

## Development of a Systematic Approach to Assess the Applicability of Silver Coated Conductive Yarn

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**Abstract :** Recently, wearable electronic textiles have been emerging in today's market and were developed rapidly since, beside the needs for the clothing uses for leisure, fashion wear and personal protection, there also exist a high demand for the clothing to be capable for function in this electronic age, such as interactive interfaces, sensual being and tangible touch, social fabric, material witness and so on. With the requirements of wearable electronic textiles to be more comfortable, adorable, and easy caring, conductive yarn becomes one of the most important fundamental elements within the wearable electronic textile for interconnection between different functional units or creating a functional unit. The properties of conductive yarns from different companies can vary to a large extent. There are vitally important criteria for selecting the conductive yarns, which may directly affect its optimization, prospect, applicability and performance of the final garment. However, according to the literature review, few researches on conductive yarns on shelf focus on the assessment methods of conductive yarns for the scientific selection of material by a systematic way under different conditions. Therefore, in this study, direction of selecting high-quality conductive yarns is given. It is to test the stability and reliability of the conductive yarns according the problems industrialists would experience with the yarns during the every manufacturing process, in which, this assessment system can be classified into four stage. That is 1) Yarn stage, 2) Fabric stage, 3) Apparel stage and 4) End user stage. Several tests with clear experiment procedures and parameters are suggested to be carried out in each stage. This assessment method suggested that the optimal conducting yarns should be stable in property and resistant to various corrosions at every production stage or during using them. It is expected that this demonstration of assessment method can serve as a pilot study that assesses the stability of Ag/nylon yarns systematically at various conditions, i.e. during mass production with textile industry procedures, and from the consumer perspective. It aims to assist industrialists to understand the qualities and properties of conductive yarns and suggesting a few important parameters that they should be reminded of for the case of higher level of suitability, precision and controllability.

**Keywords :** applicability, assessment method, conductive yarn, wearable electronics

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