



Certificate No: 105790

Project: Witness Testing of HDPE Cable Ducting in accordance with ENA TS 12-24 for Class 3 Ducts 105790

Client: Radius Systems Ltd.

Date: 03 February 2016

Inspection Date: 12th January to 14th January 2016

This certificate is issued to RADIUS SYSTEMS LIMITED to certify that tests in accordance with ENA TS 12-24 have been carried out on a range of duct sizes between the dates 12th January to the 14th January 2016 inclusive at Radius Systems Ltd manufacturing location situated at Halfpenny Valley Industrial Estate, Portadown Road, Lurgan, Northern Ireland

1. Cable duct description:

The following HDPE duct sizes were tested in accordance with the requirements of ENA TS 12-14 for Class 3 ducts. Sizes in millimetres.

38-32
44-38
50-43
63-53
63-56
107-97

Table1 Sizes of HDPE Ducts Tested

The first measurement indicates the outside diameter the latter indicates the internal diameter.



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2. Standard Reference:

Energy Networks Association Technical Specification 12-14 Issue 3 2014
(ENA TS 12-24 Specification for plastic ducts for buried electric cables).

3. The following tests were completed:

Standard Reference Clause	Description	Requirement	Test Method
ENA TS 12-24	Markings	Ducts, couplings and bends shall be coloured red throughout their length.	Visual Inspection
7.1			
7.2		The duct shall be marked "ELECTRIC CABLE DUCT C3_MFR".	Visual Inspection
7.2 a)		Class number shall be inserted after "C".	Visual Inspection
7.2 b)		"MFR" shall be replaced by manufacturer's reference.	Visual Inspection
7.2 c & d)		Minimum print size of 6mm for ducts or 50mm outside diameter and less, 8mm for ducts of more than 50mm outside diameter.	Measured
7.2 e)		The marking shall be repeated three times per metre.	Measured
7.3		Each length of small diameter cable duct shall, in addition, be marked on one line only with the metre count every metre.	
7.4		Classification code shall be marked at 1-metre intervals.	Measured
7.6		The marking shall be durable and easily legible	EN 61386-1





ENA TS 12-24 8	Dimensions		
8.2.2	Preparation of Coiled Samples	Relaxation procedure to condition duct prior to measurement.	
8.2.3	Inside Diameter Maximum Ovality Length		Clause 8.0, Table 8.1
ENA TS 12-24 9.1	Construction	There shall be no sharp edges, burrs or surface projections which are likely to damage insulated conductors or cables or inflict injury to the installer.	Visual Inspection
9.1 a)		The cross-section of all ducts shall be circular, and the internal bore shall be smooth and substantially concentric with the external surface.	Visual Inspection
9.1 b)		Both ends of ducts shall be cleanly cut perpendicular to the central axis of the duct.	Visual Inspection
9.1 c)		The material shall be free from cracks, inclusions, delamination or other defects.	Visual Inspection
9.1 d)		Any profiled surface of a cellular wall structure shall be complete with no break in the walls.	N/A
EN61386-1 9.6	Duct System Assembly	Indicate whether the system can be disassembled and how is this achieved.	Joint disassembled
ENA TS 12-24 10.2	Resistance to Deformation	When reaching the deflection of 5% of the average ID, the applied force shall be at least 450 Newtons at 23°C.	Clause 16.4





ENA TS 12-24 10.3	Impact Test @ -5°C	A 5kg weight is to be dropped onto 14 x 200-mm samples of ducting (samples conditioned at -5°C without evidence of disintegration or cracking that would allow ingress of water or light between the inside and outside.	Clause 10.3
ENA TS 12-24 10.4	Bending Test		EN 61386-24
ENA TS 12-24 14.1.2	Degree of protection - ingress of foreign objects		EN 60529
ENA TS 12-24 16.5	Heat Reversion	Change in measured length shall be less than 5% of the original measured length when heated to a temperature of 150°C for a period of one hour.	Clause 16.5.3 b)
ENA TS 12-24 16.2	Vicat Softening Test	The Vicat Softening Temperature shall not be less than 75°C using a load of 0.98kg	Clause 16.2 EN727
ENA TS 12-24 16.3	Static Friction Coefficient Test	The Static Friction Coefficient shall not exceed 0.27	Clause 16.3

4. Tests in accordance with ENA TS 12-24 have been carried out on a range of duct sizes between the dates 12th January to the 14th January 2016 inclusive at Radius Systems Ltd manufacturing location situated at Halfpenny Valley Industrial Estate, Portadown Road, Lurgan, Northern Ireland. The results of these tests indicate that ducting manufactured at this location exceed the minimum or maximum requirements stipulated in ENA TS 12-24 for Class 3 ducts.





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