

ELEKTRISOLA Selfbonding Wire Types

ELEKTRISOLA – Product - Name ELEKTRISOLA – Product - Code	Butybond 155 B155	Solabond 155 S155	Solabond 180 S180	Solabond 200 S200
General Description Base coat Bondcoat Standards IEC (including the following norms) Diameters available Technical Values 1. Thermal values of base coat Temperature index 20.000 h acc. to IEC 172 Cut through temperature min. °C acc. to IEC 851.6.4 Elektrisola typical values for 0,05 mm/ 0,25 mm, Grade 1 Heat shock min. °C acc. to IEC 851.6.3 Elektrisola typical values for 0,05 mm/0,25 mm, Grade 1 2. Electrical values Low voltage continuity max. acc. to IEC 851.5.1 for 0,05 mm/0,25 mm Elektrisola typical values for 0,05 mm/0,25 mm, Grade 1B High voltage continuity max. acc. to IEC 851.5.2 for 0,05 mm/0,25 mm Elektrisola typical values for 0,05 mm/0,25 mm, Grade 1B Breakdown voltage acc. to IEC 851.5.4.2 (at 20°C, 35% humidity) Elektrisola typical values for 0,05 mm/0,25 mm, Grade 1B 3. Mechanical values Elongation min. acc. to IEC 851.3.3 for 0,05 mm/0,25 mm, Grade 1B Elektrisola typical values for 0,05 mm/0,25 mm, Grade 1B Tensile strength Elektrisola typical values for 0,05 mm/0,25 mm, Grade 1B 4. Bonding of wire Method Hot air bonding Oven bonding Resistance bonding Solvent bonding Recommended solvent Recommended bonding temperature Resoftening temperature Stockability at 25°C/60% relative humidity in months 5. Solderability acc. to IEC 851.4.5 max. seconds at °C for 0,05 / 0,25 mm Elektrisola typical values acc. to IEC 851.4.5.1.3 0,05 mm, Grade 1B, seconds at °C 0,25 mm, Grade 1B, seconds at °C Applications	mod. Polyurethane Polyvinylbutyral IEC 317-35, IEC 317-2 0,010 - 0,50 mm 158°C ≥ 200°C 225/230°C ≥ 175°C 190/180°C ≤ 60/25 0/0 ≤ 60/25 2/1 220/160 V/μm ≥ 10 %/22 % 23% / 40% 57/1370 cN 0,010 - 0,14 mm 0,10 - 0,50 mm 0,10 - 0,50 mm limited 110 - 140°C ≥ 100°C ≤ 6 2s/390°C 3s/390°C 1,3s/370°C 0,8s/390°C 2,8s/370°C 1,4s/390°C Easy bonding, low sensitivity against humidity, low resof- tening temperature. For stepper motors for quartz watches, instruments, voice coils, sensors.	mod. Polyurethane Polyamide IEC 317-35, IEC 317-2 0,010 - 0,50 mm 158°C ≥ 200°C 225/230°C ≥ 175°C 190/180°C ≤ 60/25 0/0 ≤ 60/25 2/1 220/160 V/μm ≥ 10 %/22 % 23% / 40% 57/1370 cN 0,010 - 0,14 mm 0,10 - 0,50 mm 0,10 - 0,50 mm 0,03 - 0,10 mm Methanol 140 - 170°C ≥ 140°C ≤ 3 2s/390°C 3s/390°C 0,5s/370°C 0,4s/390°C 1,2s/370°C 0,7s/390°C Higher resoftening tempera- ture, hygroscopic, alcohol bonding possible. For instrument coils, loud- speakers, small motors, sensors.	Polyesterimide Polyamide IEC 317-36 0,010 - 0,50 mm 181°C ≥ 265°C 315/325°C ≥ 200°C 260/250°C ≤ 60/25 0/0 ≤ 60/25 2/1 220/160 V/μm ≥ 10 %/22 % 23% / 40% 57/1370 cN 0,010 - 0,14 mm 0,10 - 0,50 mm 0,10 - 0,50 mm 0,03 - 0,10 mm Methanol/Ethanol 160 - 190°C ≥ 170°C ≤ 5 2s/470°C 3s/470°C 1,9s/470°C 3,4s/470°C Very good thermal properties of base coat, high resoftening temperature, slightly hygro- scopic. For small motors, loud- speakers.	Theic-mod. Polyesterimide Polyamide IEC 317-37 0,020 - 0,50 mm 210°C ≥ 300°C 350/360°C ≥ 200°C 230/220°C ≤ 60/25 0/0 ≤ 60/25 2/1 220/160 V/μm ≥ 10 %/22 % 23% / 40% 57/1370 cN 0,020 - 0,14 mm 0,10 - 0,50 mm 0,10 - 0,50 mm 0,03 - 0,10 mm Methanol/Ethanol 200 - 230°C ≥ 190°C ≤ 5 -- -- -- Good thermal properties of base coat, high resoftening temperature, slightly hygro- scopic. For small motors, loud- speakers.

Elektrisola typical values are the result of various tests and represent average values.

Bonding Methods

1. Hot Air Bonding

Hot Air bonding is accomplished during the winding process by means of a jet of hot air. The temperature of the hot air at the winding, usually between 140°C and 230°C, is dependent upon the wire size, winding speed, and the size and shape of the winding. This method is recommended for the majority of applications. It is cost effective for fine wire and is recommended for sizes 0,010 - 0,14 mm.

2. Oven Bonding

Oven bonding is accomplished by a thermal treatment of the finished winding in a heat chamber. Dependent upon the size of the winding, heating times of 5 to 30 minutes in a temperature of 130°C to 220°C are necessary in order to obtain uniform heating of the windings. Because of the longer times needed oven bonding can be uneconomical for some applications.

3. Resistance Bonding

Resistance bonding is bonding by means of an electric current (resistance heating). Current intensity is dependent upon wire size and winding size. Resistance bonding is good for sizes heavier than 0,10 mm but care should be taken not to overheat the center of the winding because overheating could crack or destroy the base insulation, resulting in short circuits.

4. Solvent Bonding

Solvent bonding is accomplished by applying suitable solvents, like denatured alcohol, during the winding process. The solvent can be brushed, sprayed, or wicked on the winding. This method is least recommended as there is the possibility that residual traces of the solvents may remain in the winding and contaminate the base insulation. Because of this possibility this method should only be considered if the winding consists of only a small number of turns. In order to eliminate the potential solvent, remnants and insure complete hardening it is recommended to heat the winding in a heat chamber.

Bonding strength dependent on temperature



