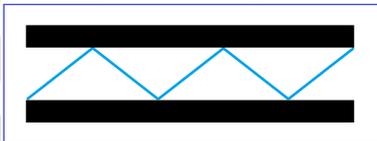


Fibre optic cables are made from a transparent core that carries light, surrounded by glass cladding that (due to its lower refractive index) reflects "escaping" light back into the core, resulting in the light being guided along the fibre. The optical fibre elements are typically individually coated with plastic layers, usually colour coded for identification. 4, 8, 12, 16 or 24 core versions available as standard. Advantages over copper cables include: no electromagnetic interference, lower weight and higher data transmission rates over longer distances.

Optical fibres are described by the diameter of both core and cladding, for example:  
62.5/125µm = core diameter of 62.5 micrometres (µm) & cladding diameter of 125µm.

<b><u>Single-mode or Multi-mode</u></b>	
<p>Single-mode fibres have much smaller core diameters than multi-mode fibres so the light does not reflect as often, reducing losses to a minimum and guaranteeing an enormous range.</p> <div style="text-align: center;">  </div>	<p>In multi-mode fibres light is reflected in a zigzag pattern down a larger core, resulting in higher attenuation (losses). Generally used for backbone applications due to the high capacity and reliability.</p> <div style="text-align: center;">  </div>
<b><u>Single-mode OS1 or OS2</u></b>	<b><u>Multi-mode OM1, OM2, OM3 or OM4</u></b>
<p>The difference between these cables is largely a matter of construction and utilization. They are often installed where low attenuation rates are required over long distances, for example:</p> <p>OS1 (9/125µm) = commonly used in tight buffered cables for runs up to 2km</p> <p>OS2 (9/125µm) = commonly used in loose tube cables for runs up to 5/10km</p>	<p>The difference between these cables is the optical fibre performance, for example the lengths at which they support 10 Gigabit Ethernet:</p> <p>OM1 (62.5/125µm) = up to 33m</p> <p>OM2 (50/125µm) = up to 82m</p> <p>OM3 (50/125µm) = up to 300m</p> <p>OM4 (50/125µm) = up to 550m</p>
<b><u>Loose Tube or Tight Buffered</u></b>	
<p>In loose tube (LT) construction the fibres are enclosed within protective tube/s, usually containing a water resistant gel. Ideal for external use and commonly available with SWA (steel wire armour) or CST (corrugated steel tape) protection.</p>	<p>In tight buffered (TB) construction the fibres have an additional tough waterproof layer (usually 900µm) over the normal fibre coating. Ideal for internal use, especially for runs around multiple bends. They are not usually armoured.</p>

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