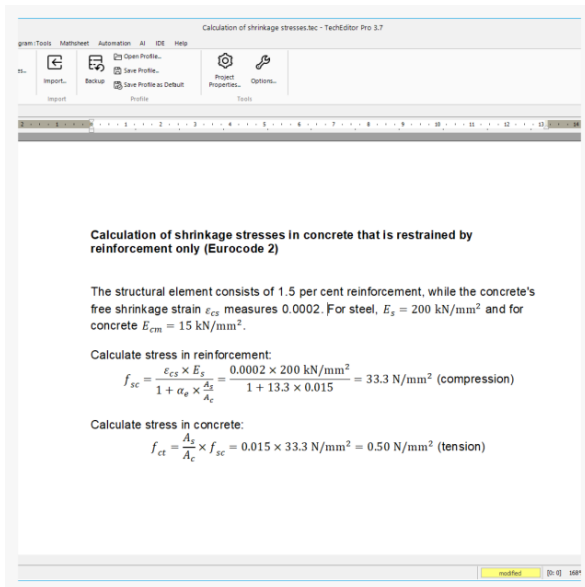


# 0014. Calculation of shrinkage stresses in concrete that is restrained by reinforcement only (Eurocode 2)



## Short Description

An example of calculation the stresses caused by concrete shrinkage of a reinforced concrete element. The calculation is performed in accordance with Eurocode 2. All calculations are automated. Any units of measurement are supported.

{module 342}

## Description

An example of calculation the stresses caused by concrete shrinkage of a reinforced concrete element. The calculation is performed in accordance with Eurocode 2. All calculations are automated. Any units of measurement are supported. A complete analytical solution.

{module 406}

## Download

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Video

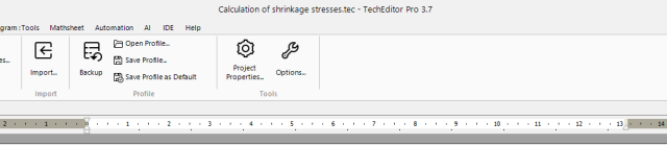
{module 406}

{module 198}

Specification

General	
Language	english
Files	
File Size (MB)	0..20
Engineering	
Material	reinforced concrete
Standard / Code	Eurocode

Product Gallery



Calculation of shrinkage stresses in concrete that is restrained by reinforcement only (Eurocode 2)

The structural element consists of 1.5 per cent reinforcement, while the concrete's free shrinkage strain  $\epsilon_{cs}$  measures 0.0002. For steel,  $E_s = 200 \text{ kN/mm}^2$  and for concrete  $E_{cm} = 15 \text{ kN/mm}^2$ .

Calculate stress in reinforcement:

$$f_{sc} = \frac{\epsilon_{cs} \times E_s}{1 + \alpha_e \times \frac{A_s}{A_c}} = \frac{0.0002 \times 200 \text{ kN/mm}^2}{1 + 13.3 \times 0.015} = 33.3 \text{ N/mm}^2 \text{ (compression)}$$

Calculate stress in concrete:

$$f_{ct} = \frac{A_s}{A_c} \times f_{sc} = 0.015 \times 33.3 \text{ N/mm}^2 = 0.50 \text{ N/mm}^2 \text{ (tension)}$$