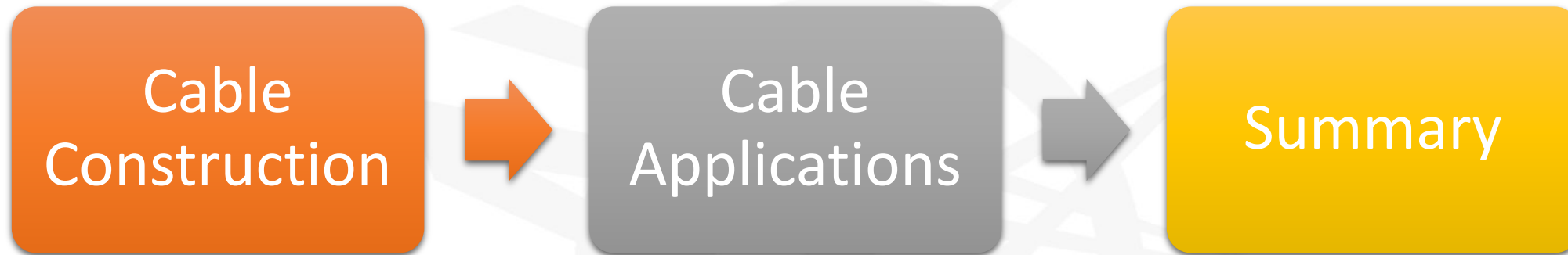


# Maser Cable Training Level 1

**This is a brief overview about cable construction.**

We will cover the material that cable is made from  
and some of the reasons why these are used.

# Content



This is an informal session and you are encouraged to ask any questions relating to this training.



# Construction: Conductor

Conductors are usually made from copper - although many other materials are also used.



CONDUCTOR

## Copper

HIGHEST  
CONDUCTIVITY  
rating of all non-  
precious metals

Copper can be  
bare or plated  
with tin to reduce  
oxidation

## Aluminium

LESS FLEXIBLE  
than copper

MORE RESISTANT  
than copper

LARGER SIZE NEEDED  
to match current  
rating of copper

## Steel

VERY STRONG  
poor conductor

Used mainly to  
support or protect  
the main conductor

# Construction: Conductor Abbreviations

## PAC

- Plain Annealed Copper

## BC

- Bare Copper

## TCW

- Tinned Copper Wire

## CCA

- Copper Clad Aluminium

## TCCA

- Tinned Copper Clad Aluminium

## CCS

- Copper Clad Steel

# Construction: Conductor

## How do we measure the conductor size?

mm<sup>2</sup>

- **Commonly referred to as the Cross Sectional Area or CSA for short**  
*Example: 0.5mm<sup>2</sup>, 1.5mm<sup>2</sup>*

AWG

- **Most cable made in the USA are measured in American Wire Gauge**  
*Example: 20AWG, 16AWG*

Stranding/CSA

- **Some cables refer to the stranding/CSA**  
*Example: Security cable 6142 = 6 cores, 14 strands of 0.2mm (0.44mm<sup>2</sup> total)*

Stranding/AWG

- **Some cables refer to the stranding/AWG**  
*Example: 19/34 = 19 strands of 34 AWG*

# Construction: Insulation

Insulation can be made from many different types of materials



INSULATION

PVC

PE

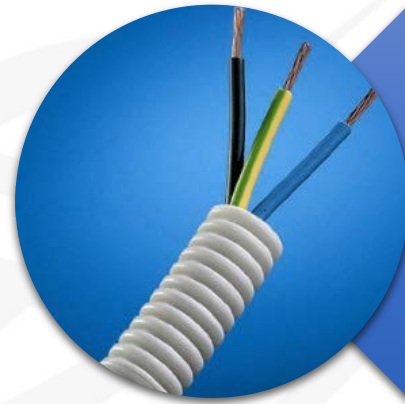
Rubber

Silicone

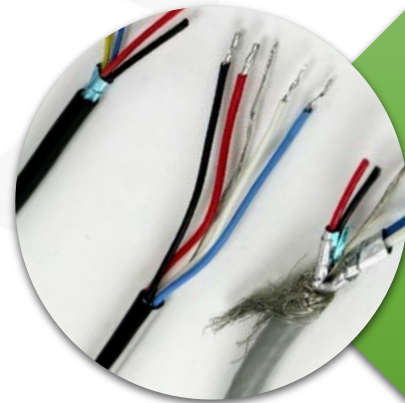
LSZH

# Construction: Insulation Voltage Rating

The voltage rating of insulation varies between different types of cables.



Cables used for mains voltage (typically 600v – 1000v rated) need to be segregated from cables used for Extra Low Voltage, like security or audio.



ELV cables are typically rated for 300v

# Construction: Shielding (or Screen)

Shielding can be made from many different types of materials



Aluminium  
Foil

Copper  
Braid

Other Materials



# Construction: Jacket (or Sheath)

The Jacket can be made from many different types of materials



Jacket (or Sheath)

PVC

Most Common

PE

Direct Bury

LSZH

Indoors

Rubber

Silicone

# Summary

## Conductor

Copper is BEST

Aluminium

Tinned version and a mix

## Conductor Size

Different ways of measuring mm<sup>2</sup> / AWG

The bigger the conductor - the more current it can carry

## Insulation

Different types, depend on where you install

Insulation can differ to Sheath

Choose the right voltage rating for your application

## Shielding

Aluminium Foil

Copper Braid

A combination of both foil & braid

## Jacket

Different types, depend on where you install

PVC is most common

PE for direct bury

End

Questions?

