

§ 1755.702

7 CFR Ch. XVII (1-1-03 Edition)

(d) For the nonmetallic reinforced design, the conductors are solid copper individually insulated with an extruded solid insulating compound.

(1) The insulated conductors are either laid parallel (two conductor design only) or twisted into pairs (a star-quad configuration is permitted for two pair wires).

(2) The wire structure is completed by the application of nonmetallic reinforcing members and an overall plastic jacket.

(e) All wires sold to RUS borrowers for projects involving RUS loan funds under §§1755.700 through 1755.704 must be accepted by RUS Technical Standards Committee "A" (Telecommunications). For wires manufactured to the specification of §§1755.700 through 1755.704, all design changes to an accepted design must be submitted for acceptance. RUS will be the sole authority on what constitutes a design change.

(f) Materials, manufacturing techniques, or wire designs not specifically addressed by §§1755.700 through 1755.704 may be allowed if accepted by RUS. Justification for acceptance of modified materials, manufacturing techniques, or wire designs must be provided to substantiate product utility and long term stability and endurance.

[61 FR 26074, May 24, 1996]

**§ 1755.702 Copper coated steel reinforced (CCSR) aerial service wire.**

(a) *Conductors.* (1) Each conductor shall comply with the requirements specified in the American National Standard Institute/Insulated Cable Engineers Association, Inc. (ANSI/ICEA) S-89-648-1993, paragraphs 2.1 through 2.1.5. The ANSI/ICEA S-89-648-1993 Standard For Telecommunications Aerial Service Wire, Technical Requirements (approved by ANSI July 11, 1994) is incorporated by reference in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies of ANSI/ICEA S-89-648-1993 are available for inspection during normal business hours at RUS, room 2845, U.S. Department of Agriculture, Washington, DC 20250-1500 or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC. Copies are available from ICEA, P. O. Box 440, South Yarmouth,

MA 02664, telephone number (508) 394-4424.

(2) Factory joints in conductors shall comply with the requirement specified in ANSI/ICEA S-89-648-1993, paragraph 2.1.6.

(b) *Conductor insulation.* (1) The raw materials used for the conductor insulation shall comply with the requirements specified in ANSI/ICEA S-89-648-1993, paragraph 3.1.1.

(2) The raw materials shall be accepted by RUS prior to their use.

(3) The finished conductor insulation shall be free from holes, splits, blisters, or other imperfections and shall be as smooth as is consistent with best commercial practice.

(4) The finished conductor insulation shall comply with the requirements specified in ANSI/ICEA S-89-648-1993, paragraphs 3.1.5 through 3.1.5.4.

(5) The insulation shall have a minimum spot thickness of not less than 0.9 millimeters (mm) (0.03 inches (in.)) at any point.

(c) *Wire assembly.* (1) The two conductors shall be insulated in parallel to form an integral configuration.

(2) The finished wire assembly shall be either a flat or a notched oval. Other finished wire assemblies may be used provided that they are accepted by RUS prior to their use.

(3) The overall dimensions of the finished wire assembly shall be in accordance with the following requirements:

Diameter	Dimensions	
	Minimum mm (in.)	Maximum mm (in.)
Major .....	5.5 (0.22)	8.0 (0.31)
Minor .....	3.0 (0.12)	5.0 (0.19)

(d) *Conductor marking.* The insulated conductors of a finished wire shall be marked in accordance with the requirements specified in ANSI/ICEA S-89-648-1993, paragraph 3.1.4.

(e) *Electrical requirements—(1) Conductor resistance.* The direct current (dc) resistance of each conductor in a completed CCSR aerial service wire shall comply with the requirement specified in ANSI/ICEA S-89-648-1993, paragraph 7.1.2.

(2) *Wet mutual capacitance.* The wet mutual capacitance of the completed CCSR aerial service wire shall comply with the requirement specified in

ANSI/ICEA S-89-648-1993, paragraph 7.1.3.

(3) *Wet attenuation.* The wet attenuation of the completed CCSR aerial service wire shall comply with the requirement specified in ANSI/ICEA S-89-648-1993, paragraph 7.1.4.

(4) *Wet insulation resistance.* The wet insulation resistance of the completed CCSR aerial service wire shall comply with the requirement specified in ANSI/ICEA S-89-648-1993, paragraph 7.1.5.

(5) *Dielectric strength.* (i) The wet dielectric strength between conductors and between each conductor of the completed CCSR aerial service wire and the surrounding water shall comply with the requirement specified in ANSI/ICEA S-89-648-1993, paragraph 7.1.6.

(ii) The dry dielectric strength between conductors of the completed CCSR aerial service wire shall comply with the requirement specified in ANSI/ICEA S-89-648-1993, paragraph 7.1.7.

(6) *Fusing coordination.* The completed CCSR aerial service wire shall comply with the fusing coordination requirement specified in ANSI/ICEA S-89-648-1993, paragraph 7.1.8.

(7) *Insulation imperfections.* Each length of completed CCSR aerial service wire shall comply with the requirement specified in ANSI/ICEA S-89-648-1993, paragraph 7.1.9.

(f) *Mechanical requirements—(1) Impact test.* (i) All CCSR aerial service wires manufactured in accordance with this section shall comply with the unaged impact test specified in ANSI/ICEA S-89-648-1993, paragraph 8.1.2.

(ii) All CCSR aerial service wires manufactured in accordance with this section shall comply with the aged impact test specified in ANSI/ICEA S-89-648-1993, paragraph 8.1.3.

(2) *Abrasion resistance test.* All CCSR aerial service wires manufactured in accordance with this section shall comply with the abrasion resistance test specified in ANSI/ICEA S-89-648-1993, paragraph 8.1.4.

(3) *Static load test.* All CCSR aerial service wires manufactured in accordance with this section shall comply with the static load test specified in

ANSI/ICEA S-89-648-1993, paragraph 8.1.5.

(4) *Plasticizer compatibility test.* All CCSR aerial service wires manufactured in accordance with this section shall comply with the plasticizer compatibility test specified in ANSI/ICEA S-89-648-1993, paragraph 8.1.8.

(g) *Environmental requirements—(1) Cold temperature handling test.* (i) All CCSR aerial service wires manufactured in accordance with this section shall comply with the unaged cold temperature handling test specified in ANSI/ICEA S-89-648-1993, paragraph 8.2.1.

(ii) All CCSR aerial service wires manufactured in accordance with this section shall comply with the aged cold temperature handling test specified in ANSI/ICEA S-89-648-1993, paragraph 8.2.2.

(2) *Light absorption test.* All CCSR aerial service wires manufactured in accordance with this section shall comply with the light absorption test specified in ANSI/ICEA S-89-648-1993, paragraph 8.2.3.

(3) *Low temperature separation test.* All CCSR aerial service wires manufactured in accordance with this section shall comply with the low temperature separation test specified in ANSI/ICEA S-89-648-1993, paragraph 8.2.4.

(4) *Flammability test.* All CCSR aerial service wires manufactured in accordance with this section shall comply with the flammability test specified in ANSI/ICEA S-89-648-1993, paragraph 8.3.

(5) *Wire listing.* All CCSR aerial service wires manufactured in accordance with this section shall comply with the listing requirements specified in ANSI/ICEA S-89-648-1993, paragraph 8.4.

(h) *Identification marker.* Each length of CCSR aerial service wire shall be identified in accordance with ANSI/ICEA S-89-648-1993, paragraph 9.1.4. When surface marking is employed, the color of the initial marking shall be either white or silver.

(i) *Length marking (optional).* (1) Sequentially numbered length marking of the completed CCSR aerial service wire may be used at the option of the manufacturer unless specified by the end user.

(2) When sequentially numbered length markings are used, the length

markings shall be in accordance with ANSI/ICEA S-89-648-1993, paragraph 9.1.5. The color of the initial marking shall be either white or silver.

(j) *Durability of marking.* The durability of the marking of the CCSR aerial service wire shall comply with the requirements specified in ANSI/ICEA S-89-648-1993, paragraph 9.1.6.

[61 FR 26075, May 24, 1996]

**§ 1755.703 Nonmetallic reinforced (NMR) aerial service wire.**

(a) *Conductors.* (1) Each conductor shall comply with the requirements specified in ANSI/ICEA S-89-648-1993, paragraphs 2.2 and 2.2.1. The ANSI/ICEA S-89-648-1993 Standard For Telecommunications Aerial Service Wire, Technical Requirements (approved by ANSI July 11, 1994) is incorporated by reference in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies of ANSI/ICEA S-89-648-1993 are available for inspection during normal business hours at RUS, room 2845, U.S. Department of Agriculture, Washington, DC 20250-1500 or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC. Copies are available from ICEA, P. O. Box 440, South Yarmouth, MA 02664, telephone number (508) 394-4424.

(2) Factory joints made in the conductors during the manufacturing process shall comply with the requirement specified in ANSI/ICEA S-89-648-1993, paragraph 2.2.2.

(b) *Conductor insulation.* (1) The raw materials used for the conductor insulation shall comply with the requirements specified in ANSI/ICEA S-89-648-1993, paragraphs 3.2 through 3.2.2.

(2) The finished conductor insulation shall comply with the requirements specified in ANSI/ICEA S-89-648-1993, paragraph 3.2.3.

(3) The dimensions of the insulated conductors shall comply with the requirements specified in ANSI/ICEA S-89-648-1993, paragraph 3.2.3.1.

(4) The colors of the insulation shall comply with the requirements specified in ANSI/ICEA S-89-648-1993, paragraph 3.2.3.2.

(5) A permissible overall performance level of faults in conductor insulation shall comply with the requirement specified in ANSI/ICEA S-89-648-1993,

paragraph 3.2.4.6. The length count and number of faults shall be recorded. The information shall be retained for a period of 6 months and be available for review by RUS when requested.

(6) Repairs to the conductor insulation during manufacture are permissible. The method of repair shall be accepted by RUS prior to its use. The repaired insulation shall comply with the requirement specified in ANSI/ICEA S-89-648-1993, paragraph 3.2.3.3.

(7) All repaired sections of insulation shall be retested in the same manner as originally tested for compliance with paragraph (b)(5) of this section.

(8) The colored insulating material removed from or tested on the conductor, from a finished wire shall comply with the requirements specified in ANSI/ICEA S-89-648-1993, paragraphs 3.2.4 through 3.2.4.5.

(c) *Identification of pairs and layup of pairs.* (1) The insulation shall be colored coded to identify:

(i) The tip and ring conductor of each pair; and

(ii) Each pair in the completed wire.

(2) The colors to be used in the pairs together with the pair numbers shall be in accordance with the table specified in ANSI/ICEA S-89-648-1993, paragraph 4.1.1.

(3) The insulated conductors shall be either layed parallel (two conductor design only) or twisted into pairs.

(4) When using parallel conductors for the two conductor design, the parallel conductors shall be designed to enable the wire to meet the electrical requirements specified in paragraph (g) of this section.

(5) When twisted pairs are used, the following requirements shall be met:

(i) The pair twists shall be designed to enable the wire to meet the electrical requirements specified in paragraph (g) of this section; and

(ii) The average length of pair twists in any pair in the finished wire, when measured on any 3 meter (10 foot) length, shall not exceed the requirement specified in ANSI/ICEA S-89-648-1993, paragraph 4.1.

(6) An alternative method of forming the two-pair wire is the use of a star-quad configuration.

(i) The assembly of the star-quad shall be such as to enable the wire to