

Cold Joint Transmission Rate

Article Overview

The cold joint transmission rate refers to the time-dependent likelihood of a cold joint forming when fresh concrete is poured onto partially hardened concrete, typically increasing significantly after 30 minutes.

Understanding Cold Joints

A cold joint occurs when a new layer of concrete is poured onto an existing layer that has already begun to set, creating a weak interface due to incomplete bonding between the two layers . This discontinuity can compromise structural integrity, reduce durability, and allow moisture or chloride penetration, which may accelerate corrosion of reinforcement .

Factors Affecting Cold Joint Formation

The transmission rate or likelihood of cold joint formation depends on several factors:

- **Time Interval Between Batches:** The longer the delay between pouring successive layers, the higher the risk. As a general guideline, a gap exceeding 30 minutes significantly increases the probability of a cold joint .
- **Concrete Mix and Hydration Rate:** The type of cement, use of supplementary cementitious materials (SCMs) like fly ash or slag, and chemical admixtures (e.g., retarders) influence the setting time and plasticity, affecting the window for safe pouring .
- **Environmental Conditions:** Temperature, humidity, and wind can accelerate or slow the initial set, altering the critical time for cold joint formation

Article Content

Oct 23, 2025

Cold Joints | Concrete Society

Generally, cold joints are not a problem structurally if the joint is in compression. However, the location of the joint within the

Jan 10, 2026

Influence of thermal fatigue cycles on concrete cold joints

To better understand the behaviour of cold joints subjected to these thermal fatigue cycles, an experimental program

Jul 01, 2026

Experimental Investigation of the Effect of Cold Joint on ...

Abstract This study investigated the effects of cold joints on the strength and some durability properties of concrete. In the first part of

Oct 16, 2025

Concrete Mixture Cold Joint Prevention and Control System

To resolve the issue of cold joints forming in concrete during the construction process, this study has developed a

Sep 07, 2025

Effect of Fatigue Loading and Precracking on the Interface Shear ...

This paper investigated the shear strengths (that is, the ultimate strength, post-ultimate residual strength and failure

Jul 04, 2026

(PDF) Mechanical behavior of concrete cold joints

In this paper, the problem of the generation of cold joints is approached from two complementary perspectives.

May 12, 2026

Transmission of colds

Aerosol transmission has been studied in the experimental setting and may provide another, albeit less common method for

Jul 23, 2026

Effect of Cold Joint and Its Direction on The ...

This study would test the compressive and flexural strength due to the effect of cold joint in concrete. The period of the

Oct 29, 2025

Numerical Investigation of Evaluating the Degree of Damage in ...

Numerical findings indicate that cold joints are detectable with a void ratio of 40% or greater. For the 60% and 80% void ratios,

Nov 30, 2025

Degradation mechanisms of concrete cold joint surfaces under sulfate ...

Shorter intervals correspond to a higher rate of decrease in both adhesion and internal friction angle, while longer

Feb 15, 2026

A comprehensive review on effect of cold metal transfer welding ...

Cold Metal Transfer (CMT), an advanced technology developed from the conventional metal inert gas (MIG) process,

Feb 28, 2026

Impact of Construction Joints on the Structural Performance of ...

The review explored how cold joints impacted key properties like flexural strength, ductility, and energy dissipation

Dec 25, 2025

The Critical Threat of Cold Joints in Concrete Columns: Ensuring ...

Managing the concrete delivery rhythm is perhaps the single most important factor in preventing cold joints. The rate of

Sep 13, 2025

Shear strength in reinforced concrete beams with cold joint

Abstract Cold joints in reinforced concrete (RC) beams can significantly impact shear behavior, influencing stress distribution and

Sep 01, 2025

Cold metal transfer process - A review

The cold metal transfer is a modified method of MIG/MAG process. The CMT is a less hot (low heat input) process

Apr 23, 2026

(PDF) A thermo-hygro computational model to determine the factors ...

A thermo-hygro computational model to determine the factors dictating cold joint formation in 3D printed concrete

Sep 13, 2025

The effect of delay time in cold joints on the bonding and shear ...

Investigating the bonding strength in cold joints in relation to delay time is the most important issue that needs more experimental

Dec 05, 2025

Cold Joint During Monolithic Concrete Works: Understanding and ...

The paper considers the conditions of occurrence of cold joints of concreting depending on the technological

Oct 04, 2025

Cold Joint in Concrete | Why Important to Know

Cold joint in concrete a structure can be occurred due to the lack of attention of the supervision team or unawareness of the setting

Oct 20, 2025

(PDF) Mechanical behavior of concrete cold joints

A loss of resistance over 30% for cold concrete cylinders with diagonal joints was found, while concrete cylinders with

Aug 11, 2025

How to Prevent Cold Joints in Concrete | Cold Joint in Slab

In this article, we will learn all about cold joints in concrete: causes, effects, prevention, and repair methods.

Feb 12, 2026

Experimental Investigation of the Effect of Cold Joint on ...

For the concretes without cold joints (CJ0) and with cold joints (CJ1, CJ2 and CJ3), cold joint formation times, strength experiments

Nov 08, 2025

What is a Cold Joint in Concrete? (And How to Fix them!)

The longer the period between the placement of the adjacent layers, the higher the risks of a cold joint. A

Nov 11, 2025

Lining cold joint defect formation mechanism and pouring interval ...

Abstract Cold joints, a prevalent defect in mass concrete casting, pose significant risks to the structural integrity and

Jun 06, 2026

Michal Hlobil, Luca Michel, Mohit Pundir, and David S. Kammer

13% for $\Delta W = 0.1$ m. The presented model allows the user to verify and compare the time for cold joint formation for

Jul 24, 2026

An experimental and numerical study on the effects of cold joint ...

The study aims to measure the reduction in compressive and flexural strength of concrete specimens containing cold

Jan 29, 2026

Cold Solder Joint: Causes, How to Identify One, and How to Prevent It ...

A cold solder joint is one of the most common — and costly — PCB defects. Learn what causes them, how to identify

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