

**THE MINISTRY OF  
HEALTH**

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No. 22/2016/TT-BYT

**THE SOCIALIST REPUBLIC OF VIETNAM  
Independence - Freedom - Happiness**

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*Hanoi, June 30, 2016*

## **CIRCULAR**

### **NATIONAL TECHNICAL REGULATION ON LIGHTING - PERMISSIBLE LEVELS OF LIGHTING IN THE WORKPLACE**

*Pursuant to the Law on Occupational Safety and Hygiene No. 84/2015/QH13 dated June 25, 2015;*

*Pursuant to the Law on Technical Standards and Regulations No. 68/2006/QH13 dated June 29, 2006;*

*Pursuant to the Government's Decree No. 127/2007/ND-CP dated August 01, 2007 on guidelines for some Articles of the Law on Technical Standards and Regulations;*

*Pursuant to the Government's Decree No. 63/2012/ND-CP dated August 31, 2012 defining functions, tasks, entitlements and organizational structure of the Ministry of Health;*

*At the request of Director of Health Environment Management Agency;*

*The Minister of Health hereby promulgates a Circular on National technical regulation on lighting - Permissible levels of lighting in the workplace.*

#### **Article 1. National technical regulation on lighting**

QCVN 22/2016/BYT - National technical regulation on lighting - Permissible levels of lighting in the workplace is promulgated together with this Circular.

#### **Article 2. Effect**

This Circular comes into force from December 01, 2016.

#### **Article 3. Responsibility for implementation**

Director of Health Environment Management Agency, General Directors and Directors of General Departments and Departments affiliated to the Ministry of Health, heads of authorities and units affiliated to the Ministry, Directors of Departments of Health of provinces and central-affiliated cities and heads of health authorities of ministries are responsible for the implementation of this Circular./.

**PP. THE MINISTER  
THE DEPUTY MINISTER**

**Nguyen Thanh Long**

**QCVN 22:2016/BYT**

**NATIONAL TECHNICAL REGULATION ON LIGHTING - PERMISSIBLE LEVELS OF  
LIGHTING IN THE WORKPLACE**

**Foreword**

QCVN 22:2016/BYT is prepared by the Drafting Committee for National technical regulation on occupational hygiene, submitted by the Health Environment Management Agency to obtain approval from, and issued as an Appendix to the Circular No. 22/2016/TT-BYT dated June 20, 2016 by, the Ministry of Health.

**NATIONAL TECHNICAL REGULATION ON LIGHTING - PERMISSIBLE LEVELS  
OF LIGHTING IN THE WORKPLACE**

**I. GENERAL PROVISIONS**

**1. Scope**

This document provides for permissible levels of lighting in indoor workplaces.

**2. Regulated entities**

This document applies to environment authorities, individuals and organizations carrying out occupational environmental monitoring; organizations and individuals employing employees that are under the influence of lighting conditions in the occupational environment.

**3. Definitions**

For the purposes of this document, the terms below shall be construed as follows:

3.1. “illuminance” means the brightness of an object illuminated by a beam and is expressed in Lux. 1 Lux is the illuminance of 1 m<sup>2</sup> surface area uniformly lighted by 1 lumen of luminous flux at a distance of 1 m.

3.2. “maintained illuminance” ( $E_m$ ) means a value below which the average illuminance on the specified surface should not fall.

## II. TECHNICAL REQUIREMENTS

1. Minimum maintained illuminance for each type of task is provided in the table below:

Minimum maintained illuminance for rooms and work areas

| Type of room, task or activity                | $E_m$ (Lux) |
|---|-------------|
| <b>1. General building areas</b>              |             |
| Entrance halls                                | 100         |
| Lounges                                       | 200         |
| Circulation areas and corridors               | 100         |
| Stairs, escalators, travelators               | 150         |
| Canteens                                      | 150         |
| Rest rooms                                    | 100         |
| Rooms for physical exercise                   | 300         |
| Cloakrooms, washrooms, bathrooms, toilets     | 200         |
| Sick bay                                      | 500         |
| Rooms for medical attention                   | 500         |
| Switch gear rooms                             | 200         |
| Post room, switchboard                        | 500         |
| Storerooms, cold stores                       | 100         |
| Dispatch packing handling areas               | 300         |
| Loading ramps/bays                            | 150         |
| Storage rack areas                            | 150         |
| Control station                               | 150         |
| <b>2. Industrial activities and crafts</b>    |             |
| <b>2.1. Iron and steel industry</b>           |             |
| Production plants without manual intervention | 50          |

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| Production plants with occasional manual operation  | 150 |
| Production plants with continuous manual operation  | 200 |
| Slab store  | 50  |
| Furnaces  | 200 |
| Mill train, coiler, shear line                      | 300 |
| Control platforms, control panels                   | 300 |
| Test, measurement and inspection                    | 500 |
| Underfloor man sized tunnels belt sections, cellars | 50  |
| <b>2.2. Foundries and metal casting plants</b>      |     |
| Mansize underfloor tunnels, cellars                 | 50  |
| Platforms   | 100 |
| Sand preparation                                    | 200 |
| Dressing room                                       | 200 |
| Workplaces at cupola and mixer                      | 200 |
| Casting bay   | 200 |
| Shake out areas                                     | 200 |
| Machine moulding                                    | 200 |
| Hand and core moulding                              | 300 |
| Die casting   | 300 |
| Model building                                      | 500 |
| <b>2.3. Metal working and processing</b>            |     |
| Open die forging                                    | 200 |
| Drop forging, welding, cold forming                 | 300 |
| Rough and average machining: tolerances > 0.1 mm    | 300 |
| Precision machining: tolerances < 0.1 mm            | 500 |
| Scribing, inspection                                | 750 |
| Wire & pipe drawing shapes                          | 300 |
| Plate machining $\geq 5\text{mm}$                   | 200 |
| Sheet metalwork < 5mm                               | 300 |
| Tool making, cutting equipment manufacture          | 750 |
| Assembly:   |     |

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| - Rough  | 200  |
| - Medium   | 300  |
| - Fine   | 500  |
| - Precision  | 750  |
| Galvanising  | 300  |
| Surface preparation and painting                                   | 750  |
| Tool, template and jig making, precision mechanics, micromechanics | 1000 |
| <b>2.4. Vehicle construction and repair</b>                        |      |
| Body work and assembly   | 500  |
| Painting, spraying chamber, polishing chamber                      | 750  |
| Painting: touch-up, inspection                                     | 1000 |
| Upholstery manufacture   | 1000 |
| Final inspection   | 1000 |
| General vehicle servicing, repair and inspection                   | 300  |
| <b>2.5. Power stations</b>   |      |
| Fuel supply plant  | 50   |
| Boiler house   | 100  |
| Machine halls  | 200  |
| Auxiliary rooms, e.g pump rooms, condenser rooms, switchboard      | 200  |
| Control rooms  | 500  |
| <b>2.6. Electrical industry</b>                                    |      |
| Cable and wire manufacture   | 300  |
| Winding:   |      |
| - Large coils  | 300  |
| - Medium-sized coils   | 500  |
| - Small coils  | 750  |
| Coil impregnating  | 300  |
| Galvanising  | 300  |
| Assembly work:   |      |
| - Rough e.g. large transformers                                    | 300  |
| - Medium e.g. switchboards   | 500  |

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| Fine e.g telephones, radios, information technology products (computers)                        | 750  |
| - Precision e.g. measuring equipment, printed circuit boards                                    | 1000 |
| Electronic workshops, testing, adjusting  | 1500 |
| <b>2.7. Cement, concrete, &amp; bricks industry</b>   |      |
| Drying  | 50   |
| Preparation of materials, work on kilns and mixers  | 200  |
| General machine work  | 300  |
| Rough forms   | 300  |
| <b>2.8. Ceramics, tiles, glass, glassware industry</b>  |      |
| Drying  | 50   |
| Preparation, general machine work   | 300  |
| Enamelling, rolling, pressing, shaping simple parts, glazing, glass blowing                     | 300  |
| Grinding, engraving, glass polishing, shaping precision parts, manufacture of glass instruments | 750  |
| Grinding of optical glass, crystal hand grinding and engraving                                  | 750  |
| Precision work e.g decorative grinding, hand painting   | 1000 |
| Manufacture of synthetic precious stones  | 1500 |
| <b>2.9. Chemicals, plastics and rubber industry</b>   |      |
| Remote-operated processing installations  | 50   |
| Processing installations with limited manual intervention                                       | 150  |
| Constantly manned work places in processing installations                                       | 300  |
| Precision measuring rooms, laboratories   | 500  |
| Pharmaceutical production   | 500  |
| Tyre production   | 500  |
| Colour inspection   | 1000 |
| Cutting, finishing, inspection  | 750  |
| <b>2.10. Paper industry</b>   |      |
| Pulp mills, edge runners  | 200  |
| Paper manufacture and processing, paper and corrugating machines, cardboard manufacture         | 300  |
| Standard book binding work, e.g. folding, sorting, gluing, cutting, embossing, sewing           | 500  |

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| <b>2.11. Printers</b>  |      |
| Cutting, gilding, embossing, block engraving, work on stones and platens, printing machines, matrix making | 500  |
| Paper sorting and hand printing  | 500  |
| Type setting, retouching, lithography  | 1000 |
| Colour inspection in multicoloured printing  | 1500 |
| Steel and copper engraving   | 2000 |
| <b>2.12. Leather industry</b>  |      |
| Work on vats, barrels, pits  | 200  |
| Fleshing, skiving, rubbing, tumbling of skins  | 300  |
| Saddlery work, shoe manufacture stitching, sewing, polishing, shaping, cutting, punching                   | 500  |
| Sorting  | 500  |
| Leather dyeing (machine)   | 500  |
| Quality control  | 1000 |
| Colour inspection  | 1000 |
| Shoe making  | 500  |
| Glove making   | 500  |
| <b>2.13. Textile industry</b>  |      |
| Workplace and zones in baths, bale opening   | 200  |
| Carding, washing, ironing, drawing, combing, sizing, card cutting, pre-spinning, jute and hemp spinning    | 300  |
| Spinning, plying, reeling, winding warping, weaving, braiding, knitting                                    | 500  |
| Sewing, fine knitting, taking up stitches  | 750  |
| Manual design, drawing patterns  | 750  |
| Finishing, dyeing  | 500  |
| Drying room  | 100  |
| Automatic fabric printing  | 500  |
| Burling, picking, trimming   | 1000 |
| Colour inspection, fabric control  | 1000 |
| Invisible mending  | 1500 |
| Hat manufacturing  | 500  |

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| <b>2.14. Wood working &amp; furniture industry</b>  |      |
| Automatic processing e.g. drying plywood manufacturing  | 50   |
| Steam pits  | 150  |
| Saw frame   | 300  |
| Work at joiner's bench, gluing, assembly  | 300  |
| Polishing, painting, fancy joinery  | 750  |
| Work on wood working machines e.g. turning, fluting, dressing, rebating, grooving, cutting, sawing, sinking | 500  |
| Selection of veneer woods, maquetry, inlay work   | 750  |
| Quality control   | 1000 |
| <b>2.15. Food industry</b>  |      |
| Workplaces and zones in:  |      |
| - Breweries, malting floors   | 200  |
| - For washing, barrel filling, cleaning, sieving, peeling   | 200  |
| - Cooking in preserve and chocolate factories   | 200  |
| - Work places and zones in sugar factories  | 200  |
| - For drying and fermenting raw tobacco, fermentation cellar  | 200  |
| Sorting and washing of products, milling, mixing, packing   | 300  |
| Work places and zones in slaughter houses, butchers, dairies mills, on filtering floor, in sugar refineries | 500  |
| Cutting and sorting of fruit and vegetables   | 300  |
| Manufacture of delicatessen foods, kitchen  | 500  |
| Manufacture work of cigars and cigarettes   | 500  |
| Inspection of glasses and bottles, product control, trimming, sorting decoration                            | 500  |
| Laboratories  | 500  |
| Colour inspection   | 1000 |
| <b>2.16. Bakeries</b>   |      |
| Preparation and baking  | 300  |
| Finishing, glazing, decorating  | 500  |
| <b>2.17. Agriculture</b>  |      |
| Loading and operating of goods handling equipment and machinery   | 200  |



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| Building for livestock                   | 50   |
| Sick animal pens, calving stalls         | 200  |
| Feed preparation, dairy, utensil washing | 200  |
| <b>2.18. Jewellery manufacturing</b>     |      |
| Working with precious stones             | 1500 |
| Manufacture of jewellery                 | 1000 |
| Watch making (manual)                    | 1500 |
| Watch making (automatic)                 | 500  |
| <b>2.19. Hairdressers</b>                |      |
| Hairdressing                             | 500  |
| <b>2.20. Laundries and dry cleaning</b>  |      |
| Goods in, marking and sorting            | 300  |
| Washing and dry cleaning                 | 300  |
| Ironing, pressing                        | 300  |
| Inspection and repairs                   | 750  |
| <b>2.21. Retail premises</b>             |      |
| Sales areas                              | 300  |
| Till areas                               | 500  |
| Wrapper tables                           | 500  |
| <b>2.22. Offices</b>                     |      |
| Filing, copying                          | 300  |
| Typing, data processing                  | 500  |
| Technical drawing                        | 750  |
| CAD workstation                          | 500  |
| Conference and meeting rooms             | 300  |
| Reception desk                           | 300  |
| Archives                                 | 200  |
| <b>3. Places of public assembly</b>      |      |
| <b>3.1. General areas</b>                |      |
| Entrance halls                           | 100  |
| Cloakrooms                               | 200  |

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| Lounges                                      | 200 |
| Ticket offices                               | 300 |
| <b>3.2. Restaurants and hotels</b>           |     |
| Reception/cashier desks, porters desks       | 300 |
| Kitchens                                     | 300 |
| Restaurant, dining room, function room       | 200 |
| Self-service restaurants                     | 200 |
| Buffets                                      | 300 |
| Conference rooms                             | 300 |
| Corridors                                    | 100 |
| <b>3.3. Theatres, concert halls, cinemas</b> |     |
| Practice rooms, dressing rooms               | 300 |
| Seating areas – maintenance, cleaning        | 200 |
| Stage areas – construction                   | 300 |
| <b>3.4. Trade fairs, exhibition halls</b>    |     |
| General lighting                             | 300 |
| <b>3.5. Libraries</b>                        |     |
| Bookshelves                                  | 200 |
| Reading areas                                | 500 |
| Counters                                     | 300 |
| <b>3.6. Public car parks (indoor)</b>        |     |
| In/out ramps (during the day)                | 300 |
| In/out ramps (at night)                      | 75  |
| Traffic lanes                                | 75  |
| Parking areas                                | 75  |
| Ticket offices                               | 300 |
| <b>4. Educational premises</b>               |     |
| <b>4.1. Nursery school, play school</b>      |     |
| Play rooms                                   | 300 |
| Nurseries                                    | 300 |
| Handicraft rooms                             | 300 |

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| <b>4.2. Educational buildings</b>                                 |     |
| Lecture halls, classrooms, tutorial rooms                         | 300 |
| Black, green wallboards and whiteboards                           | 500 |
| Demonstration tables  | 500 |
| Art rooms   | 500 |
| Art rooms in art schools  | 750 |
| Technical drawing rooms   | 750 |
| Practical rooms and laboratories                                  | 500 |
| Teaching workshops, handicraft rooms                              | 500 |
| Music practice rooms  | 300 |
| Computer practice rooms   | 300 |
| Preparation rooms and workshops                                   | 300 |
| Circulation areas, corridors                                      | 100 |
| Stairs  | 150 |
| Student common rooms and assembly halls                           | 200 |
| Teachers rooms  | 300 |
| Library: bookshelves  | 200 |
| Library: reading areas  | 500 |
| Stock rooms for teaching materials                                | 100 |
| Sports halls, gymnasiums, swimming pools (general use)            | 300 |
| School canteens   | 150 |
| Kitchens  | 300 |
| <b>5. Health care premises</b>                                    |     |
| <b>5.1. Rooms for general use</b>                                 |     |
| Corridors: during the day   | 100 |
| Corridors: cleaning   | 100 |
| Corridors: during the night                                       | 50  |
| Multiple-use corridors  | 200 |
| Elevators, lifts for passengers and visitors                      | 100 |
| Service lifts (for transport of machines, equipment, instruments) | 200 |
| Lounges   | 200 |

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| Night lighting, observation lighting                 | 200  |
| Bathrooms and toilets for patients                   | 200  |
| <b>5.2. Staff rooms</b>                              |      |
| Staff offices  | 300  |
| Staff rooms  | 300  |
| <b>5.3. Wards, maternity wards</b>                   |      |
| General lighting                                     | 300  |
| Simple examinations                                  | 500  |
| Examination and treatment                            | 1000 |
| <b>5.4. Examination rooms (general)</b>              |      |
| General lighting                                     | 300  |
| Examination and treatment                            | 1000 |
| <b>5.5. Eye examination rooms</b>                    |      |
| General lighting                                     | 300  |
| Examination of the outer eye                         | 1000 |
| Reading and colour vision tests with vision charts   | 500  |
| <b>5.6. Ear examination rooms</b>                    |      |
| General lighting                                     | 300  |
| Ear examination                                      | 1000 |
| <b>5.7. Scanner rooms</b>                            |      |
| General lighting                                     | 300  |
| Scanners with image enhancers and television systems | 50   |
| <b>5.8. Delivery rooms</b>                           |      |
| General lighting                                     | 300  |
| Examination and treatment                            | 1000 |
| <b>5.9. Treatment rooms (general)</b>                |      |
| Dialysis   | 500  |
| Dermatology  | 500  |
| Endoscopy rooms                                      | 300  |
| Plaster rooms  | 500  |
| Medical baths  | 300  |

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| Massage and radiotherapy                         | 300  |
| <b>5.10. Operating areas</b>                     |      |
| Pre-op and recovery rooms                        | 500  |
| Operating theatres                               | 1000 |
| <b>5.11. Intensive care units</b>                |      |
| General lighting                                 | 100  |
| Simple examinations                              | 300  |
| Examination and treatment                        | 1000 |
| Night watch                                      | 20   |
| <b>5.12. Dentists</b>                            |      |
| General lighting                                 | 500  |
| At the patient                                   | 1000 |
| <b>5.13. Laboratories and pharmacies</b>         |      |
| General lighting                                 | 500  |
| Colour inspection                                | 1000 |
| <b>5.14. Decontamination rooms</b>               |      |
| Sterilisation rooms                              | 300  |
| <b>5.15. Autopsy rooms and mortuaries</b>        |      |
| General lighting                                 | 500  |
| Autopsy tables and dissecting tables             | 5000 |
| <b>6. Airports</b>                               |      |
| Arrival and departure halls, baggage claim areas | 200  |
| Connecting areas, escalators, travelators        | 150  |
| Information desks, check-in desks                | 500  |
| Customs and passport control desks               | 500  |
| Waiting areas                                    | 200  |
| Luggage store rooms                              | 200  |
| Security check areas                             | 300  |
| Air traffic control towers                       | 500  |
| Testing and repair hangars                       | 500  |
| Engine test areas                                | 500  |

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| Measuring areas in hangars                    | 500 |
| Platforms and passenger subways (underpasses) | 50  |
| Ticket hall and concourse                     | 200 |
| Ticket and luggage offices and counters       | 300 |
| Waiting rooms                                 | 200 |

2. Minimum maintained illuminance for types of task must not exceed 10,000 Lux.

### **III. MEASURING METHOD**

Measuring method is provided in TCVN 5176:1990 Artificial lighting – Method for measuring the illuminance.

### **IV. REGULATORY REQUIREMENTS**

1. Any facility that has employees who are under the influence of lighting conditions in the workplace must carry out periodic monitoring and assessment of minimum luminous intensity at least once a year in accordance with regulations of the Labor Code and Law on Occupational Safety and Hygiene.

2. If lighting in the workplace is not within permissible limits, employers should immediately adopt solutions for improving lighting conditions and protecting the health of employees.

### **V. IMPLEMENTATION**

1. This document replaces the Lighting standard included in Occupational hygiene standards promulgated together with the Decision No. 3733/2002/QĐ-BYT dated October 10, 2002 of the Minister of Health.

2. The Health Environment Management Agency - Ministry of Health shall take charge and cooperate with relevant competent authorities in providing guidelines and organizing the implementation of this document.

3. The Health Environment Management Agency shall, according to regulatory requirements, recommend the Ministry of Health to make amendments to this document.

4. In the cases where any of the national standards in lighting referred to in this document is amended or replaced, the newest one shall apply.

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