

Design Properties for new SP Grades

Design Properties for SP Grades

| Grade | Design strength (MPa) | | | | Short duration average modulus of elasticity parallel to grain E (MPa) | Short duration average modulus of rigidity for beams G (MPa) |
|-------|-----------------------|-------------------------------------|--------------------------|---|--|--|
| | Bending f'_b | Tension parallel to grain f'_t | Shear in beams f'_s | Compression parallel to grain f'_c | | |
| SP4 | 10 | 4.5 | 4.1 | 16 | 7000 | 465 |
| SP3 | 16 | 7.2 | 5.0 | 20 | 9200 | 615 |
| SP2 | 26 | 12 | 6.5 | 24 | 12000 | 800 |
| SP1 | 36 | 16 | 7.8 | 28 | 14500 | 965 |

Capacity factor ϕ

As per current values for MGP grades in Table 2.5 AS1720.1-1997

Size factor k_{11}

As per current values for MGP grades in Appendix H AS1720.1-1997

Design properties related to strength groups

| Grade | Strength Group | Design property, MPa | | | |
|----------------|----------------|---------------------------------------|----------------------------------|----------------------------------|--|
| | | Bearing perpendicular to grain f'_p | Bearing parallel to grain f'_t | Shear at joint details f'_{sj} | Tension perpendicular to grain f'_{tp} |
| SP4 | SD 7 | 9.7 | 26 | 4.3 | 0.5 |
| SP1, SP2 & SP3 | SD 6 | 12 | 35 | 5 | 0.6 |

Material Constant for beams

| Grades | Ratio temporary load/total load, r | | | | |
|--------|--------------------------------------|------|------|------|------|
| | 0 | 0.25 | 0.5 | 0.75 | 1 |
| | Material constant, p_b , for beams | | | | |
| SP4 | 0.71 | 0.71 | 0.68 | 0.66 | 0.65 |
| SP3 | 0.79 | 0.79 | 0.76 | 0.74 | 0.73 |
| SP2 | 0.89 | 0.89 | 0.85 | 0.83 | 0.82 |
| SP1 | 0.96 | 0.96 | 0.92 | 0.90 | 0.88 |

Material Constant for columns

| Grade | Ratio temporary load/total load, r | | | | |
|---------------------|--|------|------|------|------|
| | 0 | 0.25 | 0.5 | 0.75 | 1 |
| | Material constant, p_b , for columns | | | | |
| SP1, SP2, SP3 & SP4 | 1.02 | 1.02 | 0.97 | 0.94 | 0.92 |

Joint Groups

| Grade | Joint Group |
|-------|-------------|
| SP4 | JD6 |
| SP3 | JD5 |
| SP2 | JD4 |
| SP1 | JD4 |

Dry Density

| Grade | Dry density (kg/m ³) | | |
|-------|----------------------------------|-------------------|-------------------|
| | D _{ave.} | D _{0.25} | D _{0.05} |
| SP4 | 440 | 410 | 370 |
| SP3 | 480 | 450 | 405 |
| SP2 | 525 | 500 | 460 |
| SP1 | 570 | 550 | 510 |