



The status of paraffin appliances in South Africa – September 2008

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1 Executive Summary

Faulty and sub-standard paraffin appliances are widely believed to have been the main culprits in uncontrolled fires in low income households and informal settlements. They are possibly only rivalled by candles in their culpability. Therefore, the development and enforcement of robust, compulsory safety and quality standards is crucial for ensuring that paraffin can be used as safely as any other household energy carrier.

This document explains the process of developing compulsory standards as well as progress so far, focusing primarily on paraffin appliance standards. Currently, the SANS 1906:2006 standard for non pressure stoves and heaters is the only compulsory standard in place. Only one heater has a license to trade under this standard – the Goldair Heater model RD85A. The new PANDA stove holds a temporary license under this standard. The standard for pressurized paraffin-fuelled appliances (SANS 1243:2007) is currently voluntary and none of the pressure appliances on the market have applied for approval from SABS Commercial against this standard.

The Paraffin Safety Association recommends that the public and government should insist on appropriate SABS standards approval before purchasing paraffin appliances destined for domestic use regardless of whether the relevant applicable standard is voluntary or compulsory.

Household energy safety is everybody's business.

2 Introduction

The right to safety and a safe environment is a fundamental human and consumer right. Although this right is entrenched in the South African constitution, it is sadly not a reality for a huge proportion of the South African population. It is estimated that about 40% of households in South Africa use paraffin (kerosene) as an energy carrier to meet some part of their domestic energy needs. While paraffin is an extremely useful fuel with a high calorific value, it is being used in unsafe ways and in a system that is presently not as safe as other household energy systems such as electricity and gas. Because energy carriers such as electricity and gas are inherently extremely dangerous, it has been necessary to design systems for them that ensures that they can be transmitted or transported safely and then stored (in the case of LP Gas) and consumed safely in a household setting.

Compulsory regulations require households to include an earth leakage switch in the electricity system to safeguard humans from possible electrocution. Similarly, although liquefied petroleum gas is colourless and odourless, regulations require the inclusion of a strong smelling gas (ethanethiol) to be added to the mixture. The strong smell then alerts the consumer of the danger of a gas leak and the need for remedial action. Asphyxiation (oxygen starvation) can be prevented by introducing fresh air into the room. An explosion can also be prevented by introducing fresh air into the room and avoiding any naked flames until the smell is completely dispelled.

A process has been initiated to ensure that a safer system for the domestic consumption of paraffin is introduced to South Africa. The development and enforcement of compulsory regulations is essential to ensure that the system of using paraffin for household energy is safe. This document explains this process and its progress in more detail, focusing primarily on paraffin appliance standards.

3 The role of the SABS and South African National Standards



Figure 1: The SABS logo

The South African Bureau of Standards (SABS) is, according to its website, a statutory body established in terms of the Standards Act as the national institution for the promotion and maintenance of standardization and quality in connection with commodities and the rendering of services. Its mission statement refers to uplifting African standards and industry within a framework "that protects consumers and the environment by promoting uncompromised quality of products and services."

It is this statutory body that is responsible for ensuring the quality and safety standards for household energy based on instructions from the department of Minerals and Energy and from the Department of Trade and Industry. More detail is available on the SABS website (www.sabs.co.za). The SABS is divided into a number of divisions that perform separate services;

1. **SABS Standards Division** - develops national standards for goods and services and coordinates South Africa's input to the development of international standards by the International Organization for Standardization (ISO). It was, until recently, known as Standards South Africa (StanSA). It publishes national standards which it prepares through a consensus process in technical committees, provides information on national standards of all countries as well as international standards. It is this division that is responsible for the drafting, revision or amendment of the SANS1906 and SANS1243 standards. Published standards are sold by SABS Standards over the internet or from any of the SABS offices nationwide. Many countries have a similar standards generating body.
2. **Commercial Division** – will certify compliance of goods or services against voluntary standards and provide the SABS stamp of approval to indicate that such goods or services comply with the standard in question.

Commercial division also has a test house which provides testing services on a commercial basis. Any paraffin appliance submitted for compliance to a standard must be tested. The test house will test the appliance according to the specifications in the relevant standard and submit a report indicating whether or not the appliance tested complies with some or all of the specifications in the standard. Anyone may request to test anything against any standard and the services are provided at a fee that covers the cost of the test and a profit. It can be a partial or full compliance test. Hence, passing a test is not the same as complying with a particular standard. Testing is a necessary step in the process of compliance with a standard.

3. **Regulatory Division** - develops technical regulations (compulsory specifications) based on national standards, and monitors and enforces compliance with the technical regulations. The regulatory division also handles concerns and complaints raised by interested parties if they there is a breach of the compulsory specifications. This division was known as SABS Regulatory but is known as the **National Regulator for Compulsory Specifications (NRCS)** as from 1 September 2008.
4. Other departments with SABS Corporate Services include the **Design Institute** which promotes design excellence. It has collaborated with the Paraffin Safety Association in the promotion of design excellence for paraffin stoves and packaging for paraffin.

4 How standards work

Safety and quality standards are drawn up for any product or service according to the Standards Act, 1993 (Act No. 29 of 1993) and are called South African National Standards (SANS). Standards are prepared through technical committees made up of a range of stakeholders and the standards are sent out for public comment before they become regulation. For example, the SANS1906:2006 is the standard for non pressure stoves and heaters. Compliance with this standard is voluntary for industry.

However, a standard becomes compulsory when any government minister, in terms of the standards act, proclaims a standard to be a compulsory specification or regulation by means of a government gazette, after a process of public consultation. The SANS1906:2007 was regulated on 1 January 2007 and hence became a compulsory specification – a standard which is compulsory for industry to comply with.

All standards are subject to revision and many standards contain references to other standards which also apply to the product or service in question.

4.1 Voluntary Standards

If a standard is voluntary, manufacturers and suppliers of the goods or services that are covered by the standard may decide whether or not they choose to comply. If they wish to comply, they must apply to the Commercial Division of SABS for certification. If the consumer or anyone wishing to protect the public wants to ensure safe, quality goods or services they can insist that their supplier provides SABS approved products or services approved by SABS Commercial. An

example of such a standard is the SANS 1243:2007 for pressurised paraffin fuelled appliances. Industry members may be reluctant to follow this route in order to avoid costs and the hassle factor of complying. It is for this reason that standards tend to be only taken seriously by manufacturers and distributors when they become regulations / compulsory specifications.

4.2 Compulsory Standards

If a standard is a regulation (compulsory) then anyone wishing to manufacture or supply the product (or service) for sale to the public must apply to the NRCS for a license to do so. The SANS 1906:2006 standard for non pressure stoves and heaters is an example of a compulsory standard.

If a manufacturer or distributor applies for compliance to this standard for an appliance and is successful, the NRCS will provide the manufacturer of the appliance with a distinct "Homologation" number which the manufacturer must then display on the product. A "Homologation" number is a number issued by NCRS to indicate that a unique appliance meets the standard. If someone wishes to import an appliance that falls under this standard, they would need to receive a Letter of Authority (LOA) from the NRCS Chemicals, Mechanical & Materials Department (CMM) for this purpose.

4.3 Standards that apply to the paraffin consumption system

There are a number of standards that apply to the domestic use of paraffin;

4.4 Fuel Specification Standard

The SANS1913:2008 Kerosene for domestic heating and illuminating. This standard is voluntary - it is not a compulsory specification. The petroleum companies have undertaken to self regulate in this matter. The limitation here is that the petroleum companies can only guarantee the integrity of fuel leaving their depots. They do not control the entire supply chain and fuel is sold in bulk (unpacked). The result is that the integrity of fuel manufactured according to this standard cannot be guaranteed up to the point of consumption in households.

4.5 Transport and storage of dangerous goods

There are a number of standards that pertain to paraffin in this category;

- SANS 1518, Transport of dangerous goods – Design requirements for road vehicles and portable tanks.
- SANS 10229-1, Transport of dangerous goods – Packaging and large packaging for road and rail transport – Part 1: Packing.
- SANS 10232-1, Transport of dangerous goods – Emergency information systems – Part 1: Emergency information system for road transport.
- SANS 10233 (SABS 0233), Transportation of dangerous goods – Intermediate bulk containers.
- SANS 10234, Globally Harmonized System of classification and labelling of chemicals (GHS).
- SANS10265:1999, Classification and labelling of dangerous substances preparations for sale and handling.

SANS10265:1999, for the classification and labelling of dangerous substances preparations for sale and handling. It states that **Packaging for illuminating paraffin** – requires to be packed in a **dedicated paraffin container**, be impervious to Paraffin and be **fitted with a CRC** – Child Resistant Closure ref 6.1.10. (**Clause 6.2.6**). Clause 7.1 requires specific labelling with danger symbols and risk and safety phrases.

The SANS 10234:2007 (Globally harmonised system for classification and labelling of hazardous substances) should be promulgated this year. It repeats the stipulations for paraffin packaging and labelling as laid out in SANS10265:1999.

4.6 Paraffin Appliance standards

There are presently two standards for paraffin appliances;

- SANS 1906:2006 Standard for non pressure stoves and heaters – this standard became a regulation on 1 January 2007. It is therefore a compulsory specification.
- SANS 1243:2007 Standard for pressurized paraffin-fuelled appliances. Although this standard is currently voluntary, the NRCS has initiated the process of making this standard a compulsory specification.

5 Paraffin Appliances and standards

In 2002, the Paraffin Safety Association commissioned the SABS Commercial test house, to test nine of the most commonly used paraffin stoves in South Africa. The results of the tests gave cause for great concern. In summary:

- All nine stoves tested failed the current SABS standards;
- All the stoves failed an average of six or more of the SABS codes;
- The most commonly used paraffin stoves, non-pressure or wick stoves, failed all the key safety tests including fuel container, fuel temperature, combustion, marking and instructions; and
- Paraffin Safety Association added an additional test to the SABS standards "After operating the stove for 1 hour, knock it over, while it is in operation and note the consequences". Again, the most commonly used paraffin stoves, non-pressure or wick stoves, all immediately erupted in flames when knocked over.

It was clear that paraffin appliances were unsafe and probably a primary cause of many household fires, especially in informal settlements. In addition, it was found that the standards that were in existence did not adequately address the safety and quality requirements that would prevent the harmful incidents that were taking place. By 2004 the minister of Minerals and Energy initiated the process of reviewing paraffin appliance standards and regulating those standards.

5.1 Appliance standards cover

The primary safety critical features address by the non pressure standard (SANS 1906) is listed below. The same features apply to the pressure standard (SANS 1243) in addition to features that address risk associated with pressure based system.

The appliance standards address;

- Prevention of fuel leakage
- Self extinguishing if knocked over
- Ensuring the fuel in the fuel tank does not get too hot
- Prevention of harmful emissions to the atmosphere
- Stability and durability of the appliance
- Sustained power output over time
- The appliance cannot be filled when in use
- Will not burst into flames if knocked over
- Will not burn the user when the controls are touched
- Safety instructions with pictograms are included in the packaging

6 Current Status of Paraffin Appliances and standards

6.1 SANS 1906:2006 – non pressure stoves and heaters

Toward the end of 2007 it became clear that this standard needed improving and a process of review was initiated. The revised standard should be out for public comment soon. Until the review process is complete, the standard as published by SABS Standard Division will remain the applicable compulsory regulation.

- Only one heater has been approved in accordance with this standard and is marketed under the Goldair brand name.
- As from July 2008 the new one-plate PANDA stove has been granted a further temporary license (for 5 or 6 months) to manufacture pending improvements to their appliance to comply with the standard.
- The Paraffin Safety Association has identified a number of non pressure appliances being sold illegally. It is apparent that these appliances are imported from countries like China and India where standards are not as stringent.

6.2 SANS 1243:2007 – pressurized paraffin-fuelled appliances

SABS Regulatory has indicated that they intend making this standard a compulsory specification. The process has been delayed by the revision to the SANS1906 standard. The Parasafe stove is the only pressurized paraffin-fuelled appliance to have a device for self extinguishing if knocked over – a basic safety requirement.

Although manufacturers and distributors of non-pressure appliances have the option of certification under SABS Commercial to demonstrate that they comply with the SANS1243 standard, none have done so at present.

6.3 Other paraffin appliances

Beside heaters and stoves, other paraffin appliances include lamps, refrigerators, blow torches and water heaters. The most common other appliance is definitely the wick based lamp or lantern. No standard has yet been developed for these appliances because they were considered a lower risk than the cooking and heating appliances.

7 The role of the Paraffin Safety Association

The Paraffin Safety Association's mandate is the promotion of safety in the domestic use of paraffin. Our mission is to ensure the safe use of paraffin, as part of the energy mix for domestic users. We will achieve this through strategic partnerships, research and promotion of safe practices from the point of manufacture to the point of consumption of domestic energy. Specifically we will;

- Conduct surveillance into household energy consumption and harmful incidents
- Identify improvements in standards and to motivate for their adoption
- Educate consumers and the public in general about safety and issues related to household energy.
- Assist the SABS and the NRCS in the development and enforcement of world class standards
- Advocate for safer standards and safer household energy practices

8 Making standards work for household energy safety

Although drafting a good standard is difficult, it is far easier to develop a standard than to enforce it. Attention must be given to working out how to ensure that standards do achieve what they set out to achieve – goods and services of an acceptable standard of safety and quality. How can this be assured?

8.1 Proof of compliance with standards

The NRCS Chemicals, Mechanical & Materials Department (CMM) insists that the appliances that they certify as complying with the regulations must indicate this either on the packaging or on the very appliance that conforms to the regulation. They call this process "homologation". Manufacturers and importers who are established within the Republic of South Africa must apply for the homologation of all types non-pressure paraffin stoves and heaters using the NRCS homologation form No. VC9089-A in terms of the regulation VC9089:2006 for non-pressure paraffin appliances.

"Proof of homologation is in the form of a NRCS HOMOLOGATION GRANTED or NRCS HOMOLOGATION EXTENDED certificate for non-pressure paraffin stoves and heaters, bearing a unique homologation number that was assigned to each homologated type. The holder of the homologation shall ensure that the homologation number is marked on every appliance conforming to the type homologated under VC9089-2006 or on its packaging, so as to be visible at the point of sale."

All importers need to obtain a Letter of Authority (LOA) for the importation of non-pressure paraffin stoves and heaters into the Republic of South Africa (using application form No. VC8076-D). They must present their LOA on demand to a Customs official for each consignment of non-pressure paraffin stoves and heaters.

8.2 Customer concerns

If it is suspected that compulsory specifications are being ignored or not adhered to, the concern can be raised by any member of the public or any juristic person with the SABS Standards Division. They will then investigate and take necessary action. See the annexure for contact details in this regard.

In the case of compliance being claimed against a voluntary standard such as the SANS1243 for pressurized paraffin-fuelled appliances, this can be verified with SABS Commercial.

For practical reasons, it is easier to address breaches of regulations with manufacturers and importers (at source) than to deal with matters at the retail level where matters are far more difficult to "police".

9 Recommendations and conclusions

While the process of formulation and enforcing paraffin safety standards is underway, especially for appliances, there is a lot of ground to cover before we can be satisfied that the system for the domestic use of paraffin can be considered safe. It is essential that consumers are informed and use their purchasing power to insist that manufacturers, distributors and suppliers of appliances adhere to existing safety standards. Local and provincial government Disaster Management and Emergency Services should use their influence and purchasing power to support the SABS standards and their enforcement, be they voluntary or compulsory.

The Paraffin Safety Association recommends that the public and government should insist on appropriate SABS standards approval before purchasing paraffin appliances destined for domestic use regardless of whether the relevant applicable standard is voluntary or compulsory.

If any government official or member of the public discovers;

1. A non-pressure appliance for sale with no homologation number on the packaging or the appliance, they can assume it is illegal and report the matter to the NRCS.
2. A non-pressure appliance for sale with a homologation number, they can ask the NRCS to verify its authenticity.
3. A pressurized paraffin-fuelled appliance for sale they should insist on certification of compliance against the SANS1243 standard from SABS Commercial from the manufacturer or supplier in question. If the seller insists there is compliance, this can be verified with SABS Commercial.

Household energy safety is everybody's business.

10 Annexure 1: SABS and NRCS contact information

10.1 Applications for homologation and Letter of Authority (LOA)

NRCS Chemicals, Mechanical & Materials Department

Mrs. Tando Magolego
MANAGER: APPROVALS
Tel No.: +27 12 428-6375
Fax No.: +27 12 428 6513
E-mail: MAGOLET@sabs.co.za

Mr. S.F. Odendaal
TECHNICAL SPECIALIST
Tel No.: +27 12 428- 6065
Fax No.: +27 12 428-6513
E-mail: odendasf@sabs.co.za

10.2 Consumer recourse

NRCS Chemicals, Mechanical & Materials Department

Inland provinces:

Mrs. Emmah Ngobeni
MANAGER: INSPECTIONS
Tel No.: +27 12 428-6502
Fax No.: +27 12 428 6513
E-mail: NGOBENIE@sabs.co.za

Coastal Provinces:

Mr. Hendrik F. de Kock
MANAGER: REGIONS
Tel No.: +27 12 428-6585
Fax No.: +27 12 428 6513
E-mail: DEKOCKHF@sabs.co.za

10.3 SABS Commercial

For information on certification of voluntary standards compliance;

Manager: Certification, Mechanical, Metallurgy and Safety Industry
Mr Malcolm Vowles
Tel No.: +27 12 428-6048
Cell: 083-632-3413
Email: malcolm@sabs.co.za

10.4 SABS Crimeline

Call: 0800212246

The Crimeline is operated by a forensic accounting company called Volker Wattrus and Mkhize - who investigate fraudulent SABS approval claims.

10.5 SABS Standards Information Centre

Information and purchasing of South African National Standards and Compulsory Specifications

Telephone Number:
National: (012) 428-6666
International: +27 12 428-6666

Email: info@sabs.co.za

Fax Number:
National: (012) 428-6928
International: +27 12 428-6928

Centre hours: 07:30 – 17:00