

A black and white photograph of the Golden Gate Bridge at night, with city lights visible in the background. The bridge's suspension cables and towers are prominent.

FRE COMPOSITES **VS** COATED STEEL

FRE Composites is a pioneer in the composite industry. We've been designing, developing and producing the best fiberglass products in the business since 1958. Using its well-established distribution network, FRE Composites sells a wide range of conduit system products throughout electrical and industrial markets in North America and economically booming countries.

PHYSICAL DIMENSIONS & WEIGHT

Weight differences between Rigid Coated Steel and **HazGuard®** are significant:

- ◆ 2.3 x lighter on 2” trade size
- ◆ 3.4 x lighter on 3” trade size
- ◆ 3.6 x lighter on 4” trade size
- ◆ 4.2 x lighter on 6” trade size

*Calculated on 100 feet of section.

HazGuard® conduit is offered in 20 foot sections* from 2” trade size and up while Rigid Coated Steel is only offered in 10 foot sections.

*Can also be manufactured in 10 foot sections if required.

TYPE OF CONDUIT	TRADE SIZE (Inches)	WALL THICKNESS (Inches)	WEIGHT PER 100FT (Pounds)	LENGTH / CONDUIT (Feet)
RGS	2	0.146	350	10
	3	0.205	751	
	4	0.225	1030	
	6	0.266	1785	
Coated Steel	2	0.190	376	10
	3	0.250	772	
	4	0.270	1089	
	6	0.310	1998	
HazGuard®	2	0.250	152	20
	3		219	
	4		286	
	6		421	

WHAT THIS MEANS:

Even at twice the length **HazGuard®** conduit is still half the weight of steel. Increasing savings on hardware and labor costs.

Needless to say this also comes in handy when installing under bridge structures and in hazardous locations.

PRICE COMPARISON

Rigid Coated Steel conduit is at least **23%** more expensive than **HazGuard®** conduit for 2” and **219%** more expensive for 4”.

This alone is a compelling argument for using HazGuard®

Compared to Rigid Coated Steel, **HazGuard®** product line is:

- ◆ 1.32 x less costly on 2” trade size
- ◆ 1.98 x less costly on 3” trade size
- ◆ 2.29 x less costly on 4” trade size
- ◆ 2.94 x less costly on 6” trade size.

*Calculated on 100 feet section.

TYPE OF CONDUIT	TRADE SIZE (Inches)	WALL THICKNESS (Inches)	WEIGHT PER 100FT (Pounds)	LENGTH / CONDUIT (Feet)	APPROX. PRICE (USD) / 100Ft
RGS	2	0.146	350	10	550
	3	0.205	751		1173
	4	0.225	1030		1627
	6	0.266	1785		3690
Coated Steel	2	0.190	376	10	726
	3	0.250	772		1388
	4	0.270	1089		2000
	6	0.310	1998		4859
HazGuard®	2	0.250	152	20	550
	3		219		700
	4		286		875
	6		421		1650

We propose a **lighter** and **less costly** solution. Nobody likes to throw money out the window...



SUPPORTS

In the past, maximum spacing distance in between supports have been restricting RTRC conduit compared to Rigid Coated Steel conduit span distances. FRE Composites ran a Fact Finding Investigation in concert with UL for the establishment of its own Span distance Listing per article **355.30 b) of the NEC***.

This extended support distance Listing shall allow the installer to review the requirements called by the project specifications.

* Details on NEC Article 355.30 on the next page

TABLE 344.30 (B)(2) Supports for Rigid Metal Conduit

Conduit Size		Maximum Spacing Between Supports	
Metric Designator	Trade Size	m	ft
16 - 21	0.5 – 0.75	3	10
27	1	3.7	12
35 - 41	1.25 – 1.5	4.3	14
53 - 63	2 – 2.5	4.9	16
78 and larger	3 and larger	6.1	20

TABLE 355.30 Supports of Reinforced Thermosetting Resin Conduit (RTRC)
UL Listed File # E53373

Conduit Size		Maximum Spacing between supports	
Metric Designator (mm)	Trade Size (In)	m	ft
21 - 41	0.75 – 1.5	3.05	10
53 - 63	2 – 2.5	4.88	16
78 - 91	3 – 3.5	5.18	17
103	4	5.33	17.5
129 - 155	5 - 6	5.49	18

FRE COMPOSITES® SUPPORTS

355.30 SECURING & SUPPORTING

RTRC shall be installed as a complete system in accordance with **300.18** and shall be securely fastened in place and supported in accordance with **355.30** (A) and (B).

(A) SECURELY FASTENED.

RTRC shall be securely fastened within 900 mm (3ft) of each outlet box, junction box, device box, conduit body, or other conduit termination. Conduit listed for securing at other than 900mm (3ft) shall be permitted to be installed in accordance with the listing.

(B) SUPPORTS.

RTRC shall be supported as required in **Table 355.30**. Conduit listed for support at spacing other than as shown in **Table 355.30** shall be permitted to be installed in accordance with the listing. Horizontal runs RTRC supported by openings through framing members at intervals not exceeding those in **Table 355.30** and securely fastened within 900 mm (3ft) of termination points shall be permitted.

(B) FRE® UL Listing File # is E53373



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CORROSION
RESISTANCE

Let others fight with **RUST**
Go corrosion free with **US**

CORROSION RESISTANCE

HazGuard® conduit definitely outperforms any metallic products. **HazGuard®** conduit is composed of 70 +/- 3 fiberglass to resin ratio. Only metals rust and corrode starting the very first day of its installation. So why worry about rust...

- ◇ Coated Steel, although demonstrating better corrosion resistance than RGS, its product longevity once installed is still at stake. Any chip, punch or cut will be enough to promote the corrosive effects of rust.
- ◇ **HazGuard®** conduit provides great performances over a longer period of time in situations where corrosion is particularly problematic, for example: near salt water, high humidity environments, exposition to temperature variation (power cables being energized and not).

HazGuard® is your lightweight, superior load-bearing solution. It boasts the highest strength to weight ratio of any conduit system while offering superior UV and weathering characteristics. And because it's non-metallic it won't rust or corrode.

FRE Composites offers a 100% corrosion resistant product so the longevity of the installation is not compromised over time.



TRUSTED BY MAJOR INFRASTRUCTURE DEVELOPERS

Tappan Zee Bridge, NY/NJ, USA - Project value: 3.9 Billion USD - Hazguard®



NORTH AMERICA'S LATEST MAJOR BRIDGE CONSTRUCTION

New Champlain Bridge, Montreal, Canada - Project value: 4.24 Billion USD - Hazguard®

| CONCLUSION

HazGuard® products offer:

A much lighter and easier to install alternative than to Rigid Coated Steel.

At least 2 to 3 times lighter

Conduit is offered in 20' section vs. 10' lengths with Rigid Coated Steel.

Saving installation time and man power

Outstanding corrosion resistance.

Simply doesn't corrode

An increased span distance between support.

Hardware savings: hardware and labour costs

A compelling cost reduction vs. Rigid Coated Steel.

Savings per foot ranging from 20% up to over 200%



HazGuard® products:
The best solution for
your project.