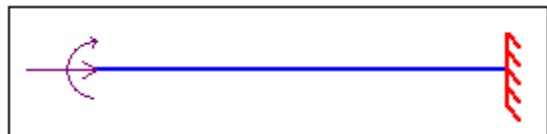


|                           |                                       |                              |
|---------------------------|---------------------------------------|------------------------------|
| <b>TEST SCHEDULE R 35</b> | <b>EN 1993-1-1: 2005 (EUROCODE 3)</b> | <b>Sargon ©, Cescoplus ©</b> |
| <b>RESISTANCE</b>         | <b>COMPRESSION + BENDING 3</b>        | <b>EC3.RES.NNM3.001</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:** Eurocode 3, esempio, validazione, test, affidabilità, controllo di qualità, misura dell'errore

**Tv**=exploitation target value, **Cv**=exploitation computed value

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|                              |                            |                                                                                          |                                       |                                       |                          |               |
|------------------------------|----------------------------|------------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------|--------------------------|---------------|
| BEAM                         |                            |                                                                                          |                                       |                                       |                          |               |
| Length [mm]                  |                            | Left end                                                                                 |                                       | Right end                             |                          |               |
| 1000                         |                            | FREE                                                                                     |                                       | FIXED                                 |                          |               |
| LOADS                        |                            |                                                                                          |                                       |                                       |                          |               |
| Type                         |                            | Value                                                                                    |                                       | Point of application                  |                          |               |
| BENDING MOMENT $M_3$         |                            | M=5.500.000Nmm                                                                           |                                       | LEFT END                              |                          |               |
| Type                         |                            | Value                                                                                    |                                       | Point of application                  |                          |               |
| COMPRESSION                  |                            | N=320.000N                                                                               |                                       | LEFT END                              |                          |               |
| MATERIAL                     | A514/100                   |                                                                                          |                                       |                                       |                          |               |
| $f_v$ [N/mm <sup>2</sup> ]   | $f_u$ [N/mm <sup>2</sup> ] | E [N/mm <sup>2</sup> ]                                                                   | $\nu$                                 | $\gamma_{M0}$                         | $\gamma_{M1}$            | $\gamma_{M2}$ |
| 689                          | 758                        | 2,000e+05                                                                                | 0,3                                   | 1,1                                   | 1,1                      | 1,25          |
| CROSS SECTION                | IPE 100                    | CLASS: $N \rightarrow 1$ $M_3 \rightarrow 1$ $N + M_3 \rightarrow 1$ (reclasses method*) |                                       |                                       |                          |               |
| 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> ] |               |
| 1032                         | 1,710e+06                  | 1,592e+05                                                                                | 1,202E+04                             | 3,420e+04                             | 5,789e+03                |               |
| $W_{pl2}$ [mm <sup>3</sup> ] | $W_{pl3}$                  | $i_2$ [mm]                                                                               | $i_3$ [mm]                            | $i_t$ [mm]                            |                          |               |
| 3,941E+04                    | 9,145E+03                  | 40,7                                                                                     | 12,42                                 | 15,88                                 |                          |               |
| h                            | b                          | $t_w$                                                                                    | $t_f$                                 | r                                     |                          |               |
| 100                          | 55                         | 4,1                                                                                      | 5,7                                   | 7                                     |                          |               |
| OTHER DATA                   |                            |                                                                                          |                                       |                                       |                          |               |
| $a=(A-2bt_f)/A$              | $N_{pl}$ [N]               | $n=N_{Ed}/N_{pl}$                                                                        | $M_{pl}=W_{pl}*f_v/\gamma_{M0}$ [Nmm] | $M_n=M_{pl}[1-((n-a)/(1-a))^2]$ [Nmm] |                          |               |
| 0.392                        | 646.407                    | 0.495                                                                                    | 5.728.095                             | 5.564.735                             |                          |               |

#### TARGET VALUES BASED ON PRELIMINAR COMPUTATIONS

|                   |
|-------------------|
| $T_v = M_2 / M_n$ |
| 9,884E-01         |

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

|           |                     |
|-----------|---------------------|
| $C_v$     | $(C_v - T_v) / T_v$ |
| 9,881E-01 | -2,701E-04          |

(\*) P. Rugarli, *Strutture in acciaio, La classificazione delle sezioni, Commento all'Eurocodice 3*, EPC Libri, 2007