

SIA - Work Sheet

Date : _____

location: _____

Tree Nr.: _____ species : _____

Name : _____



Dimensions of the tree:

Exact tree height:

(measured with clinometer - and measuring tape) = distance *(tan upper angle + tan lower angle)



Tree height in m

Trunk diameter: (if round: circumference / 3,1415)

$$\left(\frac{\text{trunk diameter 1} + \text{trunk diameter 2}}{2} - 2 * \text{thickness of bark} \right) = \text{Under bark diameter}$$

parallel to load direction in cm perpendicular to load dir. in cm in cm

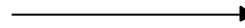


Under bark diameter in cm

Crown Shape: (1 - 4)

Diagram A

Determine the crown shape and the exact tree height. Look up tree height (on vertical y-axis); draw line to the curve of crown shape, from there down to the x-axis and obtain the required trunk diameter which resists gale force gusts of 117 km/h (if trunk is solid and sound). Divide measured under bark diameter /A-Diagram and read the magnification factor from the x-axis value.



$$\frac{\text{Under bark diameter in cm}}{\text{A-Diagram diameter}} = \text{Magnification factor to be used in diagram C}$$



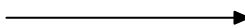
A-Diagram diameter



Magnification factor to be used in diagram C

Diagram B

Search calculated diagram B-value on the y-axis and draw line to the curve, from there drop down to the x-axis and obtain the basic safety factor of a sound trunk. In case the value is less than 100%, the tree should be crown reduced. This situation often occurs e.g. when surrounding trees were felled. The influence of crown reduction can be obtained from Diagram D. If the value obtained from diagram is greater than 100% the tree has safety reserves and may have decay and hollow spots inside. To calculate the residual wall choose diagram C.



$$100 : \text{Basic safety in \%} = \text{Remaining capacity}$$



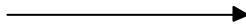
Basic safety in %



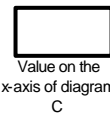
Remaining capacity

Diagram C

The factor obtained from 100/ diagram B value should be searched on the Horizontal x-axis, from there draw line up to curve and search relating point on the y-axis. Multiplying the y-axis value with the trunk diameter delivers the required thickness of the residual wall.



$$\text{Under bark diameter in cm} \times \text{Value on the y-axis in diagram C} = \text{min. required residual wall in cm}$$



Value on the x-axis of diagram C



min. required residual wall in cm