

NEWS FROM THE PIPELINE

NOVEMBER 2020

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

FROM THE CEO'S DESK

It is the month of November and we find ourselves just about at the end of the most unusual year, not only in SA, but across the world. As I'm writing this, there is great uncertainty about what comes next and whether there will be another clamp-down of activities in the country due to COVID-19. We can only hope and trust that good sense will prevail and that no further damage will be done to the already broken economy and morale.

Even though our members have seen it before, we decided to share the LHA survey in this newsletter for the benefit of readers who have not had sight of it. For the first time we conducted a qualitative survey on top of the usual quantitative information. I believe this is of great importance and even though the sample size was small, it is encouraging to see we scored over 80% in terms of quality assurance, professionalism and technical support.

I believe there is merit to do this kind of exercise regularly and would therefore aim to repeat it during the second half of next year. At this early stage I already appeal to members to offer greater participation, in order to increase the sample size (number of customers taking part). This kind of information is of great value and would help us to improve our effectiveness and service to the plastics pipe industry, needless to say, therefore in your interest.

I'm using the opportunity to wish you all the very best for the remainder of the year and that you will all return in good health and motivation early next year.

Jan Venter

IN THIS MONTH'S NEWSLETTER:

- SAPPMA hosts 16th AGM
- Gradco gets ISO9001 Certification
- Results of LHA's survey into the local pipe market
- Report back on Quality Workshop 5: Key Messages
- Bokamoso Fund launched to help future plastic leaders
- ISO 8779:2020 for Polyethylene irrigation pipes explained
- Member News
- International news

and more!

Disclaimer:

The opinions expressed by individuals in this newsletter are strictly the view of such persons and do not necessarily represent those held by SAPPMA

SAPPMA HOSTS 16TH ANNUAL GENERAL MEETING

SAPPMA hosted its 16th Annual General Meeting on the 7th of October 2020. Due to the ongoing COVID-19 pandemic, this year's event was held virtually.



SAPPMA
southern african plastic pipe manufacturers association

Annual General Meeting - via Zoom
7 October 2020 at 11:00

AGENDA

1. Welcome
2. Confirmation of minutes of AGM 9 October 2019
3. Appointment of Auditors
4. Appointment of Board of Directors (election electronically prior to meeting)
5. Annual Report - comments (circulated prior to meeting)
6. Revised MOI - adoption (agreement prior to meeting)
7. Other matters
8. Close



Welcoming the members who were in attendance, SAPPMA Chief Executive Officer Jan Venter said: "We ended the 2019/2020 financial year in the midst of the strangest situation ever, with many businesses closed. We are very grateful that all our members are back in operation and that we did not lose anyone during this time".

Growth in membership

Despite the fact that a depressed economy and difficult trading conditions have forced many businesses to close their doors permanently, SAPPMA has seen an increase in membership during the last few months.

Jan reported that they have grown to 51 members and now count almost all the pipe manufacturers of significance in South Africa as part of the SAPPMA family, along with the country's major fitting manufacturers, installers and fabricators, polymer producers, suppliers and certification bodies.

"Pipelines are at the heart of water distribution and sewage removal. Plastic pipes play a vital role in terms of the quality of the water that is delivered to our country's citizens. The industry succeeds when we succeed, and it is therefore SAPPMA's role to ensure consistent product quality and the long term sustainability of our industry," Jan said.

Standards remain a key focus point

Because it is critically important to ensure uniformity in terms of interpretation and application of the national product standards, SAPPMA continues to work closely with SANS to evaluate, amend or approve standards (these are usually derivatives or copies of ISO documents).

SAPPMA also maintains a permanent presence at TC138/SC at SABS. Regular feedback is given to SAPPMA members during Technical Meetings to ensure that everybody remains updated on the latest developments and product testing procedures.

"We have come a long way over the past five years. For the first time in decades we have access to SANAS accredited testing and certification," said Jan adding that SAPPMA is also proud to have welcomed four accredited certification bodies as members.

Announced and unannounced factory audits

In order to assess the ability and performance of member pipe manufacturers, SAPPMA continues to conduct regular announced and unannounced factory audits. Common findings at these audits are brought to the attention of the body's Technical Manager as pointers towards areas in the industry that might require attention. These issues are often used as topics of discussion at SAPPMA's regular Technical Workshops, which have proven to address a big need in the industry and are very well attended.

"Pipelines are at the heart of water distribution and sewage removal. Plastic pipes play a vital role in terms of the quality of the water that is delivered to our country's citizens.

The industry succeeds when we succeed, and it is therefore SAPPMA's role to ensure consistent product quality and the long term sustainability of our industry..."

2020 AGM (cont.)

No increase in membership fees for 2021

In view of the difficult economic conditions, but also thanks to SAPPMA's good financial results, Jan announced that there would be no increase in expenses and 5% reduction in membership fees for the next financial year.

"Members can remain confident that we will continue to serve to the very best of our ability, working for the common good of the industry in general and our members in particular," he said.

SAPPMA Board of Directors



Above: CP Bandaru of Flo-Tek was voted back on to the SAPPMA Board of Directors

Mark Berry (Safripol) and Renier Viljoen (Rare) stepped down as directors, and Chakrapani (CP) Bandaru of Flo-Tek was voted back onto the SAPPMA Board of Directors, joining Don Coleman (Sizabantu Piping Systems), Lizl du Preez (Pipeflo), Trevor Woolward (Pipe-tech), Terence Hobson (Sun Ace SA) and Jan Venter (CEO).

GRADCO GETS ISO 9001 CERTIFICATION



FLTR: Sonnyboy Nhleko (Procurement Manager), Zané de Klerk (Quality Control Officer), Jaques Lindhout (Plant Manager) and Ronèl Colvin (Sheq Co-ordinator)

Congratulations to Gradco SA who has recently received its ISO 9001 certification. The company describes it as being a long and meticulous process that began in July last year.

The unexpected COVID-19 lockdown certainly complicated matters, but it only added to the Gradco team's motivation and vision to get their accreditation.

"With ISO 9001 being the world's most recognized and respected Quality Management System and Gradco's continued focus on client satisfaction and our commitment to product quality improvement, we recognised the importance of being able to demonstrate our company's high level of service excellence when competing for contracts", says Apie Human, Gradco SA General Manager.

The company operates according to eight quality management principles, i.e. Customer Focus, Leadership, Involvement of People, Process Approach, Organizational Context, Continuous Improvement, Fact-Based Decision Making and Risk-Based Thinking.

"Being ISO 9001 certified helps to establish Gradco's credibility in the market as a well-established company that operates with increased operating efficiency, optimal supplier relationships, a continual culture of improvement, improved process integration and greater employee engagement. These principles define our operations and our vision of meeting and exceeding the requirements of our stakeholders and customers," Apie explains.

Looking at what the future holds, Gradco is committed to continued ongoing customer satisfaction and is preparing for growth through growing its markets and improved efficiency.

"Our next big goal is the certification of our Fabrication Workshop and ultimately becoming one of the world's leading manufacturers," he concludes.

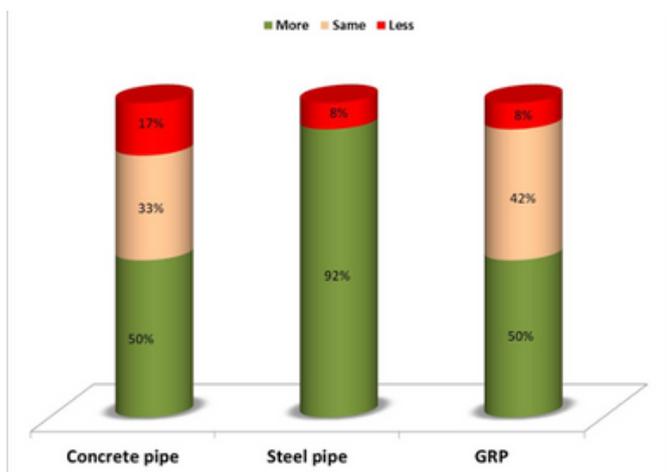
SAPPMA SURVEYS SA PIPE MARKET

LHA Management Consultants have just released their findings into the South African pipe industry. Established in 1974, LHA specialises in innovative, integrated consulting, research and analysis services for the public and private sectors, international development finance and donor institutions in South Africa and wider across the African continent.

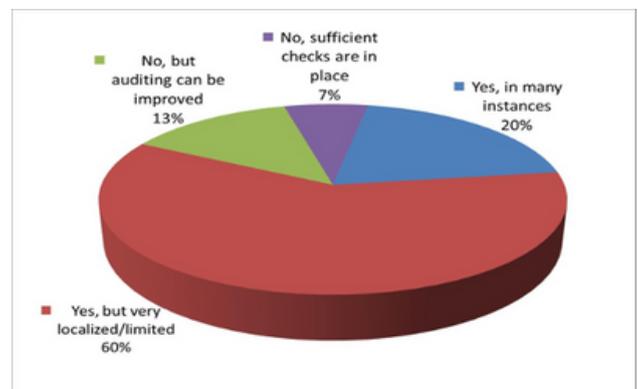
They were appointed by SAPPMA to interview municipalities, contractors and consultants to find out how familiar they are with the SAPPMA brand, logo and mission. 80% of the respondents indicated that they were very familiar with SAPPMA and its role in the plastic pipe industry, with 20% stating they were only vaguely familiar. SAPPMA scored high for delivering technical support (84%), professionalism (82%), neutrality (80%) and Quality Assurance (80%).

When asked if they give preference, or use only suppliers that are accredited members of SAPPMA, and/or carry the SAPPMA logo, 54% of the respondents said Yes, with some exceptions, 33% said Yes, exclusively and 13% said this was not a consideration to them at all.

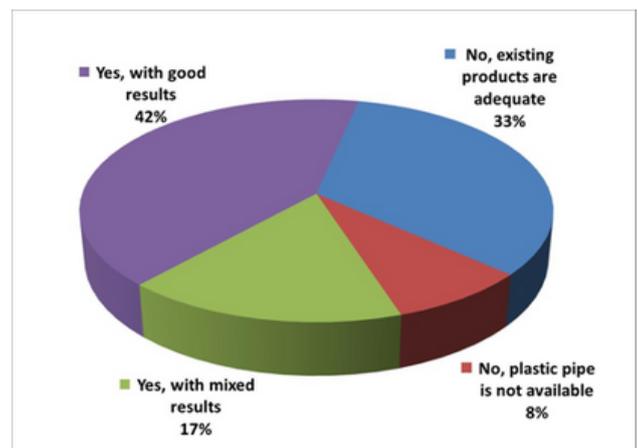
Do you regard plastic pipe as more or less energy and environment friendly compared to...



Do you have experience with or perceive that plastic pipe producers are lowering product standards and product quality in the current economic environment?



Have you used or considered plastic pipe for bulk stormwater or bulk sewer pipelines?



- 40% of the respondents were aware of plastic pipe (HDPE structured wall) alternatives for larger diameter (>400 mm) stormwater and sewer applications?
- 42% have used or considered plastic pipe for bulk stormwater or bulk sewer pipelines with good results
- 67% felt that plastic pipe producers are doing enough to promote plastic pipes as being better than other pipe material types (e.g. concrete, steel, etc.)

SA'S PLASTIC PIPE MARKET

According to the latest survey results into the local pipe industry released by LHA Management Consultants, South Africa's pipe market can be divided as follows:

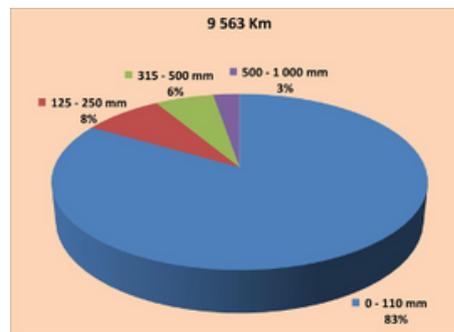
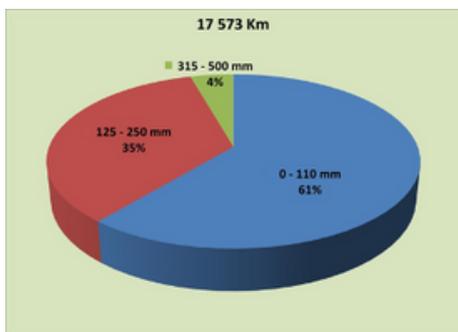
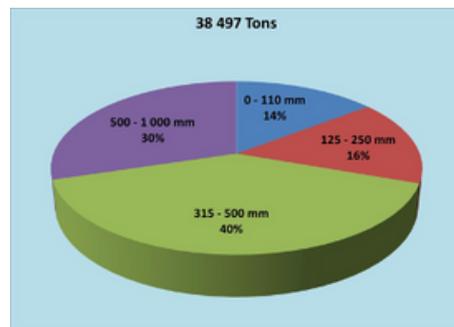
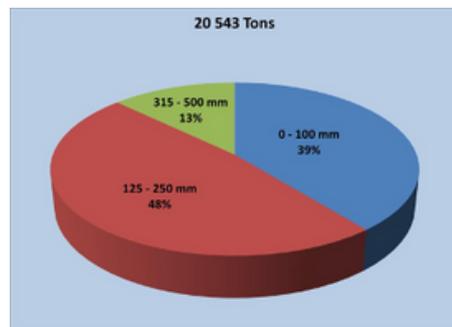
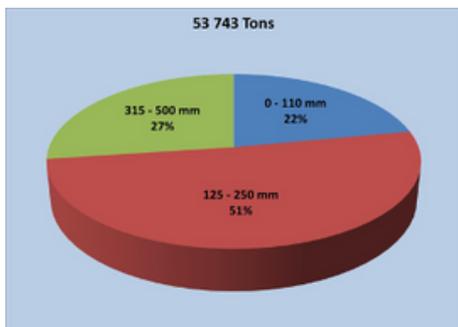
Industry structure
PVC:
 4 Producers
 ~ 60% market share
HDPE:
 3 Producers
 ~ 45% market share

- PVC ~ 78 000 tons (72% pressure and 28% non-pressure)
- HDPE ~ 48 000 tons (84% pressure, 4% non-pressure and 12% telecoms)
- Concrete ~ 220 000 tons (78% stormwater and 22% sewer).

PVC Pressure Pipe Market

PVC Non-pressure Pipe Market

HDPE Pressure Pipe Market

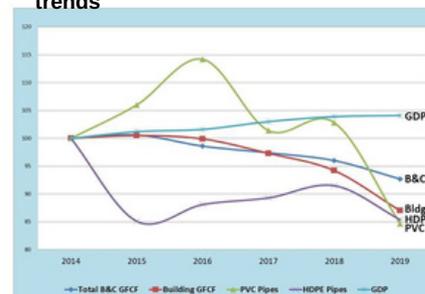


HDPE Non-pressure Pipe Market

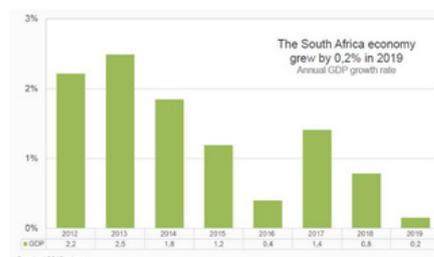
Pipe Material	Tons	Km
HDPE (> 400 mm diameter)	1 800	30 - 40
Concrete (> 315 mm diameter)	220 000	600 - 650

- South Africa recorded an average GDP growth of 0.8 % pa. over last five year. In contrast, the amount of money that was invested into building and construction projects as % of GDP has sharply declined over the same period.
- Lack of investment into infrastructure and building projects over the past six years has seen the plastic and concrete pipe markets shrink by 15 %.
- It is concerning that pipe infrastructure provision is declining on a per capita basis, a clear indication that not enough investment is being made to fund much-needed new water and sanitation networks. Whilst recent announcements made by Government that they are planning to make significant investments into building the country's infrastructure spend to be welcomed, implementation and roll-out will typically take a while and no quick improvements are likely
- The negative impact of the Coronavirus on South Africa's economy, infrastructure spend and therefore also on the pipe industry have not yet been seen or calculated. Optimistic expectations are that South Africa's GDP will only cover to 2019 levels by 2023.

Fixed investment and pipe market trends

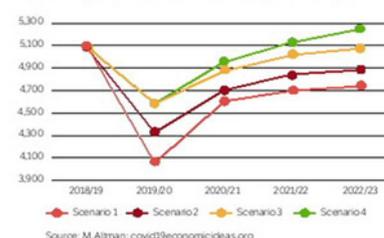


Recent GDP growth trend



NO QUICK RECOVERY

Real GDP (Rbn) in four scenarios – 2018/19 to 2022/23



Source: M. Altman; covid19economicideas.org

QUALITY CONNECTIONS

CREATING ABSOLUTE CUSTOMER CONFIDENCE IN THE PLASTIC PIPE INDUSTRY

The Southern African Plastic Pipe Manufacturers Association (SAPPMA) is a voluntary, self-regulating association incorporated under Section 21 as a company not for gain, which was launched in 2004 to represent the interests of the well-developed plastic pipe business in South Africa and surrounding countries.

Pipes produced by member companies carry the registered SAPPMA logo for clear identification. SAPPMA members are allowed to use the association's logo on their products only after they have been able to successfully demonstrate 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.

THE SAPPMA MARK: A GUARANTEE OF QUALITY

The purpose of SAPPMA is to create consumer confidence within the plastic pipe industry and to promote the production and the

use of high quality plastic pipes and pipe systems. SAPPMA members contribute towards the long term well-being of the plastic pipe industry by way of research, technical discussion, analysis and problem-solving. Being a non-profit organisation, it is solely aimed at protecting the customer and the infrastructure of the country.

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 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.

IT'S WHAT'S ON THE INSIDE THAT COUNTS

SAPPMA members only use virgin grade approved polymers and in terms of the relevant product standards no third party regrind PE-HD material. They do not use any fillers, nor heavy metal additives in the production of PVC pipe.

SAPPMA
southern african plastic pipe manufacturers association
www.sappma.co.za

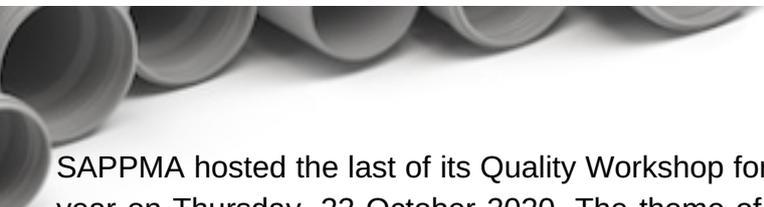


PLEASE SUPPORT THE FOLLOWING SAPPMA MEMBERS WITH CONFIDENCE:

 amanzistarway.co.za	 chemsystems.co.za	 aenor.com
 borealisgroup.com	 bsigroup.com/en-ZA	 emeraude-international.com
 flo-tek.net	 gradcosa.co.za	 hultec.co.za
 inkuluplastics.co.za	 macneil.co.za	 marleypipesystems.co.za
 mrstubman.com	 nsf.org	 pexmart.com
 pipeflo.co.za	 pipe-tech.co.za	
 plasco.co.za	 plastrading.com	 polyflo@mweb.co.za
 proplastics.co.zw	 rare.co.za	 safripol.com
 sasol.com	 satasa.co.za	 sinvac.co.za
 sizabantupipingsystems.com	 sunace.co.za	 swanplastics.co.za
 vanrynrubber.co.za		



SAPPMA HOSTS QUALITY WORKSHOP "KEY MESSAGES"



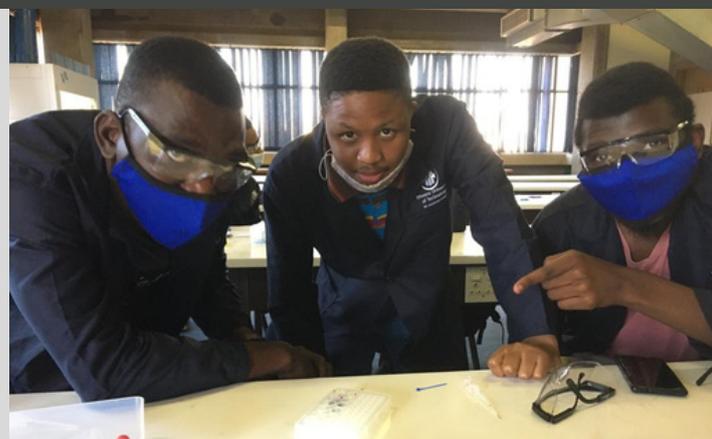
SAPPMA hosted the last of its Quality Workshop for the year on Thursday, 22 October 2020. The theme of this virtual workshop was "Key Messages" and saw four of the plastics industry's stalwarts share their expertise on a wide array of issues impacting the local plastic pipe industry.

Topics were diverse and ranged from Quality PVC mixing and formulation (presented by Renier Snyman) and SAPPMA factory audits (presented by Jacques van Eck) to ISO9001:2015 (presented by Ian Venter) to Trenchless Technology (presented by Alastair Goyns).

Feedback received from the delegates who attended was that they had found the topics interesting and the speakers engaging.

Ian Venter, SAPPMA's Technical Manager, confirmed that these free-to-attend workshops continue to be well attended and played a valuable role in imparting important technical knowledge to members and non-members alike. SAPPMA will continue to host these Quality Workshops in 2021.

More information will be communicated to the SAPPMA database via direct mails and via social media on Facebook and LinkedIn.



TUT students involved in the ORC prac (from left to right):
Thabang Modiba, Amoegelang Tshabalala and Sammy Mashabela

BOKAMOSO POLYMER FUND

In October 2019, the Tshwane University of Technology launched a new qualification, the Bachelor of Engineering Technology in Materials Engineering in Polymer Technology. The aim of this new qualification was to address the critical shortage of qualified plastics technicians and engineers facing South Africa, as the global competition and technical skills gaps in the industry increase.

In July this year, the Academic Advisory Committee of TUT's Polymer Technology Section (consisting of industry members and academia) registered the Bokamoso Polymer Fund.

The aim of this fund is to offer incentives to students enrolled in the programme for excellent academic performance, in the form of financial contributions which will be made towards their TUT academic tuition fees (paid directly into their TUT account). A portion of the money raised for this fund will also be used to help pay for the purchasing of new equipment, as well as for the general upkeep and maintenance of existing equipment currently being used by the students within the Polymer Technology Department. The administration of these funds will be strictly controlled by the Department's Academic Advisory Committee.

Members of the SA Plastics Industry are invited to adopt and own this fund, in order to ensure that we leave a legacy that continues to enrich the lives of young people in our country. At the same time, we will be improving the skills pool and strengthening the plastics industry with young, vibrant and talented successors who will build on the legacy of their predecessors.

For further information or to make financial contributions, kindly contact Elaine Relling (TUT)
Email : erelling@tut.ac.za
Telephone: 012 382 3609

Presenters SAPPMA Quality Workshop V

22 October 2020

Renier Snyman, Jacques van Eck, Ian Venter, Alaster Goyns

SAPPMA

22-10-2020



SUN ACE INTRODUCES NEW
PVC-FREE COMPOUND TO THE MARKET

ECOPURGE



Sun Ace SA is excited to introduce its new PVC-free compound, EcoPurge, to the local market. Although it is designed as a freezing compound for PVC extrusion, it contains no PVC resin.

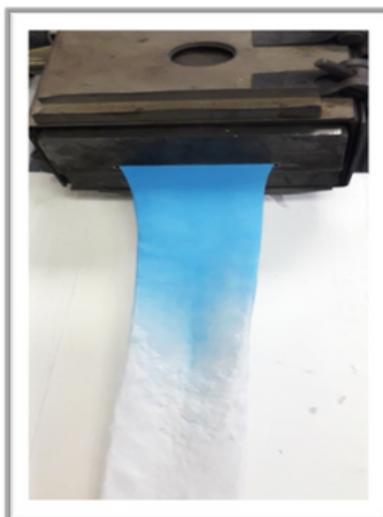
According to Terence Hobson, Sun Ace SA Managing Director, EcoPurge is a ready-made compound in convenient pellet form. "EcoPurge is fed into the extruder, just like normal freezing dry blend. It contains mineral fillers, a blend of synthetic organic compounds and other additives to effectively clean the extruder. The pellet form ensures low dust contamination and ease of use," Terence says.

Because EcoPurge possesses block-flow characteristics, it cleans the extruder using small amounts of material. It also offers exceptional purging action in an extruder and die head.

PURGING PROPERTIES:

Standard purge change-over

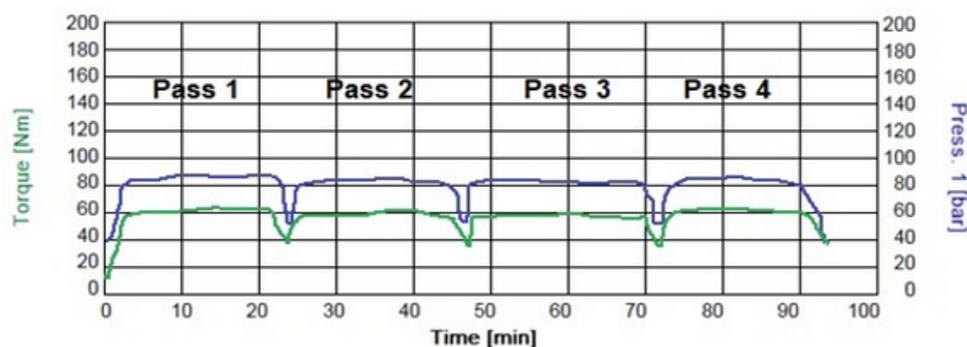
EcoPurge change-over



- High level of thermal stability - allowing purged machines to stand with heaters on for prolonged periods of time, without the purge decomposing
- A maximum processing temperature of 220° C is recommended
- Uncontaminated EcoPurge can be recycled multiple times and reused
- EcoPurge contains no heavy metals or restricted substances
- Saves on purging time
- Reduces the amount of mixed purge and production material - saving you money with every purge.
- New EcoPurge can be reused multiple times and can be left in the extruder for prolonged periods of time.

- EcoPurge was processed a number of times on a laboratory conical twin screw extruder
- Between passes the processed EcoPurge was ground into regrind
- The extrusion torque and melt pressure remained consistent throughout the exercise
- This indicates that EcoPurge can be recycled multiple times with minimal change in processing properties

RE-USE:



GOOD TRAINING + STRONG PARTNERSHIPS = SUCCESSFUL PIPING SYSTEMS

by Vollie Brink

When designing a water or sanitary drainage or rainwater/storm water system, the most important element that needs to be considered is the piping. The second most important element is the pipe material you will be using, followed by the third most important element, namely the manufacturer's representative and technical information.

The engineer who is responsible for the design of the design of the sanitary drainage or rainwater/storm water system, depends heavily on these three elements. Each one of them have the potential to ruin the project if selected incorrectly. Any student engineer who is not adequately trained on the qualities of piping, how to select the correct type of piping, how to install it correctly and how to specify it correctly, faces serious career trouble.

All too often, we see new engineers expected to design pipe systems without adequate training and/or guidance from their superiors. Whilst these newly graduated engineers might know all about hydraulic design and how to do the calculations, they know very little about the piping and the properties of piping, not having been taught how to select the correct pipe material, nor how it should be installed, transported or stored.

Pipe manufacturers are important partners

Forming partnerships with trained, experienced and ethical partners throughout this process is vital to ensure success.

To specify the pipe that is going to be used is a huge responsibility. If the pipe fails, it can cause serious repercussions. For this reason, pipe manufacturers should be seen as important partners in the team.

Although a specifier is not allowed to specify a pipe manufacturer, but there are ways to legally ensure that the tenderers are competent and comply with the requirements of the project and the specific specified standards and to allow fair competition. It is unfortunately not an uncommon occurrence where pipe manufacturers supply site technician with the wrong product information – resulting in major financial losses for the design engineer.



In terms of SANS10400-A and also the National Building Regulations, plumbing work shall only be done by a qualified plumber. If it is not a qualified plumber, the owner may be prosecuted.

An incompetent manufacturer's representative can cause serious cost claims for the engineer and the contractor and even the owner. The representative of the manufacturer is therefore extremely important he/she represents as a body of knowledge and technical support. It is extremely important that the representative make absolutely sure that the product that he or she represent is correctly specified, selected for the specific duty and correct pressure rating and all instructions provided for the installation in ground or in a building with correct fixing such as brackets and hangers and supports and anchors etc. The appropriate testing compliance with the relevant institutional requirements must also be provided. All guarantees and the conditions of the guarantees must be provided. The handover to the owner must be formal and all operational requirements and maintenance requirements.

The lifespan of an engineering project is expected to be approximately 25 years. It is therefore important to specify piping that will last at least 25 years or more!



UNDERSTANDING ISO 8779:2020 SPECIFICATIONS: POLYETHYLENE PIPES FOR IRRIGATION

By Ian Venter, Technical Manager: SAPPMA

South Africa is a dry country and water is a scarce resource. With increasing demand and inconsistent rainfall, we can no longer afford the huge losses in pipelines (estimated to be of the order of 40%).

Plastic piping is used across a wide range of industries, including mining, civil, irrigation, industrial, telecommunication and building, to provide solutions that are leak-free, reliable and durable. Approximately 150 000 tons of pipe (PVC and HDPE) are produced annually in South Africa. Representing many thousands of kilometers, these plastic piping networks form an integral, long term and extremely important part of the infrastructure of this country.

The integrity of these networks, built up over many years is of critical importance as they serve the water supply and sewage disposal needs of many millions of people. This clearly highlights the need for a responsible, ethical and quality conscious industry.

SAPPMA is an association of leading companies in the plastics piping business, with the purpose of facilitating high standards of ethics, product quality and technical information. The purpose and mission of SAPPMA is to create absolute customer confidence in the plastics pipe industry, thereby ensuring long term sustainability and dynamic growth in this all-important industry.

Both SAPPMA and SABI (SA Irrigation Institute/SA Besproeiings Instituut) play an important role in supporting specific sectors in society, and both have an impact on the quality of life of South African citizens. Both associations are service providers to sectors that have an impact on water and food security and drive concept adequacy, suitability and effectiveness through various mechanisms.

The last century has seen unprecedented growth in irrigation projects on a global level. Worldwide, irrigated land has increased from 50 million hectares in 1900 to more than 267 million hectares today. The growth in human population and limited supplies of fresh water, both highlight the importance of effective, reliable irrigation systems that will help produce more crops for food, yet with as small an environmental footprint as possible. Plastic pipes are long-lasting, practical and affordable. They have proven their versatility and outperform many alternatives per application. The smooth, inner bore of plastic pipes minimises friction loss, requires less pumping energy and helps maintain a steady flow – contributing to significant cost savings and environmental benefits.

A major focus of SAPPMA is the setting of standards and implementing policies and guidelines that best serve the various sectors that its members are involved in. To this end, SAPPMA is grateful to assist SABI and its members to gain a better understanding of the new international standard written for the specification of PE (Polyethylene) pipes for irrigation that could potentially improve the current piping system adequacy, suitability and effectiveness in the African environment, and play an even greater role in the food security sector as a result.

>> *Continue*>>



UNPACKING ISO 8779 (cont.)

ISO 8779 could be seen as the start of a new chapter in polyethylene pipes for the irrigation sector as it draws together the specific understanding of the reduced time under pressure, life expectancy and risks related to irrigation pipes. It also takes into account the resources available to the manufacturer to confirm compliance to standards, whilst giving a clear performance guideline to the designer of the system.

The aim of this standard is to specify the minimum requirements for polyethylene irrigation pipes that stay idle most of their life and are only pressurized for short periods from time to time. This condition is true for the majority of irrigation pipes in use, including laterals, submains and even mains.

The expected lifetime of pipes covered by this document is thus ten years or less. This document also specifies the properties of the material and the parameters for the test methods to which it refers and gives a clear and easy to understand Pressure Class (PC) rating per wall thickness tolerance. For the first time now, it is possible to categorize the pipe being produced according to its raw material properties and also quality manage the batches of product through the standard and the manufacturers quality plan.

It is important to recognize that normal conditions during which irrigation pipes are used, differ widely from those of plastic pipes (SANS ISO 4427 series standard) used for long-term water distribution systems. These include:

- **Pressure regime:** pressure is applied intermittently for short periods, adding up to maximum 15% of any long period of time.
- **Installation location:** most pipes are laid above-ground in fields where they are exposed to chemicals, soil cultivation operations, being stepped on, being run over by tractors, etc.
- **Non-permanent connections:** pipes are connected by removable and re-installable mechanical compression fittings, not by permanent fusion techniques.
- **Movability:** pipelines may be moved (manually or towed) between several locations in the field; they may also be dis-assembled at season's end and re-assembled at the beginning of next season.
- **End of life:** is mostly caused by external effects, mechanical or environmental and not by failure under pressure.
- **Lifetime expectancy:** Irrigation pipes have a much shorter life expectancy (maximum of ten years) compared to long-term water distribution pipes that have a life expectancy of 100 + years.
- **Lower risk:** a failure in an irrigation pipe has much lower impact, compared to a failure in long-term water distribution pipes.

Taking all of these factors into consideration, the classification of pipe material in this standards document is by resistance to a standard series of pressure tests, rather than according to ISO 12162 (which relates to pipes under continuous pressure for 50 years). The material designation will therefore also be different.

As explained earlier, fusion compatibility is not required either. In all other respects, this document follows SANS ISO 4427-2 with regard to dimensions and test requirements. In order to clearly restrict the use of this document to those pipes that fit the description above, the scope of the standard specifies a usage limit of a maximum of 1 500 hours under pressure per year. For applications where pipes exceed (or may exceed) this limit, pipes complying with the SANS ISO 4427 series should be selected. This document specifies the characteristics of pipes (mains, sub-mains and laterals) made from polyethylene (PE), intended for the conveyance of water for irrigation, at a water temperature up to 45 °C. (Grouped as follow, up to 35°C, and between 36°C and 45°C).

THERMOPLASTIC WELDING QUALITY ASSURANCE

The minimum requirements to ensure quality HDPE systems, as stipulated by the relevant South African National Standards and the Installation and Fabrication Plastics Pipe Association (IFPA) are as follows:

- All components (pipes, fittings, valves, etc.) must be inspected for compliance (SANS 966, SANS 4427, SANS 17885, etc.)
- Quality packs must include the relevant Certificate of Conformance (COC) and Certificate of Analysis (COA).
- All welders / pipe joiners must hold a Certificate of Competence from a MERSETA accredited training provider, such as Plastics SA. Training must have been conducted in accordance with SANS 10269 - Testing and Approval of Welders. It is also advisable that the company is a member of IFPA, as they will then be audited regularly (twice a year - announced and unannounced) to verify compliance with standards and accepted good practice.
- Quality welding machines purchased from a reputable supplier, that complies with the relevant part of SANS 1671, to be used, e.g. SANS 1671-1 Machines - Part 1: Heated Tool Welding; SANS 1671-2 Machines - Part 2: Electrofusion Welding; SANS 1671-3 Machines - Part 3: Hot-gas Welding; SANS 1671-4 Machines - Part 4: Hot-gas Extrusion
- Welding machines must be regularly inspected and calibrated / verified to ensure consistent quality of welding
- The welding process must comply with the relevant part of SANS 10268 and all weld protocols must be recorded, e.g. SANS 10268-1 Processes - Part 1: Heated Tool Welding; SANS 10268-2 Processes - Part 2: Electrofusion Welding; SANS 10268-3 Processes - Part 3: Hot-gas Welding; SANS 10268-4 Processes - Part 4: Hot-gas Extrusion Welding; SANS 10268-5 Processes - Part 5: Solvent Welding.
- As Certificates of Competency from Plastics SA are only relevant for a wall thicknesses between 2mm and 12mm, there is also a need for welding qualification in accordance with SANS 10270 (Approval of Welding Procedures) in line with the WPS Qualification Validity Range.
- On-site quality assurance: All of the above can be verified and welding can be witnessed by a Thermoplastic Welding Inspector on site.
- Welds will be visually inspected in accordance with SANS 10268-10 (Processes - Part 10: Weld defects) as per the assessment class specified by the client (same as Weld Qualification):

Assessment class:	Requirement Class:
I	High requirements for safety or for load-carrying capacity, or for both
II	Medium requirements for safety or for load-carrying capacity, or for both
III	Low requirements for safety or for load-carrying capacity, or for both

On site, basic weld strength test can be performed and random welds can also be taken for destructive testing according to SANS 6269 (Test methods for Welded Joints) as follows:

	Heated Tool Welding	Hot-gas Welding	Hot-gas Extrusion Welding	Electro fusion Welding	Solvent welding
Tensile test	Y	Y	Y	Y	Y
Bend test	Y	Y	Y		
Peel test	Y			Y ¹	
Tensile-creep test²	Y	Y	Y		

¹ Socket Fusion

² Seldom used in practice - For hot sulfuric acid and other dangerous chemicals or operates for long periods at an elevated temperature

Pressure situations: Advances in PVC-O

“PVC-O provided the best outcome for the project in terms of cost-effectiveness, hydraulic- capacity and constructability – including quick reinstatement and minimal disruption to landowners...”

JayRoy
Quality Manager: Iplex Pipelines,
New Zealand

PVC-O pipe is typically used to transport water under pressure, due to its high pressure rating – and was recently chosen for a major pipeline in New Zealand.

At last year’s Ozpipe event, Jay Roy, quality manager at Iplex Pipelines in New Zealand, explained how the company contributed to the Hamnak pipeline – which he said is the country’s “longest PVC-O water transmission pipeline”.

The 34km line, which was installed in 2017 and 2018, uses DN200, DN150 and DN100 sized pipe to deliver drinking water to over 1300 people in the Waitaki district. However, the system is flexible enough to handle a 45% increase in demand over 40 years, he said.

The previous pipeline was partially non-compliant with water regulations, and there were cases of E.coli contamination. In addition, there were frequent supply restrictions, and the system was subject to frequent failure.

PVC-O was chosen for the majority of the pipeline because it is lighter than conventional PVC and PE100 pipes of similar diameters and pressure classes, so is quicker and easier to install. However, sections of the pipeline under existing waterways and roadways were installed by Horizontal Directional Drilling (HDD) using PE100 pipe in sizes DN180 & DN250 with a pressure class of PN16.

“The contractor chose to use PVC-O in its tender submission to achieve a cost advantage in construction”, said Roy. “For instance, an open-cut installation method was specified for much of the tender, which meant no obvious benefits to using PE100 – which would be optimal for trenchless installations. Also, simple in-trench jointing of PVC-O with factory fitted composite seals helped towards fast installation: lay-rates of up to 200m per day were achieved with minimum disruption to landowners”, he said.

Relieving drought

Molecor of Spain – which produces PVC-O pipes, as well as the machinery to make them – recently supplied a city in Bulgaria with pressure pipe to supply drinking water, following a severe drought.

Pernik had suffered a serious drought since November 2019. A lack of rain – and the low water level in the Studena dam – threatened to leave 100,000 people without potable water. In addition, the existing water system was experienced huge leakage problems – with an estimated 75% of the water from the dam being lost on the way to the city. The situation led the city authorities to implement new measures to ensure a water supply to the population – which was already suffering daily water cuts, with a supply for only six hours per day.

The answer was to build a 12.5km long pipeline from the Belmeken dam. It is made from Molecor’s Tom PVC-O pipe, has a diameter of 630mm and a pressure range of 16, 20 and 25 bar. The line has a capacity of 300 litres/second. The project began on 29 January 2020 and, with an installation rate of several kilometres per day, was finished on 13 March.

As well as their lightness – being around 50% less dense than PE or PVC, and up to 12 times less than cast iron – the PVC-O pipes were easy to join, which helped to eliminate leaks. Molecor adds that the pipes have a 15-40% higher hydraulic capacity than pipes of the same external diameter, made from other materials. This helps to reduce pumping costs. The PVC-O pipes are resistant to water hammer and to sudden variations in flow and pressure – which helps to reduce the possibility of rupture and leakage. Low maintenance costs was a key advantage of the new line. Molecor says that the service life of the pipes is more than 75 years – leading to huge resource savings in the long term.

HDPE gains highest chlorine resistance

Borealis says that it has received the highest chlorine resistance accreditation for its HE1878E-C2 grade of HDPE – which is tailored for PEX production.

The company says that the material – which has now achieved a Class 5 listing – provides end-users with more peace of mind as it meets the higher requirements of resistance to disinfectants in hot and cold water pipe applications.

The new accreditation complies with the ASTM F876 standard for PE crosslinked pipes, the company says. "The material offers high temperature resistance and flexibility, and low creep. Its stabilisation package also opens it up for use in certain industrial applications".

Borealis adds that the material increases efficiency by reducing production steps, requiring the addition of peroxide only and minimising the risk of additive dosing errors. Also, it removes the need for separate additive purchasing and stockholding and improves safety through minimised handling.

For more information: www.borealisgroup.com



Round Robin test to boost pipe standards

PE100+, the association that represents producers of PE100 resin, recently organised a Round Robin Test (RRT) on the hydrostatic pressure test according to ISO 1167-1/2 (20°C, Hoop Stress 12.4MPa) with help of its technical administrator, Kiwa.

"Compared to other RRTs per-formed on the ISO1167 standard, this one showed slightly smaller variations in reproducibility and repeatability", said the Association.

No laboratories in the RRT were classified as statistical outliers. In addition to the statistical evaluation of the pressure test results, a deeper investigation was also carried out. This was done by means of a questionnaire on the impact of the water quality, sample preparation, equipment used and experience of the lab.

"The questionnaire showed that not all the labs followed the ISO standard precisely," said PE100+. "There is certainly room for a further improvement of the reproducibility of the hydrostatic pressure test results between laboratories. "The RRT results will be used by standardisations committees to further improve the pipe standards".

Comparing the durability of pipes made from PVC, copper and cast iron

The North American Pipe Co, a Westlake Company, recently put together an impact test to show the durability of PVC compared to copper and cast iron.

The results speak for themselves in the images below:



"SAVE THE DATE"

Please diarise the following SAPPMA meetings that will be taking place early in 2021:

3 February - TC Meeting

10 February - Board meeting

18 February - IFPA meeting

SAPPMA

southern african plastic pipe manufacturers association 

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