

## **FLEX-PLUS<sup>®</sup> BLUE<sup>™</sup> ENT**

### What UL standard covers ENT?

UL1653 Electrical Nonmetallic Tubing. This standard is a bi-national standard between the United States and Canada. CSA identifies this standard as CAN/CSA 22.2 No. 227.1-97.

### What fittings may be used with ENT?

- UL lists Carlton's one-piece Quick Connect fittings for use with our ENT.
- UL lists 1/2" through 2" Schedule 40 fittings (couplings and adapters) for use with ENT. When using the Schedule 40 fittings, ENT cement along with the specific cementing instructions are to be utilized (see the Flex-Plus Blue ENT product catalog).

### What fittings may be used in applications that require concrete encasement?

- All the fittings mentioned in question 2.
- The A243 series terminators require a foam washer to be concrete tight.
- None of Carlton's fittings are required to be wrapped in tape for concrete encasement applications.

### What is the temperature limit of ENT?

The ambient temperature limit is an arbitrary assignment by UL that is 10°C less than the heat distortion temperature of the rigid PVC compound, which is 60°C. Therefore, the ambient temperature limit is 50° (122°F). The low temperature installation limit is -20°C (-4°C).

### Why can't ENT be installed outdoors?

ENT was designed as an in-building product (see Article 362 of the 2002 NEC). Since ENT does not have ultraviolet (UV) inhibitors added to the PVC compound such as our rigid PVC conduit, it is more affected by the ultraviolet rays from the sun. We know from experience that unprotected outside storage of ENT may result in brittleness in a 3 to 4 month period. ENT from the factory is stored with a white plastic wrap for storage and shipping to protect the product from the sun.

## **FREQUENTLY ASKED QUESTIONS**

## **FLEX-PLUS<sup>®</sup> BLUE<sup>™</sup> ENT**

### [What is the fire rating of ENT?](#)

ENT does not have a fire rating since the building codes do not require it. Before ENT (or RNMC) can be used in a fire rated wall or floor/ceiling assembly, the assembly must be tested with the ENT (or RNMC) included to determine if these combustible materials will compromise the current fire ratings of these systems. See the NER-290 report which documents such test and describes in detail the use of ENT (or RNMC) in these assemblies. Also available is a manual, "Fire Safety of PVC Raceways and The Model Building Codes.

### [Is ENT permitted to penetrate fire rated wall and floor/ceiling assemblies?](#)

Yes, there are many classified through-penetration fire stop assemblies in the UL Fire Resistive Directory (Volume 2). All of those utilizing nonmetallic raceways are summarized in the trough-penetration fire stop summary, which is available from Carlton Technical Services.

### [What is the finish rating specified in section 362.10\(2\) of the 2002 NEC?](#)

It is a means of measuring the resistance of heat transfer of the material that conceals ENT when it is installed in a building that exceeds three stories. 1/2" UL classified gypsum wallboard has a 15 minute finish rating as required by section 362.10(2) of the 2002 NEC. Once a material has obtained a 15-minute finish rating through testing it can be used to protect ENT in wood or steel stud construction.

### [On your ENT product do I need to glue the fittings on or do they just use the snap in feature?](#)

When using schedule 40 fitting ENT, solvent cement is required. Solvent cement is not required when using Carlton's snap on fittings.

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What types of supports are best used in a wood construction (house)?

Section 362.30 of the 2002 NEC permits the boreholes in the wood studs to be the support of the raceway in intervals no more than 3 feet. In lengths longer than three feet, a standard conduit clamp can be used. I have also seen tie wraps and larger "U" shape nails used.

Do you sell an ENT product, such as your Blue Flex-Plus that is listed for direct burial?

Article 362 of the 2002 National Electrical Code, Uses not Permitted, prohibits ENT from being direct buried. We sell a telecommunications/data inner duct called Riser-Gard, which can be direct buried, but it is not for electrical applications. We also sell a product called P&C Flex, which is not UL listed, but is used by utility companies for direct burial. Carflex liquid tight flexible nonmetallic conduit can be direct buried up to and including 1" sizes.

Please let me know the UV rating for the Carlton "Blue" ENT. My customer is quite concerned.

ENT does not have UV inhibitors and should not be used outdoors where exposed to the sun. See Section 362.12(9) of the 2002 National Electrical Code. Carlton make Liquid tight Flexible Nonmetallic Conduit (Carflex), which is listed by UL for use outdoors (Article 356). We also make rigid Schedule 40 and 80 PVC Conduit (Article 352).

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