



a world class African city



TITLE SPECIFICATION FOR FLEXIBLE PROTECTIVE PVC SLEEVES FOR UNDERGROUND DRILLING

REFERENCE CP_TSSPEC_134
REV 2
DATE: JULY 2021
PAGE: 1 OF 12
REVISION DATE: AUGUST 2021

TABLE OF CONTENTS

Table with 2 columns: Section Name and Page. Includes sections like FOREWORD (3), INTRODUCTION (4), 1 SCOPE (4), 2 NORMATIVE REFERENCES (4), 3 REQUIREMENTS (4), 4 PHYSICAL PROPERTIES (5), 5 END CAPS (6), 6 TESTS (6), 7 MARKING AND PACKAGING (6), 8 DOCUMENTATION (6), 9 QUALITY MANAGEMENT (8), 10 HEALTH AND SAFETY (8).

**SPECIFICATION FOR FLEXIBLE
PROTECTIVE PVC SLEEVES FOR
UNDERGROUND DRILLING**

REFERENCE REV
CP_TSSPEC_134 **2**
PAGE **2** OF **13**

11 ENVIRONMENTAL MANAGEMENT	8
ANNEX A - Bibliography	9
ANNEX B - Revision information	10
ANNEX C – Item 1 – FLEXIBLE PROTECTIVE SLEEVE – SAP NO. 932	11
ANNEX D – Stock Items	13

FOREWORD

Recommendations for corrections, additions or deletions should be addressed to the:

Technology Services Manager
City Power Johannesburg (Pty) Ltd
P O Box 38766
Booyens
2016

INTRODUCTION

The protective sleeve will be used to provide a ready means of drawing cable under streets and pavements, to ensure the safety of persons engaged in excavating work in the vicinity of such cables and to afford protection to the cables that will be subject to loads due to heavy transport passing in the road above.

1 SCOPE

This specification covers City Power's requirements for flexible protective PVC piping.

2 NORMATIVE REFERENCES

The following documents contain provisions that, through reference in the text, constitute requirements of this specification. At the time of publication, the editions indicated were valid. All standards and specifications are subject to revision, and parties to agreements based on this specification are encouraged to investigate the possibility of applying the most recent editions of the documents listed below.

SANS 791:	Unplasticised polyvinyl chloride (uPVC) sewer and drain pipes and pipe fittings
SANS 1222:	Classification of degrees of protection provided by enclosures
SANS 1601:	Structured wall pipes and fittings of uPVC for buried drainage and sewerage systems.
EN 500861-2-4:	Particular requirements for conduit systems buried underground.

3 REQUIREMENTS

3.1 General

The flexible protective PVC sleeve shall comply with EN 50086-2-4.

3.2 Type

The protective sleeve shall:

- a) Be constructed from black high density polyethylene (HDPE).
- b) Be supplied with pilot string or draw-wire.
- c) Be in a coil of 100m in length.
- d) Have a nominal outside diameter of 110mm.
- e) Have a wall thickness of between 2,3mm and 2,8mm.

- f) Be supplied with a knock on coupling and end caps at either end of the sleeve.
- g) Be suitable for normal duty use.

3.3 Construction

The protective sleeve shall:

- a) Be of a double wall with an outer corrugated type construction.
- b) Have a bore that is true and smooth.
- c) Be impact and chemical resistant and shall have good thermal conductivity of at least 0.4W/mK for better dissipation of heat generated by cables.
- d) Contain no recycled or pitch fibre material.

3.4 Flexibility

The protective sleeve shall be flexible to facilitate the installation of the sleeve around immovable objects.

3.5 Friction

The protective sleeve shall have a low co-efficient of friction to accommodate the easy draw of cables through the sleeve.

3.6 Jointing

Jointing of the protective sleeve shall be done by means of the push on coupling which shall have an IP 30 rating as per SANS 1222.

4 PHYSICAL PROPERTIES

4.1 Impact

The protective sleeve shall show no signs of splits and cracks when subject to an impacted force, such as rough handling or compaction.

4.2 Compression

4.2.1 The resistance to impact shall be normal, as per EN 50086-2-4.

4.2.2 The flexible HDPE protective sleeves shall be Type 450, as per En 50086-2-4.

4.3 Temperature

The protective sleeve shall be capable of dissipating the heat (working temperature of at least 70 °C) generated by the cable.

4.4 Ultra violet

The protective sleeve, although intended to be buried underground, shall be UV resistant for storage purposes up to one year.

5 END CAPS

End caps for sealing the open ends of sleeves already laid in the ground, but not yet installed with cable, shall be provided for both ends of the sleeve. The end caps shall fit securely into the sleeve ends.

6 TESTS

6.1 Type test

6.1.1 The protective sleeve shall be type tested as per EN 50086-2-4.

6.1.2 Type tests shall be performed by an accredited laboratory.

6.2 Routine test

Visually examine each sleeve for compliance with the relevant requirements of this specification.

7 MARKING AND PACKAGING

7.1 Marking

7.1.1 All protective sleeves shall have the 110 mm nominal size indelibly marked on the sleeve.

7.1.2 The manufacturer's trademark or name shall be on all protective sleeves.

7.1.3 The duty of the sleeve, i.e. "normal" shall be indelibly marked on the sleeve.

7.1.4 The classification code "450" shall be marked on the sleeve.

7.1.5 The markings shall be spaced at intervals not longer than 3m apart.

7.2 Packing

All flexible protective sleeves shall be securely coiled in 100m lengths.

8 DOCUMENTATION

8.1 Documentation shall be submitted in a technical catalogue format.

**SPECIFICATION FOR FLEXIBLE
PROTECTIVE PVC SLEEVES FOR
UNDERGROUND DRILLING**

REFERENCE REV
CP_TSSPEC_134 **2**
PAGE 7 OF 13

- 8.2 The catalogue shall specify the protective sleeve sizes, dimensions, reference number, and whether the sleeves offered are in compliance with the EN 50086-2-4 or alternative.
- 8.3 Test reports shall be provided.

9 QUALITY MANAGEMENT

- 9.1 The supplier (deemed to be an organization that undertakes any manufacturing or assembly operation) shall have a formally documented and implemented quality management system (QMS) that, is a minimum that meets with the requirements of the international code of practice for quality systems ISO 9002. City Power reserves the right to audit quality management systems for suitability and effectiveness, and to verify all goods for conformance prior to delivery.
- 9.2 Foreign and third party manufacturers, shall, in addition, hold valid certification of their quality management system. Such certification shall be from a national quality systems certification body (Registrar), duly accredited by a QMS accreditation body, which is signatory to a mutual recognition agreement with South Africa.

10 HEALTH AND SAFETY

A health and safety plan shall be set up in order to ensure proper management and compliance of the flexible protective PVC sleeves for underground drilling. Guidance on the requirements of a health and safety plan may be found in OHSAS 18001:2007 standards. This is to ensure that the services provided conforms to standard operating procedures and City Power SHERQ Policy. The details shall be subject to agreement between City Power and the Supplier.

11 ENVIRONMENTAL MANAGEMENT

An environmental management plan shall be set up in order to ensure the proper environmental management and compliance of the flexible protective PVC sleeves for underground drilling for the entire life cycle (i.e. during design, development). Guidance on the requirements for an environmental management TPVS may be found in ISO 14001:2015 standards. The details shall be subject to agreement between City Power and the Supplier. This is to ensure that the asset created conforms to environmental standards and City Power SHERQ Policy.

ANNEX A - Bibliography

None

ANNEX B - Revision information

DATE	REV. NO.	NOTES
July 2004	0	First issue
Aug. 2005	1	Foreword: New list of members
June 2021	2	General Editing 10. HEALTH AND SAFETY 11. ENVIRONMENTAL MANAGEMENT New Study Group committee

ANNEX D – Stock Items

Material Group: PIPE-DST

Item	SAP No	SAP Short Description	SAP Long Description
1	932	SLEEVE PVC 100M X 110MM FLEXIBLE	SLEEVE, PROTECTIVE, FLEXIBLE, BLACK HIGH DENSITY POLYETHYLENE, 100M IN LENGTH WITH AN OUTER DIAMETER OF 110MM, SUPPLIED WITH PILOT STRING, FITTED WITH END CAPS AND COUPLING PER END. ITEM SPECIFICATION NO. CP_TSSPEC_134