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**SANS 927:2022**

Edition 3.4

# **SOUTH AFRICAN NATIONAL STANDARD**

## **Precast concrete kerbs, edgings and channels**

**WARNING**

**This document references other  
documents normatively.**

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**Table of changes**

<b>Change No.</b>	<b>Date</b>	<b>Scope</b>
Amdt 1	2007	Amended to insert figure numbers and specific sizes of product types in the table.
Amdt 2	2013	Amended to update referenced standards.
Amdt 3	2019	Amended to update definitions and requirements, and to delete the annex on notes to purchasers.
Amdt 4	2022	Amended to update the subclause on procedure.

**Foreword**

This South African standard was prepared by National Committee SABS/TC 081/SC 01, *Construction materials, products and test methods – Cement, lime and concrete*, in accordance with procedures of the South African Bureau of Standards, in compliance with annex 3 of the WTO/TBT agreement.

This document was approved for publication in March 2022.

This supersedes SANS 927:2019 (edition 3.3).

A vertical line in the margin shows where the text has been technically modified by amendment No. 4.

Annex B is for information only.

**Amdt 3**

**Compliance with this document cannot confer immunity from legal obligations.**

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## Precast concrete kerbs, edgings and channels

### 1 Scope

This standard specifies the dimensional and physical requirements for various types of precast concrete kerbs, edgings and channels intended for use in the construction of roads and footpaths.

### 2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this standard. All standards are subject to revision and, since any reference to a standard is deemed to be a reference to the latest edition of that standard, parties to agreements based on this standard are encouraged to take steps to ensure the use of the most recent editions of the standards indicated below. Information on currently valid national and international standards can be obtained from the South African Bureau of Standards.

ASTM C 494, *Standard specification for chemical admixtures for concrete.*

SANS 1083, *Aggregates from natural sources – Aggregates for concrete.*

~~SANS 1491-1, *Portland cement extenders – Part 1: Ground granulated blast furnace slag.*~~ **Amdt 2**

~~SANS 1491-2, *Portland cement extenders – Part 2: Fly ash.*~~ **Amdt 2**

~~SANS 1491-3, *Portland cement extenders – Part 3: Silica fume*~~ **Amdt 2**

SANS 50450-1/EN 450-1, *Fly ash for concrete – Part 1: Definition, specifications and conformity criteria.* **Amdt 2**

SANS 50450-2/EN 450-2, *Fly ash for concrete – Part 2: Conformity evaluation.* **Amdt 2**

SANS 53263-1/EN 13263-1, *Silica fume for concrete – Part 1: Definitions, requirements and conformity criteria.* **Amdt 2**

SANS 53263-2/EN 13263-2, *Silica fume for concrete – Part 2: Conformity evaluation.* **Amdt 2**

SANS 55167-1/EN 15167-1, *Ground granulated blast furnace slag for use in concrete, mortar and grout – Part 1: Definitions, specifications and conformity criteria.* **Amdt 2**

SANS 55167-2/EN 15167-2, *Ground granulated blast furnace slag for use in concrete, mortar and grout – Part 2: Conformity evaluation.* **Amdt 2**

SANS 50197-1/EN 197-1, *Cement – Part 1: Composition, specifications and conformity criteria for common cements.* **Amdt 2**

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### **3 Definitions**

For the purposes of this standard, the following definitions apply.

#### **3.1**

##### **acceptable**

acceptable to the authority administering this standard, or to the parties concluding the purchase contract, as relevant

#### **3.2**

##### **cementitious binder**

common cement that complies with the requirements of SANS 50197-1 or blends of certain types of common cement and cement extenders that comply with the requirements of SANS 55167-1, SANS 50450-1, SANS 50450-2, SANS 50934-6, SANS 53263-1, SANS 53263-2, or SANS 50934-2

**Amdt 3**

#### **3.3**

##### **defective**

product that fails in one or more respects to comply with the requirements of the standard

**Amdt 3**

#### **3.4**

##### **face**

<of kerb, edging or channel> surface that is exposed after the product has been set in place for use

**Amdt 3**

#### **3.5**

##### **product**

kerb, an edging or a channel that is made from precast concrete

**Amdt 3**

### **4 Requirements**

#### **4.1 Materials**

##### **4.1.1 Cementitious binders**

**Amdt 3**

The cement used shall comply with the requirements of SANS 50197-1.

##### **4.1.2 Aggregates**

Aggregates used shall consist of natural sand or crushed or uncrushed gravel, stone or rock or any combination of these, that complies with the relevant requirements of SANS 1083.

**Amdt 3**

##### **4.1.3 Water**

Water used in the mixing of concrete shall comply with the requirements of SANS 10100-2.

**Amdt 3**

##### **4.1.4 Admixtures**

Any admixtures used in the mixing of concrete shall comply with the requirements of SANS 10100-2.

**Amdt 3**

##### **4.1.5 Supplementary cementitious materials**

Supplementary cementitious materials shall comply with the requirements of SANS 55167-1, SANS 55167-2, SANS 50450-1, SANS 50450-2, SANS 53263-1 and SANS 53263-2.

**Amdt 2**

#### **4.2 Type**

The type (and size, if applicable) of kerb, edging or channel shall be one of those shown in the applicable figure in table 1, 2 or 3, as required. **Amdt 1; amdt 3**

### **4.3 Appearance**

All products shall comply with the following:

- a) they shall be free from cracks other than hairline cracks;
- b) the faces shall be free from visible twist and dents;
- c) arrises shall be truly formed and shall conform to those shown in the figures in table 1, 2 or 3, as relevant;
- d) there shall be no patching of defective surfaces or edges; and
- e) the colour of the products shall be uniform.

### **4.4 Dimensions**

All dimensions shall conform to the appropriate values given in table 1, 2 or 3, as relevant, subject to a tolerance of  $\pm 3$  mm.

**Length:** Unless otherwise required, the length of units shall be  $1 \text{ m} \pm 3 \text{ mm}$ . **Amdt 3**

**Straightness:** The deviation from straightness of the longitudinal edges of the product shall not exceed 3 mm/m in length.

**Squareness:** The deviation from squareness of units shall not exceed 1 mm per 200 mm.

**Radius:** Radii shall be as specified in table 1, 2 or 3, as relevant.

### **4.5 Transverse strength**

When determined in accordance with 7.3, the average failing load shall be not less than the appropriate value given in table 1, 2 or 3, as relevant.

## **5 Identification of product**

Each consignment of kerbs, edgings or channels shall be accompanied by a dispatch or consignment note that contains the following information:

- a) the manufacturer's name or trade name or trade mark;
- b) the date of manufacture (which may be a serial number or may be given in code);
- c) the type of kerb (and size if applicable), edging or channel (see 4.2); and **Amdt 1**
- d) the dimensions, if applicable.

## **6 Sampling**

An acceptable sampling method of test specimens shall be used. (See annex B.)

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### **7 Inspection and methods of test**

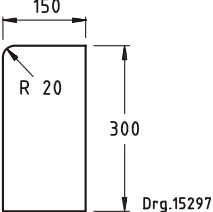
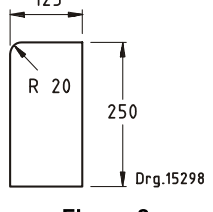
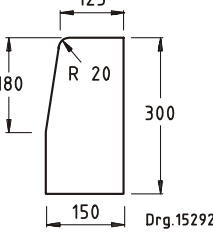
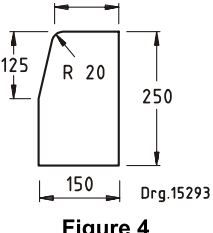
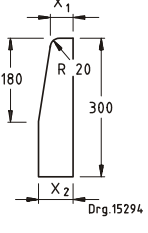
#### **7.1 Inspection**

Inspect each product for compliance with 4.3.

#### **7.2 Dimensions**

By using suitable means and sufficient accuracy, measure the dimensions and radii given in tables 1, 2 and 3, and measure the straightness and the squareness of the test specimens.

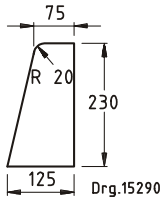
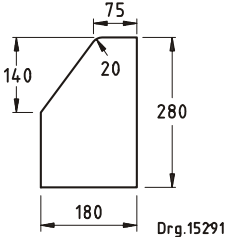
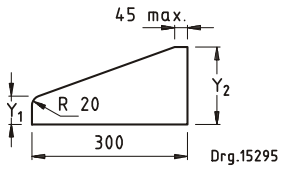
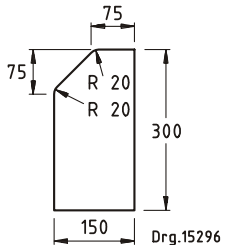
**Table 1 — Sections, dimensions and strength of kerbs<sup>a</sup>**

1 Type	2 Sections and dimensions mm	3 Minimum transverse strength kN														
Rectangular	 <p><b>Figure 1</b></p>	22														
	 <p><b>Figure 2</b></p>	13														
Half-battered	 <p><b>Figure 3</b></p>	22														
	 <p><b>Figure 4</b></p>	19														
	 <table border="1"> <thead> <tr> <th>Size</th> <th>X<sub>1</sub></th> <th>X<sub>2</sub></th> <th>Size</th> <th>Strength</th> </tr> </thead> <tbody> <tr> <td>a</td> <td>62</td> <td>75</td> <td>a</td> <td>5,5</td> </tr> <tr> <td>b</td> <td>75</td> <td>100</td> <td>b</td> <td>11</td> </tr> </tbody> </table> <p><b>Figure 5</b></p>	Size	X <sub>1</sub>	X <sub>2</sub>	Size	Strength	a	62	75	a	5,5	b	75	100	b	11
Size	X <sub>1</sub>	X <sub>2</sub>	Size	Strength												
a	62	75	a	5,5												
b	75	100	b	11												
<p><sup>a</sup> As required.</p>																

Amdt 1;amdt 3

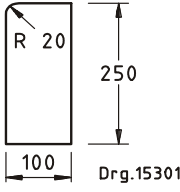
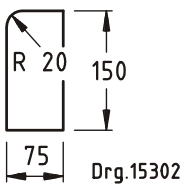
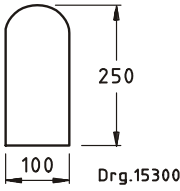
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**Table 1 (concluded)**

1	2	3																									
Type	Sections and dimensions mm	Minimum transverse strength kN																									
Battered	 <p><b>Figure 6</b></p>	8																									
Mountable	 <p><b>Figure 7</b></p>	23																									
	 <table border="1"> <thead> <tr> <th>Size</th> <th>Y<sub>1</sub></th> <th>Y<sub>2</sub></th> <th>Size</th> <th>Strength</th> </tr> </thead> <tbody> <tr> <td>a</td> <td>50</td> <td>150</td> <td>a</td> <td>11</td> </tr> <tr> <td>b</td> <td>75</td> <td>175</td> <td>b</td> <td>15,5</td> </tr> <tr> <td>c</td> <td>100</td> <td>200</td> <td>c</td> <td>20,5</td> </tr> <tr> <td>d</td> <td>125</td> <td>225</td> <td>d</td> <td>26,5</td> </tr> </tbody> </table> <p><b>Figure 8</b></p>	Size	Y <sub>1</sub>	Y <sub>2</sub>	Size	Strength	a	50	150	a	11	b	75	175	b	15,5	c	100	200	c	20,5	d	125	225	d	26,5	
	Size	Y <sub>1</sub>	Y <sub>2</sub>	Size	Strength																						
a	50	150	a	11																							
b	75	175	b	15,5																							
c	100	200	c	20,5																							
d	125	225	d	26,5																							
 <p><b>Figure 9</b></p>	21																										
NOTE The tolerance of longitudinal and radial dimensions is ± 3 mm.																											
a As required.																											

Amdt 1; amdt 3

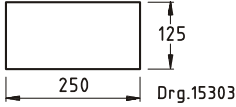
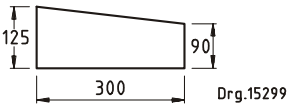
**Table 2 — Sections, dimensions and strength of edgings<sup>a</sup>**

1	2	3
Type	Sections and dimensions mm	Minimum transverse strength kN
Rectangular	 <p>Figure 10</p>	9
	 <p>Figure 11</p>	2,5
Half-round	 <p>Figure 12</p>	9
NOTE The tolerance of longitudinal and radial dimensions is $\pm 3$ mm.		
<sup>a</sup> As required.		

Amdt 1; amdt 3

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**Table 3 — Sections, dimensions and strength of channels<sup>a</sup>**

1	2	3
Type	Sections and dimensions mm	Minimum transverse strength kN
Rectangular	 <p style="text-align: center;"><b>Figure 13</b></p>	13
Tapered	 <p style="text-align: center;"><b>Figure 14</b></p>	11
NOTE The tolerance of longitudinal and radial dimensions is $\pm 3$ mm.		
<sup>a</sup> As required.		

Amdt 1; amdt 3

### 7.3 Transverse strength

#### 7.3.1 Apparatus

##### 7.3.1.1 Testing machine, that

- a) is of sufficient capacity to be capable of applying a flexural load at a rate of 20 N/min/mm of width of the specimen,
- b) is accurate to within 1,5 % of the applied test load,
- c) has two steel bearing platens with hardened faces,
- d) has an upper platen with a spherical seating, a bearing face width of 50 mm and a length that is at least equal to the width of the specimen, and
- e) has a lower platen fitted with two level and parallel self-aligning bearers of 40 mm diameter, 750 mm apart (centre to centre), and of length at least equal to the width of the specimen.

**7.3.1.2 Hardwood fillet**, used for rectangular specimens, of width 50 mm and of the same length as the width of the specimen. The fillet is in contact with both the upper platen and the specimen over the full width of the specimen.

**7.3.1.3 Hardwood wedge**, used for battered, mountable or half-round specimens, the face of which is complementary (i.e. so shaped that the cross section of the wedge-and-specimen assembly is rectangular) and provided with an end plate (or an overhang of the wedge) to prevent slipping.

### **7.3.2 Preparation of test specimens**

Before testing, immerse three specimens in water for  $24 \text{ h} \pm 2 \text{ h}$  at a temperature in the range of  $14 \text{ }^\circ\text{C}$  to  $26 \text{ }^\circ\text{C}$ .

### **7.3.3 Procedure**

**7.3.3.1** Support the specimen on the bearers on the lower platen (with the wide plane down). |  
Amdt 4

**7.3.3.2** Position the bearing face of the upper platen at midspan of the specimen and across the upper surface of the specimen parallel to the supporting bearers.

**7.3.3.3** Interpose the hardwood fillet or wedge between the platen and the specimen. A bedding of soft board can be used for proper contact between the fillet and the specimen if necessary.

**7.3.3.4** Apply the load at a rate of  $20 \text{ N/min/mm}$  width of the specimen until the specimen fails.

**7.3.3.5** Record the maximum load applied.

**7.3.3.6** Repeat 7.3.3.1 to 7.3.3.5 for the other two specimens.

### **7.3.4 Calculation**

Report the average of the results so obtained as the average failing load of the sample and check for compliance with 4.5. If the failing load of any individual specimen is less than 80 % of the specified average failing load, deem the sample to be defective.

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## **Annex A**

Deleted by amendment No. 3.

## **Annex B** (informative)

### **Quality verification of precast concrete kerbs, edgings and channels**

**B.1** When a purchaser requires ongoing verification of the quality of precast concrete kerbs, edgings and channels, it is suggested that, instead of concentrating solely on evaluation of the final product, he also direct his attention to the manufacturer's quality system. In this connection it should be noted that SANS 9001 covers the provision of an integrated quality system.

**B.2** If no information about the implementation of quality control or testing during manufacture is available to help in assessing the quality of a consignment, and a purchaser wishes to establish by inspection and testing of samples of the final product, whether a consignment of the product complies with this standard, a sampling plan based on applicable statistical principles should be agreed upon between the supplier and the purchaser.

It should be noted that

- a) such a sampling plan applies only to ready-for-use products sampled in accordance with an agreed procedure, and
- b) if another sampling plan is to be used, a clear statement should be made as to the objective of the sampling as described in the method.

## **Bibliography**

SANS 9001/ISO 9001, *Quality management systems – Requirements*.

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