

### About SAFRIPOL:

Safripol is a South African owned plastics manufacturing company that supplies Polypropylene and High-density Polyethylene to the converting industry, for the manufacture of a wide range of packaging and industrial end uses.

The majority of employees are based at our manufacturing plant in Sasolburg with the commercial and technical teams at our head office in Bryanston, as well as a sales office in Durban.

### State of the South African water supply system:

According to the Draft Second National Water Resources Strategy released in 2012, South Africa experiences annual non-revenue water losses of approximately 37%, of which a quarter (worth nearly R2-billion per year) is considered to be due to leakages from damaged water infrastructure.

During the launch of the War on Leaks campaign, a project aimed at providing training and creating job opportunities for water agents, plumbers and artisans, government stated that poorly maintained and aging infrastructure had been identified as the key cause of water losses, with much of the country's water infrastructure nearing the end of its lifespan (Engineering News, 2015).

Rising demand for water due to organic growth in population and increased socio-economic advances is putting increasing pressure on the water system. While having sufficient resources to cater to current needs, it is expected that 25% of South African towns will experience water shortages in the next 10 years if the situation is not addressed.

Heads of state and government have issued the Sustainable Development Goals report in 2015. The report ambitiously sets a target for universal access to water and dignified sanitation for all by 2030. Towns and cities need to be more efficient in the way water is transported and used.

According to the Water Research Commission, urgent attention needs to be given to the minimisation of waste. This issue is receiving increased attention from municipalities; multiple large projects have been launched or shortly will be, to refurbish leaking water pipes and other pipeline infrastructure.



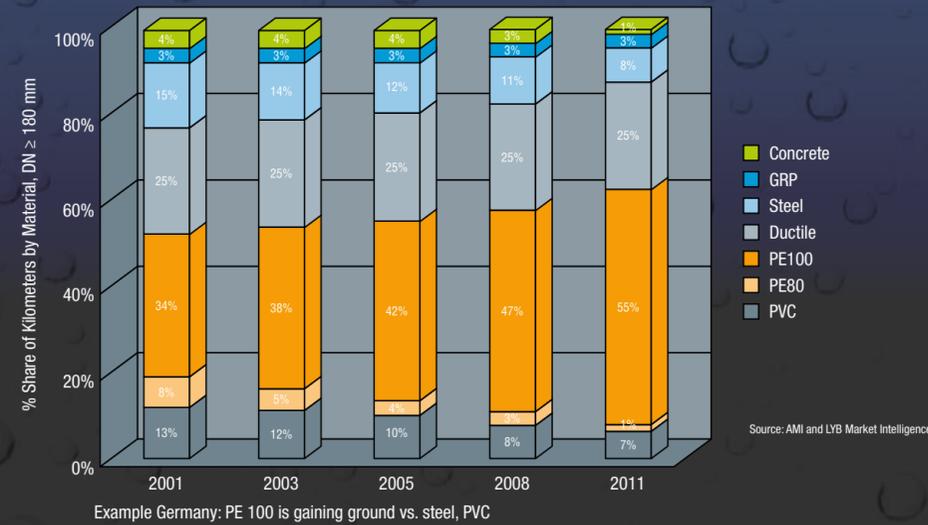
### Providing a local solution to a local problem:

Safripol is focused on fulfilling the needs of the local potable water pipe market and is the only South African producer of PE100 pipe material which conforms to the latest ISO standards. The advantages of partnering with a local supplier of raw material includes a quicker supply chain response time, decreased inventory requirements and easy access to product and technical support, as well as supporting local communities through job growth.

iMPACT 100® is a consistently high quality material and is the preferred product for use in large bore pipes up to 1.2m in diameter. HDPE pipes have a proven history of high performance in potable water transportation in excess of 50 years, with the lowest failure rates of all materials used for water systems. The United Kingdom uses HDPE for 85% of all new water and service infrastructure. With Europe following in the same applications.

The global use of plastic pipes is predicted to grow 8.5% during 2017 and to sustain this growth going forward. Based on kilometres of pipe installed, HDPE makes up 43% of pipelines in South Africa, more than any other individual pipe material.

### Drinking water supply in Europe Intermaterial competition - Long term demand 2001 - 2011



### Product description and applications:

iMPACT 100® is a world-class PE100 certified material for the manufacture of all dimensions of PE100 piping. It is a bimodal HDPE material that has a tailored molecular structure, providing excellent processability and pipes with superior mechanical properties.

PE100 resin allows for higher design stresses and subsequent thinner walls when compared to previous generation pipe materials.

Adding carbon black to PE100 materials has proven to be the most effective way of stabilising pipe against ultra violet (UV) attack. Precompounding the material with carbon black also enhances the mechanical properties of the pipe.

Being lightweight and durable, PE100 pipe systems require less energy to manufacture, transport and install compared to traditional materials. It is also easy to recycle, closing the product-chain loop and reducing environmental impacts.

An attractive characteristic of PE100 piping systems is the creation of leak-free joints through heat fusion, which creates a joint that is as strong as the rest of the pipe. This makes it ideal for use in pressure applications, and is the perfect solution for minimising loss of water due to leakage.

Since plastic pipes are flexible, they allow for changes in direction with fewer fittings needed and this simplifies installation. Resistance to corrosion and wear makes the use of PE100 ideal in harsh environments as no external corrosion protection systems are required. Its resistance to soil movement also makes it ideal for use in dolomitic areas.

### Other applications for iMPACT 100®:

The suitability of pipes from PE100 material to convey gas is determined by a number of characteristics, including resistance to Rapid Crack Propagation (RCP), resistance to gas constituents and the squeeze-off test. iMPACT 100® meets all the requirements of ISO/SANS 4437-1:2014 Plastic piping systems for the supply of gaseous fuels.



### iMPACT 100® Characteristics:

#### Residual lifetime assessment:

In 2010, FL Scholten and M. Wolters published the results of an investigation into residual lifetimes of 32mm gas lines installed in 1975 and 40mm water pipelines installed in 1967 in Germany.

ref: Residual Quality of First Generation PE Gas and Water Lines, Scholten FL and Wolters M, Kiwa Gas Technology et al. (2010)

The results concluded that: The mechanical properties of both pipelines were still remarkably good and with an MRS of 3.9MPa the HDPE pipe is expected to last a further 50 years on previous generation pipes and 100 years for newer generation pipes such as PE100. The anti-oxidant system is still sufficient to protect the pipes going into the future.

#### Effect on water quality:

One of the important factors influencing the quality of water supplied to consumers is the effect of the various materials that come into contact with the water as it passes through the system. iMPACT 100® underwent extensive testing according to the AS/NZS 4020:2005 standard "Testing of products for use in contact with drinking water". This standard prescribes methods of testing and compliance limits for the effects of a product on the taste and appearance of the water, the ability of a product to support the growth of aquatic micro-organisms and the quantity of toxic metals and non-metallic substances leached from the product when exposed to the test water. These tests were carried out by the Australian Water Quality Centre in Adelaide. This standard meets and exceeds the South African national regulations regarding water safety.

#### Resistance to slow crack growth:

The resistance to slow crack growth (SCG) of iMPACT 100® has been incrementally improved such that it far exceeds the minimum requirements of the ISO/SANS 4427 Standard, as can be seen in the graph below:

### Accelerated PENT testing

