

SECTION F — MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING

F21 LIGHTING

F21S NON-PORTABLE LIGHTING DEVICES; SYSTEMS THEREOF; VEHICLE LIGHTING DEVICES SPECIALLY ADAPTED FOR VEHICLE EXTERIORS [1, 7]

Note(s) [7, 2009.01]

- This subclass covers:
 - devices or systems intended for fixed installation or for use at a permanent location, e.g. free-standing floor- or table-lamps;
 - aspects related to the optical, mechanical, thermal or electrical arrangement of elements in vehicle illuminating devices specially adapted for vehicle exterior, e.g. headlamps;
 - aspects related to the optical, mechanical, thermal or electrical arrangement of elements in vehicle light signalling devices specially adapted for vehicle exterior, e.g. brake lamps or direction indicator lights.
- This subclass does not cover:
 - devices or systems specially adapted for transportation, which are covered by subclass F21L;
 - aspects related to the vehicles in which lighting devices are arranged, e.g. the arrangement or operation of lighting devices on vehicles, which are covered by subclass B60Q;
 - control of vehicle lighting devices in relation to the vehicle as a whole, e.g. for levelling, swivelling or aiming. Such arrangements are covered by group B60Q 1/06, even if the movement of the lighting device occurs inside the lamp housing.
- Non-electric lighting devices or systems are classified in groups F21S 11/00-F21S 15/00 only if a special adaptation related to the use of a non-electric light source is of interest.
- In this subclass, it is desirable to add the indexing codes of subclasses F21W and F21Y.

Subclass index

ELECTRIC DEVICES

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String or strip of light sources.....	4/00
Free-standing.....	6/00
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Producing varying lighting effects.....	10/00

NON-ELECTRIC DEVICES

Using daylight.....	11/00
Light source: Point-like or of unspecified shape.....	13/00
Other devices.....	15/00

COMBINATIONS OF ELECTRIC AND NON-ELECTRIC DEVICES.....19/00

VEHICLE LIGHTING DEVICES FOR VEHICLE EXTERIORS.....41/00, 43/00, 45/00

2/00	Systems of lighting devices, not provided for in main groups F21S 4/00-F21S 10/00 or F21S 19/00, e.g. of modular construction [7, 2006.01, 2016.01]	4/26	• • • of rope form, e.g. LED lighting ropes, or of tubular form [2016.01]
		4/28	• • rigid, e.g. LED bars [2016.01]
4/00	Lighting devices or systems using a string or strip of light sources [7, 2006.01, 2016.01]	6/00	Lighting devices intended to be free-standing (F21S 9/00, F21S 10/00 take precedence) [7, 2006.01]
4/10	• with light sources attached to loose electric cables, e.g. Christmas tree lights [2016.01]	8/00	Lighting devices intended for fixed installation (F21S 9/00, F21S 10/00 take precedence; using a string or strip of light sources F21S 4/00) [7, 2006.01]
4/15	• • the cables forming a grid, net or web structure [2016.01]	8/02	• of recess-mounted type, e.g. downlighters (specially adapted for vehicle exteriors F21S 41/00-F21S 45/00) [7, 2006.01]
4/20	• with light sources held by or within elongate supports [2016.01]	8/04	• intended only for mounting on a ceiling or like overhead structure (F21S 8/02 takes precedence) [7, 2006.01]
4/22	• • flexible or deformable, e.g. into a curved shape [2016.01]	8/06	• • by suspension [7, 2006.01]
4/24	• • • of ribbon or tape form, e.g. LED tapes [2016.01]		

- 8/08 • with a standard [7, 2006.01]
- 9/00 Lighting devices with a built-in power supply; Systems employing lighting devices with a built-in power supply [1, 2006.01]**
- 9/02 • the power supply being a battery or accumulator [1, 2006.01]
- 9/03 • rechargeable by exposure to light [7, 2006.01]
- 9/04 • the power supply being a generator [1, 2006.01]
- 10/00 Lighting devices or systems producing a varying lighting effect [7, 2006.01]**
- 10/02 • changing colours (F21S 10/04 takes precedence) [7, 2006.01]
- 10/04 • simulating flames [7, 2006.01]
- 10/06 • flashing, e.g. with rotating reflector or light source [7, 2006.01]
- 11/00 Non-electric lighting devices or systems using daylight [1, 2006.01]**
- 13/00 Non-electric lighting devices or systems employing a point-like light source; Non-electric lighting devices or systems employing a light source of unspecified shape [1, 2006.01]**
- 13/02 • Devices intended to be fixed, e.g. ceiling lamp, wall lamp [1, 2006.01]
- 13/04 • • with a pendant [1, 2006.01]
- 13/06 • • • multi-branched, e.g. chandelier [1, 2006.01]
- 13/08 • • with suspension from a stretched wire [1, 2006.01]
- 13/10 • • with a standard, e.g. street lamp [1, 2006.01]
- 13/12 • Devices intended to be free-standing, e.g. table lamp, floor lamp [1, 2006.01]
- 13/14 • Lighting systems [1, 2006.01]
- 15/00 Non-electric lighting devices or systems employing light sources not covered by main groups F21S 11/00, F21S 13/00 or F21S 19/00 [1, 2006.01]**
- 19/00 Lighting devices or systems employing combinations of electric and non-electric light sources; Replacing or exchanging electric light sources with non-electric light sources or vice versa [1, 2006.01]**
- Vehicle lighting devices specially adapted for vehicle exteriors [2018.01]**
- 41/00 Illuminating devices specially adapted for vehicle exteriors, e.g. headlamps (reversing lights F21S 43/00) [2018.01]**
- 41/10 • characterised by the light source [2018.01]
- 41/12 • • characterised by the type of emitted light [2018.01]
- 41/125 • • • Coloured light [2018.01]
- 41/13 • • • Ultraviolet light; Infrared light [2018.01]
- 41/135 • • • polarised [2018.01]
- 41/14 • • characterised by the type of light source [2018.01]
- 41/141 • • • Light emitting diodes [LED] [2018.01]
- 41/143 • • • • the main emission direction of the LED being parallel to the optical axis of the illuminating device [2018.01]
- 41/145 • • • • the main emission direction of the LED being opposite to the main emission direction of the illuminating device [2018.01]
- 41/147 • • • • the main emission direction of the LED being angled to the optical axis of the illuminating device [2018.01]
- 41/148 • • • • the main emission direction of the LED being perpendicular to the optical axis [2018.01]
- 41/151 • • • • arranged in one or more lines [2018.01]
- 41/153 • • • • arranged in a matrix [2018.01]
- 41/155 • • • • Surface emitters, e.g. organic light emitting diodes [OLED] [2018.01]
- 41/16 • • • Laser light sources [2018.01]
- 41/162 • • • Incandescent light sources, e.g. filament or halogen lamps [2018.01]
- 41/164 • • • • having two or more filaments [2018.01]
- 41/166 • • • • characterised by the shape of the filament [2018.01]
- 41/168 • • • • having a filament arranged transversally to the optical axis of the illuminating device [2018.01]
- 41/17 • • • Discharge light sources [2018.01]
- 41/172 • • • • High-intensity discharge light sources [2018.01]
- 41/173 • • • • Fluorescent light sources [2018.01]
- 41/176 • • • Light sources where the light is generated by photoluminescent material spaced from a primary light generating element [2018.01]
- 41/19 • • Attachment of light sources or lamp holders (achieving variable light distribution by movable light sources F21S 41/657) [2018.01]
- 41/20 • characterised by refractors, transparent cover plates, light guides or filters [2018.01]
- 41/24 • • Light guides [2018.01]
- 41/25 • • Projection lenses [2018.01]
- 41/255 • • • Lenses with a front view of circular or truncated circular outline [2018.01]
- 41/26 • • • Elongate lenses [2018.01]
- 41/265 • • • Composite lenses; Lenses with a patch-like shape [2018.01]
- 41/27 • • • Thick lenses [2018.01]
- 41/275 • • • Lens surfaces, e.g. coatings or surface structures [2018.01]
- 41/29 • • Attachment thereof (for achieving variable light distribution F21S 41/63) [2018.01]
- 41/30 • characterised by reflectors [2018.01]
- 41/32 • • Optical layout thereof [2018.01]
- 41/33 • • • Multi-surface reflectors, e.g. reflectors with facets or reflectors with portions of different curvature [2018.01]
- 41/36 • • • Combinations of two or more separate reflectors [2018.01]
- 41/365 • • • • successively reflecting the light [2018.01]
- 41/37 • • characterised by their material, surface treatment or coatings [2018.01]
- 41/39 • • Attachment thereof (achieving variable light distribution by movable reflectors F21S 41/675) [2018.01]
- 41/40 • characterised by screens, non-reflecting members, light-shielding members or fixed shades [2018.01]
- 41/43 • • characterised by the shape thereof [2018.01]
- 41/47 • • Attachment thereof (achieving variable light distribution by movable screens F21S 41/683) [2018.01]
- 41/50 • characterised by aesthetic components not otherwise provided for, e.g. decorative trim, partition walls or covers [2018.01]
- 41/55 • • Attachment thereof [2018.01]
- 41/60 • characterised by a variable light distribution [2018.01]

- 41/62 • • for adaptation between right-hand and left-hand traffic **[2018.01]**
- 41/63 • • by acting on refractors, filters or transparent cover plates **[2018.01]**
- 41/64 • • • by changing their light transmissivity, e.g. by liquid crystal or electrochromic devices **[2018.01]**
- 41/65 • • by acting on light sources **[2018.01]**
- 41/657 • • • by moving light sources **[2018.01]**
- 41/663 • • • by switching light sources (by switching incandescent light sources F21S 41/162) **[2018.01]**
- 41/67 • • by acting on reflectors **[2018.01]**
- 41/675 • • • by moving reflectors **[2018.01]**
- 41/68 • • by acting on screens **[2018.01]**
- 41/683 • • • by moving screens **[2018.01]**
- 41/686 • • • • Blades, i.e. screens moving in a vertical plane **[2018.01]**
- 41/689 • • • • Flaps, i.e. screens pivoting around one of their edges **[2018.01]**
- 41/692 • • • • Shields, i.e. screens not creating an image meant to be projected **[2018.01]**
- 41/695 • • • • Screens rotating around a vertical axis (rotating flaps F21S 41/689) **[2018.01]**
- 41/698 • • • • Shaft-shaped screens rotating along their longitudinal axes **[2018.01]**
- 43/00 Signalling devices specially adapted for vehicle exteriors, e.g. brake lamps, direction indicator lights or reversing lights [2018.01]**
- 43/10 • characterised by the light source **[2018.01]**
- 43/13 • • characterised by the type of light source **[2018.01]**
- 43/14 • • • Light emitting diodes [LED] **[2018.01]**
- 43/145 • • • • Surface emitters, e.g. organic light emitting diodes [OLED] **[2018.01]**
- 43/15 • • • Strips of light sources **[2018.01]**
- 43/16 • • • Light sources where the light is generated by photoluminescent material spaced from a primary light generating element **[2018.01]**
- 43/19 • • Attachment of light sources or lamp holders **[2018.01]**
- 43/20 • characterised by refractors, transparent cover plates, light guides or filters **[2018.01]**
- 43/235 • • Light guides **[2018.01]**
- 43/236 • • • characterised by the shape of the light guide **[2018.01]**
- 43/237 • • • • rod-shaped **[2018.01]**
- 43/239 • • • • plate-shaped **[2018.01]**
- 43/241 • • • • of complex shape **[2018.01]**
- 43/242 • • • characterised by the emission area **[2018.01]**
- 43/243 • • • • emitting light from one or more of its extremities **[2018.01]**
- 43/245 • • • • emitting light from one or more of its major surfaces **[2018.01]**
- 43/247 • • • with a single light source being coupled into the light guide **[2018.01]**
- 43/249 • • • with two or more light sources being coupled into the light guide **[2018.01]**
- 43/251 • • • the light guides being used to transmit light from remote light sources **[2018.01]**
- 43/27 • • Attachment thereof **[2018.01]**
- 43/30 • characterised by reflectors **[2018.01]**
- 43/31 • • Optical layout thereof **[2018.01]**
- 43/33 • • characterised by their material, surface treatment or coatings **[2018.01]**
- 43/37 • • Attachment thereof **[2018.01]**
- 43/40 • characterised by the combination of reflectors and refractors **[2018.01]**
- 43/50 • characterised by aesthetic components not otherwise provided for, e.g. decorative trim, partition walls or covers **[2018.01]**
- 45/00 Arrangements within vehicle lighting devices specially adapted for vehicle exteriors, for purposes other than emission or distribution of light [2018.01]**
- 45/10 • Protection of lighting devices (cooling of lighting devices F21S 45/40, waterproofing of lighting devices F21S 45/50) **[2018.01]**
- 45/20 • Promoting gas flow in lighting devices, e.g. directing flow toward the cover glass for demisting (ventilation F21S 45/30; forced cooling F21S 45/42) **[2018.01]**
- 45/30 • Ventilation or drainage of lighting devices **[2018.01]**
- 45/33 • • specially adapted for headlamps **[2018.01]**
- 45/37 • • specially adapted for signal lamps **[2018.01]**
- 45/40 • Cooling of lighting devices **[2018.01]**
- 45/42 • • Forced cooling **[2018.01]**
- 45/43 • • • using gas **[2018.01]**
- 45/435 • • • • circulating the gas within a closed system **[2018.01]**
- 45/46 • • • using liquid **[2018.01]**
- 45/465 • • • • from other vehicle cooling systems, e.g. from air-conditioning or engine cooling systems **[2018.01]**
- 45/47 • • Passive cooling, e.g. using fins, thermal conductive elements or openings **[2018.01]**
- 45/48 • • • with means for conducting heat from the inside to the outside of the lighting devices, e.g. with fins on the outer surface of the lighting device **[2018.01]**
- 45/49 • • Attachment of the cooling means **[2018.01]**
- 45/50 • Waterproofing **[2018.01]**
- 45/60 • Heating of lighting devices, e.g. for demisting **[2018.01]**
- 45/70 • Prevention of harmful light leakage **[2018.01]**