

Benefits of sustainable design in Ceramic Plumbing Fixtures and Faucets



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Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentation.

Learning Objectives

Benefits of sustainable design in
Ceramic Plumbing Fixtures and Faucets

At the end of this program, about bathroom equipment, participants will be able to:

Explain the principles of the USA codes for sustainable homes and how this affects what products we install

Understand Eco products and how they work

Understand how some eco products can be adapted to be more eco friendly

Understand which issues affect the functionality, durability, comfort and ease of use



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Ceramic Plumbing Fixtures and Faucets

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- Environmental protection
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- Water efficient codes & programs

- Water Efficient plumbing solutions for Bathroom equipment

- More efficient use of water & energy
- Technologies that encourage less water use

- Commercial solutions

- Benefits
- Case studies
- Learning outcome
- Questions



Green Design

Benefits of sustainable design in
Ceramic Plumbing Fixtures and Faucets

1. Environmental protection

- Site planning
- Energy and water efficiency
- Conservation use of resources

2. Environmental impact materials

- Raw materials
- Manufacturing and transportation processes
- Recycling processes



INTERNATIONAL PROGRAM



INTERNATIONAL ORGANIZATION
FOR STANDARDIZATION

- ISO14001

The world's most recognized framework for environmental management systems (EMS)



Green Design

Benefits of sustainable design in
Ceramic Plumbing Fixtures and Faucets

- Global benefits

 - Human Health & Recreation

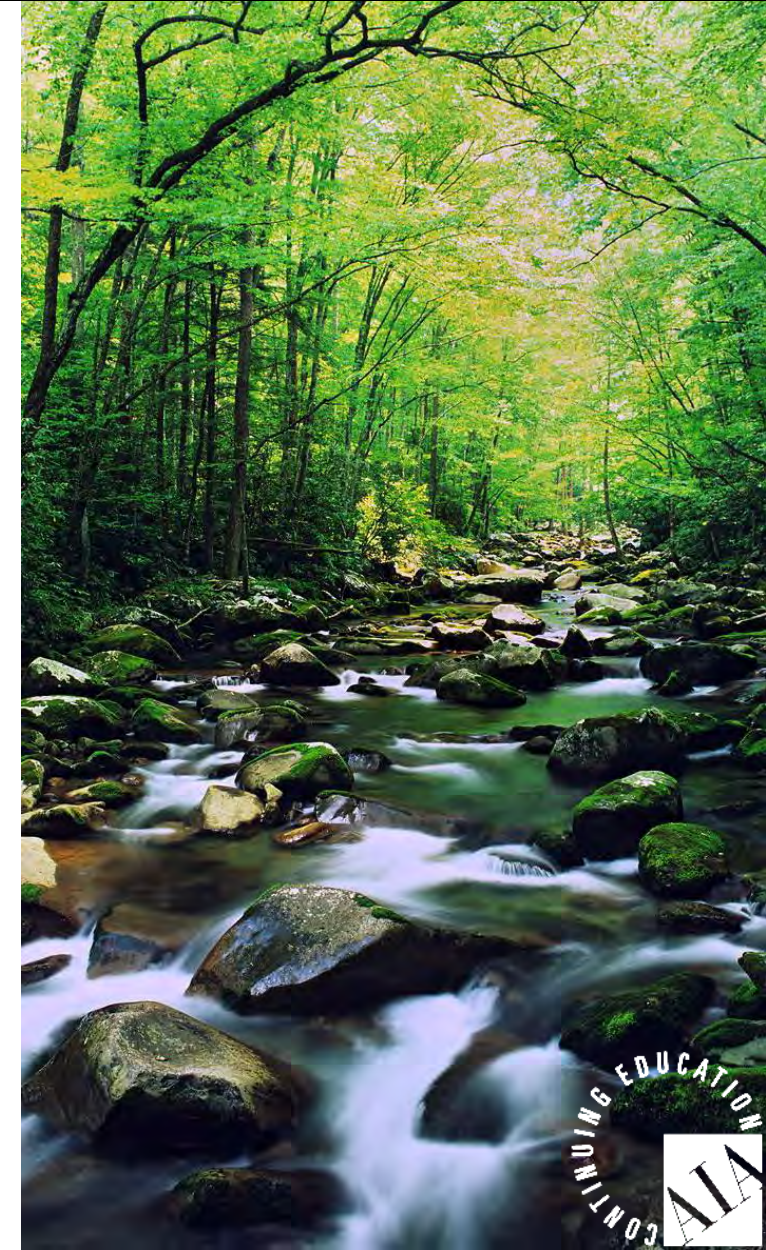
 - Protects the Environment

 - Encourages Economic Growth & Cost Savings

- Particular benefits occupants

 - Comfort: Quickly & efficiently reach desired temperature with thermostatic controls.

 - Health: Hygienic benefits

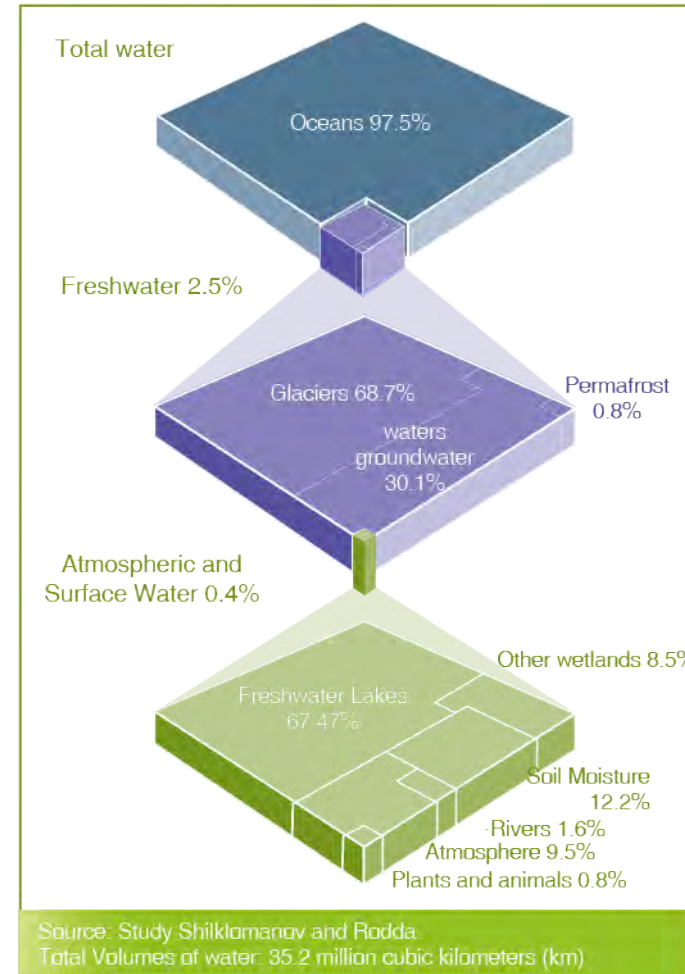


Water Demand

Benefits of sustainable design in
Ceramic Plumbing Fixtures and Faucets



We only have **0.4%**
of the Earth's water
available

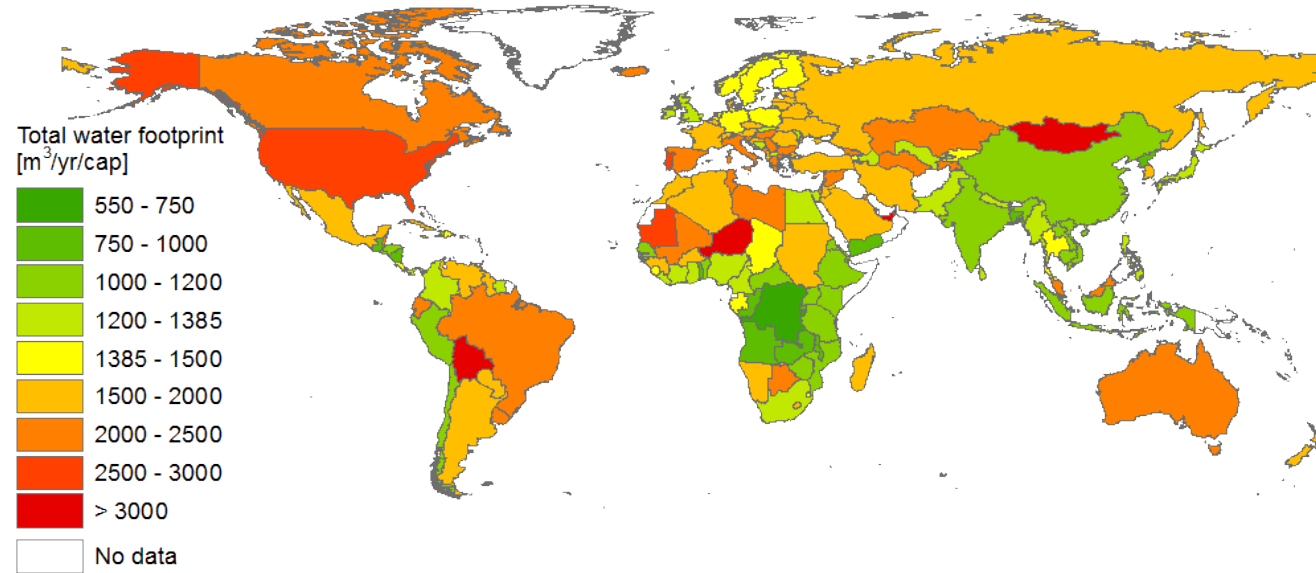


Water Demand

Benefits of sustainable design in
Ceramic Plumbing Fixtures and Faucets

The **water footprint** of an individual, community or business, is defined as the total volume of freshwater that is used to produce the goods and services consumed by the individual or community or produced by the business.

U.S. WFP



World WFP

The water footprint of humanity in the period 1996–2005. The data are shown in millimeter per year on a 5 50 grid

Source: Mekonnen, M.M. and Hoekstra, A.Y. (2011) National water footprint accounts: the green, blue and grey water footprint of production and consumption, Value of Water Research Report Series No. 50, UNESCO-IHE, Delft, the Netherlands. <http://www.waterfootprint.org/Reports/Report50-NationalWaterFootprints-Vol1.pdf>

Water Demand

Benefits of sustainable design in
Ceramic Plumbing Fixtures and Faucets

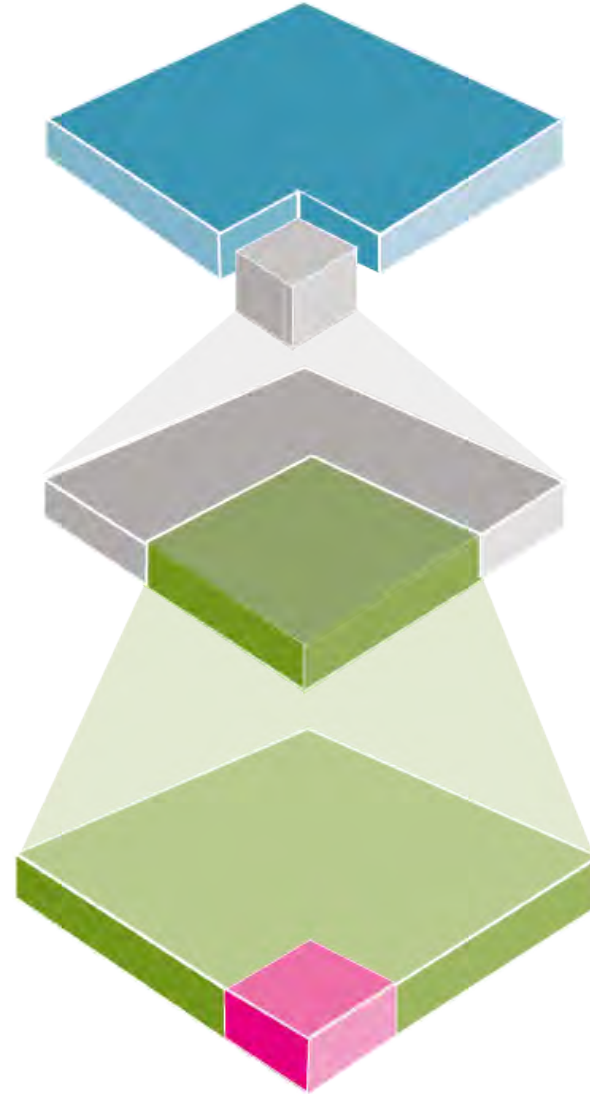
USA total water
100%
408 bgdp

Potable water
11.5%
47 bgdp

Indoor plumbing
3.7%
15 bgdp

Residential plumbing
3.35%
13.7 bgdp

Commercial plumbing
0.34%
1.4 bgdp

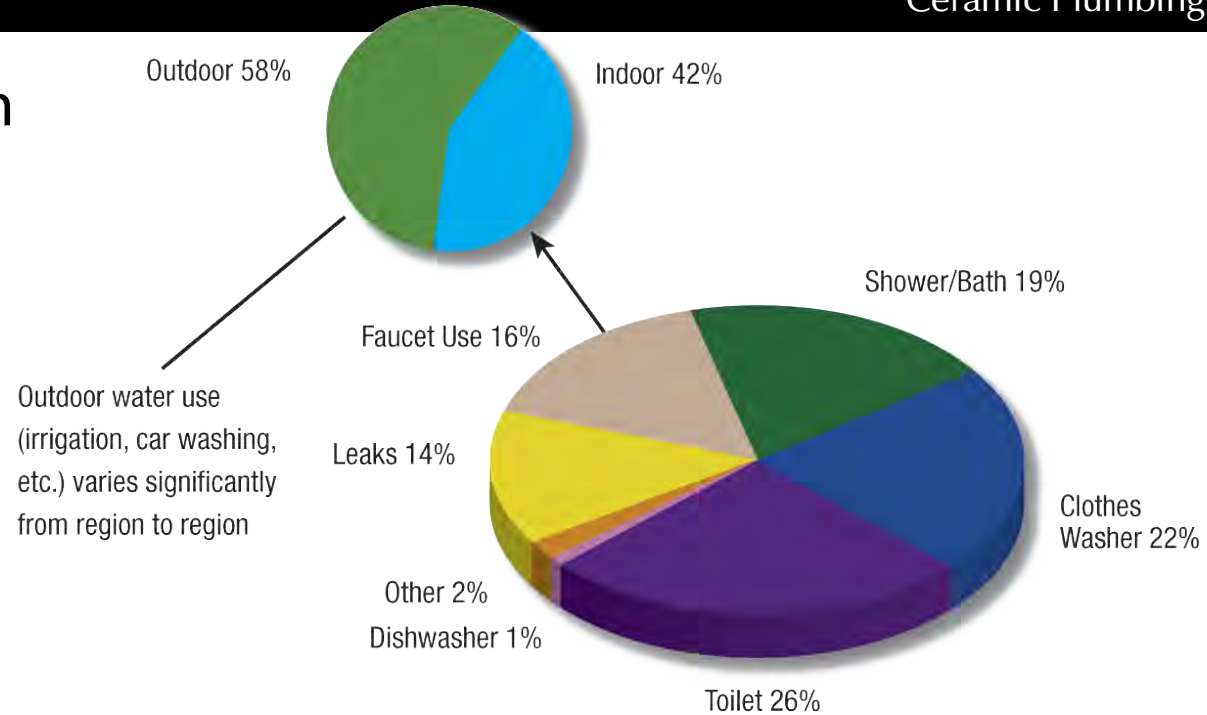


Bgdp: billions gallons per day
Source: Estimated Uses of Water, USGS, 2004 (year 2000 data)

Water Demand

Benefits of sustainable design in
Ceramic Plumbing Fixtures and Faucets

U.S. Potable Water Consumption



Residential uses of water in the United States (typically 200 gallons per day per household).
Data from Mayer, et al. Residential End Uses of Water, 1999.

Evolution



Source: EPA, 2008b, p.1.

Water Efficient Codes & Programs

Benefits of sustainable design in
Ceramic Plumbing Fixtures and Faucets

LEED



Non-profit organization of
leaders industry building
www.usgbc.org



Program for buildings
environmentally responsible



Certification for the
building



40-49 points 50-59 points 60-79 points >80 points

LEED Basics:

Sustainable Sites	26 points
Energy & Atmosphere	35 points
Materials & Resources	14 points
Indoor Environmental Quality	15 points
Water Efficiency	10 points
Innovation in Design	6 points
Regional Priority	4 points

Water Efficient Codes & Programs

Benefits of sustainable design in
Ceramic Plumbing Fixtures and Faucets

LEED

LEED Basics:

Sustainable Sites 26 points

Energy & Atmosphere 35 points

Materials & Resources 14 points

Indoor Environmental Quality 15 points

Water Efficiency 10 points

Innovation in Design 6 points

Regional Priority 4 points



Water Reuse 5 points
Irrigation System 4 points
Indoor water 6 points

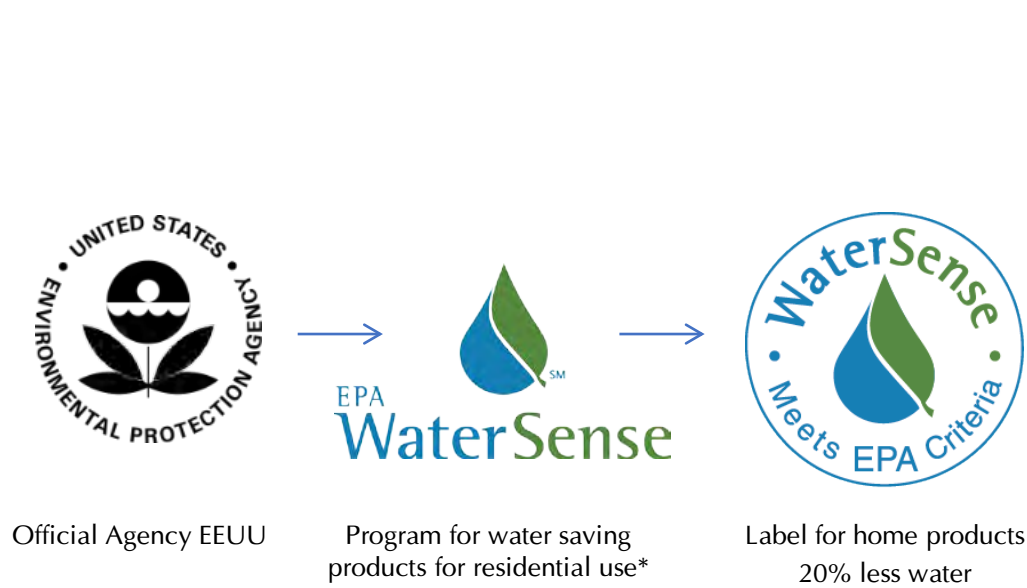



	Maximum water use	Points
All faucets	2.0 gpm	1 point
	1.5 gpm	2 points
All showerheads	2.0 gpm	1 point
	1.75 gpm	2 points
All toilets	1.3 gpm	1 point
	1.1 gpm	2 points

Water Efficient Codes & Programs

Benefits of sustainable design in Ceramic Plumbing Fixtures and Faucets

EPA WATERSENSE



 EPA WaterSense	Maximum water use
Tank Toilets HET	1.28 gpf
Urinals	0.5 gpf
Residential Faucets	1.5 gpm @ 60 psi
Kitchen Faucets	No requirements
Showers	2.0 gpm @ 80 psi
Irrigation controllers	20% less (target)
Pre-Rinse Spray valves	1,3 gpm

*The bathroom sink faucet specification applies to residential lavatories, bar faucets and private restrooms in hotels and hospitals

Water Efficient Codes & Programs

Benefits of sustainable design in Ceramic Plumbing Fixtures and Faucets



Certification for the Newly building in California

- California Green Building Standards Code
- Reduce water consumption by 20%
- More energy efficient
- Divert 50% of construction waste from landfills
- Environmentally responsible
- Install low pollutant-emitting materials
- Requires separate water meters for nonresidential buildings' indoor and outdoor water use






CALGreen

	Maximum water use
Tank Toilets	1.28 gpf
Urinals	0.5 gpf
Residential Faucets	1.2 gpm
Kitchen Faucets	1.8 gpm
Showers	1.8 gpm
Flush meter Toilets	1.28 gpf
Commercial Faucets	0.4 gpm

Water Efficient Codes & Programs

Benefits of sustainable design in
Ceramic Plumbing Fixtures and Faucets

COMPARATIVE

						EPAct* 92
Tank Toilets	1.28 gpf	1.28 gpf	1.28 gpf	1.28 gpf	1.28 gpf	1.6 gpf
Flush meter Toilets	1.28 gpf	1.6 gpf	1.6 gpf	1.28 gpf	n/a	1.6 gpf
Urinals	0.5 gpf	0.5 gpf	0.5 gpf	0.5 gpf	0.5 gpf	1.0 gpf
Residential Faucets	1.5 gpm	1.5 gpm	1.5 gpm	1.2 gpm	1.5 gpm	2.2 gpm
Commercial Faucets	0.5 gpm	0.5 gpm	0.5 gpm	0.4 gpm	n/a	0.5 gpm
Kitchen Faucets	2.2 gpm	2.2 gpm	2.2 gpm	1.8 gpm	n/a	2.2 gpm
Showers	2.0 gpm	2.0 gpm	2.0 gpm	1.8 gpm	2.0 gpm	2.5 gpm

These programs also support LEED, WaterSense New Homes, and NAHB's National Green Homebuilding Standard

*Current standard US: Energy Policy Act of 1992



Main components

BATHROOM EQUIPMENT

CERAMIC PLUMBING FAUCETS BATHROOM ACCESSORIES TOWEL WARMERS BATHROOM VANITIES



Water Efficient plumbing solutions for Bathroom equipment

Benefits of sustainable design in Ceramic Plumbing Fixtures and Faucets

DIFFERENT BATHROOMS



Water Efficient plumbing solutions for Bathroom equipment

Benefits of sustainable design in Ceramic Plumbing Fixtures and Faucets

DIFFERENT STYLES



Water Efficient plumbing solutions for Bathroom equipment

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DIFFERENT DESIGN



Water Efficient plumbing solutions for Bathroom equipment

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SAME ELEMENTS



Water Efficient plumbing solutions for Bathroom equipment

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Water Efficient plumbing solutions for Bathroom equipment

Benefits of sustainable design in
Ceramic Plumbing Fixtures and Faucets

ECO-FRIENDLY PRODUCTS OPTIONS:



MORE EFFICIENT USE OF WATER



TECHNOLOGIES THAT ENCOURAGE
LESS WATER USE

Water Efficient plumbing solutions for Bathroom equipment

Benefits of sustainable design in Ceramic Plumbing Fixtures and Faucets

MORE EFFICIENT USE OF WATER

HIGH EFFICIENCY TOILETS

HET



	Maximum water use average
Tank Toilets	1.28 gpf

Water Efficient plumbing solutions for Bathroom equipment

Benefits of sustainable design in Ceramic Plumbing Fixtures and Faucets

MORE EFFICIENT USE OF WATER

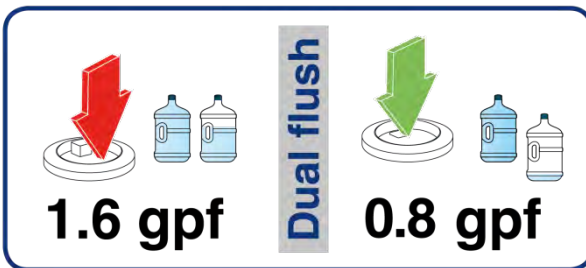
DUAL FLUSH TOILETS



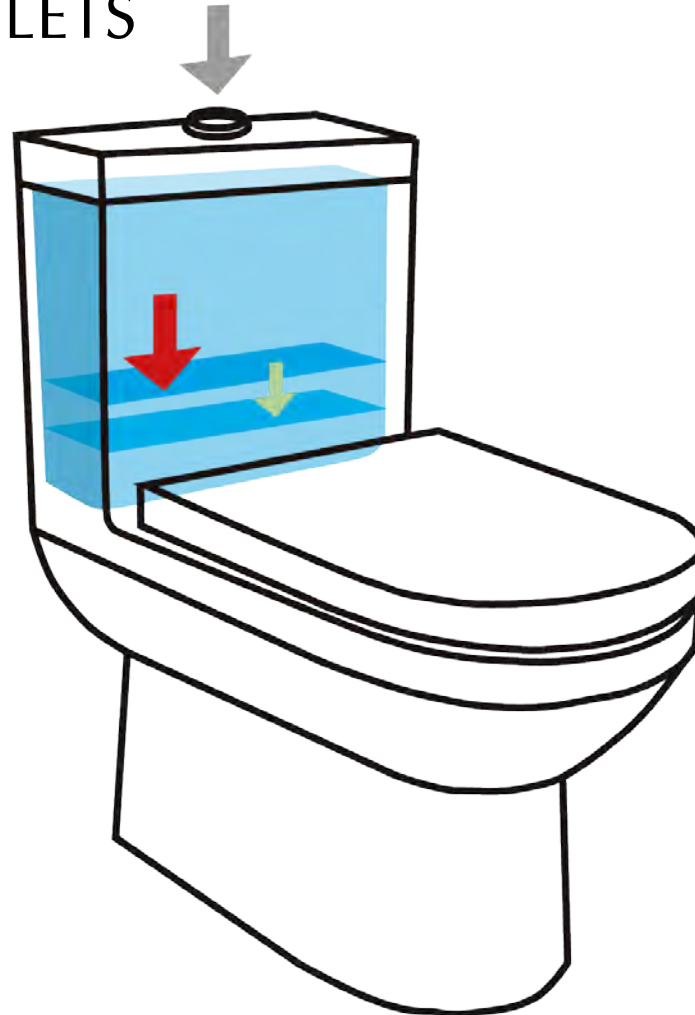
Maximum standard water by law



Maximum standard water for low-flow toilets



Functions for removal solid or liquid waste



Water Efficient plumbing solutions for Bathroom equipment

Benefits of sustainable design in Ceramic Plumbing Fixtures and Faucets

MORE EFFICIENT USE OF WATER

WALL MOUNTED TOILETS BENEFITS



Water Efficient plumbing solutions for Bathroom equipment

Benefits of sustainable design in Ceramic Plumbing Fixtures and Faucets

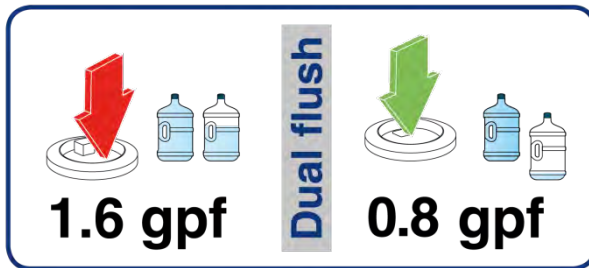
MORE EFFICIENT USE OF WATER

WALL MOUNTED TOILETS BENEFITS



MORE EFFICIENT USE OF WATER

WALL MOUNTED TOILETS BENEFITS



Idem tank toilets:
Functions for removal solid or liquid waste



MORE COMFORT USE

WALL MOUNTED TOILETS BENEFITS

ONE PIECE TOILETS

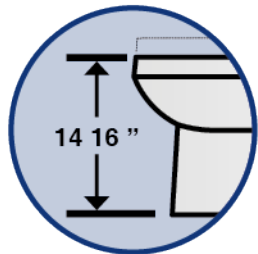
C.1 - HEIGHT: Standard

C.2 - HEIGHT: Right Height

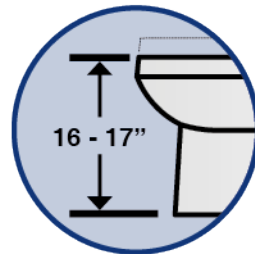
- Ideal for people with back, leg or joint problems
- Tall-people preferred

C.3 - HEIGHT: ADA Height

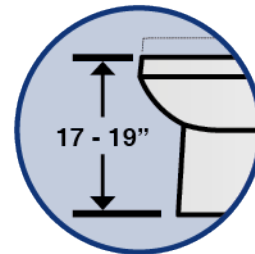
- Conforms to ADA standards



C.1



C.2

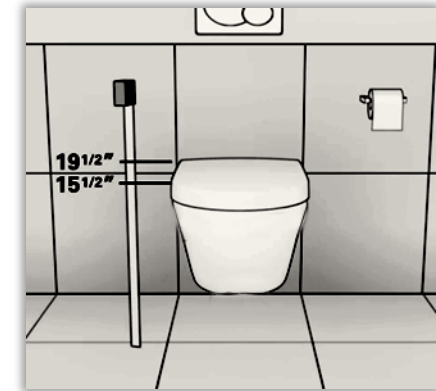


C.3

ADA
COMPLY

WALL HUNG TOILETS

FREE RANGE OF INSTALLATION



Water Efficient plumbing solutions for Bathroom equipment

Benefits of sustainable design in Ceramic Plumbing Fixtures and Faucets

MORE COMFORT USE

WALL MOUNTED TOILETS BENEFITS

EASY CLEANING



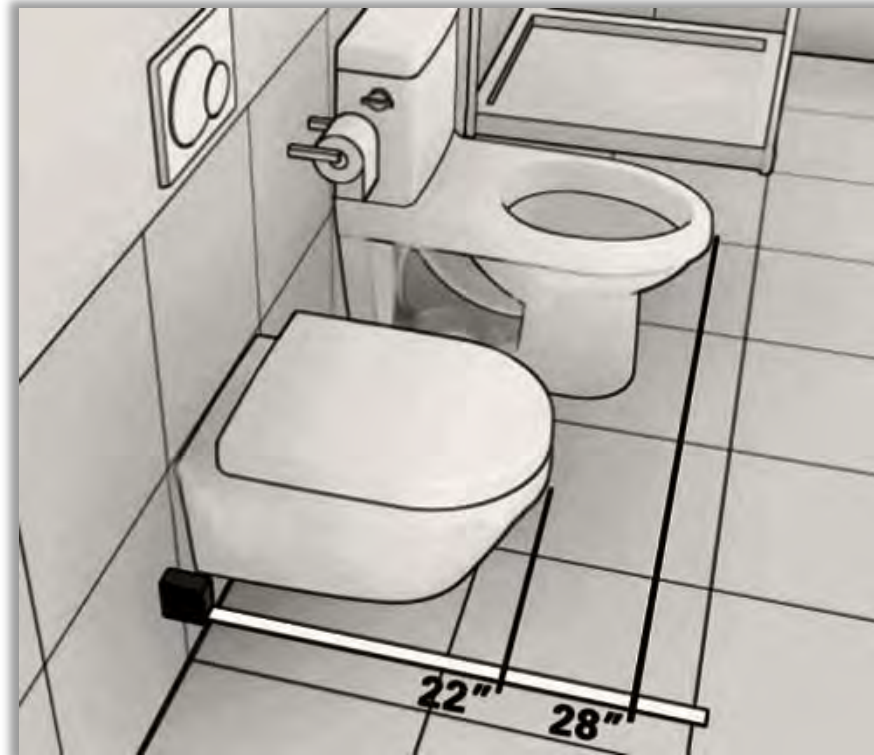
Water Efficient plumbing solutions for Bathroom equipment

Benefits of sustainable design in Ceramic Plumbing Fixtures and Faucets

MORE COMFORT USE

WALL MOUNTED TOILETS BENEFITS

SPACE SAVING



Water Efficient plumbing solutions for Bathroom equipment

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MORE EFFICIENT USE OF WATER & LESS ENERGY USE

FAUCETS

Up **83%**
Less water



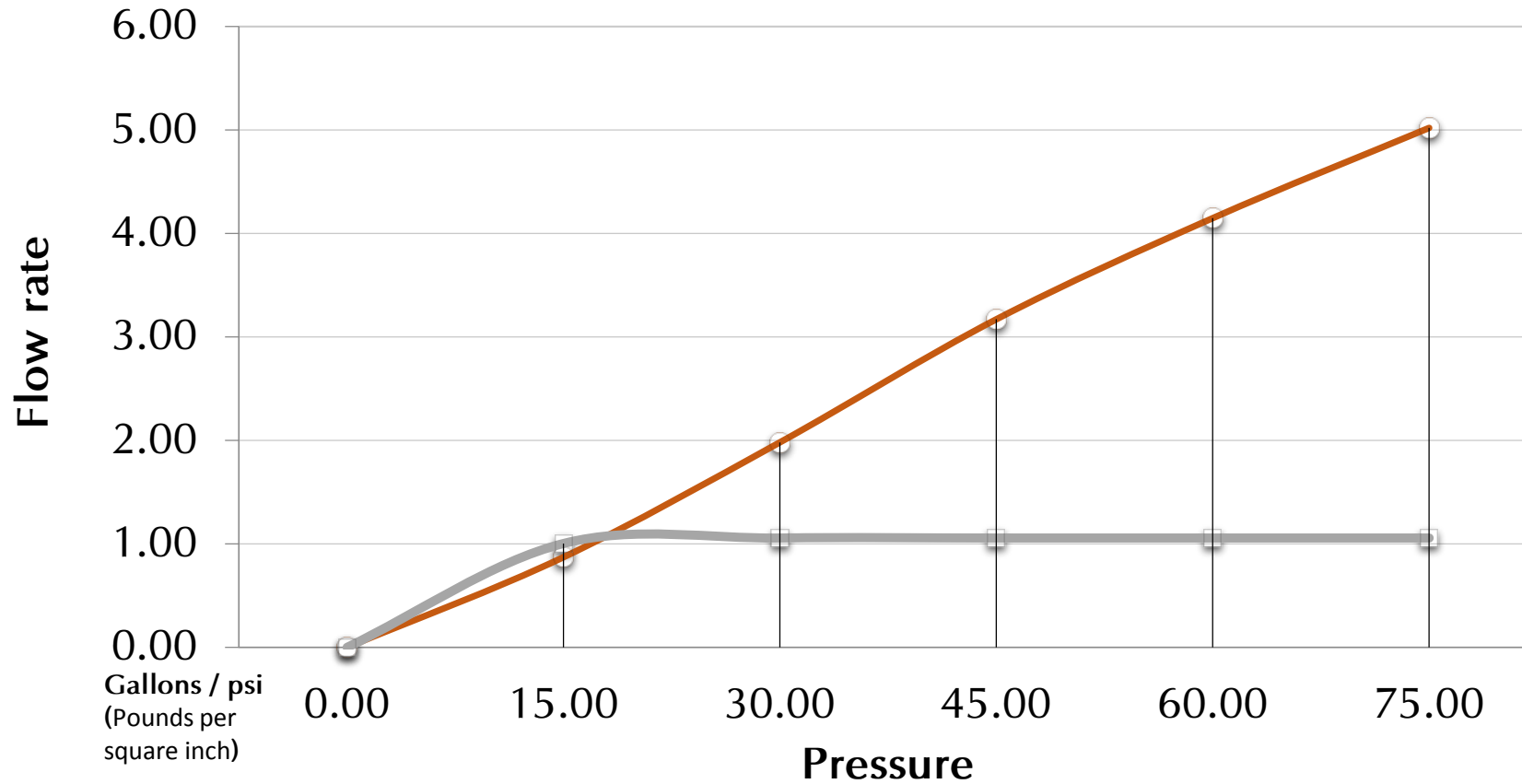
Flow regulators to reduce water flow on faucets and showers



Eco aerators for lavatory faucets

Water Efficient plumbing solutions for Bathroom equipment

Benefits of sustainable design in Ceramic Plumbing Fixtures and Faucets

NEW TECHNOLOGY IN PLUMBING
MORE EFFICIENT USE OF WATER & LESS ENERGY USE

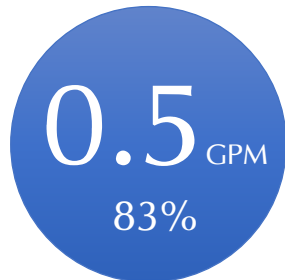


-  standard aerator
-  water saving Performance improvement



Water Efficient plumbing solutions for Bathroom equipment

Benefits of sustainable design in Ceramic Plumbing Fixtures and Faucets



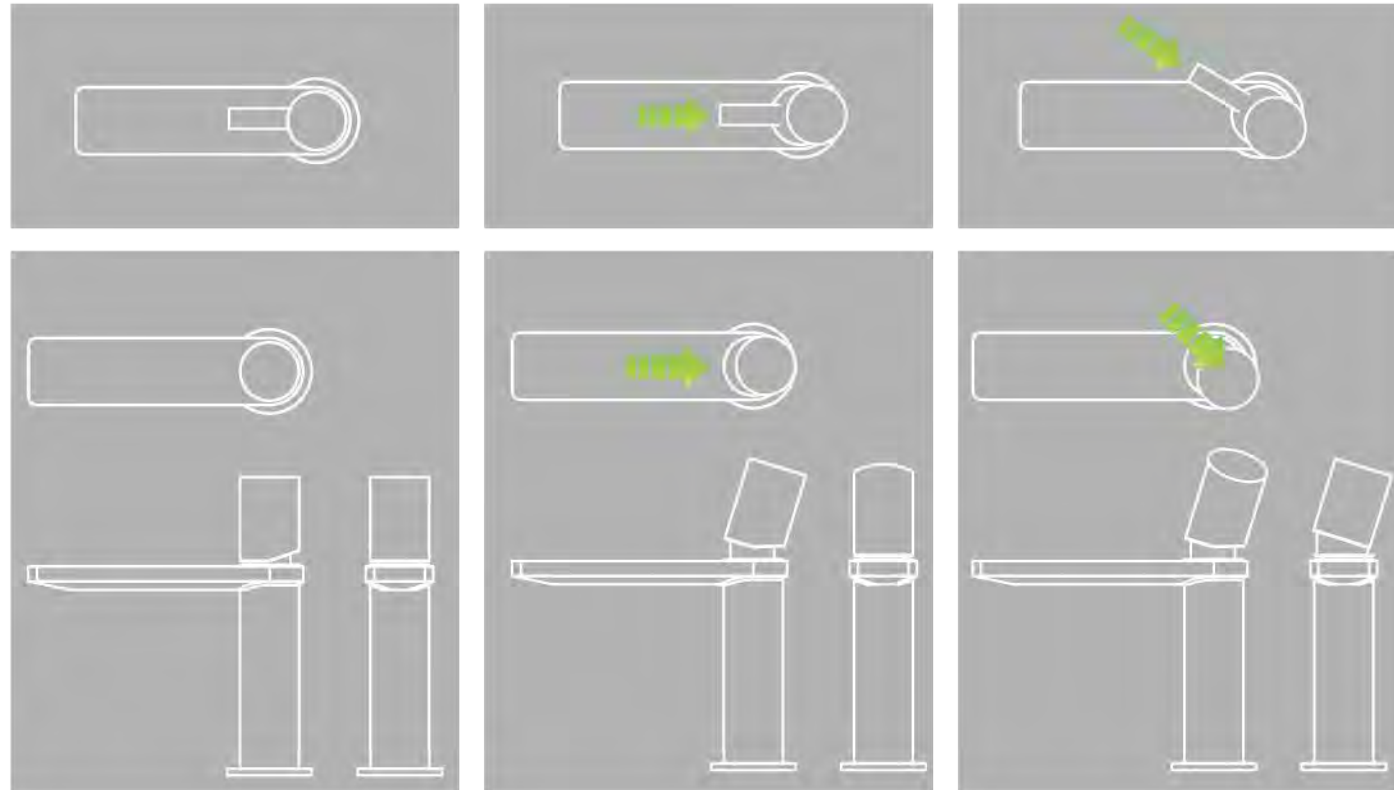
Commercial



Water Efficient plumbing solutions for Bathroom equipment

Benefits of sustainable design in Ceramic Plumbing Fixtures and Faucets

MORE EFFICIENT USE OF WATER & LESS ENERGY USE FAUCETS

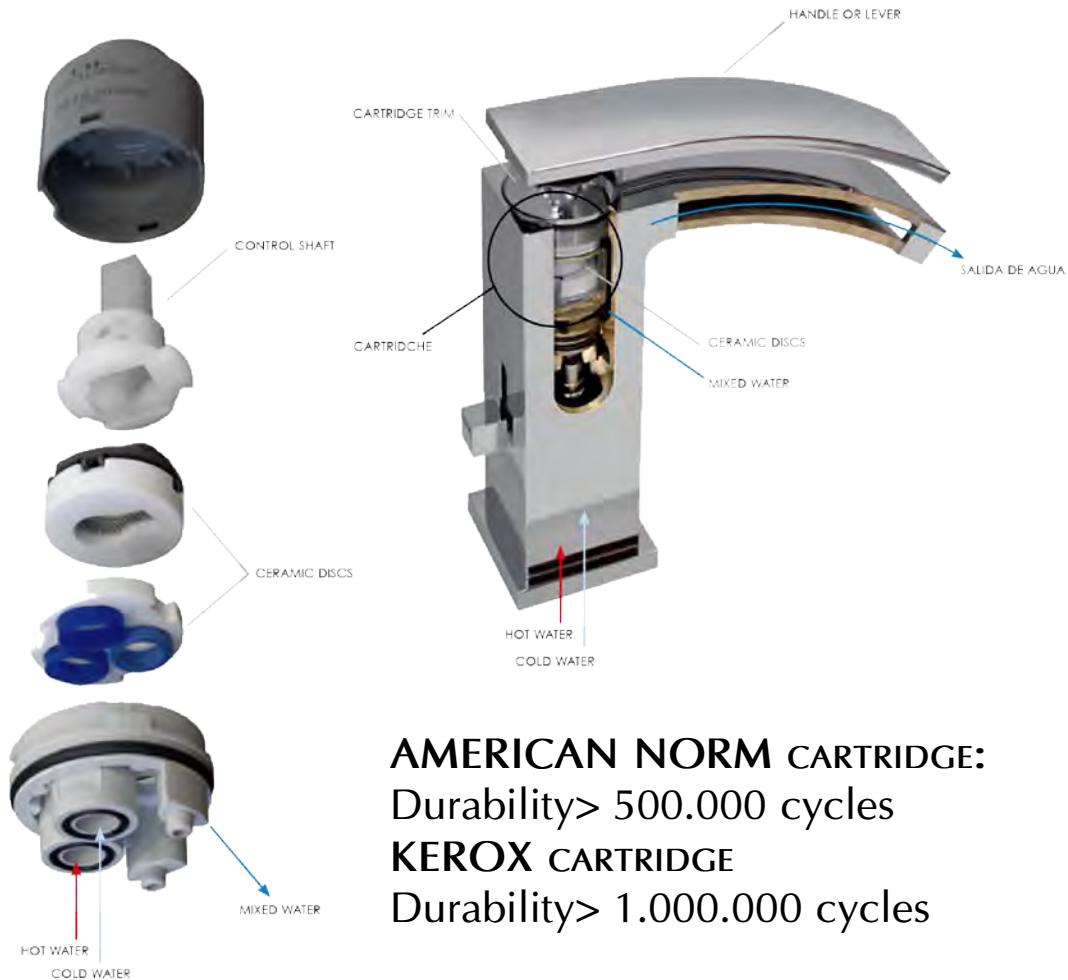


Cold opening ❄️

Water Efficient plumbing solutions for Bathroom equipment

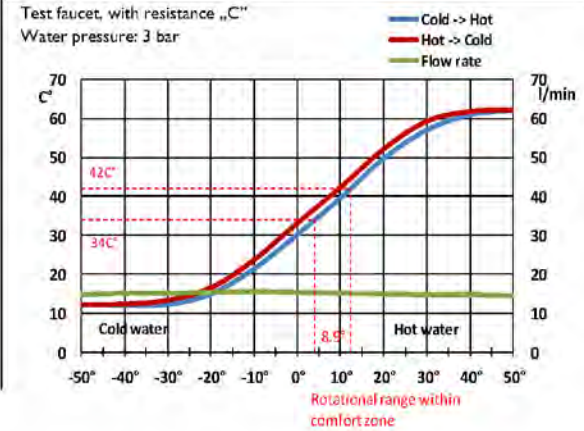
Benefits of sustainable design in Ceramic Plumbing Fixtures and Faucets

MORE EFFICIENT USE OF WATER & LESS ENERGY USE

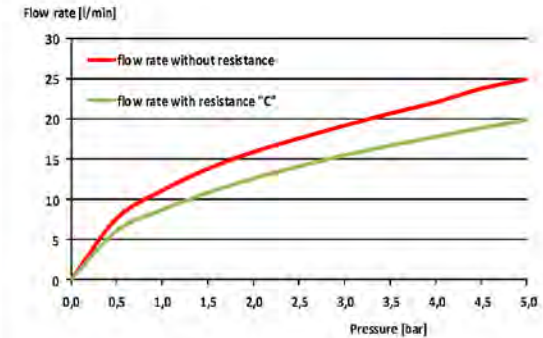


AMERICAN NORM CARTRIDGE:
Durability > 500.000 cycles
KEROX CARTRIDGE
Durability > 1.000.000 cycles

FLOW RATE & HYSTERESIS CURVES



FLOW RATE CURVES



Certification requirements worldwide:



Water Efficient plumbing solutions for Bathroom equipment

Benefits of sustainable design in
Ceramic Plumbing Fixtures and Faucets

DURABILITY

MAXIMUM CHROME AN

Brass coated with double Nickel and Chrome.

LAYER OF NICKEL OF 10 MICRONS
LAYER OF CHROME OF 0,2 MICRONS



Water Efficient plumbing solutions for Bathroom equipment

Benefits of sustainable design in
Ceramic Plumbing Fixtures and Faucets

MORE EFFICIENT USE OF WATER & LESS ENERGY USE

SHOWERHEADS

Average shower is ~8 minutes

8 min @ 2.5gpm = 20 gallons of water

Many showerheads use < 2.5 gpm

New California Standard

8 min @1.8 gpm =14.4 gallons of water

Thermostatic valves require minimum flow to work

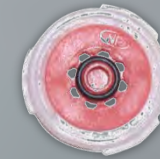


Water Efficient plumbing solutions for Bathroom equipment

Benefits of sustainable design in Ceramic Plumbing Fixtures and Faucets

MORE EFFICIENT USE OF WATER & LESS ENERGY USE

SHOWERHEADS



Integrated flow restrictor for showerheads:



Up **70%**
Less water

Water Efficient plumbing solutions for Bathroom equipment

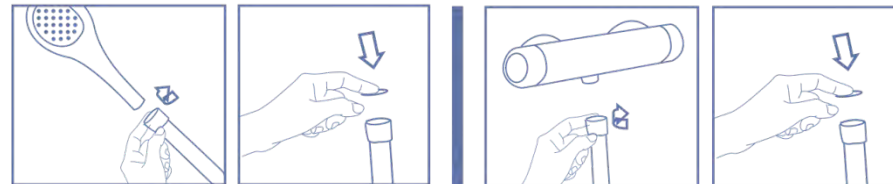
Benefits of sustainable design in Ceramic Plumbing Fixtures and Faucets

MORE EFFICIENT USE OF WATER & LESS ENERGY USE

HANDSHOWERS

Restrictors:

Up **70%** Less water



Water Efficient plumbing solutions for Bathroom equipment

Benefits of sustainable design in Ceramic Plumbing Fixtures and Faucets

MORE EFFICIENT USE OF WATER & LESS ENERGY USE

HANDSHOWERS

Air eco system:



Benefits:
1/3 Air + 2/3 Water:
Consumption

-30%



Voluminous raindrops is a soft massage

Water Efficient plumbing solutions for Bathroom equipment

Benefits of sustainable design in Ceramic Plumbing Fixtures and Faucets

MORE EFFICIENT USE OF WATER & LESS ENERGY USE

HANDSHOWERS

Air eco system:

Compatible with Hand shower functions



Benefits

Benefits of sustainable design in
Ceramic Plumbing Fixtures and Faucets

Annual Savings from Water Appliance Regulatory Standards

About 8% of the electricity used in the U.S is for the delivery and treatment of potable water. In CA 19% of the electricity is used for delivering water. 32% of the natural gas consumption is for treating water and wastewater.

Learning Outcome

Benefits of sustainable design in
Ceramic Plumbing Fixtures and Faucets

- **USA CODES FOR SUSTAINABLE HOME**

- **ECO PRODUCT**

Available for all aspects of the bathroom, both residential and commercial

How it's designed to reduce the overall consumption of water in new build homes and refurbished commercial buildings

Learning Outcome

Benefits of sustainable design in
Ceramic Plumbing Fixtures and Faucets

THE MORE ECOLOGICALLY SOUND THE PRODUCT INSTALLED, THE
MORE ECOLOGICALLY SOUND THE BUILDING WILL BE.



This will have a positive impact on the environment and reduce running costs of residential homes and commercial dwellings , were water meters are fitted.

Questions?

Benefits of sustainable design in
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Thank you for your participation!

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