

## **Polyethylene Terephthalate (PET) Fabrics Decoloring for PET Textile Recycle**

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**Abstract :** PET fiber is the most widely used fiber worldwide. This man-made fiber is prepared from petroleum chemicals, which may cause environmental pollution and resource exhausting issues, such as the use of non-renewable sources, greenhouse gas emission and discharge of wastewater. Therefore, the textile made by recycle-PET is the trend in the future. Recycle-PET fiber, compared with petroleum-made PET, shows lower carbon emissions and resource exhaustion. However, "fabric decoloring" is the key barrier to textile recycling. The dyes existing in the fabrics may cause PET chain degradation and appearance drawbacks during the textile recycling process. In this research, the water-based decoloring agent was used to remove the dispersed dye in the PET fabrics in order to obtain the colorless PET fabrics after the decoloring process. The decoloring rate of PET fabrics after the decoloring process was up to 99.0%. This research provides a better solution to resolve the issues of appearance and physical properties degradation of fabrics-recycle PET materials due to the residual dye. It may be possible to convert waste PET textiles into new high-quality PET fiber and build up the loop of PET textile recycling.

**Keywords :** PET, decoloring, disperse dye, textile recycle

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