

Outdoor lighting - EN 12193:2018



Football



Basketball



Tennis

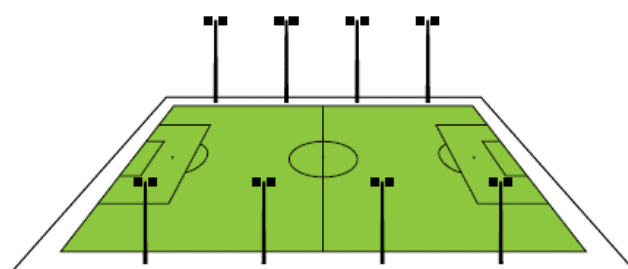
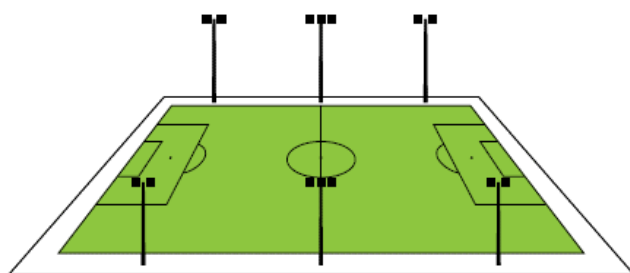
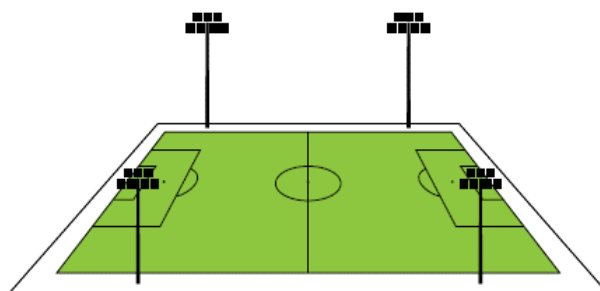


Baseball



Golf

Football



| Outdoor | | Reference area | | Number of grid points | |
|----------------|------------------------|----------------|---------|-----------------------|-------|
| | | Length-m | Width-m | Length | Width |
| Football | PA | 100-110 | 64-75 | 19-21 | 13-15 |
| | TA | 108-118 | 72-83 | 21 | 13-15 |
| Lighting class | Horizontal illuminance | | | RG | Ra |
| | E_{hor} Ave-lx | $U2_{hor}$ | | | |
| I | 500 | 0.7 | | 55 | 70 |
| II | 200 | 0.6 | | 55 | 60 |
| III | 75 | 0.5 | | 55 | 60 |

According to Standard of EN 12193: 2018

Basketball

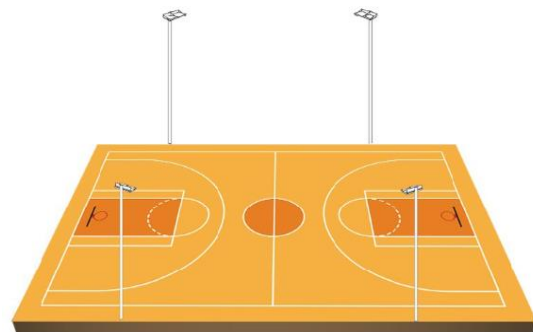


| Indoor | | Reference area | | Number of grid points | |
|-------------------------|------------------------|----------------|---------|-----------------------|-------|
| | | Length-m | Width-m | Length | Width |
| Basketball ^a | PA | 28 | 15 | 13 | 7 |
| | TA | 32 | 19 | 15 | 9 |
| Lighting class | Horizontal illuminance | | | RG ^b | Ra |
| | E_{hor} Ave-lx | $U2_{hor}$ | | | |
| I | 750 | 0.7 | | 35 | 80 |
| II | 500 | 0.7 | | 40 | 60 |
| III | 200 | 0.5 | | 40 | 60 |

a. No luminaires should be positioned in that part of the ceiling, which is above a 4 m diameter circle around the basket.

b. RG only applies for mounting heights above 10 m.

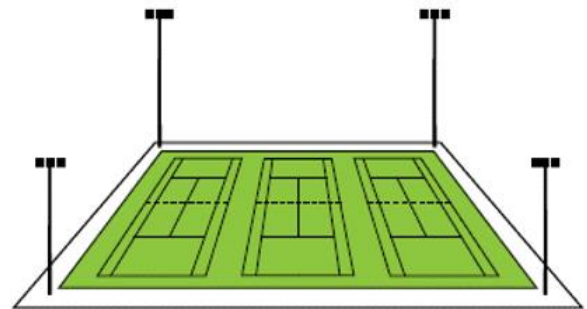
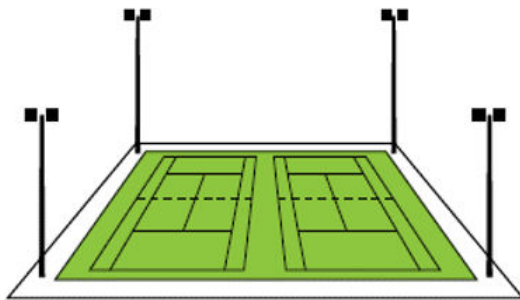
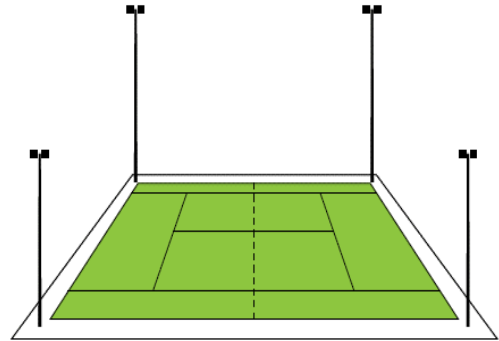
According to Standard of EN 12193: 2018



| Outdoor | | Reference area | | Number of grid points | |
|----------------|------------------------|----------------|---------|-----------------------|-------|
| | | Length-m | Width-m | Length | Width |
| Basketball | PA | 28 | 15 | 13 | 7 |
| | TA | 32 | 19 | 15 | 9 |
| Lighting class | Horizontal illuminance | | | RG | Ra |
| | E_{hor} Ave-lx | $U2_{hor}$ | | | |
| I | 500 | 0.7 | | 55 | 70 |
| II | 200 | 0.6 | | 55 | 60 |
| III | 75 | 0.5 | | 55 | 60 |

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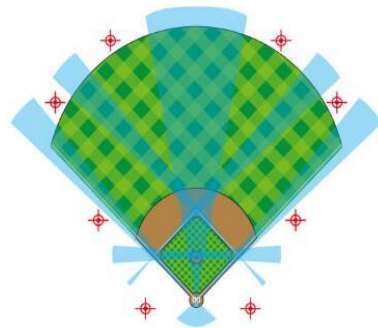
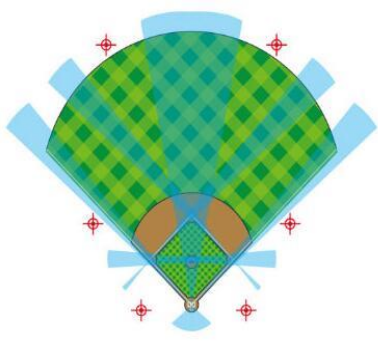
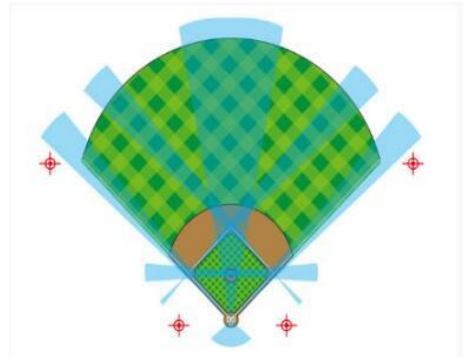
Tennis



| Outdoor | | | Reference area | | Number of grid points | |
|----------------|------------------------|------------|------------------------|------------|-----------------------|-------|
| | | | Length-m | Width-m | Length | Width |
| Tennis | PA | | 30 | 15 | 13 | 7 |
| | TA | | 36 | 18 | 15 | 7 |
| Lighting class | Horizontal illuminance | | Horizontal illuminance | | RG | Ra |
| | PA | | TA | | | |
| | E_{hor} Ave-lx | $U2_{hor}$ | E_{hor} Ave-lx | $U2_{hor}$ | | |
| I | 500 | 0.7 | 500*75% | 0.7*75% | 50 | 70 |
| II | 300 | 0.7 | 300*75% | 0.7*75% | 50 | 60 |
| III | 200 | 0.6 | 200*75% | 0.6*75% | 55 | 60 |

According to Standard of EN 12193: 2018

Baseball



| Indoor | | Reference area | | Number of grid points | |
|---|------------------------|----------------|---------|-----------------------|-------|
| | | Length-m | Width-m | Length | Width |
| Baseball ^a | Infield PA | 27.5 | 27.5 | 13 | 13 |
| | Outfield PA | 120 | 120 | 21 | 21 |
| Lighting class | Horizontal illuminance | | | RG ^b | Ra |
| | E_{hor} Ave-lx | $U2_{hor}$ | | | |
| I | 750 | 0.7 | | 50 | 70 |
| II | 500 | 0.7 | | 50 | 60 |
| III | 300 | 0.5 | | 55 | 60 |
| a. When grid points are outside the playing area they are not included in the calculation. For the backstop requirements apply as for the outfield. | | | | | |
| According to Standard of EN 12193: 2018 | | | | | |

Golf



| Golf (including driving range) | | | | | | |
|--------------------------------|-------------------------------|------------|-----------------------------------|------------|---------------------------------|------------|
| Lighting class | Horizontal illuminance on tee | | Horizontal illuminance on fairway | | Horizontal illuminance on green | |
| | E_{hor} Ave lx | $U2_{hor}$ | E_{hor} Ave lx | $U2_{hor}$ | E_{hor} Ave lx | $U2_{hor}$ |
| I | - | - | - | - | - | - |
| II | - | - | - | - | - | - |
| III | 100 | 0.5 | 20 | 0.3 | 50 | 0.5 |

a. For Golf Driving ranges the vertical illuminance only applies at the distance marker.

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| Outdoor | Reference area | | Number of grid points | |
|--------------------------------|--|---------|-----------------------|-------|
| | Length-m | Width-m | Length | Width |
| Golf (including driving range) | - | - | - | - |
| Lighting class | Vertical illuminance over the fairway and green (at 1 m height) ^a | | RG | Ra |
| | E_{vert} Ave | | | |
| I | - | | - | - |
| II | - | | - | - |
| III | 50 | | 55 | 60 |

a. For Golf Driving ranges the vertical illuminance only applies at the distance marker.

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