Loadings > Framed

Please note that these tables show minimum requirements, not Sapphire recommendations.

General loading requirements

Building use/occupancy	Horizontal uniformly distributed design load at 1.1m	Design load to infill
Inside a single family dwelling including stairs, light wells, etc, but excluding balconies/roofs.	0.36kN/m	0.5kN/m2 or 0.25kN point load
Residential balconies/roofs, offices/work areas or institutional buildings not susceptible to overcrowding.	0.74kN/m	1.0kN/m2 or 0.5kN point load
Retail environments or areas susceptible to overcrowding where there is less than 3m width for people to congregate.	1.5kN/m	1.5kN/m2 or 1.5kN point load
Shopping malls, assembly areas or areas susceptible to overcrowding where there is over 3m width for people to congregate.	3.0kN/m	1.5kN/m2 or 1.5kN point load

Tubular framed balustrades

Building Type	Loading	*Typical min handrail sizes to meet regulations	Min tubular baluster sizes to meet regulations
Domestic – internal areas only	0.36kN/m	40mmØ	40mmØ
Commercial/External Domestic Areas	0.74kN/m	40mmØ	48mmØ
Retail/Public Areas Schools	1.5kN/m	48mmØ with thick wall tube	48mmØ with reinforced core
Crowded Areas e.g. Stadia and Shopping Malls	3.0kN/m	60mmØ	60mmØ

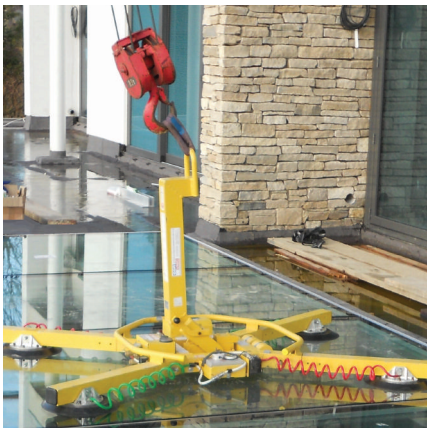
Flat baluster framed balustrades

Building Type	Loading	*Typical min handrail sizes to meet regulations	*Min flat baluster sizes to meet regulations
Domestic – internal areas only	0.36kN/m	40mmØ	60x10mm single or 50x8mm each for twin
Commercial/External Domestic Areas	0.74kN/m	40mmØ	76x12mm single or 60x10mm each for twin
Retail/areas subject to people gathering	1.5kN/m	48mmØ with thick wall tube	90x15mm single or 76x12mm each for twin
Crowded Areas e.g. Shopping Malls.	3.0kN/m	60mmØ	100x20mm single or 90x15mm each for twin

* Job specific calculations are needed to verify suitable sizes– the above chart is typical minimum guidance only
* Loadings to be read in conjunction with BS6399 Part 1:1996 (amended 2002)

CDM Responsibilities

The CDM (Construction Design and Management) Regulations 2007 defined by the Health and Safety Executive stipulate that all project designers and managers have responsibility for health and safety on site. This includes ensuring that working conditions are healthy and safe before work begins, and also ensuring that the proposed work is designed, planned and organised in such a way that it will not put others at risk. Sapphire can help the designer in his or her duty to assess and minimise risk which may arise in working with balustrades including transportation, lifting, working at height, and methods of fixing.



Size
Will it fit through the building entrance?
Do I need to consider it in sections?
Is the size actually possible?

Weight
Heavy items can be difficult to safely handle and therefore designs should fulfil questions like:
Will my floor take the required load if cranes are used? Are items to be manually handled?
Is a crane required?

Large items
Large items can be bulky and difficult to carry up narrow stairs if this is the only means of access to the installation zone. Consideration needs to be made to ensure installation is viable, whether the unit can be manoeuvred to the installation site, and especially whether the floor can accommodate the point loads imposed by cranes or lifting gear.

Some architects want the biggest glass panels possible to minimise the number of vertical joints. In addition to the above, the following needs to be taken into consideration :

> There is also an increased risk that if one of these glass panels does break, a bigger gap is left unguarded than a smaller width panel. The cost of replacement for a damaged large panel can be substantially more than for a smaller one.
> There is also the consideration that building fitments installed after the balustrade may restrict access to the site for any balustrade maintenance work.
> We recommend a maximum panel size of 1200-1500mm x 1350 high. (A 15mm thick panel of this size = approx 70Kg).