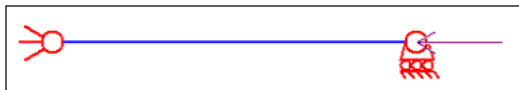


<b>TEST SCHEDULE B 2</b>	<b>EN 1993-1-1: 2005 (EUROCODE 3)</b>	<b>Sargon ©, Cescoplus ©</b>
BUCKLING	COMPRESSION	<b>EC3.BUC.NN.002</b>



**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
1000	$\beta_1=0 \quad \beta_2=1 \quad \beta_3=1$	HINGE	SIMPLY SUPPORTED

<b>LOAD</b>			
Type	Value	Point of application	
COMPRESSION	N=10.000.000N	RIGHT END	

<b>MATERIAL</b>	<b>S275</b>					
$f_y$ [N/mm <sup>2</sup> ]	$f_u$ [N/mm <sup>2</sup> ]	E [N/mm <sup>2</sup> ]	$\nu$	$\gamma_{M0}$	$\gamma_{M1}$	$\gamma_{M2}$
275→255	430	2,10E+05	0,3	1,1	1,1	1,25

<b>CROSS SECTION</b>	<b>HSH 600X828</b>	<b>CLASS: N' → 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> ]
1,055E+05	6,544e+09	2,737e+09	1,813e+08	2,181e+07	9,124e+06
$W_{pl2}$ [mm <sup>3</sup> ]	$W_{pl3}$ [mm <sup>3</sup> ]	$i_2$ [mm]	$i_3$ [mm]	$i_t$ [mm]	
2,550e+07	1,379e+07	149	161	173,2	
h	$b_1=b_2$	$t_w$	$t_{f1}=t_{f2}$		
600	600	32	76		

<b>OTHER DATA*</b>					
$\alpha_2(t_r > 40)$	$\alpha_3(t_r > 40)$	$\lambda_2$	$\lambda_3$	$\bar{\lambda}_2$	$\bar{\lambda}_3$
0,49	0,76	6,71	6,21	0,074	0,069
$\Phi_2$	$\Phi_3$	$\chi_2$	$\chi_3$	$N_{b2,Rd}$ [N]	$N_{b3,Rd}$ [N]
0,472	0,453	1,066 → 1	1,111 → 1	24.456.818	24.456.818

**TARGET VALUES BASED ON PRELIMINAR COMPUTATIONS**

$$T_v = N / N_{b2(or 3).Rd}$$

Tv
4,089E-01

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

Cv	(Cv-Tv)/Tv
4,087E-01	<b>-4,498E-04</b>

(\*) formulae for  $\lambda_{2,3}$ ,  $\bar{\lambda}_{2,3}$ ,  $\chi_{2,3}$  and  $N_{b2,3,Rd}$  are given in EN 1993-1-1 6.3.1

According to table 3.1 when cross section thickness is higher than 40mm yield stress should be decreased. Here a yield stress equal to 255N/mm<sup>2</sup> has been used.