POLARIS CABLES & WIRES PVT. LTD.

(An IS , ISO 9001 :2008 Certified Company)

MANUFACTURER'S QUALITY ASSURANCE PLAN (Q.A.P for TRI - RATED CABLE)

Component / Process	Characteristics Tests	Method of Check / Test equipment	Sampling plan	Requirement / Ref. Doc (if any)	Internal acceptances Norms
I. R A W M A T E R I A L S - PVC & COPPER					
A. CONDUCTOR	1) Diameter	Vernier / Micrometer	10%	As per BS - 6360 / UL 758 / CSA C 22.2 NO.127	As per BS - 6360
COPPER	2) Surface finish	Visual	10%	The conductor should be smooth.	Confirms to the requirement
	3) Annealing Test (for copper)	Tensile Testing M/c	10%	As per BS - 6360 / UL 758 / CSA C 22.2 NO.127	As per BS - 6360
	4) Conductor Resistance at 20℃	Electrical /Digital micro ohm Meter	10%	As per BS - 6360 / UL 758 / CSA C 22.2 NO.127	As per BS - 6360
	5) Visual check	Visual	10%	Bright Colour, No dents	Confirms to the requirement
	6) Physical & Chemical properties	Review M.T.C	100%	As per BS - 6360	As per BS - 6360
B. PVC COMPOUND	1) Specific Gravity	By Weight on Weighing m/c	One sample Per Lot	As per Manufacturer specification	As per Manufacturer specification
	2) Tensile strength & Elongation	Review M.T.C	100%	As per BS EN 50363-3 / UL 758 / CSA C 22.2 NO.127	As per BS EN 50363-3
	Before and After Ageing				
	3) Loss of mass	Review M.T.C	100%	As per BS EN 50363-3 / UL 758 / CSA C 22.2 NO.127	As per BS EN 50363-3
	4) Thermal Stability	Thermal stability oven	One sample Per Lot	As per BS EN 50363-3 / UL 758 / CSA C 22.2 NO.127	As per BS EN 50363-3
II. INPROCESS (SEMI FINISHED CABLES / WIRES) INSPECTION					
A. Bunching / Stranding	1) No of wires/ Strand	Self Device	Measurement at the start of each job	As per BS - 6360 / UL 758 / CSA C 22.2 NO.127	As per BS - 6360
	2) Diameter of Wire/Strand	Vernier calliper / Micrometer	Measurement at the start of each job	As per BS - 6360 / UL 758 / CSA C 22.2 NO.127	As per BS - 6360
	3) Direction of Lay	Visual	Measurement at the start of each job	As per requirement	Confirms to the requirement
	4) Lay length	Meter Scale	Two Samples per Lot	As per requirement	Confirms to the requirement
	5) Overall Dimensions	Vernier calliper / Micrometer	Measurement at the start of each job	As per BS - 6360 / UL 758 / CSA C 22.2 NO.127	As per BS - 6360
	6) Conductor resistance	Electrical /Digital micro ohm Meter	Measurement at the start of each job	As per BS - 6360 / UL 758 / CSA C 22.2 NO.127	As per BS - 6360

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B. Core Extrusion	1) Type of Compound	Visual check of grade used	Once when the new bag is opened for use	As per requirement	Confirms to the requirement
	2) Thickness of Insulation	Vernier Calliper	Each setting & twice in a shift	As per BS 6231 / UL 758 / CSA C 22.2 NO.127	As per BS 6231
	3) Core Identification	Visual	Each setting & twice in a shift	As per BS 6231 / UL 758 / CSA C 22.2 NO.127	As per BS 6231
	4) Void test	Visual	5%	As per Plants std	No voids
	5) Spark test (On Line)	On line sparke tester	100%	As per BS EN 50356 & BS 5099	As per BS EN 50356 & BS 5099
	6) Diameter Check	Vernier Calliper	Each setting & twice in a shift	As per BS 6231 / UL 758 / CSA C 22.2 NO.127	As per BS 6231
	7) Surface finish	Visual	Start and end of each setting & twice during the processing for that setting	Should be smooth & free from porosity	Should be smooth & free from porosity
	8) Continuity of Conductor	Continuity tester	100%	Conductor should show continuity	Conductor should show continuity
C. Tests on cores in Laboratory	1) Thickness of Insulation	Vernier Calliper	Random check for each size & colour	As per BS 6231 / UL 758 / CSA C 22.2 NO.127	As per BS 6231
	2) Concentricity of PVC	Vernier Calliper	One for each size & colour(if changes)	As per BS 6231 / UL 758 / CSA C 22.2 NO.127	As per BS 6231
	3) Tensile strength & Elongation	Tensile testing m/c	- Do -	As per BS EN 50363-3 / UL 758 / CSA C 22.2 NO.127	As per BS EN 50363-3
	4) Insulation resistance	I.R.Tester / Hot water tub	One for each size & colour(if changes)	As per BS 6231 / UL 758 / CSA C 22.2 NO.127	As per BS 6231
D. Printing / Embossing	1) Visual Check	Visual	100%	As per BS 6231 / UL 758 / CSA C 22.2 NO.127	As per BS 6231
	2) Cable Length	Visual / Mtr. Counter	Check on each Drum/ ROLLS	As per requirement	Confirms to the requirement
	3) Surface Quality	Visual	Check on each Drum/ ROLLS	Smooth surface	Smooth surface
	4) Continuity test	Continuity tester	100%	Conductor should show continuity	Conductor should show continuity
	5) High Voltage Test	Water tank,HV tester	100%	As per BS 6231 / UL 758 / CSA C 22.2 NO.127	As per BS 6231
E. DRUMS/ROLLS	1) Marking on Drum / ROLL'S BOX	Visual	100%	As per BS 6231 / requirement	As per BS 6231 / requirement
	2) Checking of length	Visual / Mtr. Counter	100%	As per requirement	Confirms to the requirement

Component / Process	Characteristics Tests	Method of Check / Test equipment	Sampling plan	Requirement / Ref. Doc (if any)	Internal acceptances Norms
III. FINISHED CABLE INSPECTION					
A. Routine Tests	1) Conductor Resistance	Electrical /Digital micro ohm Meter	As per BS - 6360	As per BS - 6360 / UL 758 / CSA C 22.2 NO.127	As per BS - 6360
	2) High Voltage Test	Water tank,HV tester	As per BS 6231	As per BS 6231 / UL 758 / CSA C 22.2 NO.127	As per BS 6231
B.Acceptance Tests	1) Annealing test on Copper	Tensile testing m/c	As per BS - 6360	As per BS - 6360 / UL 758 / CSA C 22.2 NO.127	As per BS - 6360
	2) Conductor resistance	Electrical /Digital micro ohm Meter	As per BS - 6360	As per BS - 6360 / UL 758 / CSA C 22.2 NO.127	As per BS - 6360
	3)Thickness of Insulation / Shesth	Vernier Calliper	As per BS 6231	As per BS 6231 / UL 758 / CSA C 22.2 NO.127	As per BS 6231
	4) Tensile strength of PVC insulation / Sheath	Tensile testing m/c	As per BS 50363	As per BS 50363 / UL 758 / CSA C 22.2 NO.127	As per BS 50363
	5) Elongation of PVC insulation / Sheath	Tensile testing m/c	As per BS 50363	As per BS 50363 / UL 758 / CSA C 22.2 NO.127	As per BS 50363
	6) Insuation Resistance Test	I.R.Tester / Hot water tub	As per BS 6231	As per BS 6231 / UL 758 / CSA C 22.2 NO.127	As per BS 6231
	7) High Voltage Test at room temp	High voltage tester	As per BS 6231	As per BS 6231 / UL 758 / CSA C 22.2 NO.127	As per BS 6231
	8) Flammability Test	Flammability Chamber	As per BS EN 60332-1-2	As per BS EN 60332-1-2 / UL 758 / CSA C 22.2 NO.127	As per BS EN 60332-1-2
C. Type Tests	1) Annealing test on Copper	Tensile testing m/c	One Sample Per Lot	As per BS - 6360 / UL 758 / CSA C 22.2 NO.127	As per BS - 6360
	2) Conductor resistance	Electrical /Digital micro ohm Meter	One Sample Per Lot	As per BS - 6360 / UL 758 / CSA C 22.2 NO.127	As per BS - 6360
	3) Thickness of Insulation / Sheath	measurment	One Sample Per Lot	As per BS 6231 / UL 758 / CSA C 22.2 NO.127	As per BS 6231
	4) Tensile strength of PVC insulation / Sheath	Tensile testing m/c	One Sample Per Lot	As per BS EN 50363-3 / UL 758 / CSA C 22.2 NO.127	As per BS EN 50363-3
	5) Elongation of PVC insulation / Sheath	Tensile testing m/c	One Sample Per Lot	As per BS EN 50363-3 / UL 758 / CSA C 22.2 NO.127	As per BS EN 50363-3
	6) Ageing in air oven	Oven, tensile testing m/c	One Sample Per Lot	As per BS EN 50363-3 / UL 758 / CSA C 22.2 NO.127	As per BS EN 50363-3
	7) Shrinkage test on PVC insulation / Sheath	Oven Scales	One Sample Per Lot	As per BS EN 50363-3 / UL 758 / CSA C 22.2 NO.127	As per BS EN 50363-3
	8) Hot deformation test for insulaion /Sheath	Oven Scales	One Sample Per Lot	As per BS EN 50363-3 / UL 758 / CSA C 22.2 NO.127	As per BS EN 50363-3
	9) Loss of mass test for insulaion/ Sheath	oven, weighing	One Sample Per Lot	As per BS EN 50363-3 / UL 758 / CSA C 22.2 NO.127	As per BS EN 50363-3
	10) Heat shock test for insulaion /Sheath	Oven Scales	One Sample Per Lot	As per BS EN 50363-3 / UL 758 / CSA C 22.2 NO.127	As per BS EN 50363-3
	11) Insul.resistance Test	I.R.Tester / Hot water tub	One Sample Per Lot	As per BS 6231 / UL 758 / CSA C 22.2 NO.127	As per BS 6231
	12) High Voltage Test at water Immersion	Water tank,HV tester	One Sample Per Lot	As per BS 6231 / UL 758 / CSA C 22.2 NO.127	As per BS 6231
	13) Flammability Test	Flammability Chamber	One Sample Per Lot	As per BS EN 60332-1-2 / UL 758 / CSA C 22.2 NO.127	As per BS EN 60332-1-2

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