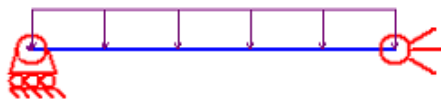


<b>TEST SCHEDULE B 19</b>	<b>EN 1993-1-1: 2005 (EUROCODE 3)</b>	<b>Sargon ©, Cescoplus ©</b>
BUCKLING	BENDING 2 (LATERAL TORSIONAL)	<b>EC3.BUC.Q3.004</b>



**Program:** WEURO © version October 2007 for Sargon and Cescoplus  
**Keywords:** EN 1993, Eurocode 3, example, validation, benchmark, reliability, quality control, error measure. **Parole chiave:** Eurocodice 3, esempio, validazione, test, affidabilità, controllo di qualità, misura dell'errore  
**Tv**=exploitation target value, **Cv**=exploitation computed value  
**Authors:** Ing. Marco Croci, Ing. Paolo Rugarli

<b>BEAM</b>			
Length [mm]	Buckling factors	Left end	Right end
3500	$\beta_1=1$ $\beta_2=1$ $\beta_3=1$	FREE	FIXED

<b>LOAD</b>		
Type	Value	Point of application
DISTRIBUTED LOAD $q_3$	$q=80\text{N/mm}$	

<b>MATERIAL</b>	<b>S235</b>					
$f_y$ [N/mm <sup>2</sup> ]	$f_u$ [N/mm <sup>2</sup> ]	$E$ [N/mm <sup>2</sup> ]	$\nu$	$\gamma_{M0}$	$\gamma_{M1}$	$\gamma_{M2}$
235	360	2,10E+05	0,3	1,1	1,1	1,25

<b>CROSS-SECTION</b>	<b>HE 200 B</b>	<b>CLASS: M<sub>2</sub> → 1</b>			
$A$ [mm <sup>2</sup> ]	$J_2$ [mm <sup>4</sup> ]	$J_3$ [mm <sup>4</sup> ]	$J_t$ [mm <sup>4</sup> ]	$W_2$ [mm <sup>3</sup> ]	$W_3$ [mm <sup>3</sup> ]
7808	5,696e+07	2,003e+07	5,928e+05	5,696e+05	2,003e+05
$W_{pl2}$ [mm <sup>3</sup> ]	$W_{pl3}$ [mm <sup>3</sup> ]	$i_2$ [mm]	$i_3$ [mm]	$i_t$ [mm]	
6,426e+05	3,058e+05	85,40	50,70	57,74	
$h$	$b$	$t_w$	$t_f$	$r$	
200	200	9	15	18	

<b>OTHER DATA*</b>				
$h/b$	$\alpha_{LT}$	$I_{\omega}$	$G$	
1,00	0,21	1,711E+11	8,077E+04	
$\chi_{LT}$	$\phi_{LT}$	$\lambda_{LT}$	$M_{cr}$	$C_1$
0,921	0,663	0,511	5,776E+08	1,132

**TARGET VALUES BASED ON PRELIMINAR COMPUTATIONS**

$$T_v = M / (\chi_{LT} W_{pl} f_y / \gamma_{M1})$$

$T_v$
9,691E-01

**CHECKER'S RESULTS (COMPUTED VALUES) AND COMPARISON WITH THE TARGET**

$C_v$	$(C_v - T_v) / T_v$
9,692E-01	<b>5,594E-05</b>

In Sargon was fixed the same  $C_1$  value reported in Other Data section