

## CHOOSING THE CORRECT ELECTRICAL CABLE FOR THE JOB

### Standard Copper Strand Cable or Tinned Coated Cable?

For general applications, ASAP Electrical Non Tinned Thin Wall Cable (part numbers starting with 734) is ideal. It has a multi strand copper wire which gives a lot better resistance to vibration and improves flexibility when compared to solid core cable, which is used commonly in domestic applications. Due to the improved flexibility, the high quality thin PVC wall makes for easy installation, while also giving a good resistance to abrasion and cut throughs as well as petrol, diesel, lubricating oils and diluted acids.

For the harsher marine environments, the ASAP Electrical Tinned Thin Wall Cable (part numbers starting with 748) is the preferred option. Tinned cable offers all the benefits of the non tinned thin wall cable but with an extra benefit of the tinning process. The tinning process fills the voids between conductors, leaving no air space for the condensation to accumulate. This gives a lot better resistance against the harsh marine environments and prevents deterioration.



**Non-Tinned Cable**  
734105-A

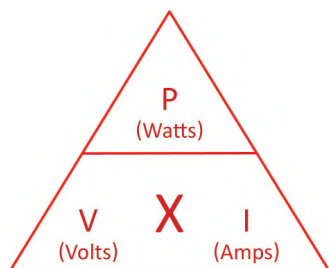


**Tinned Cable**  
748193-K

### Voltage drop

All electrical cables suffer from voltage drop due to the resistance which all cables create. The best way to reduce the resistance is to increase the diameter of the cable as the thicker the cable the lower the resistance and the lower the voltage drop. If you use a cable which is too thin, then you will find that some of the current is turned into heat, which can be a real hazard. This is why you end up with a voltage drop.

As most boats tend to be on low voltage systems 12 or 24 volt, voltage drop is something which must be taken into consideration especially over the long cable runs often found on board. You must also take into consideration where the cables will be running, for example if going through a hot engine room we would recommend using a thicker cable to counteract the ambient heat from the engine room. As a guide when wiring general electrical equipment such as lighting, pumps, blowers etc, the recommended maximum voltage drop is 3%, however the lower the better, especially for instruments.



**Use this simple guide (left) to find out your Amps, Volts or Watts. Simply block out the value you require and the positions of the other two will indicate what you need to do in order to find it. For example, if you require Volts, divide Watts by Amps.**

## Selecting your cable thickness

Each cable needs to be selected correctly to prevent fire hazards and to avoid too much voltage drop.

**Step 1:** Work out the total current loading for each cable in Amps. You can find out what the amps are by dividing watts by the voltage.

**Step 2:** Measure the total length of the circuit, both positive and negative cables.

**Step 3:** Once you have worked the above out, find the cable you require on our website or you can refer to our catalogue where we list the maximum amperage and the voltage drop for each cable.

To wire two 10 watt and one 25 watt 12 volt lights with a cable run of 10 metres we first need to work out the amperage. So 2 x 10 watts plus one 25 watts light gives 45 total watts. If we then divide the 45 watts by the 12 volts it gives an amperage of 3.75 amps. Looking at our 1.5mm<sup>2</sup> twin core tinned cable (748253-\*) the voltage drop per amp per metre is 0.013, so the calculation to work out the voltage drop will be 0.013 x 3.75 amps x 10 metres = 0.49 volts. This is a larger voltage drop than 3% so let's try a larger cable. The 2.5mm<sup>2</sup> cable (748263-\*) has a 0.00782 voltage drop per amp per metre so 0.00782 x 3.75 amps x 10 metres = 0.28 volts which is within the 3% voltage drop we are looking for.

## Other general information about cables

- Thinner is better: we often get asked "are the Thin Wall PVC Cables less quality when compared to the original thicker wall PVC Cables?", this couldn't be more wrong. Although the PVC wall is thin, please do not think that this reduces the quality. The reason the PVC is thinner is due to the fact that the manufacturer uses a high quality PVC, so you get the same or better resistance to abrasion and fuel as thicker wall cables but with the benefit of the overall diameter being thinner, making installation easier.
- For vessels which have to be made to American specifications, we also have UL listed tinned cable available (part numbers starting with 7332).

