CPVC Pipe System
Hot and Cold Water Distribution
Chlorinated Polyvinyl Chloride (CPVC) is chlorinated Pvc and has become an important engineering thermoplastic due to its relatively low cost, high heat distortion temperature, chemical inertness, and outstanding mechanical, dielectric, flame and smoke properties.

CPVC is produced by National Plastic Sharjah. A full range of CPVC pipes are produced according to American Standards (ASTM F441) and Metric Standards (DIN 8079 / 8080).

**Benefits of CPVC**

CPVC is the most superior plastic alternative to Polypropylene, PEX, Polyethylene and other plastic and much more superior to metal alternatives with respect to.

- Heat resistance upto 90°C
- Chemical resistance over a broad temperature range
- Long term proven service performance of more than 50 years
- Lower installed cost
- Suitable for potable water and can be produced with NSF or WRAS approved grade
- Does not sustain burning
CPVC advantage over Polypropylene

- Same flow rate with smaller pipe size
- Ease of installation (overhead lines, confined spaces)
- No need for expensive electrical tools and source
- Lower thermal expansion
- Wider support spacing, less “looping” of pipe
- Less heat loss
- Chemical resistance to acids and alkalis
- Low bacteria build up
- No oxygen permeation to corrode metal components
- Low flame spread
- Low smoke generation
- Self-extinguishing
- No flaming drips

Fittings / Valves

National Plastic can supply a full range of CPVC fittings and valves with the pipe to provide a complete system. ASTM standard fittings are from Spears USA to ASTM F438 / F439 in Schedule 40 and Schedule 80. DIN Standard fittings are from FIP Italy to DIN 8079 / 8080, EN ISO 15493 PN16.

Solvent Cement

In addition National Plastic recommends that IPS WELDON 724 to be used for all solvent cement application. This is a special grade cement and ensures that the system will perform for many years.
### CPVC Pipe Dimensions and Pressure Rating - ASTM F441

#### Schedule 80

<table>
<thead>
<tr>
<th>Nominal Pipe Size (in)</th>
<th>OD (in)</th>
<th>Wall ID (in)</th>
<th>Ave Wall ID (in)</th>
<th>Maximum Water @73°F (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>½”</td>
<td>0.840</td>
<td>0.147</td>
<td>0.528</td>
<td>850</td>
</tr>
<tr>
<td>¾”</td>
<td>1.050</td>
<td>0.154</td>
<td>0.724</td>
<td>690</td>
</tr>
<tr>
<td>1”</td>
<td>1.315</td>
<td>0.179</td>
<td>0.935</td>
<td>630</td>
</tr>
<tr>
<td>1 ¼”</td>
<td>1.660</td>
<td>0.191</td>
<td>1.256</td>
<td>520</td>
</tr>
<tr>
<td>1 ½”</td>
<td>1.900</td>
<td>0.200</td>
<td>1.476</td>
<td>470</td>
</tr>
<tr>
<td>2”</td>
<td>2.375</td>
<td>0.218</td>
<td>1.913</td>
<td>400</td>
</tr>
<tr>
<td>2 ½”</td>
<td>2.875</td>
<td>0.276</td>
<td>2.289</td>
<td>420</td>
</tr>
<tr>
<td>3”</td>
<td>3.500</td>
<td>0.300</td>
<td>2.864</td>
<td>370</td>
</tr>
<tr>
<td>4”</td>
<td>4.500</td>
<td>0.337</td>
<td>3.786</td>
<td>320</td>
</tr>
<tr>
<td>6”</td>
<td>6.625</td>
<td>0.432</td>
<td>5.709</td>
<td>280</td>
</tr>
<tr>
<td>8”</td>
<td>8.625</td>
<td>0.500</td>
<td>7.565</td>
<td>250</td>
</tr>
<tr>
<td>10”</td>
<td>10.750</td>
<td>0.593</td>
<td>9.492</td>
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<tr>
<td>12”</td>
<td>12.750</td>
<td>0.687</td>
<td>11.294</td>
<td>230</td>
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</table>

#### Schedule 40

<table>
<thead>
<tr>
<th>Nominal Pipe Size (in)</th>
<th>OD (in)</th>
<th>Wall ID (in)</th>
<th>Ave Wall ID (in)</th>
<th>Maximum Water @73°F (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>½”</td>
<td>0.840</td>
<td>0.109</td>
<td>0.608</td>
<td>600</td>
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<tr>
<td>¾”</td>
<td>1.050</td>
<td>0.113</td>
<td>0.810</td>
<td>480</td>
</tr>
<tr>
<td>1”</td>
<td>1.315</td>
<td>0.133</td>
<td>1.033</td>
<td>450</td>
</tr>
<tr>
<td>1 ¼”</td>
<td>1.660</td>
<td>0.140</td>
<td>1.364</td>
<td>370</td>
</tr>
<tr>
<td>1 ½”</td>
<td>1.900</td>
<td>0.145</td>
<td>1.592</td>
<td>330</td>
</tr>
<tr>
<td>2”</td>
<td>2.375</td>
<td>0.154</td>
<td>2.049</td>
<td>280</td>
</tr>
<tr>
<td>2 ½”</td>
<td>2.875</td>
<td>0.203</td>
<td>2.445</td>
<td>300</td>
</tr>
<tr>
<td>3”</td>
<td>3.500</td>
<td>0.216</td>
<td>3.042</td>
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</tr>
<tr>
<td>4”</td>
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<td>0.237</td>
<td>3.998</td>
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<td>0.280</td>
<td>6.031</td>
<td>180</td>
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<tr>
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<tr>
<td>10”</td>
<td>10.750</td>
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<td>9.976</td>
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</tr>
<tr>
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<td>12.750</td>
<td>0.406</td>
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</table>

### CPVC DIN 8079 / 8080

#### Table of Dimensions

<table>
<thead>
<tr>
<th>Outside Diameter “d” (mm)</th>
<th>SDR 13.6 S6.3 PN16 (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
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<tr>
<td>20</td>
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<td>25</td>
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<tr>
<td>32</td>
<td>2.4</td>
</tr>
<tr>
<td>40</td>
<td>3.0</td>
</tr>
<tr>
<td>50</td>
<td>3.7</td>
</tr>
<tr>
<td>63</td>
<td>4.7</td>
</tr>
<tr>
<td>75</td>
<td>5.6</td>
</tr>
<tr>
<td>90</td>
<td>6.7</td>
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<tr>
<td>110</td>
<td>8.2</td>
</tr>
<tr>
<td>160</td>
<td>11.8</td>
</tr>
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</table>

### Allowable Working Pressure for 50 years design life

<table>
<thead>
<tr>
<th>Operating Temperature °F</th>
<th>°C</th>
<th>Factors CPVC</th>
</tr>
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<tbody>
<tr>
<td>70</td>
<td>21</td>
<td>1.00</td>
</tr>
<tr>
<td>80</td>
<td>27</td>
<td>0.96</td>
</tr>
<tr>
<td>90</td>
<td>32</td>
<td>0.92</td>
</tr>
<tr>
<td>100</td>
<td>38</td>
<td>0.85</td>
</tr>
<tr>
<td>110</td>
<td>43</td>
<td>0.77</td>
</tr>
<tr>
<td>115</td>
<td>46</td>
<td>0.74</td>
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<td>120</td>
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<td>125</td>
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<tr>
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<td>60</td>
<td>0.55</td>
</tr>
<tr>
<td>150</td>
<td>66</td>
<td>0.47</td>
</tr>
<tr>
<td>160</td>
<td>71</td>
<td>0.40</td>
</tr>
<tr>
<td>170</td>
<td>77</td>
<td>0.32</td>
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<td>82</td>
<td>0.25</td>
</tr>
<tr>
<td>200</td>
<td>93</td>
<td>0.18</td>
</tr>
</tbody>
</table>
A Few Worldwide Projects

National Plastic products have been used in thousands of projects in four continents.

AFGHANISTAN
• Water Distribution Network for relief project in Kabul
• uPVC well casing and screen for Aid Agency project
• Conduits for telecommunications

ALGERIA
• Water well projects

ANGOLA
• Rural water distribution

AUSTRALIA
• Environmental Monitoring System

AZERBAIJAN
• AGT Pipeline Facilities, Baku

BAHRAIN
• Irrigation Network System
• Municipal Water Supply

BANGLADESH
• Telecommunication Network Dhaka

CAMBODIA
• Village Water Supply System in Phnom Penh

CAPE VERDE
• Water Distribution Network

CHAD
• Water well projects

CHINA
• UN Funded Water well projects

COMOROS
• Water Distribution System

CONGO
• uPVC & CPVC Pipe System for 100 Villa Project, Kinshasa

CYPRUS
• Water Supply Distribution Network

DJIBOUTI
• Housing Drainage Network Djibouti

EGYPT
• Water Supply Distribution System Cairo

ERITREA
• Town Water Supply & Drainage Network, Asmara
• Drip Irrigation System Citrus Fruit Farm, Asmara
• uPVC Pipes & Fittings for Mealewya Water Development Project

ETHIOPIA
• Town Water Distribution Network Addis Ababa
• Town Sewerage & Drainage Addis Ababa

FRANCE
• Drip Irrigation System Paris

GAMBIA
• Rural Water Distribution

GEORGIA
• Water Supply Distribution Network

GERMANY
• Environmental Monitoring System

HONGKONG
• uPVC Pipe System for Government projects

INDIA
• Pilot Drip Irrigation System for Horticultural Project in Central India
• uPVC Pipes for Champion Reef Golf Course Project
• Boulder Hills, India
• DLF Golf and Country Club, India

IRAN
• Irrigation equipments for Tehran Municipality projects

IRAQ
• uPVC Pipes and Fittings for UN funded water distribution projects

ITALY
• Pipe & Irrigation System

JAPAN
• Micro Irrigation System for Greenhouse Company

JORDAN
• Casing & Screen for rural water well projects
• uPVC Pipe System for water supply network

KENYA
• Water well projects
• Drip Irrigation System

KUWAIT
• uPVC Pipes for Kuwait Oilfield Installation
• LDPE pipes for Kuwait Oil Company

KYRGYSHTAN
• Housing complex Water Distribution Network, Bishkek

LAOS
• Water Supply Distribution Network

LEBANON
• Drainage Pipes for housing project in Beirut

LIBYA
• Water well Projects
• Catholic Education System

MAURITANIA
• Tasiast Gold Mine, Mauritania

MAURITIUS
• uPVC Pipes for Water Supply & Irrigation, Port Louis

MADAGASCAR
• Water well Projects

MALAYSIA
• Water well Projects

MALAWI
• uPVC Pipes Water Supply Projects in Mzuzu Phase 3 and Kasungu

MOROCCO
• Water Distribution Network Rabat

MYANMAR
• Community Water Supply System Yangon
• Royal Myanmar Golf Course

NEPAL
• Water Distribution Networks Kathmandu

NEW ZEALAND
• Micro Irrigation equipment for irrigation company
• Irrigation PVC pipes, New Zealand

NORTH KOREA
• Water Distribution Network

OMAN
• uPVC Well Casing and Screens for various agricultural projects

PAKISTAN
• Telecommunication Network Karachi
• uPVC Pipe / Well casing and screen for UN funded projects
• Bahria Golf City, Pakistan

QATAR
• Central A/C Coating System, Sports Stadium, Doha
• uPVC Pipes for Ras Laffan Housing Project
• Casing and Screen project for Qatar International Airport

RWANDA
• Village Water Supply Network Kigali

SAUDI ARABIA
• Telephone duct for Saudi Arabia Telecom
• uPVC Pipes for various irrigation / landscape projects

SENEGAL
• Water Supply Network

SINGAPORE
• Water Supply System
• Laguna Golf Club, Singapore

SOMALIA
• Rural Water Supply System

SOUTH AFRICA
• uPVC Well Casing and Screens

SPAIN
• Heavy duty casing & screen for Power Generating Authority in Northern Spain

SRI LANKA
• Various Waterproofing Roof Coating projects

SUDAN
• Waterproofing Roof Coating Rep Palace & Airprt, Khartoum
• Water well projects, Khartoum

SYRIA
• Micro Irrigation System for various agricultural projects

TANZANIA
• Village Water Supply System Dar Es Salaam

THAILAND
• uPVC Well Casing & Screen Pipes
• Golf Course Irrigation Systems

TURKMENISTAN
• Residential Water Supply System, Ashgabat

UNITED ARAB EMIRATES
• International City, Dubai
• Festival City, Dubai
• International Airport Expansion, Dubai
• Burj Khalifa, Dubai
• Jumeirah Lake Towers, Dubai
• Madinat Jumeirah, Dubai
• Green Community, Dubai
• Palm Islands, Dubai
• Jumeirah Beach Residence, Dubai
• Arabian Ranches, Dubai
• Al Ruwaya Tiger Woods Golf Course, Dubai
• Conference Palace Hotel, Abu Dhabi
• Presidential Palace, Abu Dhabi
• Al Sowwah Island, Abu Dhabi
• City of Lights, Abu Dhabi
• Water Park Yas Island, Abu Dhabi
• Saadiyat Beach Apartment, Abu Dhabi
• Shams Al Reem Island, Abu Dhabi
• Khalifa Park, Abu Dhabi
• Rosewood Hotel, Abu Dhabi
• Mofraq Hospital, Abu Dhabi
• Al Raha Beach Resort
• Medical College, Al-Ain
• Marjan Island, Ras Al Khaimah

UGANDA
• Water Supply Distribution Network Kampala

UNITED KINGDOM
• uPVC & PE Casing/Screen pipes
• PVC pipes for water supply distribution

UEGKISTAN
• Golf Course Irrigation Network System, Tashkent

VIETNAM
• uPVC Well Casing & Screen for Aid project
• uPVC pipes & fittings for town water supply
• uPVC Pipes for Long Bien Development
• Twin Doves Golf Course, Vietnam
• Ho Tram Golf Course, Vietnam

YEMEN
• uPVC pipes & fittings & irrigation System for World Bank funded projects

ZAMBIA
• Water well Projects
INTERNATIONAL CERTIFICATIONS

WRAS
Water Regulations Advisory Scheme

National Plastic & Building Materials Industries LLC,
PC Box 1249, Sharjah, UAE

WATER REGULATIONS ADVISORY SCHEME (WRAS)

The material referred to in this letter is suitable for contact with wholesome water for domestic purposes having met the requirements of BS 6920:1998 "Suitability of non-metallic materials for use in contact with water intended for human consumption with regard to their effect on the quality of the water".

The reference relates solely to its effect on the quality of the water with which it may come into contact and does not specify the physical properties of the material.

POLYVINYLCHLORIDE (PVC, PVC-U & CPVC)

National Plastic Sharing (India), extruded PVC-U/pipe, for use with water up to 12°C.

APPROVAL NUMBER: 493775
APPROVAL HOLDER: NATIONAL PLASTIC & BUILDING MATERIALS INDUSTRIES LLC

The Scheme reserves the right to review approval. This approval is valid between November 2013 and November 2016.

Any entry, as above, will accordingly be included in the Water Fittings Directory on-line under the section headed, "Materials which have passed full tests of effect on water quality".

The Directory may be found at www.wras.uk/directory.

Yours faithfully,

James Court
Associate Director
Water Regulations Advisory Scheme

WRAS
Water Regulations Advisory Scheme

Certificate Number: Z10W2018354002
Report Reference: E8440201082
Issue Date: 2012-AUGUST-10

Issued to:
NATIONAL PLASTIC & BUILDING MATERIALS INDUSTRIES LLC
INDUSTRIAL AREA NO.1
SHARJAH, UNITED ARAB EMIRATES

This is certify that the regulation samples of
PVC PIPE-TUBULAR PVC CONDUIT
Schedule 40 CE / A & D type pipe and a rigid PVC Conduit and fittings, UL 616
have been investigated by UL in accordance with the standard(s) indicated on this Certificate.

Standards for Use:
Standard for Schedule 40 and D Type pipe and a rigid PVC Conduit and fittings, UL 616

Additional Information:
See the ULonline Certifications Directory at www.ul.com/certification for additional information.

Only those products bearing the UL Listing Mark must be considered as being covered by UL's Listing and Follow-up Services.

The UL listing indicates that the product(s) listed satisfies the requirements of the UL's publication and the Standard(s) indicated on this Certificate. The product(s) covered by the listing are subject to periodic reevaluation and/or surveillance by UL.

You may order copies of the UL's complete listing on the product.

Yours faithfully,

James Court
Association & Quality Manager
Water Regulations Advisory Scheme
Worldwide Supplier of Quality Piping Solutions Since 1975

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E-mail : npbmi@emirates.net.ae / Website : www.national-plastic.com