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Textile dry cleaning in high pressure CO₂¹ STEVIA SUTANTO², TU Delft, MAAIKE VAN DER KAMP, Feyecon Carbon Dioxide Technologies, GEERT-JAN WITKAMP, TU Delft — High-pressure carbon dioxide (CO₂) is one of the most suitable replacements for perchloroethylene (PER), a common but harmful textile dry cleaning solvent. Previous studies have indicated that the particulate soil removal with CO₂ is lower compared to that with PER, because of the lesser amount of mechanical action in CO₂. Furthermore, there is a lack of understanding of textile-dirt-CO₂ interaction. It is the objective of this study to get an insight in the mechanical forces that play a role in CO₂ dry cleaning and to use this information to improve the CO₂ washing performance. Various mechanical actions were investigated with the experiments in an *in-situ* high pressure observation cell. Textiles stained with different kinds of particulate soils were washed in CO₂. The washing results show that the combination of rotating and vertical action gives the highest cleaning performance and liquid CO₂ spray may be a suitable additional mechanism to increase the cleaning performance.

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