



BS EN 62305-2:2006 - Simplified Risk Assessment Table

The simplified risk assessment table and associated graph have been compiled using the parameters and formulae listed in BS EN 62305-2:2006 by the ATLAS Lightning Conductor (LC) Committee which are represented on the British Standards Lightning Protection Committee GEL 81.

Introduction

BS EN 62305-2 Risk Management is a complex and demanding document. It requires the user to obtain key information about the structure in order to carry out a risk assessment. The more detailed this input information, the more accurate the ultimate lightning protection solution. However, more often than not, the detailed information is not available at the early stages of design and the lightning protection designer/user of the standard is forced to make certain assumptions. This can and has led to different users obtaining diverse solutions.

The aim of this simplified risk assessment table is to offer a quick reference to decide on a lightning protection level when the necessary information to complete a full and detailed risk assessment is not available. It is not intended to replace the detailed risk assessment calculation and, when the necessary information ultimately becomes available, a full risk assessment should be carried out.

Due to the practical difficulty in obtaining the key parameters relevant to the structure, certain default values taken from the standard (e.g. length of service line of 1000m) have been used. Also assumed are two adjacent structures connected via an underground power and telecom line.

Using the Table

In order not to make the table overly complex, two ranges of flash density have been chosen: i) N_g up to 0.3 and ii) N_g between 0.3 and 1.0. This should cover all cases within the UK. As collection area is also an important criterion, this has been broken down into three bands: i) structures up to 1000m^2 ; ii) structures between 1000 to 50000m^2 ; and iii) structures between 50000 and 200000m^2 .

The graph can be used to obtain the approximate collection area of the structure. To do this, simply add its length and width together. Then choose the curve that relates to the nearest height of the structure (i.e. 3m, 6m, 10m etc.). Using the L+W dimension cross relate this on the chosen curve to read off the collection area of the structure A_d .

Example: Structure 100m x 150m x 20m high L+W = 250m, H = 20m, $A_d = 57000\text{m}^2$

Simplified Risk Assessment Table using BS EN 62305-2:2006

Type of Structure	Flash Density						Notes
	Ng ≤0.3			0.3 > Ng ≤1.0			
	Collection area m ² (See Note 2)						
	<1 000	< 50 000	< 200 000	<1 000	< 50 000	< 200 000	
Hospital	III	II	II	II	I	I	a, b, 4, 5
Hotel	IV	II	I	IV	I	I	a, b, 4, 5
Large House		IV			III		a, b, 4
Block of Flats	IV	II	I	IV	I	I	a, b, 4
Oil refinery/chemical plant (Min level II)	II			II			a, b, 4, 5
Halls of residence	IV	IV	I	IV	I	I	a, 4
Prison	IV	III	II	IV	II	I	a, b, 4, 5
Police/fire/ambulance station	IV	III	II	IV	II	I	a, b, 4, 5
Farm building		IV			IV		a, 4
Nursing/children home	IV	III	II	IV	II	I	a, b, 4
Factory	IV	III	II	IV	III	I	a, b, 4
Railway station	IV	III	II	IV	I	I	a, b, 4, 5
Airport building	IV	III	II	IV	II	I	a, b, 4, 5
Fuel/service station (Min level II)	II			II			a, b, 4, 5
Leisure centre	IV	III	II	IV	II	I	a, b, 4
Shop/shopping centre	IV	III	III	IV	II	I	a, b, 4
Cathedral	IV	IV	III	IV	II	I	a, b, 4, 6
University	IV	IV	III	IV	III	II	a, b, 5
Museum	IV	IV	III	IV	III	II	a, 6
Commercial building/office block	IV	IV	III	IV	III	II	a, b, 5
Department store	IV	IV	III	IV	III	II	a, 5
Industrial warehouse	IV	IV	III	IV	II	I	a, 4
Civic building	IV	IV	III	IV	III	II	a, b
Community centre	IV	IV	III	IV	III	II	a, b, 5
Medical Centre	IV	IV	III	IV	III	II	a, b, 5
Telephone exchange	IV	IV	III	IV	III	II	a, b, 5
Water treatment works	IV	IV	IV	IV	IV	III	a, b, 5
Power station	IV	IV	IV	IV	IV	III	a, b, 5
Substation	IV	IV	IV	IV	IV	III	a, b, 5
School	IV	IV	III	IV	III	II	a, b
Gas compound (Min level II)	II			II			a, b, 4, 5
Theatre		IV	IV	IV	III	III	a, 4, 6
Church		IV	IV		IV	IV	a, 4, 6
Wind farm		II			I		a, b, 4, 5

Notes to Table

1. This table is provided to illustrate the typical results of risk assessments carried out to BS EN 62305-2:2006. Although not meant to replace a full risk assessment it may (with the approval of the owner of the structure) be used to provide a conservative indication of the protection measures required. If it is a requirement of the owner of the structure to carry out a full risk assessment this should be done in conjunction with the LPS designer. Each calculation included for the connection via buried cables to a sub station and telecoms building.
2. For determination of collection area see Figure 1.
3. Lightning equipotential bonding in accordance with BS EN 62305-3:2006 must be employed where there is a requirement for structural protection.
4. Where LPL I or space is blank is indicated a full risk assessment to BS EN 62305-2 :2006 is recommended.
5. Risk R2 may also require consideration (Coordinated SPD set in accordance with BS EN 62305-4:2006).
6. Risk R3 may also require consideration.

a = Structural LPS (LPL IV - I) and service entrance SPDs to all incoming/outgoing metallic electrical services in accordance with BS EN 62305-3:2006

b = 'Enhanced' SPD unit incorporated at some service entry point

Figure 1 - Approximation of Collection

