

Mylar and BOPP Wrapped Winding Wire for Submersible Pump Motors

• Introduction

“Emgee” a unit of Mangal Chand Group operates within one of the most dynamic business areas in the world (the electric - electronic based economy). The group produces high performance copper and copper alloy rods, wire & conductor, TPR/PVC/PE insulated wire and cables.

Our products serve the energy, construction, consumer and industrial sectors, pump manufacturers, aerospace, medical, automobile, CATV, telecommunication, electronic, railways and defence sectors with sales & service.

The Company is also India’s leading manufacturer of Submersible Wire & Cables and enjoys an enviable reputation as a quality manufacturer.

Company has most modern computerized fully automatic extrusion lines supported by an excellent forward & backward integrations including Wire Drawing with online annealing, High Speed Bunchers, Automatic packing machines and very sophisticated online & offline testing systems.

Emgee Cables & Communication limited is a public company, with shares listed on stock exchange. The company is ISO certified and has all the relevant quality certifications.



(Computerized Fully Automatic Extrusion Line)



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Disclaimer

All information given here is in good faith. Emgee shall not be liable for any damage arising out of incorrect use or interpretation. The company reserves the right to change any of the above specifications without any prior notice.

Submersible Motor Winding Wire

Characteristics

Designation	• Mylar and BOPP Wrapped Winding Wire
Construction Characteristics	
Tape Colour	• White BOPP (Bi-axially oriented poly propylene)
Conductor Material	• Annealed Bare copper E.C. Grade as per IS:8783 (Part I) 1995
Dimensional Characteristics	
Dimensional Standards	• See table
Electrical Characteristics	
Rated Voltage U_0/U (Um)	• 450/750 V
Test voltage	• 3.0 KV for one minute (after 24 hrs of water immersion at 20°C)
Short Circuit Temp.	• 200°C
Insulation Resistance (MΩ/km)	• 5000 against 600 of PVC.
Mechanical Characteristics	
Wire flexibility	• Flexible
Mechanical Strength	• Softer than PVC hence easy to wind
Usage Characteristics	
Flame retardant	• as per IS: 8783 Sec. 3 Part (IV)
Chemical resistance	• Accidental
Oil resistance	• Yes
Operating temperature, range	• (-) 25 (+) 90°C
Weather resistance	• Very good
Min. ambient temp.	• -25°C ~ -15°C
Max operation temp.	• 90°C in Fixed Protected installation.
Tear Resistance	• The structure of insulation (BOPP) is oriented bi-axially hence propagation of tear is difficult.
Dielectric strength (V/mm)	• 500 in comparison to 250 of PVC.
Water Absorption	• 0.45 in comparison to 0.70 of PVC.
Compressive Strength Rupture (P.S.I.)	• 5000 against 1500 of PVC.



1 Mylar Tape
 2 White BOPP
 3 Transparent BOPP
 Oxygen Free Copper
 (more than 100% Conductivity)

Certification •

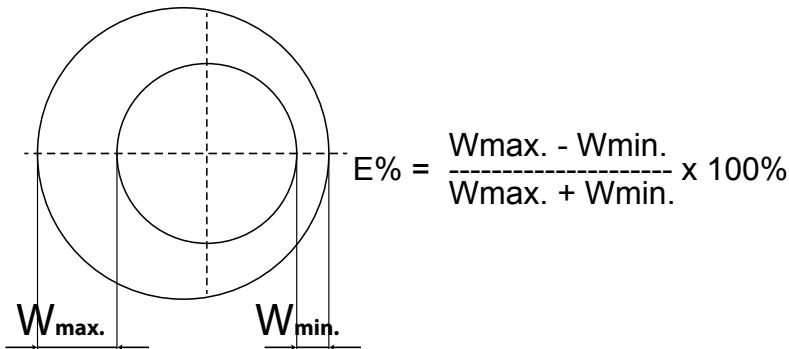


Norms • IS:8783 (Part IV / Section I), DIN 53483, VDE 0472

Description: Low Dia “PolyCot” wires help to reduce motor size thereby reducing costs. These Triple taped low diameter winding wire have excellent Electrical, Mechanical, Thermal & Chemical Properties. These wires withstand abrasion, frictional losses and work in every type of typical conditions.

Features:

- **Save Upto 25% in Pump Cost:** Because of lesser overall diameter, the motor size is reduced and eventually a smaller pump can be developed giving substantial saving in castings, stamping and other material costs.
- **Higher Life:** POLYCOT Winding Wire have excellent, Electrical, Mechanical, Thermal & Chemical properties. These wires withstand abrasion, frictional damages and work in every type of typical conditions. The insulating material is produced by bi-axially oriented synthetic film and places the insulation concentrically around the conductor and has very long life.
- **Easy Winding:** Since the overall dia is less then the conventional PVC winding wire, the winding resistance is less and the motor is easy to wind.
- **Dielectric Strength:** The multiple layer bonded construction ensures high dielectric strength .
- **Withstands 105°C Temperature:** For short period +105°C & continuous -25°C to +90°C.
- **Less Leakage Current:** BOPP Tape has constant & many times higher insulation resistance even at boiling point of water and the current leakage is very less.
- **More Mechanical Strength:** POLYCOT insulation is remarkably resistant to cut through & scratch abrasion and ensures greater cut through stress and general abuse.
- **Tear Resistant:** The structure of insulation (BOPP) is oriented bi-axially hence good tear resistant.
- **Eccentricity :**



Tolerances

Outer diameter of the insulated wire	<2.20 mm	2.21 - 3.00 mm	3.01-4.30mm	4.31-6.00mm
Tolerances on outer diameter of the insulated wire	± 0.05mm	± 0.097 mm	± 0.10 mm	± 0.15mm
Eccentricity	≤ 10%	≤ 12%	≤15%	≤ 15%

Technical Specifications:

Conductor			Normal OD			Lesser OD		
Copper Dia ±1% (mm)	Resistance @20°C Ohm/Km (Nom.)	Elongation %	Insulation Thickness Min. (mm)	Overall Dia Max. (mm)	Weight per Km. (Kg.)	Insulation Thickness Min. (mm)	Overall Dia Max. (mm)	Weight per Km. (Kg.)
0.40	136.63	30.00	0.200	0.80	1.52	0.150	0.70	1.39
0.50	87.96	31.00	0.200	0.90	2.21	0.150	0.80	2.07
0.60	60.92	32.00	0.200	1.00	3.05	0.150	0.90	2.89
0.70	44.78	33.00	0.200	1.10	4.02	0.150	1.00	3.85
0.80	34.35	33.00	0.200	1.20	5.14	0.150	1.10	4.95
0.90	27.10	35.00	0.200	1.30	6.38	0.175	1.25	6.27
1.00	21.96	36.00	0.200	1.40	7.77	0.175	1.35	7.65
1.10	18.15	37.00	0.200	1.50	9.31	0.175	1.45	9.19
1.20	15.26	38.00	0.200	1.60	10.97	0.175	1.55	10.84
1.30	12.96	38.00	0.200	1.70	12.84	0.175	1.65	12.70
1.40	11.20	38.00	0.200	1.80	14.78	0.175	1.75	14.63
1.50	9.74	40.00	0.225	1.95	17.03	0.175	1.85	16.72
1.60	8.58	40.00	0.225	2.05	19.27			
1.70	7.60	40.00	0.225	2.15	21.63			
1.80	6.79	40.00	0.225	2.25	24.18			
1.90	6.07	40.00	0.225	2.35	26.85			
2.00	5.49	40.00	0.225	2.45	29.63			
2.10	4.98	42.00	0.225	2.55	32.59			
2.20	4.54	42.00	0.225	2.65	35.68			
2.30	4.15	42.00	0.225	2.75	38.90			
2.40	3.81	42.00	0.225	2.85	42.27			
2.50	3.51	42.00	0.225	2.95	45.77			
2.60	3.25	43.00	0.225	3.05	49.28			
2.70	3.01	43.00	0.225	3.15	53.05			
2.80	2.80	43.00	0.225	3.25	56.97			
2.90	2.61	43.00	0.225	3.35	61.20			
3.00	2.44	43.00	0.225	3.45	65.57			

- Note:
1. Specific length can be supplied as per customer requirement.
 2. Over all diameter can also be increased as per customer requirement.
 3. Tolerance of outer diameter is ±0.05mm.
 4. Eccentricity : ≤ 10%.

Comparison between Polycot (Normal OD) & PVC insulated winding wires:-

Particulars	POLYCOT	PVC	Advantage of POLYCOT over PVC
Insulation Thickness (mm)	0.200 to 0.225	0.30 to 0.55	35 to 60%
Dielectric Strength (V/mm)	500	250	140%
Tensile Strength (p.s.i.)	4000	2000	100%
Water Absorption	0.45	0.70	40%
Compressive Strength Rupture (p.s.i.)	5000	1500	250%
Temperature Rating	90°C	85°C	10%
Insulation Resistance at Ambient Temp. (Mohm/km)	5000	600	700%

