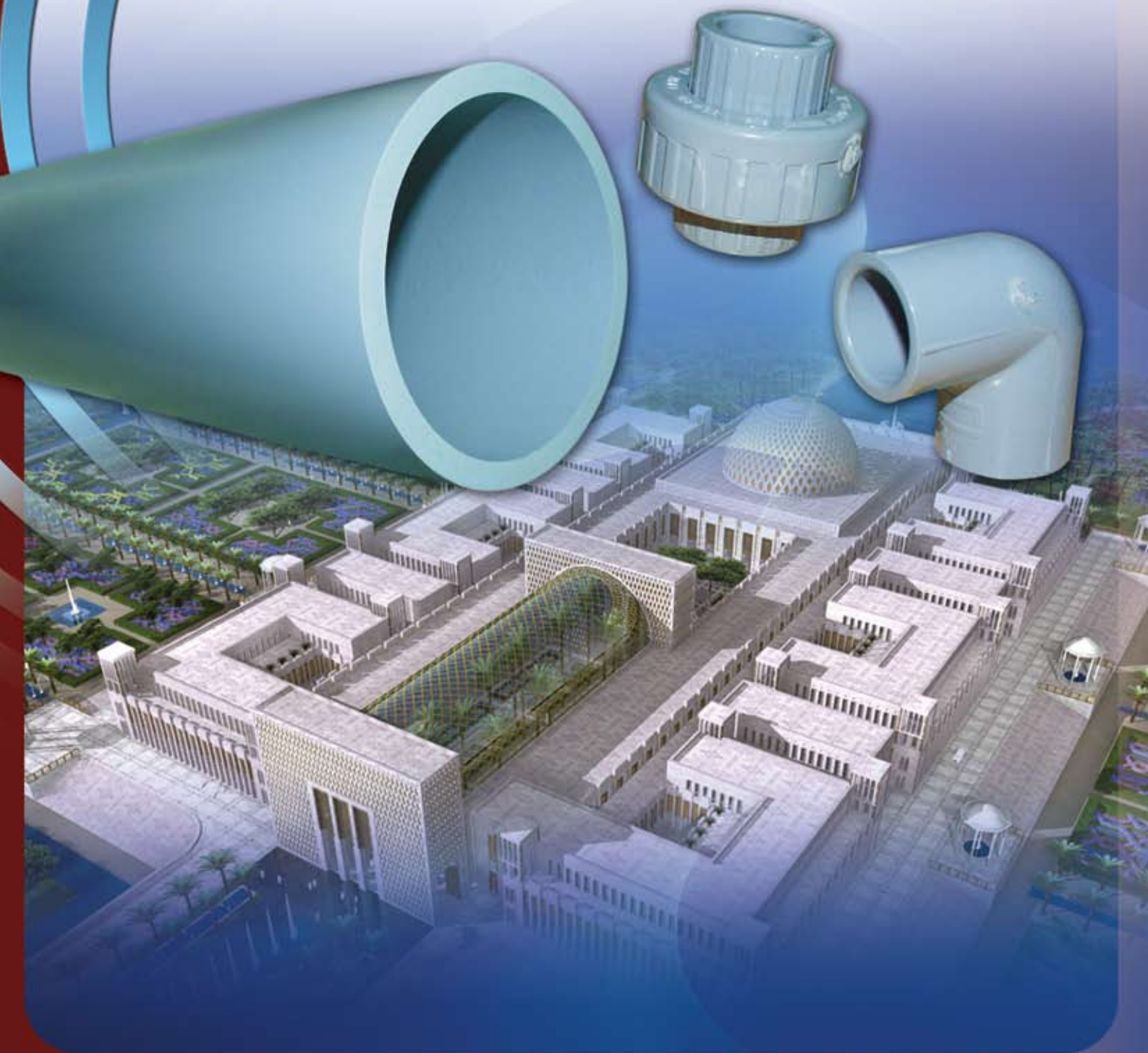


# CPVC Pipe System

Hot and Cold Water Distribution



## What is cPVC?

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**  
- initially when torch is applied



**Other Plastics**  
- initially when torch is applied



**CPVC**  
- After torch is removed



**Other Plastics**  
- After torch is removed



# CPVC Pipe System

CPVC Pipe System  
Hot & Cold Water Distribution

## 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.



Presidential Palace, Abu Dhabi

## CPVC Pipe Dimensions and Pressure Rating - ASTM F441

### Schedule 80

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

### Schedule 40

Nominal Pipe Size	Minimum		Ave ID	Maximum Water P
	OD	Wall		
(in)	(in)	(in)	(in)	@73°F
½"	0.840	0.109	0.608	600
¾"	1.050	0.113	0.810	480
1"	1.315	0.133	1.033	450
1 ¼"	1.660	0.140	1.364	370
1 ½"	1.900	0.145	1.592	330
2"	2.375	0.154	2.049	280
2 ½"	2.875	0.203	2.445	300
3"	3.500	0.216	3.042	260
4"	4.500	0.237	3.998	220
6"	6.625	0.280	6.031	180
8"	8.625	0.322	7.943	160
10"	10.750	0.365	9.976	140
12"	12.750	0.406	11.890	130

### CPVC DIN8079 / 8080 Table of Dimensions

Wall Thickness "s"	
Outside Diameter "d" mm	SDR 13.6 S6.3 PN16 mm
16	1.4
20	1.5
25	1.9
32	2.4
40	3.0
50	3.7
63	4.7
75	5.6
90	6.7
110	8.2
160	11.8

### Allowable Working Pressure for 50 years design life

Operating Temperature		Factors CPVC
°F	°C	
70	21	1.00
80	27	0.96
90	32	0.92
100	38	0.85
110	43	0.77
115	46	0.74
120	49	0.70
125	52	0.66
130	54	0.62
140	60	0.55
150	66	0.47
160	71	0.40
170	77	0.32
180	82	0.25
200	93	0.18



# 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

## KYRGHYZSTAN

- Housing complex Water Distribution Network, Bishkek

## LAOS

- Water Supply Distribution Network

## LEBANON

- Drainage Pipes for housing project in Beirut

## LIBYA

- Water well Projects
- Cathodic Protection 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 Katmandu

## 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 agriculture projects
- Waterproofing Roof coating Ministry of Agri., Inform & Health Muscat

## 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

## SENAGAL

- 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
- Mafraq 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

## UZBEKISTAN

- 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

Our Ref: HU/M110101  
Test Report: MAT/LAB 545C



11<sup>th</sup> April 2011

National Plastic & Building Material Industries LLC,  
PO Box 1943,  
Sharjah,  
UAE

**WATER REGULATIONS ADVISORY SCHEME (WRAS)  
MATERIAL APPROVAL**

The material referred to in this letter is suitable for contact with wholesome water for domestic purposes having met the requirements of BS 6920-1:2000 'Suitability of non-metallic products 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 signify the approval of its mechanical or physical properties for any use.

**POLYVINYLCHLORIDE (PVC, PVC-U & CPVC) 5300**

National Plastic Sharjah blue coloured, extruded PVC-U pipe. For use with water up to 23°C.

**APPROVAL NUMBER: 1011525  
APPROVAL HOLDER: NATIONAL PLASTIC & BUILDING MATERIAL INDUSTRIES LLC.**

The Scheme reserves the right to review approval. This approval is valid between November 2010 and November 2015.

An 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.co.uk/directory](http://www.wras.co.uk/directory)

Yours faithfully

Jason Furnival  
Approvals & Enquiries Manager  
Water Regulations Advisory Scheme

Water Regulations Advisory Scheme Ltd,  
20 West Close, River Vale Industrial Estate,  
Huddersfield, West Yorkshire WF1 3JQ, UK.  
Tel: 01484 246114 Fax: 01484 213095  
E-mail: [info@wras.co.uk](mailto:info@wras.co.uk) Website: [www.wras.co.uk](http://www.wras.co.uk)

Our Ref: HU/M120421  
Test Report: M105169



18<sup>th</sup> January 2012

National Plastic &  
Building Materials Industries LLC,  
PO Box 1943,  
Sharjah,  
UAE

**WATER REGULATIONS ADVISORY SCHEME (WRAS)  
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The reference relates solely to its effect on the quality of the water with which it may come into contact and does not signify the approval of its mechanical or physical properties for any use.

**POLYVINYLCHLORIDE (PVC, PVC-U AND CPVC) - COMPONENTS 5300**

"NATIONAL PLASTIC SHARJAH-LF". Grey coloured, extruded PVC-U pipe. For use with water up to 60°C.

**APPROVAL NUMBER: 1201510  
APPROVAL HOLDER: NATIONAL PLASTIC & BUILDING MATERIALS INDUSTRIES LLC**

The Scheme reserves the right to review approval. This approval is valid between January 2012 and January 2017.

An 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.co.uk/directory](http://www.wras.co.uk/directory)

Yours faithfully

Jason Furnival  
Approvals & Enquiries Manager  
Water Regulations Advisory Scheme

Water Regulations Advisory Scheme Ltd,  
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Huddersfield, West Yorkshire WF1 3JQ, UK.  
Tel: 01484 246114 Fax: 01484 213095  
E-mail: [info@wras.co.uk](mailto:info@wras.co.uk) Website: [www.wras.co.uk](http://www.wras.co.uk)

## CERTIFICATE OF COMPLIANCE

Certificate Number: 20120810-E354422  
Report Reference: E354422-20120802  
Issue Date: 2012-AUGUST-10

Issued to: NATIONAL PLASTIC & BUILDING MATERIAL  
INDUSTRIES LLC  
INDUSTRIAL AREA NO. 1  
STREET NO. 23  
P.O. BOX 1943  
SHARJAH, UNITED ARAB EMIRATES

This is to certify that representative samples of RIGID NONMETALLIC PVC CONDUIT  
Schedule 40 rigid nonmetallic PVC conduits in the 1-1/4, 1-1/2, 2, 2-1/2, 3, 4, 5 and 6 trade sizes with integral couplings.

Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate

Standard(s) for Safety: Standard for Schedule 40 and 80 type EB and a Rigid PVC Conduit and fittings, UL661

Additional Information: See the UL Online Certifications Directory at [www.ul.com/database](http://www.ul.com/database) for additional information

Only those products bearing the UL Listing Mark should be considered as being covered by UL's Listing and Follow-Up Service.

The UL Listing Mark generally includes the following elements: the symbol UL in a circle with the word "LISTED"; a control number (may be alphanumeric) assigned by UL; and the product category name (product identifier) as indicated in the appropriate UL Directory.

Look for the UL Listing Mark on the product.

William R. King, Director, North American Technical Programs  
UL LLC





# Kitemark® Licence



No. KM 509597

BSI hereby grants to:

National Plastic & Building  
Material Industries LLC  
P O Box 1943  
Sharjah  
UAE

In respect of:  
**BS EN 1452-2**

Plastic Piping Systems for Water Supply -  
Unplasticized Poly (Vinyl Chloride) (PVC-U)  
Part 2: Pipes

The right and Licence to use the Kitemark in accordance with the Kitemark Licence Conditions of Contract governing the use of the Kitemark, as may be updated from time to time by BSI, and as approved by the Registrar under the Trade Marks Act 1994 (the "Conditions"). All defined terms in this Licence shall have the same meaning as in the Conditions.

The use of the Kitemark is authorized in respect of the Product(s) detailed on this Licence provided at or from the above address.

For and on behalf of BSI:

Alastair Trivett, Managing Director, BSI Product Services - Qatara

First granted: 13 Feb 2008

Date: 19 Feb 2008

Page: 1 of 2



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BSI Product Services  
Maryland Avenue, Hemel Hempstead, Hertfordshire HP2 4SD United Kingdom  
Tel: +44 (0)1462 20442 Website: www.bsi-global.com  
BSI Group Headquarters: 389 Chiswick High Road, London W4 4AL, UK +44 (0)20 8996 9000

Product Services

# KITEMARK LICENCE



No. KM 79152

BSI hereby grants to:

National Plastic & Building  
Material Industries L L C  
P O Box 1943  
Sharjah  
UAE

In respect of:

Plastic piping systems for soil and waste discharge (low and high temperature)  
within the building structure - unplasticized poly(vinyl chloride) (PVC-U)

The right and Licence to use the Kitemark in accordance with the Kitemark Licence Conditions of Contract governing the use of the Kitemark, as may be updated from time to time by BSI, and as approved by the Registrar under the Trade Marks Act 1994 (the "Conditions"). All defined terms in this Licence shall have the same meaning as in the Conditions.

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For and on behalf of BSI:

Anne Boyd, Divisional Director, Product Services Operations

First granted: 12 May 2004

Date: 12 May 2004

Page: 1 of 2



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Product Services

# KITEMARK LICENCE



No. KM 79153

BSI hereby grants to:

National Plastic & Building  
Material Industries L L C  
P O Box 1943  
Sharjah  
UAE

In respect of:

Plastics piping systems for non-pressure underground drainage and sewerage  
- Unplasticized poly(vinyl chloride)(PVC-U)

The right and Licence to use the Kitemark in accordance with the Kitemark Licence Conditions of Contract governing the use of the Kitemark, as may be updated from time to time by BSI, and as approved by the Registrar under the Trade Marks Act 1994 (the "Conditions"). All defined terms in this Licence shall have the same meaning as in the Conditions.

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Product Services

**Worldwide Supplier of  
Quality Piping Solutions  
Since 1975**



**National Plastic & Building Material Industries L.L.C.**

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