

# Laboratory Test Study: Surface Abrasion Resistance



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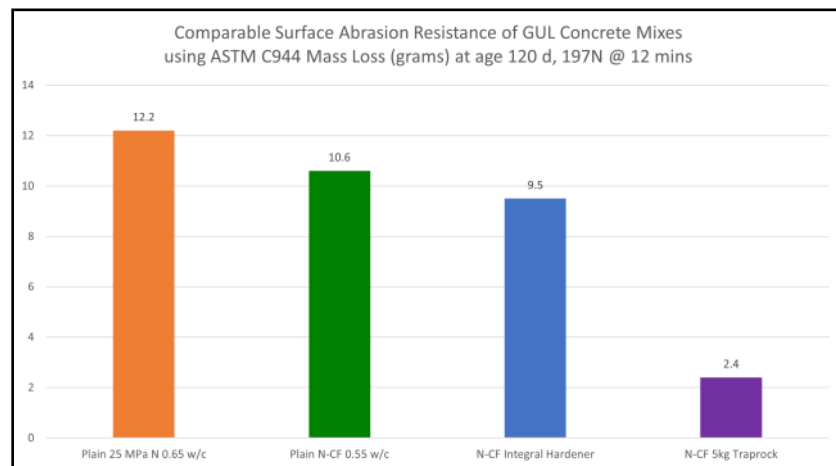
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Exposed concrete floors are being used as a sustainable floor finish in many buildings. For sustainability, there is a need to understand their real differences in performance between different concrete mixes and surface finishes.

In 2021, the CFCA undertook laboratory test study to compare 4 different surfaces for abrasion resistance using ASTM C944 “Standard Test Method for Abrasion Resistance of Concrete or Mortar Surfaces by the Rotating-Cutter Method”:

1. Plain “N” 25 MPa 0.65 w/c Concrete (CSA A23.1 type “N” & O.B.C.).
2. Plain “N-CF” 0.55 w/c Concrete (CSA A23.1 type “N-CF”).
3. “N-CF” 0.55 w/c Concrete with Integral Aggregate Hardener.
4. “N-CF” 0.55 w/c Concrete with 5 kg/m<sup>2</sup> Traprock Surface Aggregate Hardener.



When tested at an extended 120 day age and 12 minute duration:

1. Plain 25 MPa “N” 0.65 w/c Concrete exhibits ~13% less abrasion resistance than Plain “N-CF” 0.55 w/c Concrete.
2. “N-CF” 0.55 w/c Concrete exhibits ~35 MPa compressive strength which is sustainably optimal for plain concrete abrasion resistance.
3. “N-CF” Concrete with Integral Aggregate Hardener exhibits a 10% improvement in abrasion resistance over Plain “N-CF” Concrete.
4. “N-CF” with 5 kg Traprock Surface Aggregate Hardener exhibits a 400% improvement in abrasion resistance over Plain “N-CF” Concrete.

*Note: Surface Aggregate Hardeners from CPD, Euclid & Sika contain 0% hazardous respirable crystalline silica.*

## Recommendations:

- Each concrete floor surface should be designed for its intended usage and durability requirements. Please contact The [CFCA](#), [CPD](#), [Euclid](#) or [Sika](#) for more information.

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