

## **Inspection Report on some Early 20th C. Oud Strings.**

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A fine old Syrian oud, made in Damascus and said to be about 50 years old, has survived with some of its original strings intact. Now under restoration for owner Yair Dalal by luthier Yaron Naor, the old strings have been preserved and submitted for examination and are subject of this report.

These strings predate modern nylon strings now in general use that first became available during the 1950's so details of their construction is worth preserving for posterity. The manufacturer (or manufacturers) of the strings is unknown.

The oud has six double courses of string length of 61 cm. Four string courses surviving are comprised of five complete strings and three fragments attached to the pegs.

The first three courses are of plain gut and the bass courses are of silver plated round copper wire wound on a silk filament core.

The strings as received were worn with the overspun strings being heavily oxidised with little of the original silver plating remaining. The five complete strings had each been cut close to the nut of the oud - to facilitate removal – giving a total of 13 string pieces for examination.

The core material of the overspun strings was verified to be silk filament by a standard test for silk - applying a flame to a small sample. The sample balled up into a black, brittle ash with a smell of burnt hair.

The material of the metal winding was judged to be copper by colour – a small sample being lightly rubbed with a fine abrasive to cut through the surface oxidation to reveal the metal surface underneath.

The outside diameter of each string and the diameter of the copper windings were measured with a 'Starrett' #436 precision micrometer - accurate to 0.01 mm. The direction and degree of twist of the gut strings was recorded as well as the direction of winding of the overspun strings. The results are as follows:

#01 - copper wire/silk - 0.88 to 0.89 mm dia. Wire 0.16 mm dia. wrapping clockwise.

#02 - ditto - 5<sup>th</sup> course.

#03 - copper wire/silk - 0.89 to 0.90 mm dia. Wire 0.16 mm dia. wrapping clockwise.

#04 - ditto - 5<sup>th</sup> course.

#05 - copper wire/silk - 0.73 to 0.76 mm dia. Wire 0.10 mm dia. wrapping anti-clockwise.

#06 - ditto - 4<sup>th</sup> course.

#07 - copper wire/silk - 0.78 mm dia. Wire 0.1 mm dia. wrapping anti-clockwise.

(fragment) 4<sup>th</sup> course.

#08 - plain gut - 1.02 to 1.07 mm dia. clockwise twist 20° - 25° angle.

#09 - ditto - 3<sup>rd</sup> course.

#10 - plain gut - 1.00 to 1.05 mm dia. clockwise twist 20° - 25° angle.

#11 - ditto - 3<sup>rd</sup> course.

#12 - plain gut - 0.82 to 0.83 mm dia. clockwise twist 30° angle. (fragment)

#13 - plain gut - 0.85 to 0.88 mm dia. clockwise twist. (fragment) 2nd course.

Assuming an original Arabic tuning of CEAdgc' at A440 concert pitch, the tension for each of the gut strings would have been about 3.9 Kg for the third course and 4.1 Kg to 4.7 Kg for the second course or at a lower pitch of say A415 about 3.5 Kg and 3.6 Kg to 4.1 Kg. The tension of the overspun strings of the 4<sup>th</sup> and 5<sup>th</sup> courses cannot be determined here but the outside diameters are similar to those of 'Pyramid' Oud Orange label strings with nylon floss core at 3.7 Kg average tension.

The silk filament cores had been dyed bright red for the 5<sup>th</sup> course strings and purple for the 4<sup>th</sup> course – presumably as a production identification aide for the string manufacturer. Note that the wire for the 5<sup>th</sup> course string has been wound on the core in a clockwise direction whereas the winding for the 4<sup>th</sup> course strings is anti-clockwise. This suggests that the 4<sup>th</sup> and 5<sup>th</sup> strings may have been made by different manufacturers.



## **Second Course**



**Plain Gut - 0.82 to 0.88 dia.  
Twist Clockwise 30°**

## **Third Course**



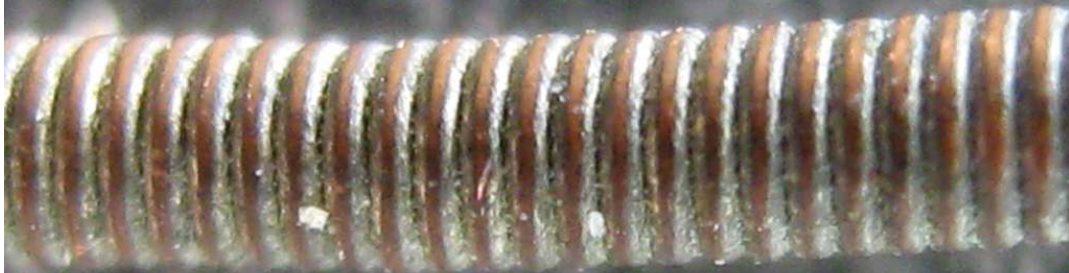
**Plain Gut - 1.02 to 1.07 mm dia.  
Twist Clockwise 20° - 25°**

### **Fourth Course**



**Silver Plated Copper on Silk  
Filament - 0.73 to 0.76 mm dia.  
Wire Diameter 1.0 mm, Winding  
Anti Clockwise.**

### **Fifth Course**



**Silver plated Copper on Silk  
Filament - 0.88 to 0.9 mm dia.  
Wire Diameter - 1.6 mm, Winding  
Clockwise.**

**Fourth Course  
Anti Clockwise Winding**



**Fifth Course  
Clockwise Winding**

