

Paraffin Safety Association 2003 Stove Test Report Summary

Comparison of Test Results for Pressure Stoves

| Clause and requirement | “Primus” Roarer type burner | “Conquest” Roarer type burner | “Primus” Silent type burner | “Glory” Roarer type burner | “Hippo” Roarer type burner |
|---|--|--|--|--|--|
| 3.2.MATERIALS 3.2.2 Sealing Washers: Washers in the fuel inlet assembly shall not become tacky after being submerged in paraffin for 24 hours <i>[adjusted from original requirement]</i> | Pass | Pass | Pass | Pass | Pass |
| 3.3 CAPACITY 3.3 Capacity: 3.3.1 When the working capacity of the stove is determined in accordance with subclause 6.2, it shall be between 85% and 90% of the nominal capacity. <i>[adjusted from original requirement]</i> | Fail The working capacity was 95% of the nominal capacity. Working capacity = 875 ml Nominal capacity = 920 ml | Fail The working capacity was 99% of the nominal capacity. Working capacity = 1410 ml Nominal capacity = 1423 ml | Fail The working capacity was 94% of the nominal capacity: Working capacity = 870 ml Nominal capacity = 923 ml | Pass The working capacity was 87% of the nominal capacity: Working capacity = 1250 ml Nominal capacity = 1441 ml | Fail The working capacity was 88% of the nominal capacity: Working capacity = 1250 ml Nominal capacity = 1426 ml |
| 3.4 CONSTRUCTION 3.4.1 Accessibility for cleaning Surfaces in the vicinity of joints shall be readily accessible for inspection and cleaning. Components that are not fixtures shall be capable of being removed (and, when relevant, dismantled) for inspection and cleaning. | Pass | Pass | Pass | Pass | Pass |
| | Pass | Pass | Pass | Pass | Pass |

| Clause and requirement | “Primus” Roarer type burner | “Conquest” Roarer type burner | “Primus” Silent type burner | “Glory” Roarer type burner | “Hippo” Roarer type burner |
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| <p>3.4.2 Assembly Parts of an appliance that are intended to be removed (e.g. for cleaning, replacement, or adjustment) shall be such that it is not possible to replace them incorrectly.</p> <p>When a pressure stove is assembled and placed upright on a horizontal surface</p> <p>a) The top surface of the burner shall be at least 12mm below the horizontal plane of the plate ring;</p> <p>b) The axes of the plate ring, and the connecting tube shall be vertical and, subjected to a maximum deviation of 1.0mm, shall coincide. <i>[Adjusted from original requirement]</i></p> <p>c) The surface of the plate ring shall be horizontal</p> <p>d) The centre of the base of the fuel container shall be at least 5mm above the surface on which the appliance is standing.</p> | <p>Fail The outer ring of the burner could be fitted upside down.</p> <p><i>Comment: This could affect the performance of the burner. All clauses referring to burner performance could thus be affected.</i></p> <p>Pass: A height of 23 mm was measured</p> <p>Fail: A deviation of at least 4 mm was measured.</p> <p>Pass</p> <p>Pass</p> | <p>Fail The outer ring of the burner could be fitted upside down.</p> <p><i>Comment: This could affect the performance of the burner. All clauses referring to burner performance could thus be affected</i></p> <p>Pass: A height of 25 mm was measured</p> <p>Fail: A deviation of at least 2 mm was measured.</p> <p>Pass</p> <p>Pass</p> | <p>Fail The burner head incorporated two loose parts. The inner part could be fitted upside down.</p> <p><i>Comment: This could affect the performance of the burner. All clauses referring to burner performance could thus be affected</i></p> <p>Pass: A height of 13 mm was measured</p> <p>Fail: A deviation of at least 3.5 mm was measured</p> <p>Pass</p> <p>Pass</p> | <p>Fail The outer ring of the burner could be fitted upside down.</p> <p><i>Comment: This could affect the performance of the burner. All clauses referring to burner performance could thus be affected</i></p> <p>Pass: A height of 25 mm was measured.</p> <p>Fail: A deviation of at least 2 mm was measured.</p> <p>Pass</p> <p>00Pass</p> | <p>Fail The outer ring of the burner could be fitted upside down.</p> <p><i>Comment: This could affect the performance of the burner. All clauses referring to burner performance could thus be affected</i></p> <p>Pass: A height of 23 mm was measured.</p> <p>Fail: A deviation of at least 3 mm was measured.</p> <p>Pass</p> <p>Pass</p> |
| <p>3.4.3 Stability. An appliance that is standing upright on a horizontal surface shall be stable and when tilted in any direction through an angle of 15° from the vertical, shall not, on being released, overturn</p> | <p>Pass</p> | <p>Pass</p> | <p>Pass</p> | <p>Pass</p> | <p>Pass</p> |

| Clause and requirement | “Primus” Roarer type burner | “Conquest” Roarer type burner | “Primus” Silent type burner | “Glory” Roarer type burner | “Hippo” Roarer type burner |
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| 3.4.4 Threads. Threads on pressure stoves shall be of the appropriate size and pitch given below: a) Burner connecting thread: M 14,5 x 0,75 b) Nipple connecting thread: M 4,5 x 0,5 | Pass Pass | Pass Pass | Pass Pass | Pass Pass | Pass Pass |
| 3.4.5 Fuel Container. The shape of the top of the fuel container and the location of the fuel inlet assembly shall be such as to enable the appliance to comply with the relevant requirement of 3.3 | Fail See clause 3.3 | Fail See clause 3.3 | Fail See clause 3.3 | Pass See clause 3.3 | Fail See clause 3.3 |
| 3.4.6 Burner Assembly a) The cross-sectional area of the fuel feed pipes of the burner assembly shall be nowhere less than 25 % of the cross-sectional area of the connecting tube. b) The outer cap of a perforated burner of a pressure stove shall have at least four equally spaced rows of holes around the circumference of the cap. c) The nipple shall be so shaped as to enable it to be removed and replaced with use of a standard tool. If a special tool is required to remove the nipple, such a tool shall be supplied with the appliance. <i>[Adjusted from original requirement]</i> d) The orifice in the nipple shall have a diameter of 0,35mm + 0,02 and, in the case of a pressure stove, the axis of the orifice shall be vertical and central to the burner top. | Pass 91% - not applicable to a roarer type burner Fail No standard tool could be found that was capable of removing the nipple. Fail No special tool was supplied Pass 0.34 mm | Pass 79% not applicable to a roarer type burner Fail No standard tool could be found that was capable of removing the nipple. Fail No special tool was supplied Pass 0.32 mm | Pass 91% Pass Fail No standard tool could be found that was capable of removing the nipple. Fail No special tool was supplied Fail 0.27 mm | Pass 73% - not applicable to roarer type burner Fail No standard tool could be found that was capable of removing the nipple. Fail No special tool was supplied Pass 0.32 mm | Pass 72% - not applicable to roarer type burner Fail No standard tool could be found that was capable of removing the nipple. Fail No special tool was supplied Pass 0.32 mm |

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| <p><u>3.4.7 Fuel Inlet Assembly.</u> The fuel inlet assembly shall be fitted with a pressure release device, and the outlet hole in this device shall be directed away from the burner.</p> | <p>Fail The outlet of the relief device was directed on the same axes as the burner. It was thus not directed away from the burner.</p> <p><i>Comment: If it points away from the burner, escaping gasses will not be ignited by the burner.</i></p> | <p>Pass</p> | <p>Fail The outlet of the relief device was directed on the same axes as the burner. It was thus not directed away from the burner.</p> <p><i>Comment: If it points away from the burner, escaping gasses will not be ignited by the burner.</i></p> | <p>Pass</p> | <p>Pass</p> |
| <p>3.5 Performance</p> | | | | | |
| <p><u>3.5.1. Durability of Burner Assembly.</u> When an appliance is tested in accordance with subclause 6.3, there shall be no noticeable deterioration in the performance of the burner.</p> <p><i>{subclause 6.3, involves letting the sample burn for 250 hours}</i></p> | <p>Pass</p> | <p>- This was not verified</p> | <p>Fail After burning for only 30 hours the flame of the burner deteriorated to a small orange flame. No repair attempts on this burner were successful.</p> <p><i>Comment: Such flame deterioration can cause reduced efficiency, as well as increased levels of carbon monoxide.</i></p> | <p>Fail After 200 hours, part of the outer ring of the burner was burned off. See photos in Annexe A</p> <p><i>Comment: This could affect the performance of the burner. All clauses referring to burner performance could thus be affected.</i></p> | <p>Fail After 100 hours, part of the outer ring of the burner was burned off. See photos in Annexe A</p> <p><i>Comment: This could affect the performance of the burner. All clauses referring to burner performance could thus be affected.</i></p> |
| <p><u>3.5.2. Strength of Pressure Stove.</u> When a pressure stove is tested as indicated below, the supports shall show no sign of buckling and the upper surface of the plate ring shall still be horizontal.</p> | <p>Pass</p> | <p>Pass</p> | <p>Pass</p> | <p>Pass</p> | <p>Pass</p> |

| Clause and requirement | “Primus” Roarer type burner | “Conquest” Roarer type burner | “Primus” Silent type burner | “Glory” Roarer type burner | “Hippo” Roarer type burner |
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| <i>[Adjusted from original requirement] {The sample was lit and left to burn for 1 hour where after a mass piece of 10 kg was placed on it. It was left burning for another 2 hours}</i> | | | | | |
| <p>3.5.3 Operating Pressure Range. When an appliance is tested generally in accordance with subclause 6.5, the gauge pressure that can be developed in the fuel container by the operation of the fuel pump shall be not higher than 300 kPa and not lower than 100 kPa <i>[Adjusted from original requirement] {subclause 6.5 as modified, involves monitoring the pressure inside the container while operating the pump. A pump speed of 60 strokes in 60 seconds was used as a reference}</i></p> | <p>Fail: A pressure of 70 kPa was achieved <i>See also clause 4.5.7 on P6 of this report</i></p> | <p>Fail: A pressure of 35 kPa was achieved <i>See also clause 4.5.7 on P6 of this report</i></p> | <p>Fail: A pressure of 70 kPa was achieved <i>See also clause 4.5.7 on P6 of this report</i></p> | <p>Fail: A pressure of 20 kPa was achieved <i>See also clause 4.5.7 on P6 of this report</i></p> | <p>Fail: A pressure of 32 kPa was achieved <i>See also clause 4.5.7 on P6 of this report</i></p> |
| <p>3.5.4 Pressure Release Time. When an appliance is tested in accordance with subclause 6.6, operation of the pressure release device shall reduce the gauge pressure in the container from its maximum value to zero in not longer than 6 s. <i>{subclause 6.6, involves measuring the time taken for the pressure to be released by opening the relief mechanism}</i></p> | Pass | Pass | Pass | Pass | Pass |
| <p>3.5.5 Thermal efficiency When tested in accordance with subclause 6.7, the thermal efficiency of each burner shall be noted. <i>[Adjusted from original requirement] {subclause 6.7, involves carefully measuring the amount of paraffin used to heat 2l of water to 90°C}</i></p> | <p>The thermal efficiency was 63% <i>Comment: This indicates that approximately 100% - 63% = 37% of the energy of the paraffin</i></p> | <p>The thermal efficiency was 56% <i>Comment: This indicates that approximately 100% - 56% = 44% of the energy of the paraffin</i></p> | <p>The thermal efficiency was 56% <i>Comment: This indicates that approximately 100% - 56% = 44% of the energy of the paraffin</i></p> | <p>The thermal efficiency was 63% <i>Comment: This indicates that approximately 100% - 63% = 37% of the energy of the paraffin</i></p> | <p>The thermal efficiency was 66% <i>Comment: This indicates that approximately 100% - 66% = 34% of the energy of the paraffin</i></p> |

| Clause and requirement | “Primus” Roarer type burner | “Conquest” Roarer type burner | “Primus” Silent type burner | “Glory” Roarer type burner | “Hippo” Roarer type burner |
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| | <i>was lost to the atmosphere and not used in the cooking process</i> | <i>was lost to the atmosphere and not used in the cooking process</i> | <i>was lost to the atmosphere and not used in the cooking process</i> | <i>was lost to the atmosphere and not used in the cooking process</i> | <i>was lost to the atmosphere and not used in the cooking process</i> |
| <p><u>3.5.6 Proof Pressure.</u> When an appliance is tested at a hydrostatic pressure of 600 kPa in accordance with subclause 6.8, the container shall not leak appreciably or rupture, and the fixed supports shall not become visibly distorted or detached from the fuel container. {subclause 6.8, involves pressurising the sample for a period of 5 minutes, while monitoring it for leakage}</p> | Pass | Pass | Pass | Pass | Fail: The fuel container developed a leak in the vicinity of the seam between the top and side panels of the fuel container. <i>Comment: Although it failed at a pressure that is higher than can be expected in normal operating conditions, it indicates a weakness of the container. Failure of a container during use could result in an instant spread of fire</i> |
| <p><u>3.5.7 Durability of Pump Assembly.</u> After the pump assembly of an appliance has been tested in accordance with subclause 6.9, it shall operate smoothly and the appliance shall still comply with the requirement of 4.5.3. {subclause 6.9 involves operating the pump for 200 000 cycles}</p> | Pass A pressure of 195 kPa was achieved <i>Comment: It was noted that the internal pressure achieved after the endurance test was higher than that before the endurance test. See also clause 4.5.3 on P5 of this report</i> | Fail A pressure of 60 kPa was achieved <i>Comment: It was noted that the internal pressure achieved after the endurance test was higher than that before the endurance test. See also clause 4.5.3 on P5 of this report</i> | Fail A pressure of 149 kPa was achieved <i>Comment: It was noted that the internal pressure achieved after the endurance test was higher than that before the endurance test. See also clause 4.5.3 on P5 of this report</i> | Fail A pressure of 31 kPa was achieved <i>Comment: It was noted that the internal pressure achieved after the endurance test was higher than that before the endurance test. See also clause 4.5.3 on P5 of this report</i> | Fail A pressure of 56 kPa was achieved <i>Comment: It was noted that the internal pressure achieved after the endurance test was higher than that before the endurance test. See also clause 4.5.3 on P5 of this report</i> |

| Clause and requirement | “Primus” Roarer type burner | “Conquest” Roarer type burner | “Primus” Silent type burner | “Glory” Roarer type burner | “Hippo” Roarer type burner |
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| 3.5.8 Resistance to corrosion When the inside of the fuel container is subjected to salt fog in accordance with SABS Method 155 the metal should show no sign of pitting or penetration. <i>[Adjusted from original requirement]</i> | Pass | Pass | Pass | Pass | Pass |
| 4 PACKING, MARKING, AND INSTRUCTIONS | | | | | |
| 4.1 PACKING. Each appliance shall be so packed, in an acceptable container, as to prevent damage to the appliance and its components and fittings during normal transportation and handling. | Pass The sample was supplied in a box | Pass The sample was supplied in a box | Not verified The sample was supplied without packing. | Pass The sample was supplied in a box. | Pass The sample was supplied in a box. |
| 4.2 MARKING | | | | | |
| 4.2.1 Appliance marking. Each appliance shall bear, in legible and indelible marking, the manufacturer’s name or trade name or trademark, and the serial number of the appliance. | Fail Trade name: “PRIMUS” No serial number | Fail Trade name: “CONQUEST” No serial number | Fail Trade name: “PRIMUS” No serial number | Fail Trade name: “GLORY” No serial number | Fail Trade name: “HIPPO” No serial number |
| 4.2.2 Container marking. The following information shall appear, in legible and indelible marking, on the container or on a tag or sticker securely attached to the appliance: a) The nominal capacity, in millilitres; b) a warning notice (in at least the two official languages) drawing the attention of the user to the necessity to read the c) instructions before using the appliance (e.g. NOTE: READ INSTRUCTIONS BEFORE USING). | Fail No information supplied Fail Fail Fail | Fail No information supplied Fail Fail Fail | Fail No information supplied Fail Fail Fail | Fail No information supplied Fail Fail Fail | Fail No information supplied Fail Fail Fail |
| 4.3 INSTRUCTIONS. | | | | | |

| Clause and requirement | “Primus” Roarer type burner | “Conquest” Roarer type burner | “Primus” Silent type burner | “Glory” Roarer type burner | “Hippo” Roarer type burner |
|---|---|---|---|---|---|
| Each pressure appliance shall be accompanied by legible printed instructions, in at least the two official languages, that include at least the following: a) Instructions on the correct method of filling the fuel container; b) instructions on the correct and safe method of operating the appliance; c) instructions on the care of the appliance. | Fail No information supplied a)Fail b)Fail c)Fail | Fail Instructions was printed only in English, and not in any other official language. a)Pass b)Pass c)Fail | Fail No information supplied a)Fail b)Fail c)Fail | Fail No information supplied Fail Fail Fail | Fail: No information supplied Fail Fail Fail |
| <u>Knocking over the stove</u> After operating the stove for 1 hour, knock it over, while it is in operation, and note the consequences | The flame continued burning in a controlled fashion for a few seconds were after it was extinguished. No paraffin leaked from the sample. | The flame continued burning in a controlled fashion for a few seconds were after it was extinguished. No paraffin leaked from the sample. | The flame continued burning in a controlled fashion for a few seconds were after it was extinguished. No paraffin leaked from the sample. | The flame continued burning in a controlled fashion for a few seconds were after it was extinguished. No paraffin leaked from the sample. | The flame continued burning in a controlled fashion for a few seconds were after it was extinguished. No paraffin leaked from the sample. |
| <u>Combustion test</u> When tested in accordance with a custom test method, the CO/CO2 ratio shall not exceed 0,02. . {This custom test method, involves letting the sample burn with a pot on it. A collecting hood was placed over the sample from which air samples were drawn and analysed} | Fail The CO/CO2 Ration was 0.04. This is double the required maximum ratio. <i>Comment: This ratio gives an indication of how much CO would be formed. CO is highly toxic. A high ratio could result in dangerous CO levels in the area where the stove is used.</i> [CO : Carbon Monoxide] | Pass The CO/CO2 Ration was 0.001 <i>[CO : Carbon Monoxide]</i> | Fail The CO/CO2 Ration was 0.04. This is double the required maximum ratio. <i>Comment: This ratio gives an indication of how much CO would be formed. CO is highly toxic. A high ratio could result in dangerous CO levels in the area where the stove is used.</i> [CO : Carbon Monoxide] | Pass The CO/CO2 Ration was 0.002 <i>[CO : Carbon Monoxide]</i> | Pass The CO/CO1 Ration was 0.01 <i>[CO : Carbon Monoxide]</i> |

| Clause and requirement | "Primus" Roarer type burner | "Conquest" Roarer type burner | "Primus" Silent type burner | "Glory" Roarer type burner | "Hippo" Roarer type burner |
|--------------------------|---|---|---|--|--|
| <p><u>Annexure A</u></p> | <p><u>Annexe A</u></p>  <p>General view of sample</p>  <p>Marking</p>  <p>Burner</p> | <p><u>Annexe A</u></p>  <p>General view of sample</p>  <p>Marking</p>  <p>Burner</p> | <p><u>Annexe A</u></p>  <p>General view of sample</p>  <p>Marking</p>  <p>Burner configuration</p>  <p>Burner flame after 30 hours of operation (See clause 3.5.1 on P5)</p> | <p><u>Annexe A</u></p>  <p>General view of sample</p>  <p>Marking</p>  <p>Burner</p>  <p>Burner after 200 hours (See clause 3.5.1 on P5)</p> | <p><u>Annexe A</u></p>  <p>General view of sample</p>  <p>Marking</p>  <p>Burner configuration</p>  <p>Burner after 100 hours (See clause 3.5.1 on P5)</p>  <p>Burner after 200 hours</p> |

Comparison of Test Results for Non-Pressure Stoves with Wick-type Burners

| Clause and requirement | “Giant” 2 wick type burner | “Panda” 1 wick type burner | “Giant” 1 wick single square type burner | “ Giant “ 1 wick single round wick type burner |
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| 4.1 GENERAL REQUIREMENTS | | | | |
| 4.1.2 Attachment of components Replaceable components shall fit in an acceptable and rigid manner. Permanently fitted components shall be rigid and fixed in a manner suitable for the duty they have to perform | Pass Pass | Pass Pass | Pass Pass | Pass Pass |
| 4.1.3 Erase of fitting Any part of an appliance that is intended to be removed in the course of filling, cleaning, or the replacing or the trimming of the wick shall be so constructed that it can not be refitted incorrectly. If the design of the appliance is such that special tools are required for removable parts, such tools shall be supplied with the appliance. | Pass Pass No special tools were required. | Fail Pass No special tools were required. | Pass Pass No special tools were required. | Pass Pass No special tools were required. |
| 4.1.4 Flame regulator (wick adjusting device) The flame regulator shall be readily accessible and easily adjustable when the appliance is alight and shall adjust the flame evenly. | Pass | Pass | Pass | Pass |
| 4.1.5. Smoke The flame of the burner shall emit no visible smoke during normal operating conditions. This shall be monitored during the cause of testing. <i>[Adjusted from original requirement]</i> | Pass | Pass | Pass | Pass |

| Clause and requirement | “Giant” 2 wick type burner | “Panda” 1 wick type burner | “Giant” 1 wick single square type burner | “ Giant “ 1 wick single round wick type burner |
|--|--|--|--|--|
| <p>4.1.6 Resistance to corrosion When the inside of the fuel container is subjected to salt fog in accordance with SABS Method 155 the metal should show no sign of pitting or penetration. <i>[Adjusted from original requirement]</i></p> | Pass | Pass | Pass | Pass |
| <p>4.1.7 Fuel container All joints below maximum fuel level shall be fuel-tight. There shall be no accumulation of fuel on top of the fuel container. <i>[Adjusted from original requirement]</i></p> | <p>Pass</p> <p>Fail During different stages of testing it was found that fuel collected on the top of the container, a while after the flame of the burner was extinguished. NOTE: Also see clause 4.1.9 on P4 of this report Comment: Leaking paraffin would create a risk of being ignited during use. (See also clause 4.2.3 P4 of this report). A uncontrolled fire could easily result.</p> | <p>Fail During burning tests paraffin was found collecting at the base of the sample</p> <p>During different stages of testing it was found that fuel collected on the top of the container, a while after the flame of the burner was extinguished. NOTE: Also see clause 4.1.9 on P4 of this report Comment: Leaking paraffin would create a risk of being ignited during use. (See also clause 4.2.3 P4 of this report). A uncontrolled fire could easily result</p> | <p>Pass</p> <p>Fail During different stages of testing it was found that fuel collected on the top of the container, a while after the flame of the burner was extinguished. NOTE: Also see clause 4.1.9 on P4 of this report Comment: Leaking paraffin would create a risk of being ignited during use. (See also clause 4.2.3 P4 of this report). A uncontrolled fire could easily result.</p> | <p>Fail During burning tests paraffin was found collecting at the base of the sample</p> <p>During different stages of testing it was found that fuel collected on the top of the container, a while after the flame of the burner was extinguished. NOTE: Also see clause 4.1.9 on P4 of this report Comment: Leaking paraffin would create a risk of being ignited during use. (See also clause 4.2.3 P4 of this report). A uncontrolled fire could easily result</p> |

| Clause and requirement | “Giant” 2 wick type burner | “Panda” 1 wick type burner | “Giant” 1 wick single square type burner | “ Giant “ 1 wick single round wick type burner |
|---|---|---|---|---|
| <p>4.1.8 Rigidity (ability to withstand heavy loads) When an appliance is tested in accordance with subclause 5.4, no component shall become permanently distorted or broken and each component shall maintain its mating component in an operative ma</p> | Pass | Pass | Pass | Pass |
| <p>{subclause 5.4, involves placing a mass piece of 10 kg on the sample after the sample have been operated for 2 hour. The mass piece was left on the sample for 1 hours while burning</p> | | | | |
| <p>4.1.9 Stability of appliances When tested in accordance with subclause 5.5, the appliance shall not topple over. {subclause 5.5, involves letting the sample burn for 1 hour where after a pot was placed on it and it was tilted through 10°}</p> | <p>Pass NOTE: During this test paraffin leaked from between the base of the burner and the top of the fuel tank</p> | <p>Pass NOTE: During this test paraffin leaked from between the base of the burner and the top of the fuel tank</p> | <p>Pass NOTE: During this test paraffin leaked from between the base of the burner and the top of the fuel tank</p> | <p>Pass NOTE: During this test paraffin leaked from between the base of the burner and the top of the fuel tank</p> |
| 4.2 PERFORMANCE REQUIREMENTS | | | | |

| Clause and requirement | “Giant” 2 wick type burner | “Panda” 1 wick type burner | “Giant” 1 wick single square type burner | “ Giant “ 1 wick single round wick type burner |
|--|---|--|--|--|
| <p>4.2.1 Flame stability When tested in accordance with subclause 5.6, the stability of the flame shall be such that there is no significant flickering.</p> <p>{ subclause 5.6, involves letting the sample burn for 15 minutes where after the flame was adjusted and a pot placed on the sample. Without any further adjustments the flame was monitored for 4 hours.}</p> | Pass | Pass | Pass | Pass |
| <p>4.2.2 Fuel container capacity The capacity of the fuel container shall be such that the appliance can be continuously operated at full output for at least six hours in one filling without interruption when all burners are in operation.</p> | Pass | Pass | Pass | Pass |
| <p>4.2.3 Fuel temperature When tested in accordance with subclause 5.7, the maximum temperature of the fuel in the fuel container shall not exceed 54°C.</p> <p>{ subclause 5.7, involves letting the sample burn for 2 hours where after the fuel temperature was measured}</p> | <p>Fail The fuel temp was measured as 84°C</p> <p>Comment: As this temperature is well above the flash point of paraffin (See SABS CKS 78-1972, as amended). Fuel could easily ignite.</p> | <p>Fail The fuel temp was measured as 68°C</p> <p>Comment: As this temperature is well above the flash point of paraffin (See SABS CKS 78-1972, as amended). Fuel could easily ignite</p> | <p>Fail The fuel temp was measured as 67°C</p> <p>Comment: As this temperature is well above the flash point of paraffin (See SABS CKS 78-1972, as amended). Fuel could easily ignite</p> | <p>Fail The fuel temp was measured as 80°C</p> <p>Comment: As this temperature is well above the flash point of paraffin (See SABS CKS 78-1972, as amended). Fuel could easily ignite</p> |













| <p>Clause and requirement</p> | <p>“Giant” 2 wick type burner</p> | <p>“Panda” 1 wick type burner</p> | <p>“Giant” 1 wick single square type burner</p> | <p>“ Giant “ 1 wick single round wick type burner</p> |
|---|--|--|--|--|
| <p><u>4.2.4 Surface temperature</u> When tested in accordance with subclause 5.8, the surface temperature of any part of the appliance that may be</p> | | | | |

| Clause and requirement | “Giant” 2 wick type burner | “Panda” 1 wick type burner | “Giant” 1 wick single square type burner | “ Giant “ 1 wick single round wick type burner |
|--|---|---|---|---|
| | | | | |
| <p>4.2.6 Thermal efficiency When tested in accordance with subclause 5.10, the thermal efficiency of each burner shall be noted. [Adjusted from original requirement]</p> <p>{subclause 5.10, involves carefully measuring the amount of paraffin used to heat 2l of water to 90°C}</p> | <p>The thermal efficiency was Left hand burner 63% Right hand burner: 47%</p> <p>Comment: This indicates that approximately 100% - 47% = 53% of the energy of the paraffin was lost to the atmosphere and not used in the cooking process</p> | <p>The thermal efficiency was 41%</p> <p>Comment: This indicates that approximately 100% - 41% = 59% of the energy of the paraffin was lost to the atmosphere and not used in the cooking process</p> | <p>The thermal efficiency was 51%</p> <p>Comment: This indicates that approximately 100% - 51% = 49% of the energy of the paraffin was lost to the atmosphere and not used in the cooking process</p> | <p>The thermal efficiency was 59%</p> <p>Comment: This indicates that approximately 100% - 59% = 41% of the energy of the paraffin was lost to the atmosphere and not used in the cooking process</p> |
| <p><u>6. PACKING, MARKING, INSTRUCTIONS AND WARNINGS</u></p> | | | | |
| <p>6.1 Packing Each appliance shall be so packed, as to prevent damage to the appliance and its components and fittings during normal transportation and handling.</p> | <p>Pass The sample was supplied in a box</p> | <p>Pass The sample was supplied in a box</p> | <p>Pass The sample was supplied in a box</p> | <p>Pass The sample was supplied in a box</p> |
| <p>6.2 Marking 6.2.1The appliance shall bear the following information in legible, indelible marking: a) the name or trademark of the manufacturer and the country of origin; b) the manufacturer's model name and</p> | <p>Fail Fail Fail</p> | <p>Fail Fail Fail</p> | <p>Fail Fail Fail</p> | <p>Fail Fail Fail</p> |

| Clause and requirement | “Giant” 2 wick type burner | “Panda” 1 wick type burner | “Giant” 1 wick single square type burner | “ Giant “ 1 wick single round wick type burner |
|--|--|--|--|--|
| <p>type number or both, followed by in the case of a space heating appliance, the words "Dangerous: Do not use as a COOKER", and in the case of a cooking appliance, the words "Dangerous: Do not use as a HEATER";</p> <p>c) the manufacturer's batch number; and</p> <p>d) the words "USE DOMESTIC PARAFFIN ONLY".</p> | <p>Fail</p> <p>Fail</p> <p>6.2.1The sample contained a sticker that was easily removable. The sticker was thus not indelible.</p> <p>a) Only the trade name “GIANT” was indicated. The county of origin was not printed.</p> <p>b)No such information was supplied</p> <p>c)No such information was supplied</p> <p>d)No such information was supplied</p> | <p>Fail</p> <p>Fail</p> <p>6.2.1The sample contained a sticker that was easily removable. The sticker was thus not indelible.</p> <p>a) Only the trade name “PANDA” was indicated. The county of origin was not printed.</p> <p>b)No such information was supplied</p> <p>c)No such information was supplied</p> <p>d)No such information was supplied</p> | <p>Fail</p> <p>Fail</p> <p>6.2.1The sample contained a sticker that was easily removable. The sticker was thus not indelible.</p> <p>a) Only the trade name “GIANT” was indicated. The county of origin was not printed.</p> <p>b)No such information was supplied</p> <p>c)No such information was supplied</p> <p>d)No such information was supplied</p> | <p>Fail</p> <p>Fail</p> <p>6.2.1The sample contained a sticker that was easily removable. The sticker was thus not indelible.</p> <p>a) Only the trade name “GIANT” was indicated. The county of origin was not printed.</p> <p>b)No such information was supplied</p> <p>c)No such information was supplied</p> <p>d)No such information was supplied</p> |
| <p>6.3 Instructions and warnings</p> <p>The appliance manufacturer shall supply written instructions and warnings in a booklet accompanying the appliance concerning its safe use and operation. These shall be written in English and have sufficient pictograms to ensure understanding. The manufacturer's instructions shall include the following:</p> | <p>Fail</p> | <p>Fail</p> | <p>Fail</p> | <p>Fail</p> <p>Fail</p> |

| Clause and requirement | “Giant” 2 wick type burner | “Panda” 1 wick type burner | “Giant” 1 wick single square type burner | “ Giant “ 1 wick single round wick type burner |
|---|-------------------------------|-------------------------------|--|--|
| a) before lighting the stove, ensure that all the components are undamaged and properly assembled in accordance with the design, do not place stove near flammable items; | Fail | Fail | Fail | Fail |
| b) place the stove on a reasonably level surface to ensure either uniform wetting of wicks or uniform flow of paraffin in the wick-trough. The level can be checked by placing a pan of water on the stove; | Fail | Fail | Fail | Fail |
| c) the appliance is to use only domestic paraffin as a fuel; | Fail | Fail | Fail | Fail |
| d) store the paraffin on a high shelf in a paraffin safety container for the safety of children; | Fail | Fail | Fail | Fail |
| | | | | |
| e) always use a funnel when pouring paraffin to prevent any spillage; | Fail | Fail | Fail | Fail |
| f) use the appliance in adequately ventilated area to ensure satisfactory removal of smoke and fumes of combustion and to allow circulation of air; | Fail | Fail | Fail | Fail |
| g) "Do not fill or carry when alight"; | Fail | Fail | Fail | Fail |
| h) "Use in a ventilated place, do not | Fail | Fail | Fail | Fail |

| Clause and requirement | “Giant” 2 wick type burner | “Panda” 1 wick type burner | “Giant” 1 wick single square type burner | “ Giant “ 1 wick single round wick type burner |
|---|---|---|---|---|
| <p>expose to draughts”;</p> <p>i) in the case of a cooking appliance: "Do not use as a heater”;</p> <p>j) in the case of a heating appliance: "Do not use as a cooker”;</p> <p>k) "Do not introduce water into the fuel container"</p> <p>l) any special instruction or warning for the safe and efficient operation of the appliance;</p> <p>m) refuel stoves and heaters outside the home to avoid spillage inside, spilt paraffin is a fire hazard; and</p> <p>n) instructions for the maintenance and servicing of the appliance to ensure optimum operation.</p> | <p>Fail</p> <p>Fail</p> <p>Fail</p> <p>Fail</p> <p>Fail</p> <p>Fail</p> <p>No additional information was supplied</p> | <p>Fail</p> <p>Fail</p> <p>Fail</p> <p>Fail</p> <p>Fail</p> <p>Fail</p> <p>No additional information was supplied</p> | <p>Fail</p> <p>Fail</p> <p>Fail</p> <p>Fail</p> <p>Fail</p> <p>Fail</p> <p>No additional information was supplied</p> | <p>Fail</p> <p>Fail</p> <p>Fail</p> <p>Fail</p> <p>Fail</p> <p>Fail</p> <p>No additional information was supplied</p> |
| <p><u>General wick requirements</u> It shall not be possible to turn the wick all the way down in to the fuel container.</p> <p>If it is possible, what is the result of such action?</p> | <p>Pass</p> <p>N/A</p> <p>The wick was prevented from being turned down all the way</p> | <p>Pass</p> <p>N/A</p> <p>The wick was prevented from being turned down all the way by a piece of</p> | <p>Pass</p> <p>N/A</p> <p>The wick was prevented from being turned down all the way by a piece of</p> | <p>Pass</p> <p>N/A</p> <p>The wick was prevented from being turned down all the way by a piece</p> |

| Clause and requirement | "Giant" 2 wick type burner | "Panda" 1 wick type burner | "Giant" 1 wick single square type burner | " Giant " 1 wick single round wick type burner |
|--|---|--|---|---|
| | by a piece of wire that was fastened to the top of the wick assembly. | wire that was fastened to the top of the wick assembly | wire that was fastened to the top of the wick assembly | of wire that was fastened to the top of the wick assembly |
| <p>Knocking over the stove After operating the stove for 1 hour, knock it over, while it is in operation, and note the consequences</p> | <p>The sample immediately erupted in flames. Lying on its side paraffin was running from the tank, causing the flame to spread.</p> <p>See photo in annexe A</p> | <p>The sample immediately erupted in flames. Lying on its side paraffin was running from the tank, causing the flame to spread.</p> <p>See photo in annexe A</p> | <p>The sample immediately erupted in flames. Lying on its side paraffin was running from the tank, causing the flame to spread.</p> <p>See photo in annexe A</p> | <p>The sample immediately erupted in flames. Lying on its side paraffin was running from the tank, causing the flame to spread.</p> <p>See photo in annexe A</p> |
| <p>Annexure A</p> | <p><small>Test House - SABS affiliated company REPORT No. 7222/2117843/VG01 Page 9 of 10</small></p> <p><u>Annexe A</u></p>  <p><small>General view of sample</small></p>  <p><small>Marking label</small></p>  <p><small>Burner top view</small></p> | <p><u>Annexe A</u></p>  <p><small>General view of sample</small></p>  <p><small>Marking sticker</small></p>  <p><small>Burner top view</small></p> | <p><u>Annexe A</u></p>  <p><small>General view of sample</small></p>  <p><small>Top view of burner</small></p>  <p><small>Side view of burner</small></p> | <p><u>Annexe A</u></p>  <p><small>General view of sample</small></p>  <p><small>Marking</small></p>  <p><small>Top view of burner</small></p> |

| Clause and requirement | "Giant" 2 wick type burner | "Panda" 1 wick type burner | "Giant" 1 wick single square type burner | "Giant" 1 wick single round wick type burner |
|------------------------|--|--|--|---|
| |  <p>Burner side view</p>  <p>Burner components</p>  <p>Reaction to being knocked over (See additional test 2 on P8)</p> |  <p>Burner components</p>  <p>Burner side view</p>  <p>Reaction to being knocked over (See custom test 2 on P8)</p> |  <p>Burner components</p>  <p>Reaction to being knocked over (See additional test 2 on P8)</p> |  <p>Side view of burner</p>  <p>Burner components</p>  <p>Reaction to being knocked over (See additional test 2 on P8)</p> |