

Outdoor lighting - EN 12193:2018



Football



Basketball



Tennis

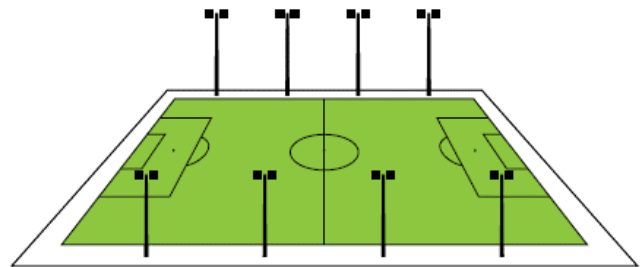
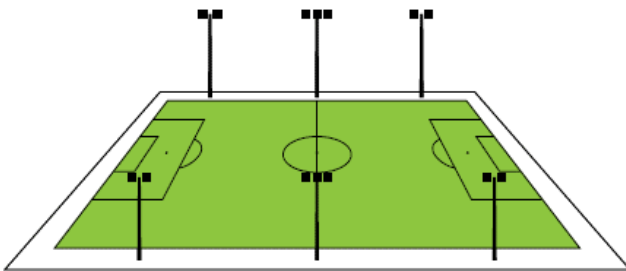
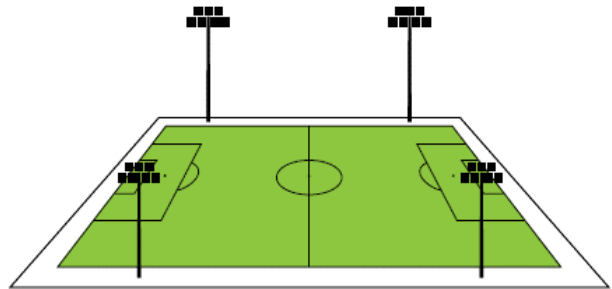


Baseball



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

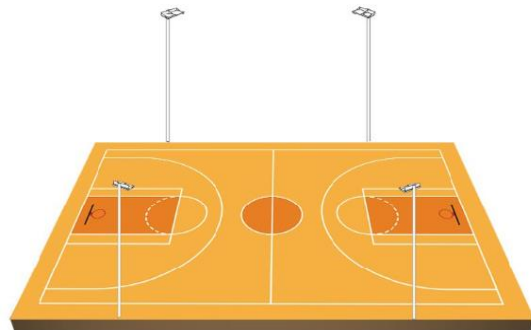


Indoor		Reference area		Number of grid points	
		Length-m	Width-m	Length	Width
Basketball ^a	PA	28	15	13	7
	TA	32	19	15	9
Lighting class	Horizontal illuminance			RG ^b	Ra
	E_{hor} Ave-lx	$U2_{hor}$			
I	750	0.7		35	80
II	500	0.7		40	60
III	200	0.5		40	60

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.

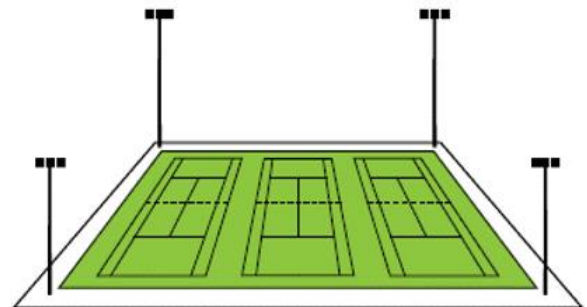
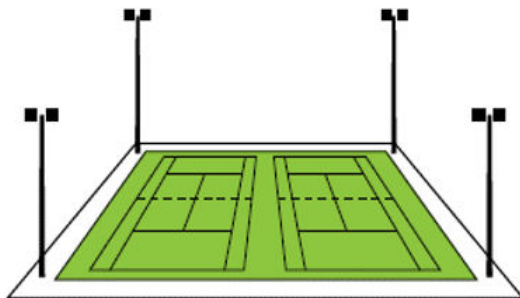
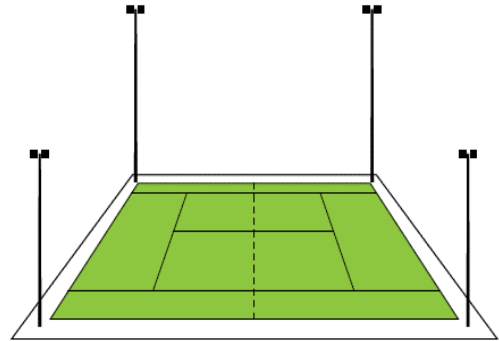
According to Standard of EN 12193: 2018



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

According to Standard of EN 12193: 2018

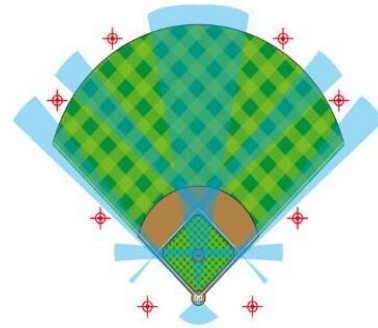
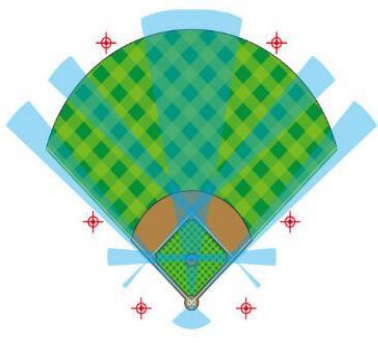
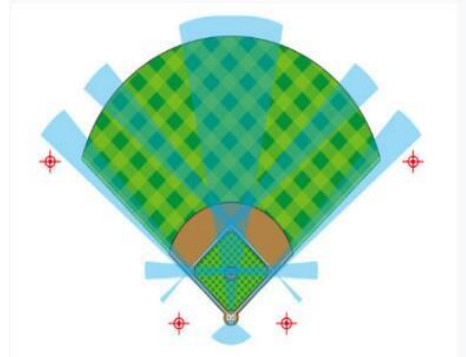
Tennis



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.

According to Standard of EN 12193: 2018

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.

According to Standard of EN 12193: 2018