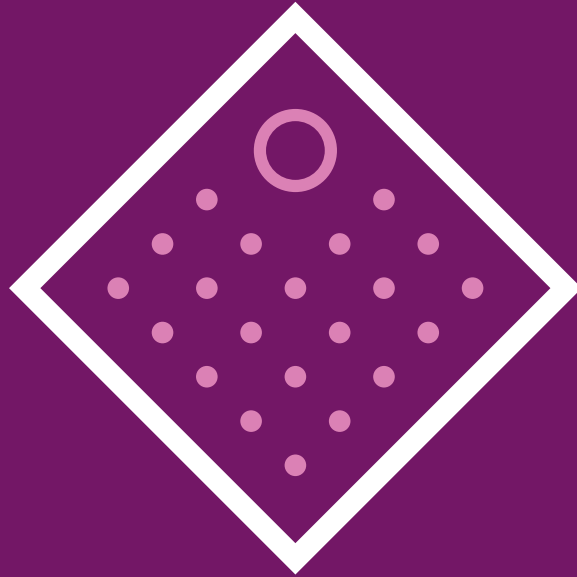


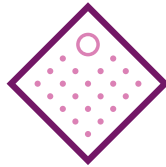
PRECISION ENGINEERED



SENSTEC

ANTI-SLIP SHOWER TRAY

senstecshowertray.com



SENSTEC

ANTI-SLIP SHOWER TRAY

A hand holding a pen over a document, overlaid with a purple gradient. The background is a blurred image of a person writing on a document, with a purple gradient overlaying the entire scene.

“Felt quite
safe and
not slippery
underfoot”

The Brief

Our task was to use the most relevant international standards on slip resistance to design and manufacture an innovative anti-slip shower tray for use with barefoot, wet and soapy conditions. The anti-slip shower tray should be easily cleaned, offer a verifiable positive user experience and have no limitations on use throughout its lifetime.

“We left the meeting wondering just what we had actually agreed to do! The bar had been set high but we kept in mind that CM Group has been at the forefront of design

and innovation since 1983 and that we had won numerous product innovation awards for bathroom waterproofing products within our Classi® range.”

“The surface
was very
comfortable
and quite
sensual –
a bit like
reflexology”

The Challenges

Manufacturers of shower trays sold within the EU must have their shower trays CE marked in accordance with the EU Construction Products Regulations including EN 14527.

The first challenge that we came across was the realisation that whilst EN 14527 draws attention to the potential for slipping to increase when the surface of shower trays are wet, it does not detail particular tests or technical parameters for shower trays in relation to slip resistance.

As soon as we discovered this to be the case, our managing director joined the UK Slip Resistance Group, UKSRG, in order to raise awareness

of this fact and to keep himself and the CM Group team fully up to date with changing legislation.

As a result we found ourselves fulfilling an educational role, as well as developing a new product.

Our next challenge was the actual design, so we turned to the aerospace tooling industry for help. This indicates the high level of precision engineering and expertise that the SENSTEC design required.



“I was
impressed
how it
provided
grip as well
as comfort”

Methodology

Our initial research led us to two methods of measuring slip resistance - the Pendulum Test and the Ramp Test, BS 7976-2 and DIN 51097 respectively. We decided to test our product using both standards.

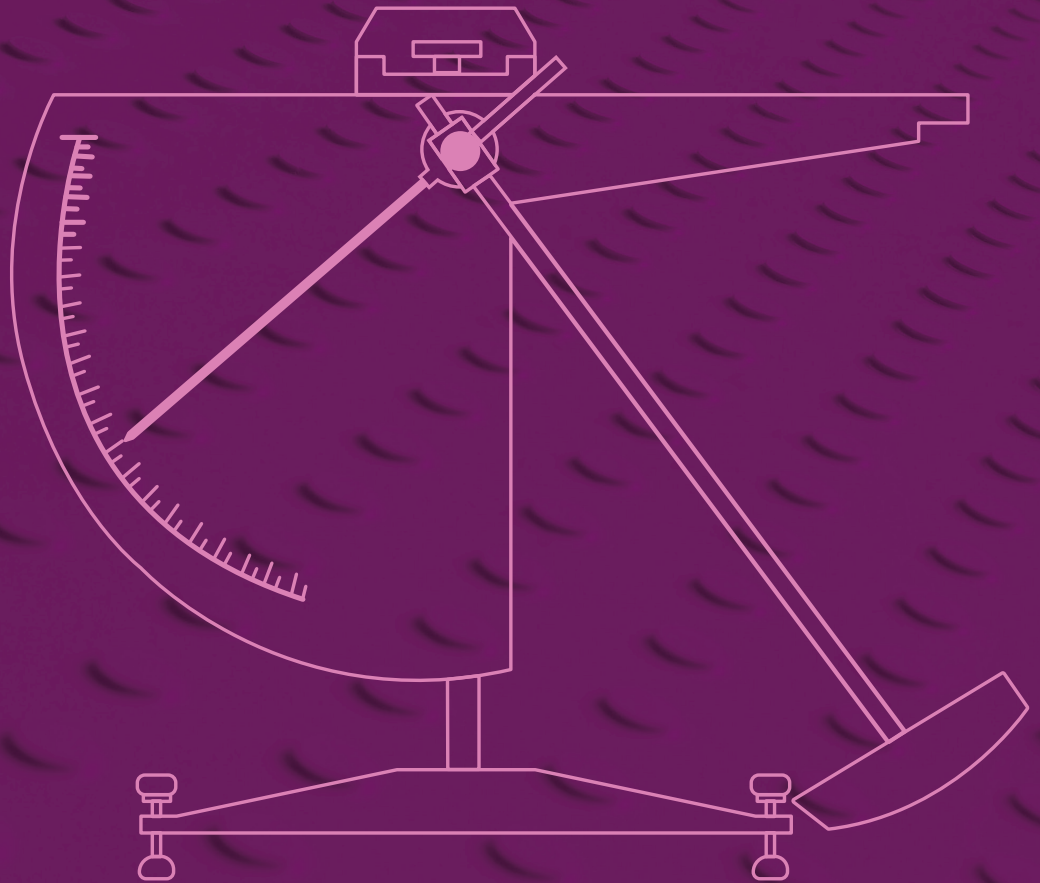
From the outset, we agreed that we should adopt an engineered solution and make the anti-slip design an integral part of the mould. This would ensure that anti-slip properties would be built in to all of our shower trays. In addition, we decided that the anti-slip profile should be made from the same material as the rest of the shower tray surface. This would mean that there would be no limitations of use.

More than two years of continuous research and development ensued and it soon became clear why no-one had yet successfully completed a project such as this. Prototype tool #1, tray manufacture, test, feedback results... Prototype tool #2, tray manufacture, test, feedback results... the trials went on and on.

Then finally we cracked it after Prototype tool #42!

Or had we? Only rigorous testing would provide the answer.

“Dimples
felt like
they
added
grip”



Pendulum Testing

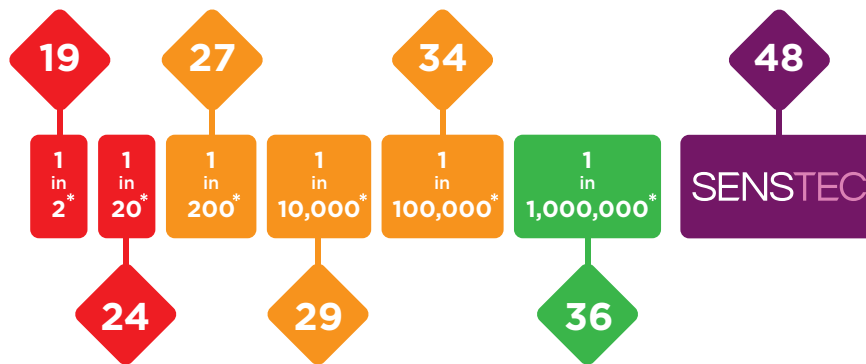
BS 7976-2

The pendulum tester is universally recognised as an effective floor slip resistance measuring device.

It is the subject of many international studies and is the preferred test method of the UK Slip Resistance Group (UKSRG), the Health & Safety Executive (HSE), and the Health and Safety Authority of Ireland. Owing to its size and portability, it can be used both on site and for laboratory testing.

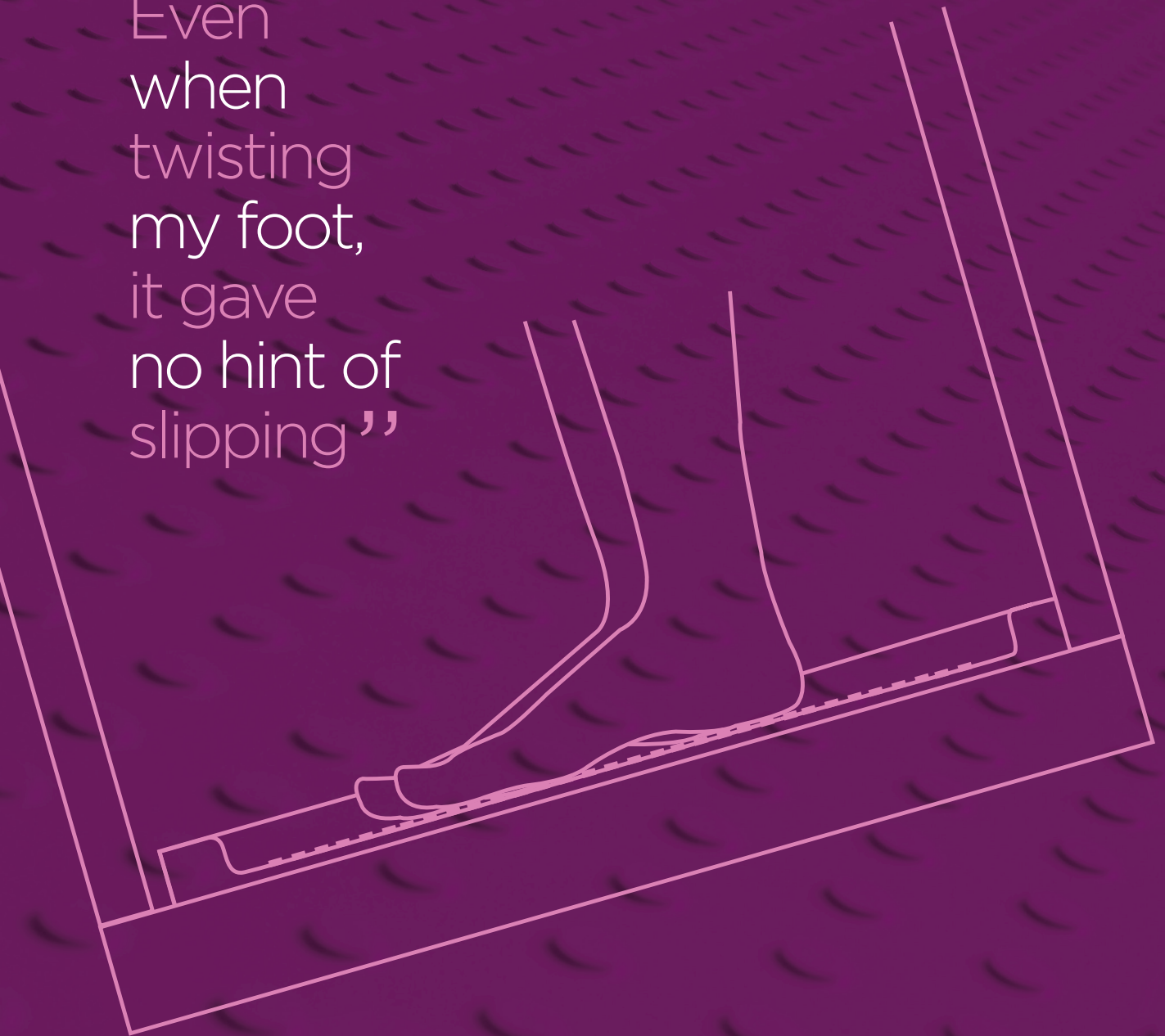
UKAS accredited laboratory results report an average PTV value of 48 for the SENSTEC anti-slip design, placing the product in the Low Slip Potential, the best classification possible.

This outstanding result was achieved with the addition of a soaping agent, as defined in DIN 51097, to replicate a true showering environment, even though this was over and above the standard requirements.



*Chance of slipping!

“Even when twisting my foot, it gave no hint of slipping”



Ramp Testing

DIN 51097

The ramp test involves a person walking forwards and backwards on a test sample at a predefined tempo, as determined by a metronome. A water and contaminant solution is pumped over the sample, at the same time as the apparatus is continuously tilted. Throughout the test the person continuously walks forward and backward. The test ends when the person slips.

Due to the size and operation of the equipment this method is for laboratory testing only.

Our UKAS-accredited laboratory testing reported an average result of 30°, placing it in category C, the best classification possible.

This meant that after extensive testing with the ramp and pendulum our design could be placed in the best classifications available.

But what about the all-important user experience?



“ I have older children and teenagers and I would feel safer that they would not slip or fall and could be left to shower by themselves independently ”



User Experience Testing

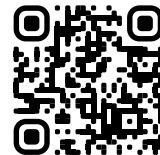
A key requirement of the design brief was that our shower tray should deliver a verifiable positive user experience. CM Group engaged the Podiatry Department at Ulster University to investigate and report on user perceptions of the SENSTEC anti-slip shower tray.

The entire report can be found at senstecshowertray.com

Individual subject comments were very positive in terms of product design (94%) and some subjects found the experience of standing and moving in the tray therapeutic for their feet. 88% of subjects reported a high degree of comfort when standing and moving in the SENSTEC anti-slip shower tray. Various post-test comments are shared throughout this brochure.

It is important to note that the study protocol was followed diligently and that tests were conducted in line with the German DIN 51097 standard in relation to contaminant concentration and flow rates.

Success! As a result of the Ulster University study the SENSTEC design was turned from prototype to tooling.



“Surface provides a good sturdy grip and I felt very securely grounded”



Unrivalled, World-Class Quality

CM Group has been designing and manufacturing shower trays since 1983 and we operate our manufacturing and supply operations to both BS EN ISO 9001 Quality Management System and BS EN ISO 14001 Environmental Standards. We maintain strong relationships with our suppliers and they keep us well informed about improvements in materials. This means that we always use the highest quality raw materials available.

The SENSTEC manufacturing process requires each anti-slip shower tray to go through 12 sign-off quality control gateways. In addition, every SENSTEC shower tray has an inbuilt microchip which provides complete traceability of all raw materials and details of the manufacturing process, should such information ever be needed.

CM Group has an enviable reputation for innovation, quality products and

customer service, all of which are driven by our desire for continuous improvement in everything we do. In 2008 CM Group became the Founding Sponsor of what is now the British Institute of Kitchen, Bedroom and Bathroom Installers, whose primary purpose is to raise installation standards. We remain its sponsors to this day and we are also members of the Bathroom Manufacturers Association.



“Wasn’t slippery,
I took steps
confidently”

Cleaning

The Health & Safety Executive have clearly linked grime and dirt to the slip potential of any surface. That's why we dedicated so much time to understanding the effect of water, soap and dirt during product development. Safety is everything to us.

After studying the flow of water around the shower tray's surface profile (examining how the profile could and should be cleaned, followed by trial, testing and re-testing), we were delighted to learn that cleaning

is as straightforward as using soap and water, then drying off with a soft cloth.

*Extremely safe, extremely simple.
That's elegant design.*

“Since retiring we have been able to do a bit of travelling and I have noticed some of the textured trays in hotels looking grubby. This is not the case with your tray - it is as clean as the day I fitted it. We clean it the same as the other trays in the house.”



A close-up photograph of a laptop keyboard. The focus is on a single key that is labeled 'SENSTEC' in a bold, black, sans-serif font. The key is slightly raised and has a rectangular shape. The background shows other keys in a dark color, but they are out of focus. The lighting is soft, highlighting the texture of the key and the surrounding keys.

SENSTEC

“Surface was extremely stable which gave me a feeling of confidence moving about it”

The SENSTEC Range

Shower trays in the SENSTEC range are 36mm tall and are completely solid, as our design does not require a hollow void underneath.

Each tray is composed of a gel-coated surface, backed with a poly-concrete composite. Our unique process allows for the shower trays to be manufactured in any colour.

The number of sizes for SENSTEC shower trays is continually evolving, so please check our website, senstecshowertray.com for the most current information and for key dimensions and waste positions.

Shower Trap

SENSTEC shower trays have been designed exclusively for use with McAlpine ST90CPB-S-HP2 or ST90CPB-S-70, with flow rates of 42

and 34 litres per minute respectively when tested in accordance with EN274-2:2002. mcalpineplumbing.com

In order to ensure a watertight installation, we recommend that all SENSTEC anti-slip shower trays are used in conjunction with the Classi® Bathroom waterproofing range of products.

For further information, go to www.senstecshowertray.com/downloads

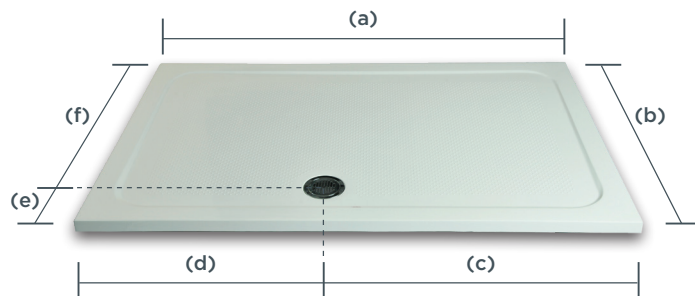


SENSTEC RANGE

RECTANGLE *(Tray depth 36mm)*

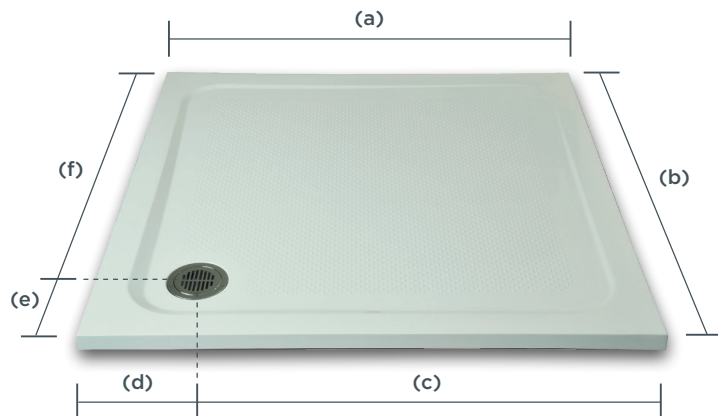
(a) mm	(b) mm	(c) mm	(d) mm	(e) mm	(f) mm	MPN
1800	1000	990	810	180	820	S18x1000
1800	900	990	810	180	720	S18x9
1800	800	990	810	180	620	S18x8
1700	1000	940	760	180	820	S17x1000
1700	900	940	760	180	720	S17x9
1700	800	940	760	180	620	S17x8
1700	750	940	760	180	570	S17x750
1600	1000	890	710	180	820	S16x1000
1600	900	890	710	180	720	S16x9
1600	800	890	710	180	620	S16x8
1500	1000	840	660	180	820	S15x1000
1500	900	840	660	180	720	S15x9
1500	800	840	660	180	620	S15x8
1400	1000	790	610	180	820	S14x1000
1400	900	790	610	180	720	S14x9
1400	800	790	610	180	620	S14x8
1300	900	740	560	180	720	S13x9
1300	800	740	560	180	620	S13x8
1200	1000	690	510	180	820	S12x1000
1200	900	690	510	180	720	S12x9
1200	800	690	510	180	620	S12x8
1200	760	690	510	180	580	S12x760

(a) mm	(b) mm	(c) mm	(d) mm	(e) mm	(f) mm	MPN
1100	900	640	460	180	720	S11x9
1100	800	640	460	180	620	S11x8
1100	760	640	460	180	580	S11x760
1000	900	590	410	180	720	S1000x9
1000	800	590	410	180	620	S1000x8
1000	760	590	410	180	580	S1000x760
900	800	540	360	180	620	S9x8
900	760	540	360	180	580	S9x760



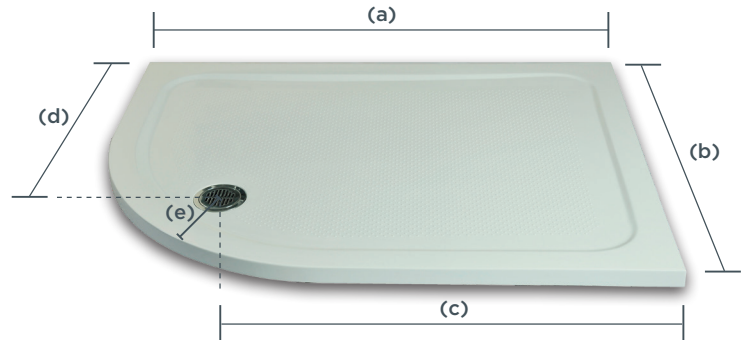
SQUARE *(Tray depth 36mm)*

(a) mm	(b) mm	(c) mm	(d) mm	(e) mm	(f) mm	MPN
1000	1000	820	180	180	820	S1000x1000
900	900	720	180	180	720	S9x9
800	800	620	180	180	620	S8x8



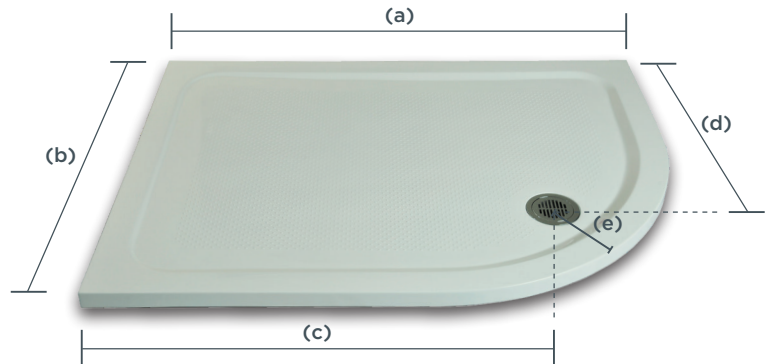
OFFSET QUADRANT LEFT *(Tray depth 36mm, Radius 550mm)*

(a) mm	(b) mm	(c) mm	(d) mm	(e) mm	MPN
1200	900	912	612	180	S12x9QLH
1200	800	912	512	180	S12x8QLH
1000	800	712	512	180	S1000x8QLH



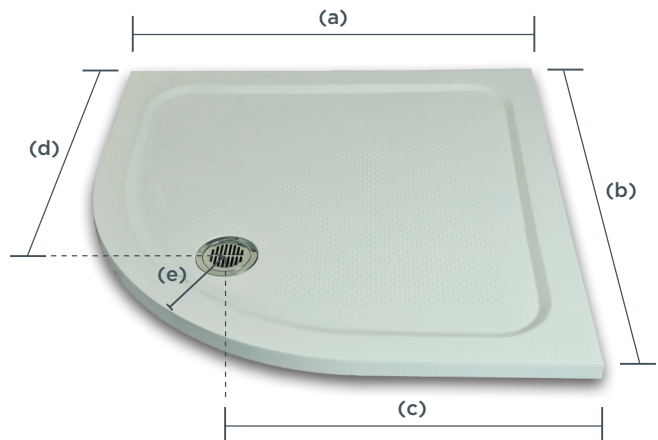
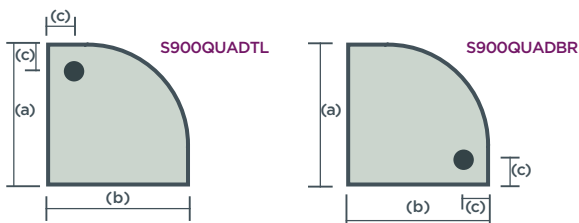
OFFSET QUADRANT RIGHT *(Tray depth 36mm, Radius 550mm)*

(a) mm	(b) mm	(c) mm	(d) mm	(e) mm	MPN
1200	900	912	612	180	S12x9QRH
1200	800	915	515	180	S12x8QRH
1000	800	715	515	180	S1000x8QRH



QUADRANT *(Tray depth 36mm, Radius 550mm)*

(a) mm	(b) mm	(c) mm	(d) mm	(e) mm	MPN
1000	1000	726	726	180	S1000QUAD
900	900	626	626	180	S900QUADC
900	900	180	N/A	N/A	S900QUADTL
900	900	180	N/A	N/A	S900QUADBR
800	800	526	526	180	S800QUADC



“Even when
moving
around on
the surface
I felt very
stable and
secure”

Architects/ Specifiers

We recognise that architects are among the most important members of any design team, so we have prepared a CPD Module - 'SENSTEC Anti-Slip shower tray'. The modules focus on anti-slip Shower Trays and give a clear insight to current legislation, an explanation of what is currently on the market, the two most widely used methods of testing and the advantages and disadvantages associated with both.

The CPD module will help architects to make informed choices when specifying anti-slip shower trays with the following learning outcomes:

- An understanding of the two main methods of slip measurement.
- An understanding of whether the anti-slip properties are part of the shower tray design, or an applied coating after manufacture.
- An understanding of any limitations the anti-slip properties may have on the shower tray guarantee.
- An understanding of whether the slip resistance values consider likely contaminants found in the shower tray, such as soap suds.

Please contact CM Group to register your interest in taking part in this CPD.



“Even in the soapy water as I moved about I was extremely confident after the initial moves that I wouldn't slip”

Review

Did we meet The Brief?

We believe so! Here's why:

1. UKAS Laboratory tested to BS 7976-2, showing best category of Slip resistance possible, considering wet and soapy conditions.
2. UKAS Laboratory tested to DIN 51097, showing best category of Slip resistance possible, considering wet and soapy conditions.
3. The anti-slip properties are an integral part of the tray manufacture, made from the same materials as the rest of the tray surface, therefore no limitations on use.
4. Ulster University Study - 100% of subjects confident that they would not slip in a SENSTEC anti-slip shower tray, as well as 88% reporting a high degree of comfort when standing and moving in the SENSTEC anti-slip shower tray.
5. Easily cleaned - no extra effort required over standard cleaning methods used on normal shower trays.
6. **UK Patent GB2551138 & US Patent 10,765,268**

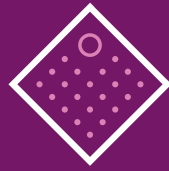
A Note of Thanks

As well as our dedicated team at CM Group, thanks are reserved for some special partners, all of whom helped to ensure that the design brief became a reality.

In no particular order, Alan Wallace of FR Kelly for IP guidance, Gary Kerr of Invest NI, Simon Hall of Lucideon for external testing, Michael Maguire and his team at Datum Design for their endless patience with tool design and re-design and re-design and..., Mr Raymond Robinson of the Podiatry Department at Ulster University for facilitating the user experience testing.

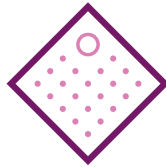
A handwritten signature in black ink, reading "C P Hackett". The signature is fluid and cursive, with a long horizontal stroke extending from the end of the name.

Christopher Hackett, Managing Director, CM Group



SENSTEC

ANTI-SLIP SHOWER TRAY



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ANTI-SLIP SHOWER TRAY



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ANTI-SLIP SHOWER TRAY

UK Patent GB2551138 & US Patent 10,765,268

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