1. Razlika između EN standarda 310 i 789.

EN 310 STANDARD – ispitivanje nestrukturnih ploča



1-epruveta za ispitivanje B=50mm

F-sila pritiska

 l2min=150mm

l2max=1050mm

t-debljina epruvete

l1=20t (mm)

l2= l1+50 (mm)

$$f\_{s}=\frac{3Fmax\*l\_{1}}{2\*b\*t^{2}}\left(MPa\right) E\_{m}=\frac{M^{3} \* \left(F\_{2}-F\_{1}\right)}{4 \*b\* t^{3}\*\left(a\_{1}-a\_{2}\right)}(Mpa)$$



EN 789 STANDARD – ispitivanje strukturalnih ploča



L2=16t

min 240, max 400

L1=250

b=300mm

$ f\_{s}=\frac{Fmax\*l\_{2}}{2\*\frac{b\*t^{2}}{6}}$ (Mpa) $E\_{m}=\frac{l\_{1}^{2} \* l\_{2}\*\left(F\_{2}-F\_{1}\right)}{16\*\frac{b\*t^{3}}{12}\*(a\_{2}-a\_{1})}$ (MPa)

REDNI BROJ SA SPISKA 17

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| t (mm) | Fmax | F2 | F1 | a1 | a2 |
| 20 | 910N | 40% | 10% | 25 | 32 |

B – PRORAČUN

1. Izračunati dimenzije uzoraka za ispitivanje savojne čvrstoće po EN 310 i EN 789 standarda, ako se ispituju ploče sledećih debljina: 4mm, 20mm i 60mm
2. Za izabrane vrednosti debljine ploče, sile loma i ugiba uzoraka, izračunati savojnu čvrstoću i modul elastičnosti pri savijanju. Proračun uraditi I za EN 310 i EN 789, a kod EN 789 uzeti da je sila loma (Fmax) 10 puta veća od zadate u tabeli.

 **EN 310**

1. t = 4mm

l1 = 20\*t = 20 \* 4 = 80mm

l2 = l1 + 50 = 80 + 50 = 130mm=>150mm

t = 20mm

l1 = 20\*t = 20 \* 20 = 400mm

 l2 = l1 + 50 = 400 + 50 = 450mm

 3) t = 60mm

 l1 = 20\*t = 20 \* 60 = 1200mm

 l2 = l1 + 50 = 1200 + 50 = 1250mm =>1050mm

**EN 789**

1. t = 4mm

l1 =250mm

l2 = 16\*t = 16 \* 4 = 64mm => 240mm

Luk=2 l2+300+50 =830mm

1. t = 20mm

l1 =250mm

l2 = 16\*t = 16 \* 20 = 320mm

Luk=2 l2+300+50 =990mm

1. t = 60mm

l1 =250mm

 l2= 16\*t = 16 \* 60 = 960mm => 400mm

 Luk=2 l2 + 300 + 50 =1150mm

**EN 310**

 1) t= 20mm

 Fmax =910N

 l1 = 20\*t = 20 \* 20 = 400mm

$$ f\_{s}=\frac{3Fmax\*l\_{1}}{2\*b\*t^{2}}=\frac{3\*910\*400}{2\*50\*20^{2}}=27.3 Mpa$$

$$ F\_{2}=0,4\*Fmax=364N$$

$$F\_{1}=0,1\*Fmax=91 N$$

$$E\_{m}=\frac{l\_{1}^{3} \* \left(F\_{2}-F\_{1}\right)}{4 \*b\* t^{3}\*\left(a\_{1}-a\_{2}\right)}=\frac{400^{3}\*(364-91)}{4\*50\*21^{3}\*(32-25)}=1025.72 N/mm^{2}$$

**EN 789**

**2**) t = 20mm

Fmax = 9100N

l1 = 250mm

 l2 = 16\*t = 16 \* 20 = 320mm

b = 300mm

$$ f\_{s}=\frac{Fmax\*l\_{2}}{2\*b\*t^{2}}=\frac{9100\*320}{2\*\frac{300\*20^{2}}{6}}=72.8Mpa$$

$$ F\_{2}=0,4\*Fmax=3640N$$

$$F\_{1}=0,1\*Fmax=910 N$$

$$E\_{m}=\frac{l\_{1}^{2} \* l\_{2}\*\left(F\_{2}-F\_{1}\right)}{16\*\frac{b\*t^{3}}{12}\*\left(a\_{2}-a\_{1}\right)}=\frac{250^{2}\*320\*\left(3640-910\right)}{16\*\frac{300\*20^{3}}{12}\*\left(32-25\right)}$$

$$E\_{m}=2437.5N/mm^{2}$$

**Ljubica Minic 37/2017**