NEWS FROM THE PIPELINE

MAY 2022

The official newsletter of the Southern African Plastic Pipe Manufacturers Association (SAPPMA)

CREATING ABSOLUTE CUSTOMER CONFIDENCE IN THE PLASTIC PIPE INDUSTRY

Pipelines are one of three key elements of a country's infrastructure, together with the electrical grid and network of roads and rail. Infrastructural elements are long-term investments that provide essential services to citizens with minimum interruption.

Plastic has grown to a dominant position in piping systems worldwide, with an estimated share of more than 50 %. Independent market surveys in South Africa indicate similar dominance in sizes up to 1000 mm diameter. Well-designed plastic pipelines made with modern polymers are capable of lifetimes up to 100 years.

SAPPMA is an open association, well-regulated by strong Articles of Association and Code of Conduct, and is registered as a Section 21 Company incorporated not for gain. We are proud to represent the important, dynamic and burgeoning plastic pipe industry in South Africa. As an association of leading companies, we are united in our purpose and mission to create absolute customer confidence in the plastics pipe industry. We do this through facilitating high standards of ethics, product quality and sound technical information.

Code of Conduct

All SAPPMA members are committed to a strict Code of Conduct whereby they agree to comply with various requirements for national product standards, internal standards and to pay due regard to trade mark, copyright, patent ownership and all other intellectual property in order to maintain the industry body's highest ethical standards.

By signing SAPPMA's Code of Conduct, members undertake not to supply counterfeit products, refrain from negative marketing and any form of corruption with customers, suppliers, competitors, legal authorities and any other persons, desist from any anti-competitive behaviour (including the fixing of prices or other trading conditions), the division of markets through the allocation of customers, suppliers, territories or types of goods, or collusive tendering.

IN THIS ISSUE:

The SAPPMA mark: Your Guarantee of Quality

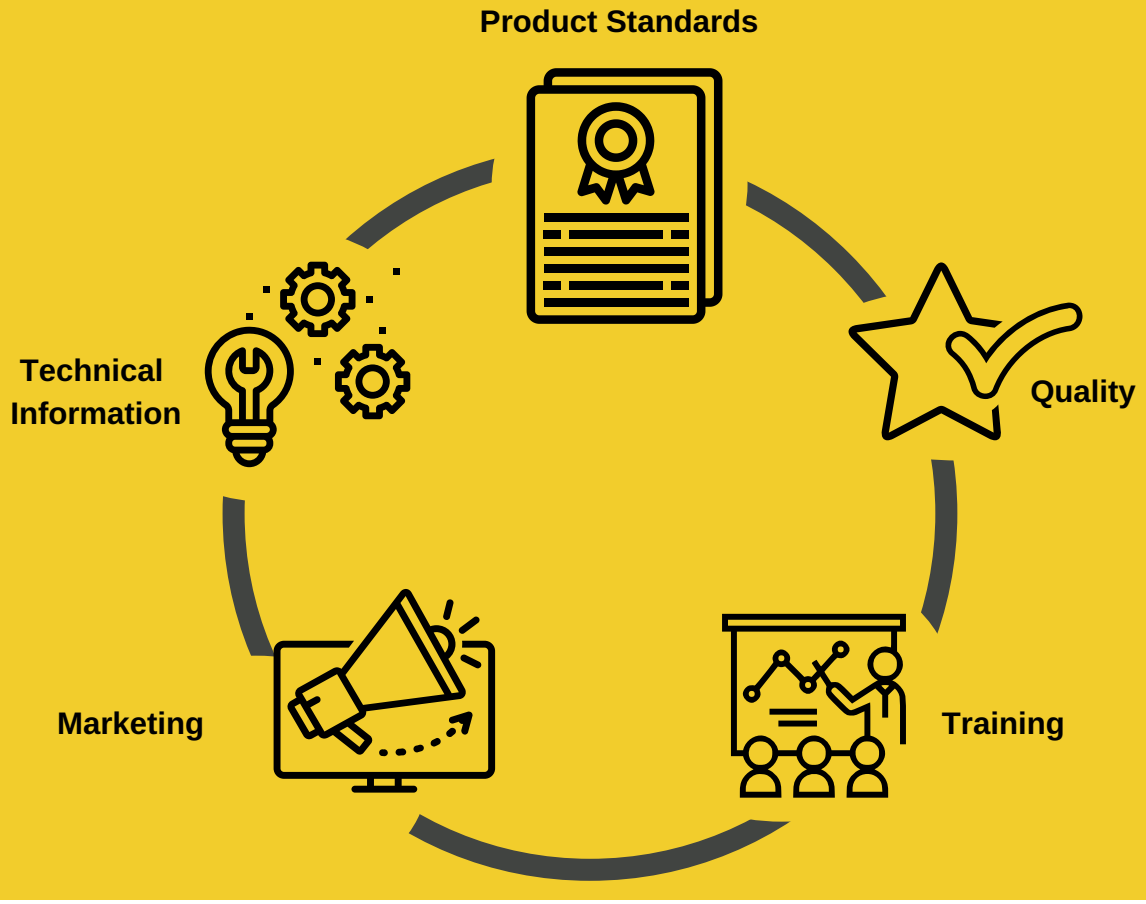
Pipes produced by member companies carry the registered SAPPMA logo for clear identification. SAPPMA members are only allowed to use the mark on their products after they have successfully demonstrated that their plastic pipes and fittings comply with the association's quality and manufacturing requirements and that they are fully compliant with all relevant local and international standards and specifications.

This includes:

- Ensuring they are ISO 9001:2015 quality management system compliant (or alternatively, they have passed a SAPPMA systems audit) and as such strive towards successful maintenance and improvement of these systems;
- Agreeing to be independently audited on a regular basis (announced or unannounced), including sampling and testing of products.
- Conforming to additional SAPPMA 'Minimum Standards' to further differentiate members from non-members.

SAPPMA members are obliged to use only approved PE100 polymers and no third party regrind PE-HD material in certified products. In the production of PVC pipe they are not allowed to use heavy metal stabilisers.

SAPPMA's 5 Areas of Focus



REPORT BACK FROM SAPPMA WORKING GROUPS

SAPPMA has created three standing committees with a view to promoting best practise, but also to educate members and end-users of plastic pipe about how quality is obtained and maintained in the industry. The end goal is to issue guidance documents in support of the Standards which govern our industry.

The three working groups are for PVC pipes, HDPE pipes and fittings
Each of these standing committees are headed up by experienced and committed individuals who have a strong core of knowledge which is representative of SAPPMA's membership and the needs of the industry. This "knowledge core" is free to call on other members/industry representatives as the need arises. Below follows brief updates of provided by the standing committees at the recent SAPPMA Members' meeting:

PVC (Renier Snyman)

High Speed Impact Test

- Low Pressure Classes (below pressure class 12) will be removed from (SANS 1283)
- Mines will also be involved to establish the voice of customer, as SANS 1283 is a safety critical product standard. SANS 966-2 amendment is at SABS for amendment.

SANS 1601

- At a recent meeting held to discuss SANS 1601, it was agreed that joint and socket testing will be included in the standard.
- The amendment to SANS 1601 is expected to be completed by August 2022.

SANS 967

- Strap-on-Boss to be included in the SANS 967. The working group is waiting for current amendments to be completed before they can submit further amendments.
- SANS 967 wall thickness requirements were to be checked against international standards.
- A request was raised to investigate the solvent weld socket dimensions, as they are not practical or reflecting actual practise.

PIPE LENGTHS

- SANS 966-1 and SANS 966-2 are completed, waiting for current amendments to these standards at SABS to complete in order to submit this work.
- SANS ISO 16422 (PVC-O) will be evaluated next for pipe lengths. The work group in conjunction with local manufacturer will be consulted for this standard.

STIFFNESS TESTING

- The PVC working group is in the process of reviewing a document sent through by Mike Smart on the subject, as well as a technical report from PESC, and ISO 9967 and ISO 9969 (Plastic pipe ring stiffness).

Dawie Fick welcomed as new committee leader

Welcome to Dawie Fick as the new IFPA working group committee leader, following the stepping down of Renier Pieterse from this position.

Dawie has a long standing relationship with IFPA. He was one of its founding members when it was formed in 2009 as an initiative by SAPPMA to expand regulation of the plastic pipe industry in South Africa. Members are encouraged to participate in meetings and support Dawie in his efforts.

HDPE (George Diliyannis)

Due to current time constraints experienced by the HDPE working group committee leader, the current working group's activities will be put on hold until the end of June 2022.

Representatives of the following sectors are required to serve on the HDPE working group:

- Pipe manufacturer
- Raw material
- Certification/audit
- External testing
- SAPPMA

This core group of individuals will collectively decide on project priorities and one of the main tools used will be the voice of the customer as gathered by SAPPMA.

SIZABANTU
PIPING SYSTEMS
Official distributor of MOLECOR South Africa

SIZABANTU CELEBRATES 20 YEARS WITH 20 DAYS OF GIVING

WINTER DONATIONS NEEDED

Any other donations will be gratefully accepted!

Sizabantu Piping Systems' nationwide divisions are in partnership with various charity organisations throughout South Africa.
As part of their 20th anniversary celebrations, they will be running a "20 Days of Giving" campaign!

20 YEARS -STRONG- 20 DAYS OF GIVING!

Sizabantu Piping Systems' nationwide divisions are in association with various charity organisations throughout South Africa, and will be running a "20 days of giving" campaign for our 20th birthday .

We would like to call on our customers, suppliers and team to kindly donate any of the following for the upcoming winter:
- **Blankets**
- **Any other essential food or clothing items**
- **Baby food (non-perishable)**

We appeal to all to donate generously so that we can make a real difference. It is in times like that that we (with our abundant blessings) are called upon to assist wherever we can. We would like to encourage anyone else who is interested in making an impact for this mission, to join us to help those in great need. Pediatric Care Africa has already donated the first 200 blankets. The First collection of donations will be at the end of May and the second collection will be done at the end of June.

Join in today! Contact your nearest division to get involved

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#SizabantuCharity #SizabantuCares #ProudlySizabantu #20Years Strong #20DaysOfGiving

NEW RANGE OF MANHOLES

based on Weholite HDPE technology

"Weholite manholes are watertight - unlike concrete systems - which often leak and allow ingress, damage that disrupts sewerage settlement and separation, causing strain on municipal treatment plants".

The new range of manholes are designed to meet the construction sector's growing demand for efficient water and sewerage infrastructure materials. They are based on the Weholite HDPE technology and are being manufactured at the company's newly completed Ruiru plant.

Weholite manholes will revolutionise the construction sector in Kenya. They allow clients to remove weeks from programme delivery times. The lightweight nature of the material enables these manholes to be installed much faster than traditional alternatives such as concrete. Weholite manholes can also be customised to meet a project's specification which increases reliability.

According to Simon Thomas, the efficiency in building is becoming one of the biggest factors to consider during construction due to disruptions in global supply chains and the rallying prices of construction materials across the board, factors that are negatively affecting delivery.

"Today developers and contractors want to complete projects within the shortest time possible. The unprecedented price increases in construction materials are adversely affecting budgets and result is either redesigning projects or scaling down. In both cases this is undesirable. However, by offering a solution with a 100-year service life, which is extremely low maintenance and is 100% watertight, we are adding value to each and every project over the lifecycle," Thomas says.

Another advantage for the Weholite systems is their resistance to hydrogen sulphide, a corrosive gaseous by-product of the waste that flows through sewage pipelines.

Hydrogen Sulphide attacks concrete pipes and manholes which results in damage and failure, in severe cases replacement can occur in 5-10 years. Weholite manholes are watertight, unlike concrete systems, which often leak and allow ingress, damage that disrupts sewerage settlement and separation, causing strain on municipal treatment plants.

Megapipes Solutions also announced that it will be introducing many other chamber products for water management purposes. For example, flow control, valve, flow meter and backwash chambers; wet wells, soakaways and duct pits to name but a few. Weholite manholes and chambers are also manufactured under factory conditions which is critical in ensuring high quality.

The systems are designed to have a 100-year service life. Megapipes Solutions has already installed Weholite sewer manholes in Narok when the country was installing its first drainage system in 2020. Each manhole was installed, connected and backfilled in a two-hour time window, far quicker than their concrete equivalents.

Laboratory Quality Management Systems

A quality management system (QMS), which is well implemented, can help a laboratory achieve its maximum productivity and financial success. Although QMS implementation can provide comfort and success for both employees and managers, many people are unable to see the point.

Extensive research has shown that QMSs can have a significant impact on productivity. QMS's can also increase job satisfaction by allowing staff to be accountable and work within a defined set of tasks.

A QMS can be implemented in your Laboratory for many benefits that go beyond “because we have”. These are just a few of the many benefits that a well-implemented quality management system (QMS) can bring to a laboratory environment:

- A reputation for excellence
- Standardising every procedure and protocol in your laboratory will make it easier to identify problems when they occur. This will enable you to quickly address the issue and reduce customer complaints.
- Respecting QMS standards will help customers trust the laboratory results.
- These are just a few of the many factors that will increase customer satisfaction. A satisfied customer is a returning customer.
- Be confident

What is a QMS and how does it work?
A QMS is simply a set of business processes, policies, and procedures that are implemented consistently to satisfy a specific set of customer needs. The fundamental concepts of a QMS can be described as follows:

- Speak up!
- Do what we say
- Do it!
- It can be improved

Quality data is not the only goal. Traceability and integrity are also important.

QMS covers every department and system within an organisation. It integrates the processes and departments in a holistic way through coordinated, standardised activities.

A QMS is a standardised activity that covers administration, the laboratory environment, methods and techniques, staff training, record keeping, and other related activities.

Laboratory Quality Management Systems (Cont.)

These factors have been shown to increase employee confidence, which leads to higher morale in the company. All of these factors have an important impact on lowering staff turnover, which is costly due to staff training and slower productivity.

Optimizing and improving efficiency and productivity

If a company's bottom line starts to drop, it can often be a sign that there is a problem with the productivity chain. A QMS can quickly identify and fix a productivity gap before it affects the bottom line.

Pre-determined protocols can save valuable time by eliminating any guesswork from each experiment, assay or procedure. This predictability allows for flexibility and the ability to respond to any challenges or obstacles that may (and most likely will) arise. appear at some point.

A predictable laboratory also has predictable needs. It is possible to negotiate lower rates with suppliers when it comes to waste removal and consumables. Predictability is also helpful in identifying waste and consumables that are not needed.

A laboratory that functions as a well-oiled machine can always be improved. A fully-optimised QMS can easily identify the need for improvement. From there, the laboratory can reach any level of productivity or quality.

Protecting your business

Sometimes, we underestimate the importance of laboratory results and their impact on downstream decision-making, diagnosis, and subsequent treatment. A well-designed laboratory QMS can be an unofficial policy of insurance.

A good record-keeping system can track each test result back to the day it was taken and any Quality Control checks that were necessary to verify its validity. You may not feel the urgency until it's too late.

Save money and make money

If none of these factors have piqued interest in you implementing a QMS in your laboratory, then take a look to the bottom line.

Managing customer complaints will earn you more by returning clients. Promoting excellence will attract new customers and make you more money. By reducing staff turnover and boosting morale, you can lower your costs of training and recruitment. This will save you money.

What now?

It is important to understand the requirements for laboratory standards. The International Organisation of Standardisation (ISO) is the basis of most standardised laboratory QMS. ISO is the international federation for more than 160 national standard bodies from all over the world.

The South African National Accreditation System is South Africa's designated Accreditation Body for ISO standardisation.

Any laboratory that does sampling, testing, and calibration can use ISO/IEC 17025. This standard guarantees reliable results in any laboratory that is owned or operated by the industry, government, universities, inspection bodies, or any other laboratory organisation.

ERRATUM

In our March newsletter, we reported on Rare Plastics who supported the Litterboom Project (www.thelitterboomproject.com) which is run by Cameron Service. In the same article, we also made mention of the fact that Plastics SA is involved in various Litterboom projects as part of their River Clean-Up projects.We wish to clarify that Rare's donation was not made to Plastics SA, but to the Litterboom Project.We apologise for any confusion the article may have caused. -Ed

FALLING FROM HEIGHT

WHY 90 MM 0.6 MPA UPVC PIPE WITHSTANDS LESS FALLING WEIGHT IMPACT ENERGY AS COMPARED TO 90 MM 1.0 MPA PIPE

BY YASHODHAN KANADE

Falling weight impact test at 0° C is the best test method for UPVC pipe. This is because, in contrast to Izod or Charpy impact test on the injection or compression moulded samples, this impact test is directly carried out on the samples randomly drawn from UPVC pipe production lot that will be actually used.
This indicates how the pipe would perform during its actual use in difficult weather conditions.

Impact strength passes through a peak between the fusion level of 65-70%, achieved during processing, as against the tensile strength at yield that increases with the level of fusion and then settles down. Therefore, achieving the best impact strength and testing it correctly, matters.

In India, IS 4985 (2021) demands that the pipe samples to be conditioned at minimum 1 – 4 hours, depending on thickness and tested as quickly as possible, to ensure that the temperature of the pipe sample does not increase.

If the sample does not break during the first impact, the pipe sample is rotated in the V block and tested along the equidistant lines as per the specification. This has to be done within 10-20 seconds, depending on the pipe thickness as mentioned in the standard to avoid increase in sample temperature.

WHAT HAPPENS TO THE PIPE ON IMPACT?

During testing, pipe sample 200 + 10 mm long, resting on a V-block that has an angle of 120 °, positioned so that the vertical projection of the point of impact of the falling striker is within 2.5 mm of the axis of the V-block, when a striker dropped from the specified height falls on the pipe.

When the impact is made, following things happen –

- Part of the energy is utilized in bouncing back of the striker due to pipe elasticity. The height of bounce gives a fairly good idea about the impact strength of the pipe sample. More the height of bounce, more is the impact strength.
- Other part of the energy is absorbed, depending on the thickness (SDR) of UPVC pipe.

As a result, the pipe either undergoes –

- Shear yielding or deforming in a ductile manner. Indentation of the test piece is not considered as a failure, or;
- split in the pipe or shattering in a brittle manner. This is considered as a failure.

What we see is the net result of these two forces.

Caution:
Sometimes, during third party inspection, the QA personnel performing the test positions the pipe sample in such a way that it is off centre the falling weight axis, thinking that the doubtful quality pipe will pass in impact test. However, the fact remains that even the otherwise passing pipe may fail. This is because the striker is deprived of bouncing action.

Why do 90 mm 0.6 MPa pipes fail so often, compared to 90 mm 1.0 MPa pipe?

In case of 90 mm 0.4 MPa pipe, minimum thickness is 2.1 mm. At this thickness (higher SDR), the pipe gets compressed on impact and the striker bounces back.
In case of 90 mm 0.6 MPa pipe, the thickness is 3.1 mm.
This (medium SDR) reduces the compressibility and hence the bouncing of striker reduces.

FALLING FROM HEIGHT (CONT.)

Therefore, the available impact energy must either deform the pipe in ductile manner, or the pipe must have a brittle failure. Usually, the pipe sample shatters if the fusion is out of optimum range or the reversion is out of optimum range. This may happen at some point along the circumference of the pipe.

In case of 90 mm 1.0 MPa pipe (lower SDR), the bouncing of the striker is minimum, but due to 5 mm minimum thickness, the mass available for absorbing the impact energy is sufficient to ensure that the pipe does not break.

Purpose of testing pipe for impact strength is threefold:

1. To ensure that the pipe meets the minimum requirements of the standard, e.g., ASTM, ISO, BIS etc.
2. To ensure that it meets requirements commensurate with the performance e.g., low temperature by adding impact modifiers.
3. To find the actual impact strength e.g. for Research and Development and further improvement.

As per ISO 1452 (2009), the test impact energy increases exponentially with the pipe diameter. It can also be calculated by using formula Log (Impact energy) = 10*Pipe diameter (m)

It is observed in IS 4985 (2021) standard that 90 mm and 110 mm pipes are tested at same impact energy. Logically, 90 mm pipe should be tested at lower impact energy than 110 mm pipe.

Should test impact energy increase with the pipe thickness?

Logically, if the mass or thickness at the point of impact is increased due to increase in diameter as well as thickness, the energy required to break the pipe should increase. However, this aspect is not considered in related standards for pipe because the purpose is not to test the impact strength but to ensure that the pipe survives the stipulated falling weigh impact energy.
the statistical method used in ASTM D 4226 to calculate impact energy required for the failure of 50% samples at 0° C, perhaps can help to further improve the quality of pipes.

Calculating impact energy/mm thickness of the product

The ASTM D 4226 method is based on statistical calculations that calculates energy required to break 50% of the UPVC profile samples.

Considering that pipe is a round profile, and the extent of fusion varies along the circumference due to variation in temperature of extrudate, variation in cooling, variation in thickness affecting the reversion and frozen stresses, the impact strength varies at different points along the circumference. This is the reason why 10% failure is allowed in UPVC pipe in IS 4985 (2021). (True Impact Rate – TIR).

Test method as per ASTM D 4226 sounds better to find actual impact strength.

In this method, not only the impact energy required for the failure of 50% samples is calculated, but impact energy/ mm thickness of the profile can also be calculated.

A combination of both methods i.e. testing as per IS 4985 and applying the statistical method used in ASTM D 4226 to calculate impact, energy required for the failure of 50 % samples at 0 % perhaps can help to further improve the quality of pipes.

PIPES XIII CONFERENCE 6-7 September 2022

Emperors Palace, Gauteng

Emperors Palace in Kempton Park, Gauteng, will host the SAPPMA's Pipes XIII Conference on 6 and 7 September 2022.

Given the increasing role of plastic pipe systems in the development of new and improved infrastructure, organizers of the event are keen to share the latest technological advances from around the world.

Jan Venter, Chief Executive Officer of the Southern African Plastic Pipe Manufacturers Association (SAPPMA) explains: “Our South African conferences are run jointly as spin-off events from the main PPCA plastic pipe conferences. Typically, they are attended by about 300 delegates.”

“Technical progress showcased at the most recent PPXX Conference in Amsterdam now has important implications for local infrastructure investment. For those of us that were unable to attend PPXX, our conference in Johannesburg offers an excellent opportunity to stay abreast of the news and reviews of the latest technology.”

Zoran Davidovski (PPXX Chair) agrees: “Numerous speakers at Pipes XIII are selected from those of our Amsterdam conference on the basis of their cutting-edge experience and expertise.”

“For over 85 years, plastic pipelines throughout the world have achieved major environmental, operational and economical benefits. The versatility of plastics is a source of ceaseless innovation for our pipe technology and commerce. By virtue of such dynamic progress and people, our Johannesburg conference is not to be missed.”

Topics covered by Pipes XIII will embrace issues relating to HDPE and PVC pipe quality, production and manufacturing trends, installation standards and new international applications.

Our next SAPPMA newsletter will have the full line-up of speakers and programme. In the meanwhile, to register or for more information, visit the conference page on the SAPPMA website:

https://www.sappma.co.za/index.php/pipesxiii

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Two PPXX Awards Announced

Two presenters of papers from the PPXX conference in Amsterdam have been awarded equal recognition. Both papers involve the delivery of hydrogen gas as blend or replacement for natural gas.

In announcing the awards, Davidovski comments: “hydrogen is already used to power public transport in some parts of the world. Its future use within the gas distribution network is all the more appealing given that it may be generated by wind and solar power.”

Derek Muckle from Radius Systems has been awarded a prize for his paper entitled: “An evidential approach to the use of Polyethylene Pipe for Hydrogen Fuel Gases”.

“Derek Muckle’s paper addresses a relevant and actual topic,” Davidovski adds. “It proves the ‘fit-for-use’ of our existing PE-based pressure pipe network to transport hydrogen as (partial) replacement of natural gas to consumers. Such replacement will help society to transition to a circular economy.”

“Sjoerd Jansma from KIWA has been awarded for his PVC pipe paper at PPXX. It is equally related to the gas distribution sector and is entitled: “Finding the relationship between non-destructive test methods and the tensile impact test on PVC pipes.”

“Jansma’s paper deals with the increasing importance of establishing the actual material quality of many PVC gas pipelines in The Netherlands. Most of these pipelines will reach their specified lifespan of 50 years within the decade,” Davidovski concludes.

Prizes for each presenter is an iPad sponsored respectively by PE100+ Association and PVC4Pipes.

SAPPMA

southern african plastic pipe manufacturers association

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