

April 2023

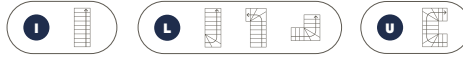


AKKERMAN ENGINEERING SOLUTIONS ApS  
Torskekaj 1A, 3. sal, 6700 Esbjerg, Denmark  
CVR: 41 82 40 26

# CERTIFICATE

## PRODUCT

FRANKFURT prefabricated stair kit (PSK)



## DESCRIPTION

Structural verification of the staircase FRANKFURT product family. The maximum installation height from floor to top tread is 3010 mm and it has a maximum of 13 treads. The maximum tread width is 750 mm. The following configurations are included in this certificate: Straightway, quarter turn and half turn. Turn can be positioned any place on the staircase except from top tread. FRANKFURT is approved with Classic II, Classic III, Style6 and Design banister. The required strength of the walls, deck and floor are not included in this verification.

## MATERIAL

|                     |                           |
|---------------------|---------------------------|
| Treads:             | Center stringer elements: |
| 38 mm oak or beech  | Steel, S235 JR            |
| Handrail:           | Balusters:                |
| Ø40 mm oak or beech | Steel, S235 JR            |

## PARTICULARITIES

The structure is checked with FEM for deformations and stress.

## EUROCODES

- » EAD 340006-00-0506
- » EN 1990:2002 Eurocode: Basis of Structural Design
- » EN 1991-1-1:2002 + AC:2009 Eurocode 1: Actions on structures - Part 1-1
- » EN 1991-1-6:2005 + AC:2008 Eurocode 1: Actions on structures - Part 1-6
- » EN 1993-1-5:2005 + AC:2009 Eurocode 3: Design of steel structures - Part 1-5
- » EN 1993-1-8:2005 + AC:2009 Eurocode 3: Design of steel structures - Part 1-8

## CONCLUSION

DOLLE FRANKFURT staircase is calculated according to Eurocodes [1] and the design is found to be strong and stable [2].

## DESIGNATION

Complete product

## REFERENCES

- [1] DOLLE PSK verification procedure
- [2] FRANKFURT PSK FEA verification report

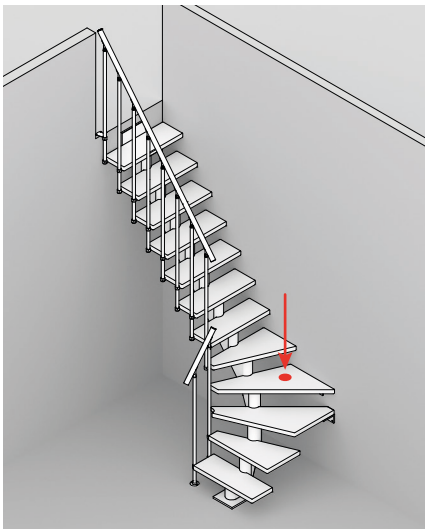
## CLIENT



DOLLE A/S  
CVR: 69 39 50 15  
Vestergade 47, 7741 Frøstrup, Denmark

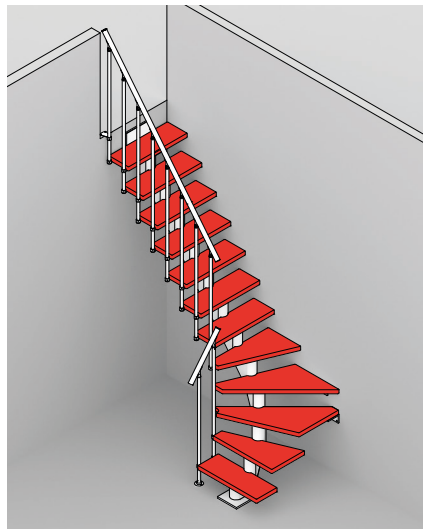


Thomas Sillesen  
CEO AKKERMAN ENGINEERING SOLUTIONS ApS



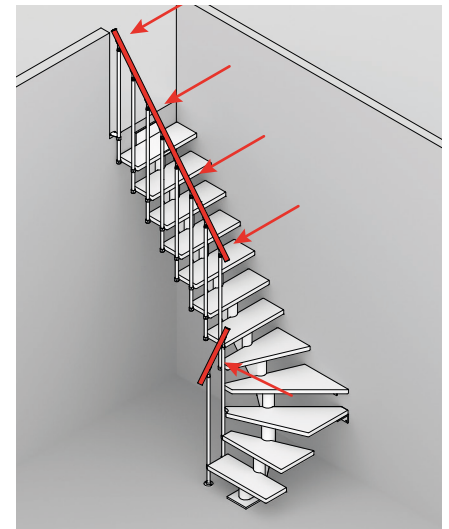
### STAIR POINT LOAD

Max. 2 kN ~ 200 kg



### STAIR SURFACE LOAD

Max. 2 kN/m<sup>2</sup> ~ 450 kg total load



### LOAD ON HANDRAIL

Max. 0,5 kN/m ~ 50 kg/m