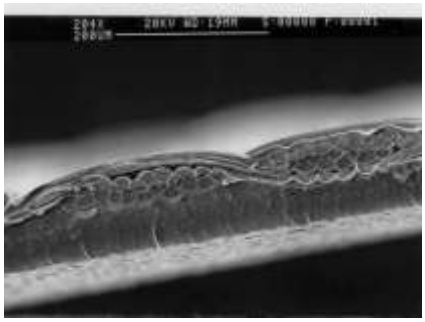
Schlegel Electronic Materials - Space Applications and materials

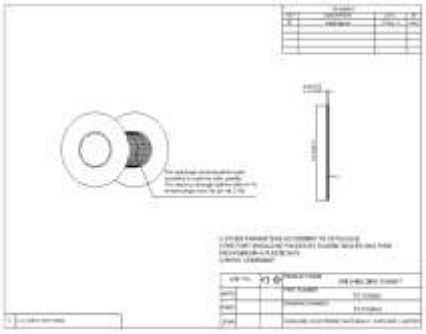
A lot of efforts in Research and developments in Space industry are focused on solution to decrease the overall weight of applications. It is usually admitted that for a launcher, an extra weight of 1 kg represents an extra cost of 15 K€. Schlegel Electronic Materials with over 25 years experience in the design of light and very conductive flexible claddings mainly for the EMI shielding industry, proposed its technology and expertise in several space applications .The Schlegel /European space market cooperation was initiated in France in 2008, in Toulouse with companies like Astrium (now Airbus Defense and Space) , Thales Alenia Space ,Airbus , ….all partners of the European Space Agency (ESA) .

Materials : NiCu- C12



C12 is a woven of NiCu plated polyester fibers isolated with a proprietary special coating. The coating improves abrasion resistance preserving the metal integrity under shear forces and increases its galvanic compatibility . Its surface resistivity is typically around 0.02 ohm/square .C12 has a density of 1,05 gr./cm3 .The shielding effectiveness of the material measured per MIL DTL 83528 C by an independent Lab is 97.4 dB (20 MHz-10 GHz) and + 70 dB at 40 GHz through Stripline method .

Product :



The NiCu-C12 fabric is bended and glued on itself by means of an acrylic adhesive to ensure similar conductivity on both sides .It forms a conductive strip of 10 mm ,12.7 mm or 25.4 mm wide and 0.25 mm thick .It is supplied in rolls of max. 33 meters .

Outgassing :

Test carried out on tape made of NiCu-C12 polyester fabric bended and glued on itself (Independent lab certified by ESA).

TML % : 0.771
RML % : 0.179
CVCM % : 0.027

ECSS-Q-ST-70-50C : Particles Contamination monitoring for spacecraft systems and cleanrooms

Test evaluating Particles Fall Out (PFO) under multiple cycles of high wearing .Stress not representative of normal usage of the product.

NiCu-C12: Visibly Cleaned (PFO< 300 ppm) according to ECSS-Q-ST-70-01C

Applications :

1. Connecting strap :

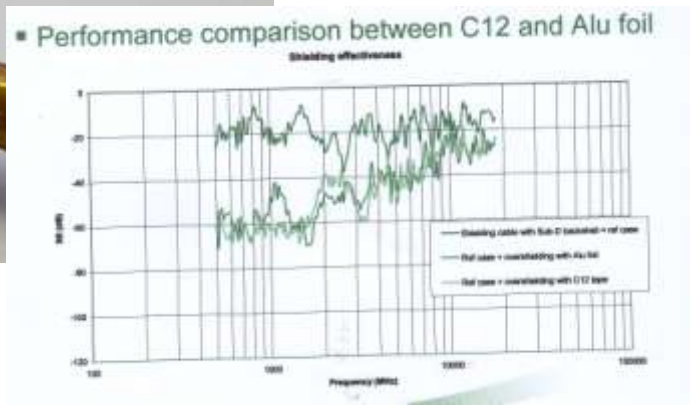
The light C12 tape replaces a wire cable connecting different parts of the satellite .In this instance, the tape is secured by rivet .

2. MLI (Multi Layer Insulation)

The MLI which is wrapped over the satellites consist in several layers including a braided mesh made of bronze .The C12 replaces the mesh .In this application, the fabric is not bended on itself and is supplied in rolls 1450 mm wide and a thickness of 0.10 mm.

3. Cable Shield :

The light and conformable C12 tape replaces Al foil wrapped over the cable bundle .With the same overlap than for the Aluminum, it provides similar or greater attenuation (measured up to 18 GHz). The tape is secured by means of Kapton tapes.

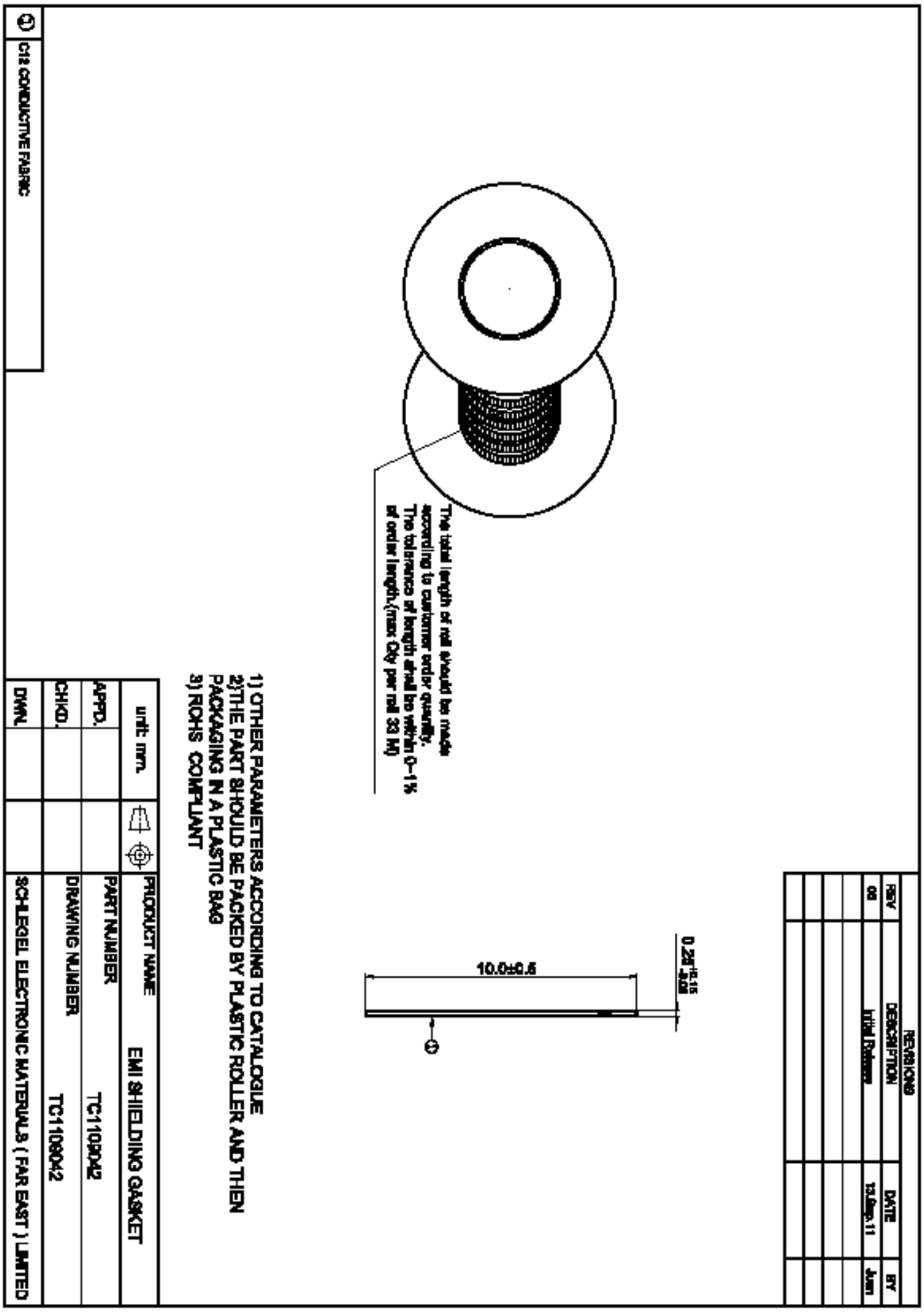


4. Others

Other applications are on target using the C12 fabric embedded into composite material to replace metal for panels and structures or other specific designs made usually of metal.

Drawings :

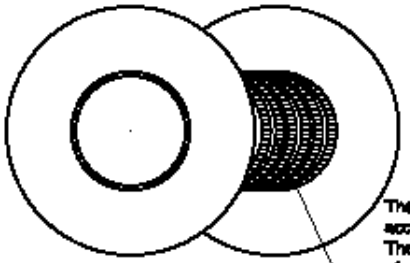
APPLICATION 1 and 3



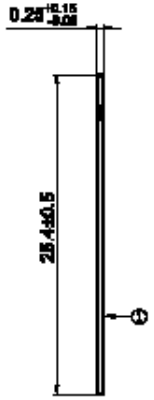
SCHLEGEL electronic materials
a member of eMEI Group

APPLICATION 1 and 3

REVISIONS			
REV	DESCRIPTION	DATE	BY
00	Initial Release	27-Jul-12	Lei



The total length of roll should be made according to customer order quantity. The tolerance of length shall be within 0~1% of order length.(max Qty per roll 33 M)



1) OTHER PARAMETERS ACCORDING TO CATALOGUE
2) THE PART SHOULD BE PACKED BY PLASTIC ROLLER AND THEN PACKAGING IN A PLASTIC BAG
3) ROHS COMPLIANT

①	C12 CONDUCTIVE FABRIC

unit: mm.			PRODUKT NAME: EMI SHIELDING GASKET
APPD.			PART NUMBER: TC1207140
CHKD.			DRAWING NUMBER: TC1207140
DWN.			SCHLEGEL ELECTRONIC MATERIALS (DONG GUAN) LIMITED

APPLICATIONS 1 AND 3

APPLICATION 2 AND 4