



Acme Sanitary Ware Co. Ltd.

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American Standard

Raising The Standard

PROJECT		REF		REV	ITEM CODE	
LOCATION		DATE			PAGE	

SANITARY WARE SPECIFICATION SHEET

Item Descriptions	American Standard (Thailand) "Acacia Evolution" Vitreous china solid back-to-wall double vortex washdown watercloset with soft-closing seat & cover; Aqua Ceramic & ComfortClean Technology against stain, bacteria and germs; tested on BS 3402:1969, HTM 64, BS EN 997:2012+A1:2015 & Modified ISO 22196; test report J25283A, J25283B & IMSL 2015/11/002.1B ; 3/4.6 LPF in WELS Grade 1 ; Registration No.: WC 20-0010	Illustration/ Drawing
Dimensions	W376 x L555 x H390 mm	
Model	TF3229 (Bowl) 640000S (Seat & Cover)	
Material/Colour	Vitreous China / White (Water Closet)	
Manufacturer	American Standard (Thailand)	
Source	Acme Sanitary Ware Co. Ltd Mr. Eric Wong/ Mr. Don Yuen	
Contact Tel/Fax	(852) 2388-7171 / (852) 2710-8012	
E-mail	acme@acmesanitary.com.hk	
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<p>Plastic outlet connector</p> <p>P-Trap</p>	<p>TOP VIEW</p>
<p>Plastic outlet connector</p> <p>S-Trap</p>	<p>BACK VIEW</p> <p>FINISHED FLOOR</p> <p>FRONT VIEW</p> <p>FINISHED FLOOR</p>

Note: New Code : CL3229B-6DACTCB

* All information of the above is for the reference only. No prior notice is made if any changes.



自願參與用水效益標籤計劃 - 水廁
Voluntary Water Efficiency Labelling Scheme - Water Closets



茲證明

This is to certify that


Acme Sanitary Ware Co. Ltd.

將下列水廁在本計劃內註冊：

has registered the following water closet under this scheme :

牌 子 / Brand	: American Standard
型 號 / Model	: TF3229
種 類 / Category	: Water Closet Pan
原 產 地 / Country or Region Origin	: Thailand

在用水效益標籤上展示的標誌

Symbolic Presentation on the Water Efficiency Label :  滴水點 *Water droplet(s)*

用水效益級別

Water Efficiency Grade : 1

全沖水量

Water Flush Volume (Full) : 4.6 公升/沖廁 *litres/flush*

低沖水量

Water Flush Volume (Reduced) : 3.0 公升/沖廁 *litres/flush*

簽發日期:

Date of Issue: 29 April 2020



水 務 署

Water Supplies Department



水務署署長(張業駒代行)
for Director of Water Supplies

+ 上述水廁具額外節水功能，即： reuse 洗盤水作沖廁用途。

The above water closet is equipped with additional water saving feature, that is: re-use the water collected from wash basin for flushing purpose.



MAXIMUM FLUSHING PERFORMANCE, MINIMUM WATER USAGE

The design of the bowl propels the water forward and creates a strong flushing momentum.



Momentum and power are created by the design of the bowl and force of the water.



100% of the water is ejected through two water openings.



RIMLESS HYGIENIC AND EASY TO CLEAN

Double Vortex is a rimless flushing system that effectively cleans the entire bowl interior, preventing dirt and deposits from building up. This rimless design makes it easy to clean as no dirt can accumulate over time.



The resulting 'vortex' of water cleans the entire surface of the bowl.



All water flows out from the top of the bowl, cleaning the inner surface of the bowl.



Experience
Double Vortex Here



*American
Standard*

ANTI-STAIN TECHNOLOGY



AQUA CERAMIC



**GOOD DESIGN
AWARD 2016**

Less Dirt Stains. Less Water Stains.

This award-winning super-hydrophilic technology prevents dirt and dark ring stains from sticking to ceramic surfaces. In fact, dirt glides off the surface effortlessly as **Aqua Ceramic** enables water to penetrate between the contaminants and the toilet surface, effectively lifting off that waste with every flush.

AQUA CERAMIC is the first material in the world that is able to address the four main issues that affect the cleanliness of toilets: scuffing and scratching, marks from waste, stains caused by prolonged exposure to hard water, and the build-up of bacteria.

The technology incorporates super-hydrophilic performance in the surface of the ceramic, which permits the rinse water to permeate beneath any waste that may have become attached to the ceramic. And as the stain relinquishes its hold, the water simply lifts it and flushes it away.





ComfortClean

Effectively kills E.Coli bacteria according to tests done with the Industrial Microbiological Service Ltd (IMSL).



COMFORTCLEAN

Effectively kills E. Coli bacteria according to tests done with IMSL.

ComfortClean Antibacterial Glaze

China Glaze

Ceramic Ware



ComfortClean inhibits the growth of odor-causing bacteria, mold and mildew.



Effectively eliminates E. coli bacteria.

ComfortClean Antibacterial Technology

Long-lasting Protection Against Bacteria and Germs.

American Standard ComfortClean technology: A revolutionary ceramic glaze with zinc oxide that effectively kills E. coli bacteria inside the toilet bowl for the long term and beyond, as proven in tests conducted by Industrial Microbiological Services Limited (IMSL).



ComfortClean Antibacterial Glaze

is fired into the ceramic at more than 1000°C, ensuring long-lasting effectiveness.

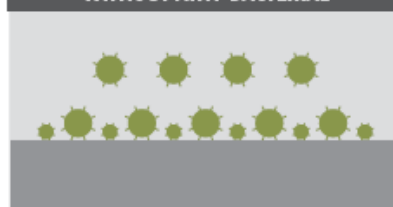


ANTI-BACTERIAL FINISH

TOTAL HYGIENE PROTECTION

American Standard's anti-bacterial finish covers all essential touch points, including the push button, seat and cover to provide an ultimate hygienic environment.

WITHOUT ANTI-BACTERIAL



Over time, bacteria breeds on a conventional toilet's surface.

WITH ANTI-BACTERIAL



With Anti-bacterial finish, it effectively inhibits the growth of bacteria.

Antimicrobial test result example (24 hours later)

ANTIMICROBIAL PRODUCTS



Colon Bacilli Multiplication



Staphylococcus Aureus Multiplication

NON ANTIMICROBIAL PRODUCTS



Colon Bacilli Multiplication

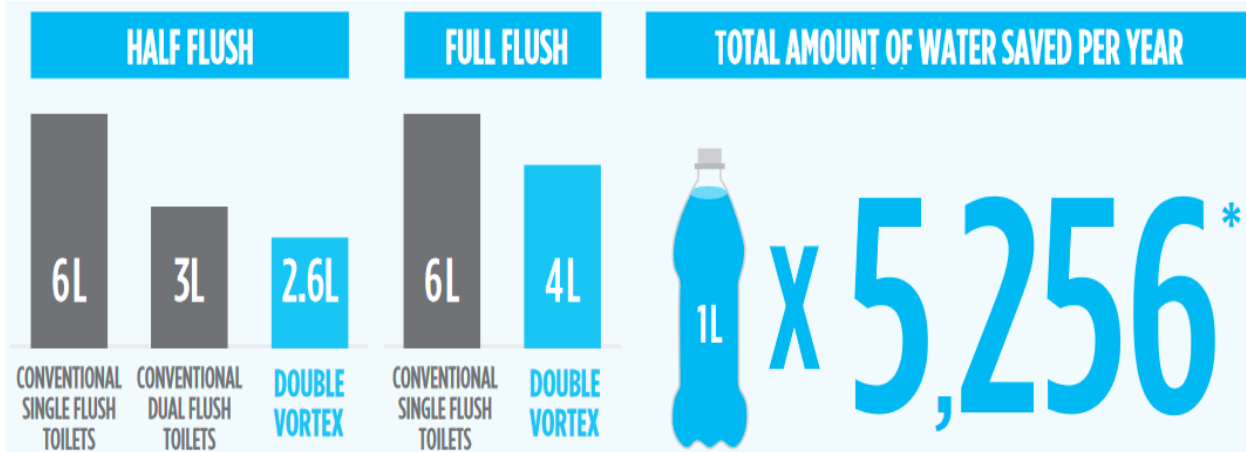


Staphylococcus Aureus Multiplication

*Japan Industrial Standard (JIS Z 2801:2010) is the standard established by Japan Industrial Standard to test for anti-bacterial activity and efficacy.



American Standard is the first in the industry to meet the *Japan Industrial Standard (JIS Z 2801:2010) for this anti-bacterial technology on the push button. This technology is also applied on the seat and cover to provide a more hygienic environment.



LIXIL

[Link to Good Living](#)

About LIXIL

LIXIL is the most comprehensive and connected global company in the housing and building industry, delivering human-centric innovation that enhances people's living spaces – we call this Living Technology.

Delivering core strengths in water, housing, building and kitchen technologies, our brand portfolio businesses including LIXIL, INAX, GROHE, American Standard Brands and Permasteelisa are leaders in the industries and regions in which they operate, bringing better living solutions to the world today and for future generations.



The anti-bacterial innovation is applied as a glaze on ceramic wares, and is certified by the Industrial Microbiological Service Ltd (IMSL) in UK. The anti-bacterial feature cannot be removed even by household detergents, providing a lifetime of hygiene protection.

Good Design Award 2014

American Standard wins 2014 Good Design Award for its Acacia Evolution basin mixer.



**GOOD DESIGN
AWARD 2014**





Test Report



3229-WT=TF3229

Test
Title: Testing of WC Pan
Method: BS 3402: 1969
Report No.: J 25283B
Completion: 19 Nov., 2020 to 27 Nov., 2020

Applicant (Information provided by client)

Name:

Address:

Sample (Information provided by client)

Description: Back to Wall WC Pan

Brand: AMERICAN STANDARD

Model: 3229-WT

Body Marking: *American Standard*

Manufacturer: LIXIL (Thailand) Public Company Limited

Origin: Thailand

Approved Signatory

Signature:

Name (title): Hing Kah Kuin (Engineer)

Date: 13 May, 2022

Nutek Systems is a testing agency,
accepted by the Water Supplies
Department, for testing water supply
fittings.



REPORT NO: J 25283B

Summary

Test	Remark
1 Visual Examination	C
2 Water Absorption	C
3 Crazing	C
4 Chemical Resistance Test	C
5 Resistance to Staining and Burning	C



Results (apply only to samples tested)

1 Visual Examination

BS 3402: 1969 Cl. 5 & Table 1

Location	Blemish or defect	Maximum permitted	Remark
General	Wavy finish	None on all visible surfaces	C
	Warpage	Not more than 6mm	C
	Discoloration	None on all visible surfaces	C
Flushing surface and horizontal face of rims of WC pans bidets and urinals	Spots, blister and pinholes	A total of not over three; no grouping; for coloured appliances, blister and pinhole limited to one.	C
	Bubbles and specks	Not over two in one pottery square; a total of not over four	C
	Polishing marks	One only; none permitted for coloured fixtures	C
Visible surfaces other than above	Spots, blisters and pinholes	A total of not over five; no grouping; for coloured appliances, no blisters are permitted and pinholes are limited to a total of two	C
	Bubbles and specks	Not over three in one pottery square; a total of not over ten	C
Overall result			C

2 Water Absorption

BS 3402: 1969 Cl. 6

ID	Weight (kg)		Absorption (%)	Required	Remark
	Before Test	After Test			
Sample 1	117.3213	117.4076	0.07	0.75% max.	C
Sample 2	142.8026	142.8873	0.06		C
Sample 3	135.1394	135.2299	0.07		C
Average			0.07	0.50% max.	C
Overall result					C

3 Crazeing

BS 3402: 1969 Cl. 7

ID	Variable	Unit	Measured	Required	Remark	
1	Saturated steam	MN/m ²	0.34	0.33 - 0.35	C	
	Duration	h	10	10	C	
	Crazing	Sample 1	---	No	No	C
		Sample 2	---	No		C
		Sample 3	---	No		C
Overall result					C	

4 Chemical Resistance Test

BS 3402: 1969 Cl. 8

Table 4 — Chemical solutions

Name of Chemical	Strength of solution	Time	Temperature
Acetic acid	10 %	16 hours	100 °C
Citric acid	10 %	16	100
Detergent (Note 1)	(Note 1)	48	60
Hydrochloric acid	(Note 2)	48	15 to 21
Sodium hydroxide	5 %	0.5	60
Sodium stearate	0.15 %	48	60
Sulphuric acid	3 %	16	100

NOTE 1: This consists of an aqueous solution containing 0.04 % (wt/vol) of a condensation product of nonylphenol with 8-10 molecules of ethylene oxide. A suitable solution which contains 0.15% (wt/vol) of the product is obtainable commercially under the trade name "Lissapet N".

NOTE 2: This solution consists of equal volumes of water and of hydrochloric acid of specific gravity 1.18.

ID	Solution	Time (h)	Temperature (°C)	Measured	Required	Remark
1	Acetic acid	16	100	No Loss	No loss of reflectivity on glaze	C
	Citric acid	16	100	No Loss		C
	Detergent	48	60	No Loss		C
	Hydrochloric acid	48	20	No Loss		C
	Sodium hydroxide	0.5	60	No Loss		C
	Sodium stearate	48	60	No Loss		C
	Sulphuric acid	16	100	No Loss		C
Overall result						C

5 Resistance to Staining and Burning

BS 3402: 1969 Cl. 9

ID	Variable	Unit	Measured	Required	Remark
1	Methylene blue	---	No Stain	No stain remains	C
	Sodium hypochlorite	---	No Stain		C
	Hydrogen peroxide	---	No Stain		C
	Amyl acetate	---	No Stain		C
	Iodine in ethanol	---	No Stain		C
2	Lighted cigarette	---	No Stain		C
Overall result					C

Figure 1 - Sample

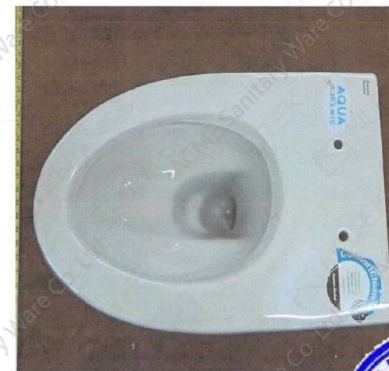


Figure 2 - Body marking





REPORT NO: J252838

General Note(s)

Definitions:

C - conformance
N - no requirement
NC - non-conformance
R - remainder

Organizations:

WSD - Water Supplies Department (of Hong Kong)
WHO - World Health Organization

- End of report



Test Report



3229-WT=TF3229

Test

Title: Testing of WC

Method: Health Technical Memorandum(HTM) 64 & BS EN 997: 2012 +A1: 2015

Report No.: J25283A

Completion: 13 Nov., 2020

Applicant: (Information provided by client)

Name:

Address:

Sample: (Information provided by client)

Description: Back to Wall WC Pan

WC Pan

Brand: American Standard

Model: 3229-WT

Body Marking: *American Standard*

Manufacturer: LIXIL (Thailand) Public Company Limited

Origin: Thailand

Approved Signatory

Signature:

Name (title): Hing Kah Kuin (Engineer)

Date: 13 May, 2022

Nutek Systems is a testing agency,
accepted by the Water Supplies
Department, for testing water supply
fittings.

Summary

Test	Remark
1 Dimensions of WC Pan	C
2 Static Load of Class 2 Products	C

Results (apply only to samples tested)

1 Dimensions of WC Pan

Health Technical Memorandum(HTM) 64

Variable	Measured	Required	Remark
Maximum length of WC Pan	550	520-550	C
Overall result			C

2 Static Load of Class 2 Products

BS EN 997: 2012 + A1: 2015 Cl. 5.7.4

ID	Variable	Unit	Measured	Required	Remark
1	Force applied	kN	4.00	4.00 ± 0.05	C
	Duration	h	1	1	C
	Cracking or permanent deformation	---	No	No	C
Overall result					C

Note :

Refer to Health Technical Memorandum(HTM) 64, a load of 140kg shall be sustained, this test result also applies to HTM 64 requirements



Figure 1 - Top View

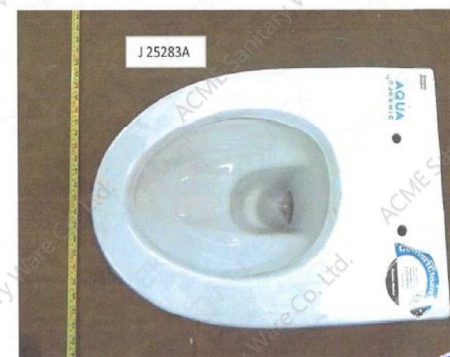


Figure 2 - Side View





REPORT NO.: J 25283A

General Note(s)

Definitions:

C - conformance
N - no requirement
NC - non-conformance
R - remainder

Organizations:

WSD - Water Supplies Department (of Hong Kong)
WHO - World Health Organization



- End of report -

IMSL

INDUSTRIAL MICROBIOLOGICAL SERVICES LTD

STUDY REPORT: Determination of the Antibacterial Activity of a Ceramic Glaze Formulation against *Escherichia coli* and *Staphylococcus aureus* using ISO 22196: 2011.

CLIENT:

REPORT NO: IMSL 2015/11/002.1B

DATED: 21st December 2015



Study: Determination of the Antibacterial Activity of a Ceramic Glaze Formulation against *Escherichia coli* and *Staphylococcus aureus* using ISO 22196: 2011.

Number: IMSL 2015/11/002.1B

Client:

The above study was conducted in the laboratories of Industrial Microbiological Services Ltd at Pale Lane Hartley Wintney, Hants, RG27 8DH, UK. This report represents a true and accurate account of the results obtained.

Start Date 14th December 2015

Report Issued 21st December 2015

Supervisor Kyle Allison
Senior Microbiologist



Operator Richard Webb
Microbiologist



IMSL

INDUSTRIAL MICROBIOLOGICAL SERVICES LTD

CERTIFICATE OF ANALYSIS

CERTIFICATE NO. 1029047.1B

CUSTOMER

CUSTOMER REF.

SAMPLE DETAILS

DATE RECEIVED 14-Dec-15

Ceramic Tile

METHOD: (Determination of Antibacterial Activity using Modified ISO 22196)

DATE ANALYSED 15-Dec-15

DATE REPORTED 21-Dec-15

RESULTS (AS CFU CM -2)

SAMPLE		CONTACT TIME		LOG REDUCTION	% DIFFERENCE
		0	24		
Polypropylene	<i>E. coli</i>	1.5E+04	2.4E+05	-	-
IMSL Tile	<i>E. coli</i>	1.5E+04	1.9E+05	-	-
Blank Tile	<i>E. coli</i>	1.5E+04	6.0E+04	-	-
Treated Sample	<i>E. coli</i>	1.5E+04	2.6E+02	2.4	99.57%
Polypropylene	<i>S aureus</i>	1.5E+04	5.2E+03	-	-
IMSL Tile	<i>S aureus</i>	1.5E+04	7.3E+03	-	-
Blank Tile	<i>S aureus</i>	1.5E+04	3.8E+03	-	-
Treated Sample	<i>S aureus</i>	1.5E+04	1.6E+03	0.4	58.06%

The above data shows the difference in the population following contact with the surface of the Treated Sample for 24 hours at 35°C under a RH of > 95% relative to the population recovered from the Blank Tile.

NS = Poor survival on control supplied.

INDUSTRIAL MICROBIOLOGICAL SERVICE LTD
PALE LANE
HARTLEY WINTNEY
HANTS
RG27 8DH
UK

PETER D ASKEW
MANAGING DIRECTOR

