

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]

1. 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.
2. 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.
3. 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.
4. In this subclass, it is desirable to add the indexing codes of subclasses F21W and F21Y.

Subclass index

ELECTRIC DEVICES

Systems.....	2/00
String or strip of light sources.....	4/00
Free-standing.....	6/00
Fixed installation.....	8/00
Built-in power supply.....	9/00
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

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]	4/28	• • 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]
4/26	• • • of rope form, e.g. LED lighting ropes, or of tubular form [2016.01]		

9/00	Lighting devices with a built-in power supply; Systems employing lighting devices with a built-in power supply [1, 2006.01]	41/148	• • • • the main emission direction of the LED being perpendicular to the optical axis [2018.01]
9/02	• the power supply being a battery or accumulator [1, 2006.01]	41/151	• • • • arranged in one or more lines [2018.01]
9/03	• • rechargeable by exposure to light [7, 2006.01]	41/153	• • • • arranged in a matrix [2018.01]
9/04	• the power supply being a generator [1, 2006.01]	41/155	• • • • Surface emitters, e.g. organic light emitting diodes [OLED] [2018.01]
10/00	Lighting devices or systems producing a varying lighting effect [7, 2006.01]	41/16	• • • Laser light sources [2018.01]
10/02	• changing colours (F21S 10/04 takes precedence) [7, 2006.01]	41/162	• • • Incandescent light sources, e.g. filament or halogen lamps [2018.01]
10/04	• simulating flames [7, 2006.01]	41/164	• • • • having two or more filaments [2018.01]
10/06	• flashing, e.g. with rotating reflector or light source [7, 2006.01]	41/166	• • • • characterised by the shape of the filament [2018.01]
11/00	Non-electric lighting devices or systems using daylight [1, 2006.01]	41/168	• • • • having a filament arranged transversally to the optical axis of the illuminating device [2018.01]
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]	41/17	• • • Discharge light sources [2018.01]
13/02	• Devices intended to be fixed, e.g. ceiling lamp, wall lamp [1, 2006.01]	41/172	• • • • High-intensity discharge light sources [2018.01]
13/04	• • with a pendant [1, 2006.01]	41/173	• • • • Fluorescent light sources [2018.01]
13/06	• • • multi-branched, e.g. chandelier [1, 2006.01]	41/176	• • • • Light sources where the light is generated by photoluminescent material spaced from a primary light generating element [2018.01]
13/08	• • with suspension from a stretched wire [1, 2006.01]	41/19	• • Attachment of light sources or lamp holders (achieving variable light distribution by movable light sources F21S 41/657) [2018.01]
13/10	• • with a standard, e.g. street lamp [1, 2006.01]	41/20	• characterised by refractors, transparent cover plates, light guides or filters [2018.01]
13/12	• Devices intended to be free-standing, e.g. table lamp, floor lamp [1, 2006.01]	41/24	• • Light guides [2018.01]
13/14	• Lighting systems [1, 2006.01]	41/25	• • Projection lenses [2018.01]
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]	41/255	• • • Lenses with a front view of circular or truncated circular outline [2018.01]
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]	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]
<u>Vehicle lighting devices specially adapted for vehicle exteriors [2018.01]</u>			
41/00	<i>Illuminating devices specially adapted for vehicle exteriors, e.g. headlamps (reversing lights F21S 43/00) [2018.01]</i>		
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]		

- 41/62 • • 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]**