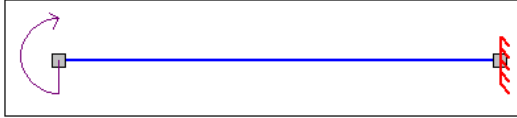


<b>TEST SCHEDULE B 12</b>	<b>EN 1993-1-1: 2005 (EUROCODE 3)</b>	<b>Sargon ©, Cescopius ©</b>
BUCKLING	BENDING 2 (LATERAL TORSIONAL)	<b>EC3.BUC.M2.001</b>



**Program:** WEURO © version October 2007 for Sargon and Cescopius  
**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

BEAM			
Length [mm]	Buckling factors	Left end	Right end
3500	$\beta_1=2$ $\beta_2=2$ $\beta_3=2$	FREE	FIXED

LOAD		
Type	Value	Point of application
BENDING MOMENT $M_2$	$M=120.000.000\text{Nmm}$	LEFT END

MATERIAL						
S235						
$f_y$ [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

CROSS-SECTION		HE 240 A				CLASS: $M_2 \rightarrow 1$	
$A$ [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> ]		
7684	7,763E+07	2,769E+07	4,155E+05	6,751E+05	2,307E+05		
$W_{pl2}$ [mm <sup>3</sup> ]	$W_{pl3}$ [mm <sup>3</sup> ]	$i_2$ [mm]	$i_3$ [mm]	$i_t$ [mm]			
7,446E+05	3,517E+05	100,5	60	69,28			
$h$	$b$	$t_w$	$t_f$	$r$			
230	240	7,5	12	21			

OTHER DATA*				
$h/b$	$\alpha_{LT}$	$I_{\omega}$	$G$	
0,96	0,21	3,285E+11	8,077E+04	
$\chi_{LT}$	$\phi_{LT}$	$\lambda_{LT}$	$M_{cr}$	$C_1$
0,830	0,827	0,736	3,231E+08	1

**TARGET VALUES BASED ON PRELIMINAR COMPUTATIONS**

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

$T_v$
9,086E-01

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

$C_v$	$(C_v - T_v) / T_v$
9,086E-01	-1,751E-05

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

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