuhi keperluan  
*as complying with*  
**BS EN 12200-1 : 2000**

*Khalidah Mustafa*

**Khalidah Mustafa**  
**Pengarah Urusan**  
*Managing Director*  
**SIRIM QAS International Sdn. Bhd.**



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**Tarikh Mula Pensijilan : 21 February 2014**  
*Certified Since*  
**Sah Sehingga : 21 February 2015**  
*Valid Until*

**Tarikh Dikeluarkan : 07 March 2014**  
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**No Siri : 010291**  
*Serial No*

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No Lesen : PC001039

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## SCHEDULE

**BINA PLASTIC INDUSTRIES SDN. BHD.**

Brand : BESSTEM  
Model : CIRCULAR PIPES WITH PLAIN END  
Type : SEALED SYSTEM  
Size : NOMINAL SIZE : DN110 & DN160

Factory Name and Location :  
**BINA PLASTIC INDUSTRIES SDN. BHD.**  
**LOT 2079, BALAKONG NEW VILLAGE INDUSTRIAL ESTATE**  
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