

# Life Cycle Assessment of Building ETFE Cushion for Circular Economy

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## ABSTRACT

The transition from linear to circular economy is not realizable until the concepts of circular economy are applied to the life-cycle stages of buildings, which is a proactive design strategy to manage structures from cradle to cradle [1]. Textile building is a special but inevitable building style, whose circularity should be put more efforts.

ETFE cushion is applied more in the building sector because its aesthetic value and outstanding physical properties. But the circularity of ETFE material has never been discussed. It is important to figure out the strategy to recycle ETFE foil to realize the circular economy before the extensive implementation. In this paper, the production and recycling procedures of ETFE foil are summarized. A cradle-to-cradle life cycle assessment is conducted. The life cycle inventory of ETFE foil for circular economy is developed. Finally, the environmental performances of ETFE foil are calculated and provided. The results will provide deep insights and reasonable evidence in the carbon emission reduction of circular ETFE cushion components.

## REFERENCES

- [1] H. Lei and W. Yang. A new method for probabilistic circular economy assessment of buildings. *Journal of building engineering*. 57, 104875, 2022.