

ROPE GUIDE TRIBOLOGY

Electric Control Products has designed the SAFE-T-GUIDE with the enhanced knowledge of UV stabilization and implemented designs from tribology studies done by Electric Control Products.

The SAFE-T-GUIDES are made from modified polypropylene with added carbon black. Adding about 3% of carbon black material acts as an effective UV stabilizer by absorbing the UV light energy and turning it into heat, thus not allowing the UV energy to excite the molecular structure of the polypropylene and cause free radicals to break the structure down. This is the reason the guides are not coloured, as they will need to withstand UV for long periods. The adding of carbon black also increases the performance of the polypropylene by enhancing the abrasion resistance, flexibility and mechanical strength which is needed for a lanyard rope guide to reduce wear of the guide and pull wire.

The guide has a slipping agent added into it at the moulding stage to reduce as much surface friction as possible, so the pull wire runs smoothly through the guide and reduces any foreign material build up. Metal pig tails and eyebolts have a very small surface area of support because they are usually made from 10mm diameter rough surfaced round bar. The rope sits on this small radius and over a short time this small rough radius point causes three faults. One is the vibration caused by the conveyor moving the pull wire 90 degrees (back and forth) to the pigtail/eyebolt axis. The small rough radius wears the coating of the pull wire, and the wire can then become stuck to the support via the convex made in the pull wire coating or the coating may cold weld to the support. The second issue is the lanyard rope expands, and contracts and the tribology studies show the friction motion cuts into the steel pigtail/eyebolt and becomes jammed into the diameter of the bar. Then these 2 issues all together cause extreme friction and safety system failure. These tribology studies are the reason the SAFE-T-GUIDE has a long friction free surface to support the pull wire and allow for a free-flowing pull wire system.



Also, in the design the guide is mounted loose on the support rod and allows the guide to follow the pull wire axis as the wire moves, allowing better pull wire movement without causing pull wire or emergency stop safety function failure.