

# Dufferin Concrete Technical Bulletin

## Rapid Surface Evaporation of Fresh Concrete

### What is Rapid Surface Evaporation?

Environmental conditions can accelerate the surface evaporation moisture loss beyond the replenishing capacity of the fresh concrete bleeding rate, leading to a wide range of finish-ability & surface deficiencies that will have an impact on the durability & aesthetics of the concrete.

### What causes Rapid surface evaporation?

Typically the **wind, low relative humidity, direct sun exposure, high ambient & concrete temperatures** are the main factors that increase the surface evaporation rate while the presence of entrained air & cool subgrade temperatures are often involved reducing bleeding rate.

Surface evaporation is **prevalent during the spring & fall** months when the humidity is low & the winds are high in combination with low ambient & subgrade temperatures.

### What Are the Symptoms of Rapid Surface Evaporation?

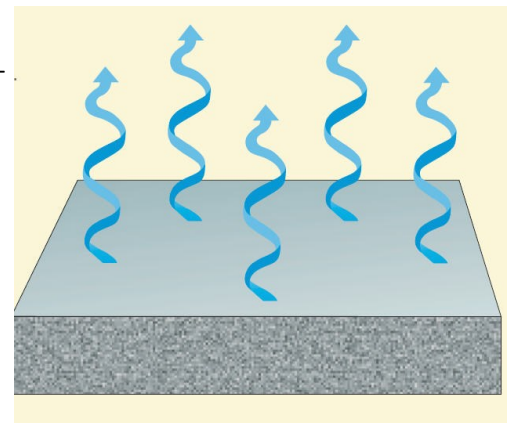
Light to moderate rapid evaporation might induce **“tearing” & “sponginess”** on the fresh concrete surface & could make the surface appear ready to be troweled while the underlying concrete is still bleeding or still plastic.

If the evaporation rate is too rapid, **plastic shrinkage cracks** may develop.

### How to Minimize the Effects of Rapid Surface Evaporation?

Depending on the application & type of finish some of the recommended protective measures include:

- Plan to have indoor slabs poured after all walls & roofs are built
- Fogging, sunshades, & windbreaks
- Liquid-applied **evaporation reducers/retardants**
- Wet burlap, cotton mats, & synthetic covers
- Wet sand, straw, & hay



Additionally **be ready to receive & place concrete**, consider scheduling pours to **start early in the morning or later in the afternoon** & have **sufficient manpower** to manage the placement & finishing process.

#### Bibliography & references:

PCA- *Concrete Slab Surface Defects: Causes, Prevention, Repair*  
NRMCA—CIP5—*Plastic Shrinkage cracking*  
*Concrete Ontario -Concrete Construction Troubleshooting Tips*  
CSA A23.1-14