



# Technical Product Specification - CU195

Date: 7/22/2016 | Number: CU195 | Rev No: 3

## Purpose

The purpose of this Technical Product Specification is to define the specifications for CU195.

## Manufacturer

NEXt Aerospace a Division of Niles International, 310 North Pleasant Ave, Niles OH 44446

## Description

Niles product designation CU195. The designation of the foil refers as follows:

## Identification of Niles Product

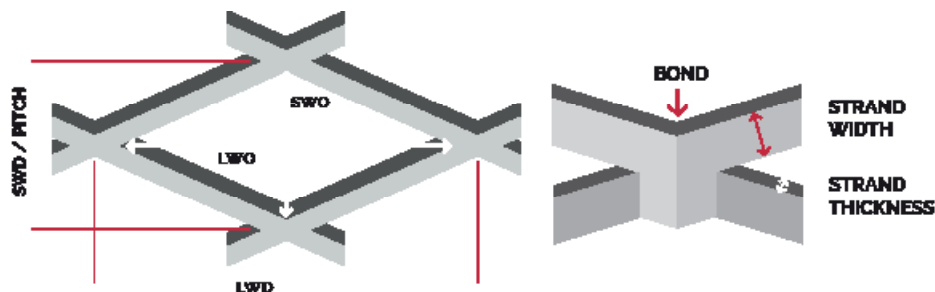
Nomenclature: SWD x LWD x strand width x material thickness.

Product Designation	Niles Product Code	Supplier Material Code
1.34mm x 2.54mm x 0.240mm x 0.070mm	CU195	N/A

## CU195 Nominal Specification

Item	Unit	CU195
Mesh Length (LWD)	mm	2.54
Mesh Width (SWD)	mm	1.34
Strand Width	mm	0.240
Open Area	%	65
Coverage	%	35
Overall Thickness	mm	0.280
Material Width	mm	930
Resistance (SWD - LWD)	mΩ / m <sup>2</sup>	≤3.6 - ≤1.1
Area Weight	g / m <sup>2</sup>	195

## General Geometric Characteristics



**LWD** - Long Way Design, the length of the long axis, measured from the middle of the knot on one side to the middle of the knot on the opposite side  
**SWD** - Short Way Design, the length of the short axis, measured from the middle of the knot on one side to the middle of the knot on the opposite side  
**A** - Material/Strand thickness  
**B** - Strand Width

**Knot** - The area where the strands intersect aka: Bond.  
**LWO** - Long Way Opening, is the length of the opening of the longest side of the diamond. LWO does not include the strand width.  
**SWO** - Short Way Opening, is the width of the opening of the shortest side of the diamond. SWO does not include the strand width.  
**Overall thickness** - The actual measurement of the thickness of the mesh measured at the knot.

## ECF Roll Identification

Each finished goods coil has a unique coil reference label attached to the outer packing and also one placed within the material core that has the following information:

- Weight
- Date of Manufacture
- Batch Number (see also 4.2)
- Niles Part and Work Order Numbers

- SWD Average Resistance
- Unique Coil Reference Number (see also 4.1)

## Coil Identification

Each finished goods coil has a unique 10-digit reference number, i.e. 1202161445

- A. 12: Year of Production
- B. 02: Month of Production
- C. 16: Day of Production
- D. 1445: Time of Labeling in hours and minutes – 24 hour clock system

## Batch Identification

The batch number on the finished goods coil refers to a batch of raw material that was produced from a master batch of raw material or from the same single set-up and run period.

At the request of the customer a batch definition may be determined otherwise.

## Properties Of Primary Material - Copper Foil

Raw material is 70 µm EDP copper foil with an anti-stain treatment to prevent oxidization. Overall thickness 0.07mm ± 10%. The primary raw material meets the specifications shown below:

Item	Units	Acceptance Level
		70 µm Electrodeposited (EDP) Copper Foil
Area Weight	g / m <sup>2</sup>	580 ± 5%
Tensile Strength (23°C)	N/mm <sup>2</sup>	> 290
Elongation (23°C)	%	> 10
Coefficient of Roughness Rz	µ	7.0 – 13.0
Purity	%	> 99.9

## Primary Material Roll Identification

Each coil of raw material is identified with a unique 12-digit reference number that can be easily referenced to all finished goods rolls that were produced and also to other rolls that were from a supplier's same batch. The coils are identified as follows, i.e. 120217144513.

- A. 12: Year of Production
- B. 02: Month of Production
- C. 16: Day of Production
- D. 144513: Time of Receipt in hours, minutes and seconds – 24 hour clock system.

## Primary Material Batch Identification

As produced by a supplier from the same master coil or from the same single set-up and run period.

## Properties Of Primary Material - Copper Foil

Raw material is 70 µm EDP copper foil with an anti-stain treatment to prevent oxidization. Overall thickness 0.07mm ± 10%. The primary raw material meets the specifications shown below:

### Mesh Inspection Characteristics

RAW MATERIAL THICKNESS	mΩ/m <sup>2</sup>	0.070 ± 0.007 (0.063- 0.077)	According to NTM-010	Device: Micrometer Frequency: Eight (8) - Four (4) per raw material coil at receiving and Four (4) at coil start of production
RAW MATERIAL WIDTH	mm	930 ± 4 (926 – 934)	According to NTM-040	Device: Tape Measure Frequency and n° of measurements: Two (2) – One (1) at Receiving of raw material and One (1) at set-up before production of a coil.
COIL LENGTH	mm	As per Customer Requirements	According to the Shop Floor Instruction Manual	Read out from in line Mesh Inspector and Measuring Wheel

<b>AREA WEIGHT</b>	g/m <sup>2</sup>	195 ± 15.6 (179.4- 210.6)	According to NTM-020	Device: Salter precision scale Frequency: Four (4) – Two (2) at the beginning and Two (2) at the end of each coil. Sample size: 80 x 380 (mm)
<b>OVERALL THICKNESS</b>	mm	0.280 ± 0.028 (0.252- 0.308)	According to NTM-030	Device: Micrometer Frequency: Four (4) - Two (2) at the beginning and Two (2) at the end of each coil.
<b>RESISTANCE LWD DIRECTION</b>	mΩ/m <sup>2</sup>	≤1.1	According to NTM-060	Device: Resistomat 2316 Frequency and n° of measurements: Six (6) – Three (3) at the start and Three (3) at the end of coil.
<b>RESISTANCE SWD DIRECTION</b>	mΩ/m <sup>2</sup>	≤3.6	According to NTM-060	Device: Resistomat 2316 Frequency and n° of measurements: Six (6) – Three (3) at the start and Three (3) at the end of coil.
<b>SWD</b>	mm	1.34 ± 0.084 (1.256-1.424)	According to NTM-050	Device: Master View Comparator Frequency and n° of measurements: Two (2) – One (1) at the start and One (1) at the end of each coil.
<b>LWD</b>	mm	2.54 ± 0.127 (2.413- 2.667)	According to NTM-050	Device: Master View Comparator Frequency and n° of measurements: Two (2) – One (1) at the start and One (1) at the end of each coil.
<b>STRAND WIDTH</b>	mm	0.240	According to the Shop Floor Instruction Manual	None: Machine Setting Parameter
<b>FINISHED PRODUCT WIDTH</b>	mm	930 ± 4 (926 – 934)	According to NTM-040	Device: Tape Measure Frequency and n° of measurements: Two (2) – One (1) at Receiving of raw material and One (1) at set-up before production of a coil.
<b>SAMPLE RESISTANCE SWD DIRECTION SIZE: 80 X 380</b>	mΩ	≤9.0	According to NTM-060	Device: Resistomat 2316
<b>SAMPLE RESISTANCE LWD DIRECTION SIZE: 80 X 380</b>	mΩ	≤2.75	According to NTM-060	Device: Resistomat 2316
<b>SAMPLE AREA WEIGHT</b>	grams	5.93 ± 0.47 (5.46-6.40)	According to NTM-020	Device: Salter precision scale Frequency: Four (4) – Two (2) at the beginning and Two (2) at the end of each coil. Sample size: 80 x 380 (mm)

## CU195 Copper Foil Roll Size

Rolls will either be supplied in 50, 100, 150 or 200 meter lengths or as otherwise agreed with the customer.

## General Geometric Characteristics



Each finished goods coil is wrapped in bubble wrap and shrink film to prevent oxidation and has a coil label attached to the outside of the coil with a label also inserted in the coil core.

### Core Tube

The standard core tube is plastic with a 76mm ID and a length of 1000mm or as otherwise agreed with the customer.

### Box Definition

Coils are normally packaged in a wooden crate (as shown below) that will prevent damage during transportation. The crate has removable sides to enable ease of removal of the coil without damage. Coils may be packaged using cardboard boxes with additional bubble wrap packaging in agreement with the customer.

