

Chemical Works



Food Factories



Dairies



Hospitals



Laboratories



Breweries



Specialist Appliances

Ball Mills



Nutsche Filters



Naylor Hathernware

Naylor Hathernware is the world's leading manufacturer of thermal shock and chemical resistant vitrified clay.

Extensive research and development have enabled Naylor to specify, select and blend ceramic materials to withstand sudden temperature changes with substantial resistance to chemical attack.

Highest performance ceramics are used at Naylor to manufacture components for use in specialist underground drainage systems and also in industrial applications.

Hathernware Ceramic Characteristics Thermal Shock Properties

By far the biggest single threat to ceramic pipes in the process industry is temperature change. When the pipeline is regularly subjected to a rapid change in temperature, the ceramic body can quickly be destroyed by thermal shock. Hathernware is the only ceramic material suitable for use in areas which are subjected to intermittent discharges of hot and cold effluents such as hospital sterilisation units, boiler blow down drains, laboratories, food processing and beverage production drainage systems with temperature changes of up to 120°C. Independent testing by a leading authority produced the following data for "Hathernware":

TABLE 1 - Maximum Recommended Effluent Temperatures

System	Pipeline Temperature (°C)					Maximum Safe Temperature Gradient (°C)
	-10°	0°	10°	20°	30°	
Hathernware	110°	120°	130°	140°	150°	120°
Standard Clayware	60°	70°	80°	90°	100°	70°

Chemical Resistance

The legal obligations imposed upon companies by the Environmental Protection Act 1990 have resulted in increasing awareness of the potential discharge impact of industrial effluents into ground water or rivers. This has led to an increasing trend for 'worst-case' scenarios to be designed into the structure of buildings such as food processing, pharmaceutical and research laboratories, hospitals and process plants. This is especially applicable to drainage installed below the main floor slab, where future repair or process amendment would prove prohibitively expensive.

Hathernware "Thermachem" pipes and fittings can be used to handle most chemicals and aggressive discharges. The chart at the back of this publication details the resistance of "Thermachem" to a range of chemicals.

Hathernware “Thermachem” Drainage

The key benefits of the Hathernware ceramic are its thermal shock resistant properties and its resistance to aggressive chemicals.

“Thermachem” is the name given to the Hathernware drainage system whose piping provides a wide range of industries with robust drainage systems with an extensive lifespan and with both cost and installation benefits.

The “Thermachem” range of pipes and fittings have been developed to handle extremes of temperature variation that would normally result in cracking of conventional clay pipes due to thermal shock and to handle the most aggressive of chemicals. Situations that are commonly found in the Process Industry.

Selecting a material with a high level of thermal shock resistance coupled with resistance to aggressive chemicals at the outset gives the plant manager and owner the flexibility to introduce new processes or process conditions at a later stage of the plant’s lifetime and to change the cleaning regime or effluent composition.

A correctly specified “Thermachem” system will give many years of trouble free service and can be directly coupled to other Naylor drainage systems.

slabs without surface disruption. The pipes also accommodate applications that require high temperature variations in the discharges as well as any chemical discharge resulting from process or cleaning operations.

Couplings

Connections are made using purpose made adaptors or by the use of the Naylor Band-Seal coupling system.

“Thermachem” Sleeve Couplings

Manufactured in high impact polypropylene with elastomeric seals providing watertight, flexible mechanical joint assemblies, complying with BS EN295-1: System G. Coloured yellow for easy identification on site. Suitable for sudden changes in temperature and some chemical effluents.

Band-Seal Chemical Couplings

Manufactured in high grade EPDM or Nitrile elastomers conforming to EN681-1 with corrosion resistant austenitic stainless steel clamping bands and fluoropolymer liner. Suitable for sudden changes in temperature and most chemical effluents.

Pipes and Fittings

The standard range of pipes and fittings are shown in the following pages but specials can be made to solve most drainage problems.

Trenchless Installation

A range of pipes has been developed for trenchless installation. This allows pipelines to be installed in heavily trafficked areas or under floor

Joint Performance and Flexibility

Joint assemblies meet all the requirements of BS EN295-1. They accept angular deflection and shear resistance without leakage, when tested under an internal or external water pressure of 50kPa (5 metres head).

The design of both the “Thermachem” and Band-Seal Chemical Couplings ensures that pipelines will accommodate minor settlement and ground movement without failure.

TABLE 2 - Maximum Operating Temperatures for Joint Materials are given below

	Material			
	EPDM	NBR	SBR	Polypropylene
Maximum Continuous Temperature (°C)	130°	100°	85°	110°
Maximum Intermittent Temperature (°C)	150°	130°	115°	120°

Technical Services

An in-house advisory service is able to help with problem-solving on most aspects of drainage and plant design.

For drainage projects, Naylor prefers to be involved at the very early planning stage, working with the consulting engineers, chemical engineer designers, works plant managers etc, to identify the effluent composition, concentration and temperature at each release point. The full range of Naylor pipe systems can accommodate virtually all applications and conditions from domestic sewage to the most

aggressive of trade effluents at temperatures well above ambient. Because of this, Naylor is well qualified to advise on the specification of the most appropriate type of pipe and coupling, thus avoiding unnecessarily onerous specifications and costs.

For further technical information contact our technical hotline on 01226 794074 or e-mail: hathernware@naylor.co.uk

Typical Applications for "Thermachem" Drainage

Where hot and/or corrosive liquids are discharged:

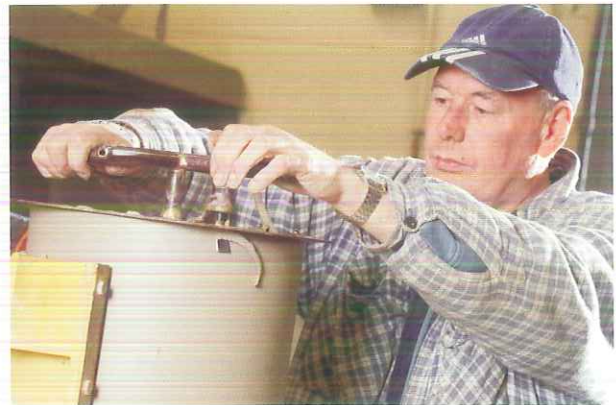
- The chemical and process industries
- Pharmaceutical and research laboratories

Where sterile conditions involve the use of aggressive cleaning fluids and/or supersteam:

- Food processing plants
- Breweries
- Dairies
- Hospital sterilisation areas

In other aggressive environments:

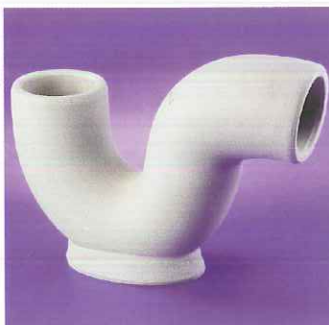
- Badly contaminated ground
- Areas susceptible to chemical spillage



Quality Standards

Hathernware "Thermachem" drainage complies with the stringent requirements of BS EN295-1 and BS65:1991, extra chemical resistance.

Naylor Hathernware is manufactured in accordance with BS EN ISO9002.



Thermachem Drainage Product Range

DN100, 150, 225 and 300 plain-end specially formulated clay pipes and fittings with high performance polypropylene sleeve coupling joints and EPDM seals.

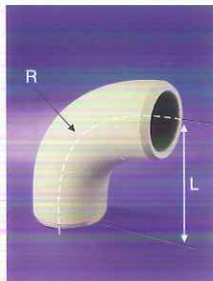
Pipes & Bends



Pipes

DN	CODE	L
100	83090	1.5M
150	83088	1.5M
225	83037	1.25M
300	83044	1.25M

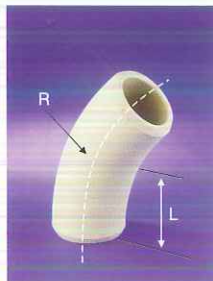
Larger diameters available on request



Bends (90°)

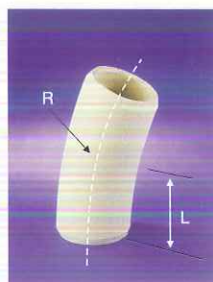
DN	CODE	L	R
100	83382	190	150
150	83385	230	190
225	83041	310	250
300	83045	360	300

15°, 30° and 60° Bends also available



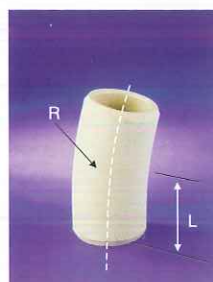
Bends (45°)

DN	CODE	L	R
100	83383	190	375
150	83387	230	475
225	83040	310	600
300	83033	310	600



Bends (22½°)

DN	CODE	L	R
100	83377	150	750
150	83402	180	900
225	83039	250	1200
300	83034	250	1200



Bends (11¼°)

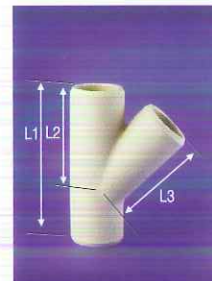
DN	CODE	L	R
100	83376	120	1500
150	83401	175	1750
225	83038	245	2400
300	83035	245	2400



Rest Bend

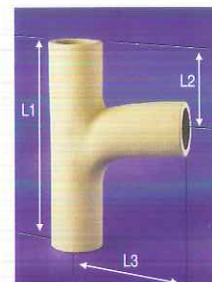
DN	CODE	L	R
100	83073	250	220
150	83089	270	250
225	83484	310	250
300	83485	360	300

Junctions



Oblique (45°)

DN	CODE	L1	L2	L3
100x100	83378	380	250	240
150x100	83379	450	330	300
150x150	83384	450	330	350
225x100	83342	500	380	375
225x150	83031	500	360	420
225x225	83043	700	530	500
300x150	83025	600	480	490
300x225	83047	750	530	550
300x300	83048	900	600	615

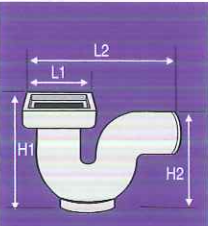


Curved Square (90°)

DN	CODE	L1	L2	L3
100x100	83074	380	145	180
150x100	83080	450	225	180
150x150	83081	450	185	225
225x100	83487	500	175	275
225x150	83082	600	220	290
225x225	83083	700	290	300
300x150	83486	600	240	320
300x225	83420	750	330	370

Where more aggressive discharges are expected, the Band-Seal Chemical Coupling joint can be utilised. Contact the Naylor Hatherware Technical Department on 01226 794074 for assistance.


Gully



Square P Gully

DN Outlet	100
L1	150x150
L2	350
H1	350
H2	180
Code	83071

Grate for P Gully & Hoppers




Loose Grate

CODE	SIZE
83111	150x150

Made from Pipe material
Made to Order

Hoppers



Square

DN	CODE	L	H
100	83110	150	285

Couplings



**EPDM Seals as standard
Nitrile also available**

DN	CODE	L1	L2
100	83103	155	90
150	83104	220	120
225	83105	320	155
300	83106	410	190



Horizontal 100mm Inlet

DN	CODE	L	H1	H2
100	83482	150	285	160

Made to Order


Tapers



Taper

DN D1-D2	CODE	L
100-150	83398	300
150-225	83029	380
225-300	83046	500

Made to Order




Vertical 100mm Inlet

DN	CODE	L	H
100	83483	150	285

Made to Order


Lubricant



Lubricant

50001	1Kg Tub
50002	2.5Kg Tub
DN	Average Number of Joints per 1Kg Tub
100	100
150	50
225	30
300	24

Low Back Trap



P Outlet 92 1/2°

DN	CODE	L	H1	H2
100	83388	350	295	240
150	83071	450	400	320

Other sizes Made to Order

NB: Measurements are only as a guideline