

Purple Epoxy-Coated Reinforcement: Q & A

by Peter Fosnough, Epoxy Interest Group of the Concrete Reinforcing Steel Institute

After I penned “Purple Epoxy-Coated Reinforcement: Does Color Make a Difference?” for the Spring 2022 issue of *ASPIRE*[®], several questions have been raised. I will try to succinctly address them.

Why should I specify one over the other? Do I specify either, or both?

Generally, there is no reason to specify one epoxy-coated reinforcement standard over the other standard. Both standards, ASTM A775¹ (green) and ASTM A934² (purple), equally protect the steel from corrosion. In fact, I recommend specifying both to ensure that local capabilities for sourcing are taken into account. However, when in doubt, always specify A775, as it is the most prevalent and readily available material in North America.

Is there any other reason (project, application, etc.) to use one over the other?

Because of the constraints in the coating operation, the finished size of the fabricated reinforcement item

may restrict the use of A934. If the smallest dimension of an item exceeds the capability of an A934 (purple) coater, the material will have to be A775 (green) and then fabricated after coating. For example, a large column on a bridge project required a 12-ft round tie for confinement and the engineer wanted the entire tie to be a single, continuous piece of reinforcement and did not want to use a coupler. The largest diameter the local coater could accommodate using A934 was 10 ft. By specifying A775, the material was coated in approximately 40-ft lengths and then fabricated into a 12-ft round tie with hooks.

How do I find out which fabricators (green or purple) are in my area, or does it matter?

The Concrete Reinforcing Steel Institute (CRSI) maintains a roster of CRSI-certified plants listed by state, which identifies facilities with straight bar lines and those with custom lines.³ Straight bar lines typically focus on

A775 (green) coating. Custom lines typically focus on A934 (purple) coating, but can do both.

Can I “mix” purple bar and green bar on the same project or structural element?

Both purple and green reinforcing bars can be used on the same project or structural elements. However, it is not typical because fabricators of epoxy-coated reinforcing steel usually only produce one type of bar, purple or green.

What about tie wire?

Coated steel tie wire should be used when tying epoxy-coated steel reinforcing bars regardless of the coating color. On small projects, it is not uncommon to use plastic cable ties. Bare metal or abrasive material should not be used or come into contact with the epoxy-coated reinforcing steel.

What about repair?

All bare steel or damaged areas should be repaired to ensure maximum

Photo: Lane Enterprises





protection from corrosion. Regardless of whether the coated material is A775 or A934, all patching material should be specified to meet ASTM A775 Annex A2 requirements. When patching material does not meet these requirements, the corrosion protection of the steel is compromised. When specifying patching material, I recommend that the following language be used: “Patching material shall meet all of the testing performance requirements in Annex A2 of the ASTM A775 specification.”

How well do these reinforcing bars perform in service?

As I mentioned in the previous article, through more than 50 years of use and refinement, epoxy-coated reinforcing steel produced to today’s A775 or A934 standards far exceeds the performance of the product introduced in 1973. A recent University of Kansas study states that “a 100-year design life is possible even in the presence of minor damage.”⁴

What happens if someone bends a purple bar in the field? What are the ramifications?

Because A934 (purple) is not designed to be modified in the field, attempts to bend it will likely cause the coating to fracture and separate from the steel. If damage to the coating occurs, repair (using approved patching material) will be required.

I hope these responses have clarified any lingering questions. Should you have any additional inquiries, feel free to contact me at pfosnough@epoxy.crsi.org.

References

1. ASTM International. 2019. *Standard Specification for Epoxy-Coated Steel Reinforcing Bars*. ASTM A775/A775M-19. West Conshohocken, PA: ASTM International.
2. ASTM International. 2019. *Standard Specification for Epoxy-Coated Prefabricated Steel Reinforcing Bars*. ASTM A934/A934M-19. West Conshohocken, PA: ASTM International.
3. Concrete Reinforcing Steel Institute (CRSI). “CRSI Epoxy Coating Plant Certification Program.” <https://www.crsi.org/index.cfm/certification/plant>.
4. O’Reilly, M. 2022. *Effect of Damaged Area on Service Life of Epoxy-Coated Reinforcement SL Report 22-2*. Lawrence, KS: The University of Kansas Center for Research Inc. <https://iri.ku.edu/sites/iri/files/files/pdfs/SL%20Report%2022-1.pdf>. 

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