Specification No. PF 19012A

EFLEX Square Duct

Specification

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1. Scope

This specification applies to EFLEX Square Duct (hereinafter referred to as the “Duct”) used as a conduit for underground electrical cables.

The Duct corresponds to Appendix 3 of JIS C 3653 “Installation Methods of Power Cables　Buried Ground”.

2. Type

Available Duct sizes are shown in Table 1.

Table 1. Type

Nominal Diameter	Part Number
φ50	KFEP-50
φ81	KFEP-81
φ100	KFEP-100
φ130	KFEP-130
φ150	KFEP-150

3. Structure & Material

The structure & material of the Duct is shown in Table 2.

The connector parts are installed at both ends of the Duct body to join adjacent pieces.

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Table 2. Structure & Material

Structure		Material
Body		High-Density Polyethylene
Joint	Rubber Seal	Synthetic Rubber
	Stopper (Ring)	Rigid Plastic

4. Construction

4.1 Appearance & Shape

The appearance of the Duct shall be free of wear or scratches to the inner or outer surfaces that may cause problems in practical use.

The Duct has a corrugated structure and includes built-in male and female connectors at either end. The colour of the Duct is black.

4.2 Dimensions

The dimensions of each Duct body is shown in the Table 3.

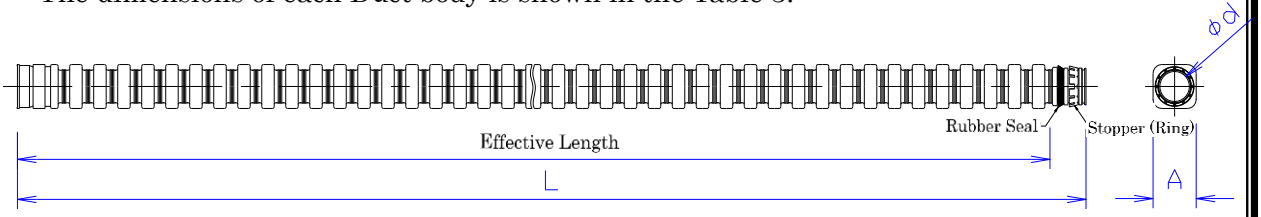


Table 3 Dimension

Part Number	Outer Diameter A(mm)	Inner Diameter φd(mm)	Total Length L(mm)	(Reference) Effective length B (mm)
KFEP-50	73±3.5	50.0±3.5	5,300±70	5,250
KFEP-81	105±5	81.0±5	5,300±70	5,250
KFEP-100	125±5	100.0±5	5,300±70	5,250
KFEP-130	162±7	133.0±7	5,300±70	5,250
KFEP-150	184±7	153.0±7	5,300±70	5,250

5. Performance

The performance of the Duct complies with the required performance as shown in Table 4.

Table 4 Performance

Item	Required Performance	Relevant test method paragraph
Dimensions	The dimensions shall meet the specifications in Table 3.	6.1
Tensile Strength	19.6 N/mm^2{2.0kgf/mm^2} or more	6.2
Compression Strength	The Relative deflection of the outer diameter shall be 3.5 % or less and no cracks shall appear in any part.	6.3
Fire-resistant	Must self-extinguish within 30 seconds	6.4
Water-tightness at joint	There shall be no leakage under the condition of 0.05 MPa for 10 minutes.	6.5
Pull-out strength	The joint shall not be pulled apart by pulling with a speed of 20mm/min and a power of 500N.	6.6

6. Test

6.1 Dimensions

The dimensions described in Table 3 are measured with calipers.

The diameter is measured at two or more points (perpendicular to the tube axis) and an average measurement recorded.

6. 2 Tensile Strength Test

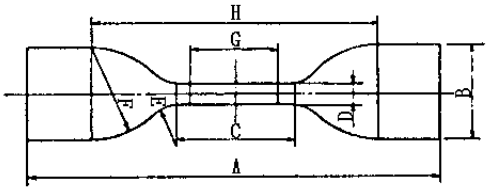
Prepare 5 test pieces of the Duct material, as shown in figure 1 Perform tensile strength test at a speed of 50mm/min. Calculate the tensile strength by taking the average result of the 5 pieces using the following formula:

$\sigma = F/A$

σ : Tensile strength

F : Maximum measured load

A : Original minimum cross-sectional area of the test piece (mm2)



SIGN	A	B	C	D	E	F	G	H	Thickness
Measure(mm)	115	25	33	6	14	25	25	80	2

Figure 1 Test Pieces

6.3 Compression Strength Test

The compression strength of the Duct will be determined in accordance with the test method as provided in Paragraph 5.1 “Compressive Strength Test,” Appendix 3, JIS C 3653.

(1) Prepare 250mm material specimen from the duct.

(2) Prepare the testing device illustrated in Figure 2

(3) Maintain the specimen and the testing device at a temperature of 20±2℃ for 2 hours and complete the test at that temperature.

(4) Sandwich the specimen between two flat steel plates and apply the compression load given in Table 5 at a rate of 20mm/min in a direction perpendicular to the pipe axis.

Table 5 Compression Load

Nominal Diameter	Compression Load(N)
φ50	1,510
φ81	1,900
φ100	1,900
φ130	2,917
φ150	3,287

○Deflection rate

$$\text{Deflection rate (\%)} = \frac{\text{Height Before Loading} - \text{Height After Loading}}{\text{Height Before Loading}} \times 100$$

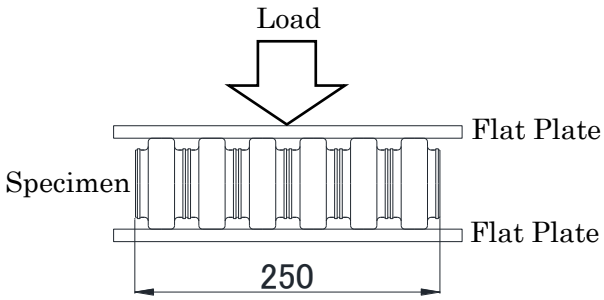


Figure 2 Compression Strength Test

6.4 Fire-resistance Test

The Fire-resistance of the Ducts will be determined in accordance with the test method as provided in Paragraph 6.2 "Fire-resistant Test," Appendix 3, JIS C 3653.

(1) Prepare a material specimen of 600 mm in length from the Duct.

(2) Hold the specimen vertically to the ground and make the lower 100mm portion contact the tip of the reducing Bunsen burner flame. Note that the flame length must be adjusted to around 100mm for the oxidative flame and 50mm for the reducing flame. The burner must be tilted at 45 degrees from the horizontal level.

(3) The time of contact with the flame is as shown in Table 6.

Table 6. Time of contact with the flame

Thickness of specimen (mm)	Time of contact with the flame(s)
Above 1.0 Under1.5	25
Above 1.5 Under 2.0	35
Above 2.0 Under 2.5	45
Above 2.5 Under 3.0	55
Above 3.0 Under 3.5	65
Above 3.5 Under 4.0	75
Above 4.0 Under 4.5	85

(4) Remove from the flame after the specified contact time is over and verify whether or not the specimen self-extinguishes within 30 seconds.

6.5 Water-tightness at joint

Prepare the joined test pieces plugged at both ends in a tank filled with water. After holding the products under the condition 0.05MPa for 10 minutes, the product is checked for signs of leakage.

6.6 Pull-out strength

Pull-out strength will be determined by pulling the Joined Ducts with a speed of 20mm/min holding both ends of ducts.

7. Marking

The following items will be marked on the Duct surface.

① Size

② Name or mark of the manufacturer

③ Manufacturing date or its abbreviation

8. Other notes

The specifications described in this document are subject to change without notice for product improvement or other reasons.