

# PROPER LIGHTING FOR ANY REQUIREMENT.

Excerpt from DIN EN 12464-1 regarding the illumination of indoor workplaces.  
The listed values are requirements.

**Waldmann** W  
ENGINEER OF LIGHT.

Traffic zones and general areas inside of buildings		
Type of room, task or activity	$\bar{E}_m$	$R_a$
Traffic areas and hallways	100	40
Stairs, escalators, moving walkways	150	40
Loading ramps, loading areas	150	40

Warehouses and cold storage rooms		
Type of room, task or activity	$\bar{E}_m$	$R_a$
Storage and warehouse rooms	100	60
Shipping and packing areas	300	60

(High-bay) Racking		
Type of room, task or activity	$\bar{E}_m$	$R_a$
Tracks without passenger traffic	20	40
Tracks with passenger traffic	150	60
Control room	150	60

Industrial and craftsmen activities Ceramics, tiles, glass, glasswares		
Type of room, task or activity	$\bar{E}_m$	$R_a$
Drying	50	20
Material processing, general machine work	300	80
Enameling, rolling, pressing, molding simple parts, glazing, glass marking	300	80
Grinding, engraving, buffing glass, molding small parts, production of glass instruments	750	80
Grinding of optical glasses, crystal, manual grinding and engraving, working on medium-sized parts	750	80
Detailed work, e.g. grinding ornamentation (ornamental grinding), manual painting	1000	90

Industrial and craftsmen activities Ceramics, tiles, glass, glasswares		
Type of room, task or activity	$\bar{E}_m$	$R_a$
Production/processing of synthetic precious stones	1500	90

Chemical industry, plastics and rubber industry		
Type of room, task or activity	$\bar{E}_m$	$R_a$
Processing systems with remote control	50	20
Processing systems with occasional manual intervention	150	40
Continuously occupied workplaces in processing systems	300	80
Precision measuring chambers, laboratories	500	80
Drug manufacture	500	80
Tire production	500	80
Color testing	1000	90
Cutting, reworking, control work	750	80

Electrical industry		
Type of room, task or activity	$\bar{E}_m$	$R_a$
Cable and wire production	300	80
Winding		
▪ large coils	300	80
▪ medium-sized coils	500	80
▪ fine coils	750	80
Impregnating of coils	300	80
Electroplating	300	80
Assembly work		
▪ rough, e.g. large transformers	300	80
▪ medium-sized, e.g. control panels	500	80
▪ detailed, e.g. telephones	750	80
▪ very detailed, e.g. measuring instruments	1000	80
Electronic repair shops, testing, adjusting	1500	80

Food, beverage and tobacco industry		
Type of room, task or activity	$\bar{E}_m$	$R_a$
Workplaces and work zones in <ul style="list-style-type: none"> <li>▪ Breweries, on malting floors</li> <li>▪ for cleaning, for bottling in barrels, for cleaning, for straining, for peeling</li> <li>▪ for boiling in canning and chocolate factories</li> <li>▪ Workplaces and work zones in sugar factories</li> <li>▪ for drying and fermenting raw tobacco, fermenting cellars</li> </ul>	200	80
Sorting and washing products, milling, blending, packaging	300	80
Workplaces and critical zones in slaughter houses, butcher shops, dairies, mills, on filter floors in sugar refineries	500	80
Cutting and sorting fruit and vegetables	300	80
Production of delicatessen products, kitchen work, production of cigars and cigarettes	500	80
Inspection of glasses and bottles, product inspection, garnishes, sorting, decorating	500	80
Laboratories	500	80
Color inspection	1000	90

Foundry and metal casting		
Type of room, task or activity	$\bar{E}_m$	$R_a$
Walkable underground tunnels, cellars etc.	50	20
Platforms	100	40
Sand processing	200	80
Workplaces on the cupola melting furnace and the mixer	200	80
Casting houses	200	80

Foundry and metal casting		
Type of room, task or activity	$\bar{E}_m$	$R_a$
Emptying stations	200	80
Machine molding	200	80
Hand and core molding	300	80
Diecasting	300	80
Prototyping	500	80

Jewelry production		
Type of room, task or activity	$\bar{E}_m$	$R_a$
Processing of precious stones	1500	90
Production of jewelry	1000	90
Watch-making (manual)	1500	80
Watch production (automatic)	500	80

Leather and leather products		
Type of room, task or activity	$\bar{E}_m$	$R_a$
Working on vats, barrels, mines	200	40
Scouring, splitting, sanding, fulling the skins	300	80
Saddler work, shoe-making: stitching, sewing, buffing, pressing, cutting to size, stamping	500	80
Sorting	500	90
Tanning (automatic)	500	80
Quality control	1000	80
Color testing	1000	90
Shoe-making	500	80
Glove production	500	80

Metal cutting and metal working		
Type of room, task or activity	$\bar{E}_m$	$R_a$
Free-form cutting	200	60
Drop forging	300	60
Welding	300	60
Rough and average machine work: Tolerances $\geq 0.1$ mm	300	60
Fine machine work, grinding: tolerances < 0.1 mm	500	60
Tracing, inspection	750	60
Wire and pipe drawing, cold forming	300	60
Machining heavy sheet metal: thickness $\geq 5$ mm	200	60
Machining lightweight sheet metal: thickness < 5 mm	300	60
Production of tools and cutlery	750	60
Assembly work:		
▪ rough	200	80
▪ medium	300	80
▪ fine	500	80
▪ very fine	750	80
Electroplating	300	80
Surface machining and painting	750	80
Production of tools, gauges and devices, precision and micro mechanics	1000	80

Paper and paper products		
Type of room, task or activity	$\bar{E}_m$	$R_a$
Working on beaters, edge runners, wood grinding machines	200	80
Paper production and processing, paper and cardboard machines, cardboard box production	300	80
General book-binding work, e.g. folding, sorting, gluing, cutting, stamping, sew- ing	500	80

Power plants		
Type of room, task or activity	$\bar{E}_m$	$R_a$
Fuel supply facilities	50	20
Boiler houses	100	40
Machine shops	200	80
Secondary rooms, e.g. pump rooms, condenser rooms etc.; switching systems (in buildings)	200	60
Switch rooms	500	80
Outside switch rooms	20	20

Print shops		
Type of room, task or activity	$\bar{E}_m$	$R_a$
Cutting, gold-plating, stamping, etching of printing plates, working on stones and plates, printing machines, matrix production	500	80
Paper sorting and block printing	500	80
Type-setting, retouching, lithography	1000	80
Color inspection during multi-color printing	1500	90
Steel and copper engraving	2000	80

Rolling mills, smelters and steel mills		
Type of room, task or activity	$\bar{E}_m$	$R_a$
Production facilities without manual intervention	50	20
Production facilities with occasional manual intervention	150	40
Production facilities with continuous manual intervention	200	80
Slab warehouse	50	20
Furnace	200	20
Rolling mill, swifts, shearing/separa- ting stations	300	40
Control platform, control stands	300	80

**Rolling mills, smelteries and steel mills**

Type of room, task or activity	$\bar{E}_m$	$R_a$
Testing, measuring and inspection stations	500	80
Walkable underground tunnel, conveyor roads, cellars etc.	50	20

**Textile production and processing**

Type of room, task or activity	$\bar{E}_m$	$R_a$
Workplaces and work zones on baths, bale openers	200	60
Carding, washing, ironing, working on the shredder, stretching, combing, finishing, lacing cords, pre-spinning, jute and hemp spinning	300	80
Spinning, twining, spooling, winding	500	80
Warping, waving, braiding, knitting	500	80
Sewing, fine-gauge knitting, taking up stitches	750	80
Drafting, designing	750	90
Underlaying, dyeing	500	80
Drying chamber	100	60
Automatic textile printing	500	80
Napping, looping, stripping	1000	80
Color inspection, textile inspection	1000	90
Invisible mending	1500	90
Hat manufacture	500	80

**Automobile production**

Type of room, task or activity	$\bar{E}_m$	$R_a$
Body production and assembly	500	80
Painting, spray booths, grinding booths	750	80
Painting: touch-ups, inspection	1000	90
Upholstery	1000	80
Final inspection	1000	80

**Woodworking and wood processing**

Type of room, task or activity	$\bar{E}_m$	$R_a$
Automatic processing, e.g. drying, laminated wood production	50	40
Steaming beds	150	40
Saw frame	300	60
Working on the planing bench, gluing, assembly	300	80
Grinding, painting, joiner's shop	750	80
Working on wood processing machines, e.g. turning, grooving, true running, rabbeting, cutting, sawing, milling	500	80
Selecting veneer wood	750	90
Marquetry, wood inlay work	750	90
Quality control	1000	90

**Explanations:**

$\bar{E}_m$ : Average brightness level. The quotient of the luminous flux and the surface with which it meets corresponds to the brightness level. In general, it is determined on horizontal and vertical surfaces and listed in the unit of measure of lux.

$R_a$ : Color rendering index, which was introduced for the objective identification of the color rendering properties of a light source. The highest possible  $R_a$  value is 100. This value decreases with decreasing color rendition quality.