

CPC COOPERATIVE PATENT CLASSIFICATION

F MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING (NOTE omitted)

LIGHTING; HEATING

F24 HEATING; RANGES; VENTILATING (protecting plants by heating in gardens, orchards, or forests [A01G 13/06](#); baking ovens and apparatus [A21B](#); cooking devices other than ranges [A47J](#); forging [B21J](#), [B21K](#); specially adapted for vehicles, see the relevant subclasses of [B60](#) - [B64](#); combustion apparatus in general [F23](#); drying [F26B](#); ovens in general [F27](#); electric heating elements and arrangements [H05B](#))
(NOTE omitted)

F24S SOLAR HEAT COLLECTORS; SOLAR HEAT SYSTEMS (for producing mechanical power from solar energy [F03G 6/00](#))

NOTE

In this subclass, the following terms or expressions are used with the meanings indicated:

- "solar heat collector modules", often referred to simply as "modules", covers;
 - a. whole solar heat collectors
 - b. elements of solar heat collectors, e.g. reflectors, lenses or heat storage elements.
- "absorbing elements" covers elements for absorbing solar-rays and converting it into heat.
- "solar heat systems" covers systems having solar heat collectors as their components and using the collected heat

10/00	Solar heat collectors using working fluids	10/60	• the working fluids trickling freely over absorbing elements
10/10	• the working fluids forming pools or ponds	10/70	• the working fluids being conveyed through tubular absorbing conduits
10/13	• . Salt-gradient ponds	2010/71	• . {the conduits having a non-circular cross-section}
10/17	• . using covers or floating solar absorbing elements	10/72	• . {the tubular conduits being integrated in a block; the tubular conduits touching each other}
10/20	• having circuits for two or more working fluids (with means for exchanging heat between two or more fluids F24S 10/30)	10/73	• . {the tubular conduits being of plastic material}
10/25	• having two or more passages for the same working fluid layered in direction of solar-rays, e.g. having upper circulation channels connected with lower circulation channels	10/74	• . {the tubular conduits are not fixed to heat absorbing plates and are not touching each other}
10/30	• with means for exchanging heat between two or more working fluids	10/742	• . . {the conduits being parallel to each other}
10/40	• in absorbing elements surrounded by transparent enclosures, e.g. evacuated solar collectors	10/744	• . . {the conduits being helically coiled}
10/45	• . {the enclosure being cylindrical}	10/746	• . . {the conduits being spirally coiled}
10/50	• the working fluids being conveyed between plates	10/748	• . . {the conduits being otherwise bent, e.g. zig-zag}
10/501	• . {having conduits of plastic material}	10/75	• . with enlarged surfaces, e.g. with protrusions or corrugations (collectors comprising porous material or permeable masses directly contacting the working fluids F24S 10/80)
10/502	• . {having conduits formed by paired plates and internal partition means}	2010/751	• . . {Special fins}
10/503	• . {having conduits formed by paired plates, only one of which is plane}	2010/752	• . . . {extending obliquely}
10/504	• . {having conduits formed by paired non-plane plates}	10/753	• . . {the conduits being parallel to each other}
10/505	• . {having curved plate-like conduits, e.g. semi-spherical}	10/754	• . . {the conduits being spirally coiled}
10/506	• . {having conduits formed by inflation of portions of a pair of joined sheets}	10/755	• . . {the conduits being otherwise bent, e.g. zig-zag}
10/55	• . with enlarged surfaces, e.g. with protrusions or corrugations (collectors comprising porous materials or permeable masses directly contacting the working fluids F24S 10/80)		

10/80	<ul style="list-style-type: none"> comprising porous material or permeable masses directly contacting the working fluids (for conveying liquefied working fluid from evaporator sections to condenser sections with capillary force F24S 10/95) <p>WARNING</p> <p>Group F24S 10/80 is impacted by reclassification into group F24S 10/95.</p> <p>Groups F24S 10/80 and F24S 10/95 should be considered in order to perform a complete search.</p>	20/20	<ul style="list-style-type: none"> Solar heat collectors for receiving concentrated solar energy, e.g. receivers for solar power plants
		2020/23	<ul style="list-style-type: none"> {movable or adjustable}
		20/25	<ul style="list-style-type: none"> using direct solar radiation in combination with concentrated radiation
		20/30	<ul style="list-style-type: none"> Solar heat collectors for heating objects, e.g. solar cookers or solar furnaces <p>WARNING</p> <p>Group F24S 20/30 is impacted by reclassification into group F24S 50/20.</p> <p>Groups F24S 20/30 and F24S 50/20 should be considered in order to perform a complete search.</p>
10/90	<ul style="list-style-type: none"> using internal thermosiphonic circulation <p>WARNING</p> <p>Group F24S 10/90 is incomplete pending reclassification of documents from group F24S 90/10.</p> <p>Group F24S 10/90 is also impacted by reclassification into groups F24S 10/95 and F24S 90/10.</p> <p>All groups listed in this Warning should be considered in order to perform a complete search.</p>	20/40	<ul style="list-style-type: none"> Solar heat collectors combined with other heat sources, e.g. using electrical heating or heat from ambient air
		20/50	<ul style="list-style-type: none"> Rollable or foldable solar heat collector modules <p>WARNING</p> <p>Group F24S 20/50 is impacted by reclassification into group F24S 20/55.</p> <p>Groups F24S 20/50 and F24S 20/55 should be considered in order to perform a complete search.</p>
10/95	<ul style="list-style-type: none"> having evaporator sections and condenser sections, e.g. heat pipes <p>WARNING</p> <p>Group F24S 10/95 is incomplete pending reclassification of documents from groups F24S 10/80, F24S 10/90 and F24S 90/10.</p> <p>Groups F24S 10/80, F24S 10/90, F24S 90/10, and F24S 10/95 should be considered in order to perform a complete search.</p>	20/55	<ul style="list-style-type: none"> made of flexible materials <p>WARNING</p> <p>Group F24S 20/55 is incomplete pending reclassification of documents from group F24S 20/50.</p> <p>Groups F24S 20/50 and F24S 20/55 should be considered in order to perform a complete search.</p>
20/00	<p>Solar heat collectors specially adapted for particular uses or environments</p> <p>WARNING</p> <p>Group F24S 20/00 is incomplete pending reclassification of documents from group F24S 21/00.</p> <p>Groups F24S 20/00 and F24S 21/00 should be considered in order to perform a complete search.</p>	20/60	<ul style="list-style-type: none"> Solar heat collectors integrated in fixed constructions, e.g. in buildings
20/02	<ul style="list-style-type: none"> {for swimming pools} 	20/61	<ul style="list-style-type: none"> {Passive solar heat collectors, e.g. operated without external energy source}
20/04	<ul style="list-style-type: none"> {for showers} 	20/62	<ul style="list-style-type: none"> {in the form of fences, balustrades or handrails}
2020/10	<ul style="list-style-type: none"> {Solar modules layout; Modular arrangements} 	20/63	<ul style="list-style-type: none"> {in the form of windows}
2020/11	<ul style="list-style-type: none"> {in the form of multiple rows and multiple columns, all solar modules being coplanar} 	20/64	<ul style="list-style-type: none"> {in the form of floor constructions, grounds or roads}
2020/12	<ul style="list-style-type: none"> {Coplanar arrangements with frame overlapping portions} 	20/66	<ul style="list-style-type: none"> {in the form of facade constructions, e.g. wall constructions (in the form of shingles or tiles F24S 20/69)} <p>WARNING</p> <p>Group F24S 20/66 is impacted by reclassification into group F24S 20/69.</p> <p>Groups F24S 20/66 and F24S 20/69 should be considered in order to perform a complete search.</p>
2020/13	<ul style="list-style-type: none"> {Overlaying arrangements similar to roof tiles} 	20/67	<ul style="list-style-type: none"> {in the form of roof constructions (in the form of shingles or tiles F24S 20/69)}
2020/14	<ul style="list-style-type: none"> {Stepped arrangements, e.g. in parallel planes, without module overlapping} 		
2020/15	<ul style="list-style-type: none"> {Non-parallel arrangements} 		
2020/16	<ul style="list-style-type: none"> {Preventing shading effects} 		
2020/17	<ul style="list-style-type: none"> {Arrangements of solar thermal modules combined with solar PV modules} 		
2020/18	<ul style="list-style-type: none"> {having a particular shape, e.g. prismatic, pyramidal} 		
2020/183	<ul style="list-style-type: none"> {in the form of louvers} 		
2020/186	<ul style="list-style-type: none"> {allowing change of position for optimization of heat collection} 		

20/69	<ul style="list-style-type: none"> in the form of shingles or tiles <p>WARNING</p> <p>Group F24S 20/69 is incomplete pending reclassification of documents from group F24S 20/66.</p> <p>Groups F24S 20/66 and F24S 20/69 should be considered in order to perform a complete search.</p>	23/74	<ul style="list-style-type: none"> with trough-shaped or cylindro-parabolic reflective surfaces <p>WARNING</p> <p>Group F24S 23/74 is incomplete pending reclassification of documents from group F24S 23/71.</p> <p>Groups F24S 23/71 and F24S 23/74 should be considered in order to perform a complete search.</p>
20/70	<ul style="list-style-type: none"> Waterborne solar heat collector modules (for working fluids forming pools or ponds F24S 10/10) <p>WARNING</p> <p>Group is impacted by reclassification into groups F24S 30/00, F24S 30/20, F24S 30/40, F24S 30/42, F24S 30/422, F24S 30/425, F24S 30/428, F24S 30/45, F24S 30/452, F24S 30/455, F24S 30/458, and F24S 30/48.</p> <p>All groups listed in this Warning should be considered in order to perform a complete search.</p>	23/745	<ul style="list-style-type: none"> {flexible}
20/80	<ul style="list-style-type: none"> Airborne solar heat collector modules, e.g. inflatable structures 	23/75	<ul style="list-style-type: none"> with conical reflective surfaces
21/00	<p>Solar heat collectors not provided for in groups F24S 10/00-F24S 20/00</p> <p>WARNING</p> <p>Group F24S 21/00 is impacted by reclassification into group F24S 20/00.</p> <p>Groups F24S 21/00 and F24S 20/00 should be considered in order to perform a complete search.</p>	23/77	<ul style="list-style-type: none"> with flat reflective plates
23/00	<p>Arrangements for concentrating solar-rays for solar heat collectors</p> <p>WARNING</p> <p>Group F24S 23/00 is impacted by reclassification into group F24S 50/20.</p> <p>Groups F24S 23/00 and F24S 50/20 should be considered in order to perform a complete search.</p>	23/79	<ul style="list-style-type: none"> with spaced and opposed interacting reflective surfaces
23/10	<ul style="list-style-type: none"> {Prisms} 	23/80	<ul style="list-style-type: none"> {having discontinuous faces}
23/11	<ul style="list-style-type: none"> {Fluorescent material} 	23/81	<ul style="list-style-type: none"> {flexible (F24S 23/715, F24S 23/745 take precedence)}
23/12	<ul style="list-style-type: none"> {Light guides} 	23/82	<ul style="list-style-type: none"> {characterised by the material or the construction of the reflector}
23/30	<ul style="list-style-type: none"> with lenses 	2023/83	<ul style="list-style-type: none"> {Other shapes}
23/31	<ul style="list-style-type: none"> {having discontinuous faces, e.g. Fresnel lenses} 	2023/831	<ul style="list-style-type: none"> {corrugated}
23/70	<ul style="list-style-type: none"> with reflectors 	2023/832	<ul style="list-style-type: none"> {curved}
23/71	<ul style="list-style-type: none"> with parabolic reflective surfaces (with cylindro-parabolic reflective surfaces F24S 23/74) <p>WARNING</p> <p>Group F24S 23/71 is impacted by reclassification into group F24S 23/74.</p> <p>Groups F24S 23/71 and F24S 23/74 should be considered in order to perform a complete search.</p>	2023/833	<ul style="list-style-type: none"> {dish-shaped}
23/715	<ul style="list-style-type: none"> {flexible} 	2023/834	<ul style="list-style-type: none"> {trough-shaped}
23/72	<ul style="list-style-type: none"> with hemispherical reflective surfaces 	2023/835	<ul style="list-style-type: none"> {asymmetric}
		2023/836	<ul style="list-style-type: none"> {spiral}
		2023/837	<ul style="list-style-type: none"> {hyperbolic}
		2023/838	<ul style="list-style-type: none"> {involutés}
		2023/84	<ul style="list-style-type: none"> {Reflective elements inside solar collector casings}
		2023/85	<ul style="list-style-type: none"> {Micro-reflectors}
		2023/86	<ul style="list-style-type: none"> {in the form of reflective coatings}
		2023/87	<ul style="list-style-type: none"> {Reflectors layout}
		2023/872	<ul style="list-style-type: none"> {Assemblies of spaced reflective elements on common support, e.g. Fresnel reflectors}
		2023/874	<ul style="list-style-type: none"> {Reflectors formed by assemblies of adjacent similar reflective facets}
		2023/876	<ul style="list-style-type: none"> {Reflectors formed by assemblies of adjacent reflective elements having different orientation or different features}
		2023/878	<ul style="list-style-type: none"> {Assemblies of spaced reflective elements in the form of grids, e.g. vertical or inclined reflective elements extending over heat absorbing elements}
		2023/88	<ul style="list-style-type: none"> {Multi reflective traps} <p>WARNING</p> <p>Group F24S 2023/88 is impacted by reclassification into group F24S 2070/62.</p> <p>Groups F24S 2023/88 and F24S 2070/62 should be considered in order to perform a complete search.</p>
		25/00	<p>Arrangement of stationary mountings or supports for solar heat collector modules</p> <p>NOTE</p> <p>Arrangements also intended for use with photovoltaic modules should further be classified in the relevant groups of subclass H02S.</p>
		2025/01	<ul style="list-style-type: none"> {Special support components; Methods of use}

2025/011	. . {Arrangements for mounting elements inside solar collectors; Spacers inside solar collectors}	2025/6011	. . {by welding or brazing}
2025/012	. . {Foldable support elements}	2025/6012	. . {Joining different materials}
2025/013	. . {Stackable support elements}	2025/6013	. . . {Joining glass with non-glass elements}
2025/014	. . {Methods for installing support elements}	25/61	. . for fixing to the ground or to building structures
2025/015	. . {Supports with play between elements}	25/613	. . . in the form of bent strips or assemblies of strips; Hook-like connectors; Connectors to be mounted between building-covering elements
2025/016	. . {Filling or spacing means; Elastic means}	25/615	. . . for fixing to protruding parts of buildings, e.g. to corrugations or to standing seams
2025/017	. . {Tensioning means}	25/617	. . . Elements driven into the ground, e.g. anchor-piles; Foundations for supporting elements; Connectors for connecting supporting structures to the ground or to flat horizontal surfaces
2025/018	. . {Means for preventing movements, e.g. stops}	25/63	. . for fixing modules or their peripheral frames to supporting elements
2025/019	. . {Means for accommodating irregularities on mounting surface; Tolerance compensation means}	25/632	. . . Side connectors; Base connectors
2025/02	. . {Ballasting means}	25/634	. . . Clamps; Clips
2025/021	. . {Sealing means between support elements and mounting surface}	25/636 clamping by screw-threaded elements
2025/022	. . {Sealing means between support elements, e.g. overlapping arrangements; Gap closing arrangements}	25/65	. . for coupling adjacent supporting elements, e.g. for connecting profiles together
2025/023	. . {Means for preventing theft; Locking means}	25/67	. . for coupling adjacent modules or their peripheral frames (for fixing modules or their peripheral frames to supporting elements F24S 25/63)
25/10	. extending in directions away from a supporting surface	25/70	. with means for adjusting the final position or orientation of supporting elements in relation to each other or to a mounting surface; with means for compensating mounting tolerances
25/11	. . using shaped bodies, e.g. concrete elements, foamed elements or moulded box-like elements	2025/80	. {Special profiles}
25/12	. . using posts in combination with upper profiles	2025/801	. . {having hollow parts with closed cross-section}
25/13	. . Profile arrangements, e.g. trusses (F24S 25/12 takes precedence)	2025/802	. . {having circular or oval cross-section}
25/15	. . using bent plates; using assemblies of plates	2025/803	. . {having a central web, e.g. I-shaped, inverted T-shaped}
25/16	. . Arrangement of interconnected standing structures; Standing structures having separate supporting portions for adjacent modules	2025/804	. . {U-, C- or O-shaped; Hat profiles}
25/20	. Peripheral frames for modules	2025/805	. . {in the form of corrugated profiles}
25/30	. using elongate rigid mounting elements extending substantially along the supporting surface, e.g. for covering buildings with solar heat collectors (extending in directions away from the supporting surface F24S 25/10; peripheral frames for modules F24S 25/20)	2025/806	. . {having curved portions}
25/33	. . forming substantially planar assemblies, e.g. of coplanar or stacked profiles	2025/807	. . {having undercut grooves}
25/35	. . . by means of profiles with a cross-section defining separate supporting portions for adjacent modules	30/00	Arrangements for moving or orienting solar heat collector modules
25/37	. . . forming coplanar grids comprising longitudinal and transversal profiles		NOTE
25/40	. using plate-like mounting elements, e.g. profiled or corrugated plates; Plate-like module frames (extending in directions away from a supporting surface F24S 25/10)		Arrangements also intended for use with photovoltaic modules should further be classified in the relevant groups of subclass H02S .
25/50	. comprising elongate non-rigid elements, e.g. straps, wires or ropes		WARNING
25/60	. Fixation means, e.g. fasteners, specially adapted for supporting solar heat collector modules		Group F24S 30/00 is incomplete pending reclassification of documents from groups F24S 20/70 and F24S 30/20
2025/6001	. . {by using hook and loop-type fasteners}		Groups F24S 20/70 , F24S 30/20 , and F24S 30/00 should be considered in order to perform a complete search.
2025/6002	. . {by using hooks}	2030/10	. {Special components}
2025/6003	. . {by clamping}	2030/11	. . {Driving means}
2025/6004	. . {by clipping, e.g. by using snap connectors}	2030/115	. . . {Linear actuators, e.g. pneumatic cylinders}
2025/6005	. . {by screwed connection}	2030/12	. . {Coupling means}
2025/6006	. . {by using threaded elements, e.g. stud bolts}	2030/13	. . {Transmissions}
2025/6007	. . {by using form-fitting connection means, e.g. tongue and groove}	2030/131	. . . {in the form of articulated bars}
2025/6008	. . {by using toothed elements}	2030/132 {in the form of compasses, scissors or parallelograms}
2025/6009	. . {by deforming the material, e.g. by crimping or clinching}	2030/133	. . . {in the form of flexible elements, e.g. belts, chains, ropes}
2025/601	. . {by bonding, e.g. by using adhesives}		

- 2030/134 . . . {in the form of gearings or rack-and-pinion transmissions}
- 2030/135 . . . {in the form of threaded elements}
- 2030/136 . . . {for moving several solar collectors by common transmission elements}
- 2030/137 . . . {for deriving one movement from another one, e.g. for deriving elevation movement from azimuth movement}
- 2030/14 . . {Movement guiding means}
- 2030/145 . . . {Tracks}
- 2030/15 . . {Bearings}
- 2030/16 . . {Hinged elements; Pin connections}
- 2030/17 . . {Spherical joints}
- 2030/18 . . {Load balancing means, e.g. use of counter-weights}
- 2030/19 . . {Movement dampening means; Braking means}
- 30/20 . for linear movement

WARNING

Group [F24S 30/20](#) is incomplete pending reclassification of documents from group [F24S 20/70](#).

Group [F24S 30/20](#) is also impacted by reclassification into group [F24S 30/00](#).

Groups [F24S 20/70](#), [F24S 30/20](#), and [F24S 30/00](#) should be considered in order to perform a complete search

- 30/40 . for rotary movement

WARNING

Group [F24S 30/40](#) is incomplete pending reclassification of documents from group [F24S 20/70](#).

Groups [F24S 20/70](#) and [F24S 30/40](#) should be considered in order to perform a complete search.

- 30/42 . . with only one rotation axis

WARNING

Group [F24S 30/42](#) is incomplete pending reclassification of documents from group [F24S 20/70](#).

Groups [F24S 20/70](#) and [F24S 30/42](#) should be considered in order to perform a complete search.

- 30/422 . . . Vertical axis

WARNING

Group [F24S 30/422](#) is incomplete pending reclassification of documents from group [F24S 20/70](#).

Groups [F24S 20/70](#) and [F24S 30/422](#) should be considered in order to perform a complete search.

- 30/425 . . . Horizontal axis

WARNING

Group [F24S 30/425](#) is incomplete pending reclassification of documents from group [F24S 20/70](#).

Groups [F24S 20/70](#) and [F24S 30/425](#) should be considered in order to perform a complete search.

- 30/428 . . . with inclined axis

WARNING

Group [F24S 30/428](#) is incomplete pending reclassification of documents from group [F24S 20/70](#).

Groups [F24S 20/70](#) and [F24S 30/428](#) should be considered in order to perform a complete search.

- 30/45 . . with two rotation axes

WARNING

Group [F24S 30/45](#) is incomplete pending reclassification of documents from group [F24S 20/70](#).

Groups [F24S 20/70](#) and [F24S 30/45](#) should be considered in order to perform a complete search.

- 30/452 . . . Vertical primary axis

WARNING

Group [F24S 30/452](#) is incomplete pending reclassification of documents from group [F24S 20/70](#).

Groups [F24S 20/70](#) and [F24S 30/452](#) should be considered in order to perform a complete search.

- 30/455 . . . Horizontal primary axis

WARNING

Group [F24S 30/455](#) is incomplete pending reclassification of documents from group [F24S 20/70](#).

Groups [F24S 20/70](#) and [F24S 30/455](#) should be considered in order to perform a complete search.

- 30/458 . . . with inclined primary axis

WARNING

Group [F24S 30/458](#) is incomplete pending reclassification of documents from group [F24S 20/70](#).

Groups [F24S 20/70](#) and [F24S 30/458](#) should be considered in order to perform a complete search.

- 30/48 . . with three or more rotation axes or with multiple degrees of freedom
- WARNING**
- Group [F24S 30/48](#) is incomplete pending reclassification of documents from group [F24S 20/70](#).
- Groups [F24S 20/70](#) and [F24S 30/48](#) should be considered in order to perform a complete search.
- 40/00 Safety or protection arrangements of solar heat collectors; Preventing malfunction of solar heat collectors (control arrangements [F24S 50/00](#))**
- WARNING**
- Group [F24S 40/00](#) is impacted by reclassification into group [F24S 40/90](#).
- Groups [F24S 40/00](#) and [F24S 40/90](#) should be considered in order to perform a complete search.
- 40/10 . Protective covers or shrouds; Closure members, e.g. lids (transparent coverings [F24S 80/50](#))
- 40/20 . Cleaning; Removing snow
- 40/40 . Preventing corrosion; Protecting against dirt or contamination
- 40/42 . . Preventing condensation inside solar modules (by venting [F24S 40/53](#))
- WARNING**
- Group [F24S 40/42](#) is impacted by reclassification into group [F24S 40/53](#).
- Groups [F24S 40/42](#) and [F24S 40/53](#) should be considered in order to perform a complete search .
- 40/44 . . Draining rainwater or condensation
- 40/46 . . Maintaining vacuum, e.g. by using getters
- 40/48 . . Deaerating or degassing the working fluid
- 40/50 . Preventing overheating or overpressure (by draining the working fluid [F24S 40/60](#))
- 40/52 . . by modifying the heat collection, e.g. by defocusing or by changing the position of heat-receiving elements
- 40/53 . . by venting solar heat collector enclosures
- WARNING**
- Group [F24S 40/53](#) is incomplete pending reclassification of documents from group [F24S 40/42](#).
- Groups [F24S 40/42](#) and [F24S 40/53](#) should be considered in order to perform a complete search.
- 40/55 . . Arrangements for cooling, e.g. by using external heat dissipating means or internal cooling circuits (by venting [F24S 40/53](#))
- 40/57 . . Preventing overpressure in solar collector enclosures (by venting [F24S 40/53](#))
- 40/58 . . Preventing overpressure in working fluid circuits
- 40/60 . Arrangements for draining the working fluid
- 40/70 . Preventing freezing (arrangements for draining the working fluid [F24S 40/60](#))
- 40/80 . Accommodating differential expansion of solar collector elements

- 40/85 . . {Arrangements for protecting solar collectors against adverse weather conditions ([F24S 40/10](#) takes precedence)}
- 40/90 . Arrangements for testing solar heat collectors
- WARNING**
- Group [F24S 40/90](#) is incomplete pending reclassification of documents from group [F24S 40/00](#).
- Groups [F24S 40/00](#) and [F24S 40/90](#) should be considered in order to perform a complete search.
- 50/00 Arrangements for controlling solar heat collectors**
- 50/20 . for tracking
- WARNING**
- Group [F24S 50/20](#) is incomplete pending reclassification of documents from groups [F24S 20/30](#) and [F24S 23/00](#).
- Groups [F24S 50/20](#) and [F24S 50/20](#) should be considered in order to perform a complete search.
- 2050/25 . . {Calibration means; Methods for initial positioning of solar concentrators or solar receivers}
- 50/40 . responsive to temperature
- 50/60 . responsive to wind
- 50/80 . for controlling collection or absorption of solar radiation
- 60/00 Arrangements for storing heat collected by solar heat collectors (working fluids forming pools or ponds [F24S 10/10](#))**
- WARNING**
- Group [F24S 60/00](#) is impacted by reclassification into groups [F24S 60/10](#) and [F24S 60/20](#).
- Groups [F24S 60/00](#), [F24S 60/10](#), and [F24S 60/20](#) should be considered in order to perform a complete search.
- 60/10 . using latent heat
- WARNING**
- Group [F24S 60/10](#) is incomplete pending reclassification of documents from groups [F24S 60/00](#) and [F24S 60/30](#).
- Groups [F24S 60/00](#), [F24S 60/30](#), and [F24S 60/10](#) should be considered in order to perform a complete search.
- 60/20 . using chemical reactions, e.g. thermochemical reactions or isomerisation reactions
- WARNING**
- Group [F24S 60/20](#) is incomplete pending reclassification of documents from groups [F24S 60/00](#) and [F24S 60/30](#).
- Groups [F24S 60/00](#), [F24S 60/30](#), and [F24S 60/20](#) should be considered in order to perform a complete search.

60/30	<ul style="list-style-type: none"> storing heat in liquids <p>WARNING</p> <p>Group F24S 60/30 is impacted by reclassification into groups F24S 60/10 and F24S 60/20.</p> <p>Groups F24S 60/30, F24S 60/10, and F24S 60/20 should be considered in order to perform a complete search.</p>	70/60	<ul style="list-style-type: none"> characterised by the structure or construction (absorbing coatings or surface treatment for increasing absorption F24S 70/20; auxiliary coatings F24S 70/30)
		2070/62	<ul style="list-style-type: none"> {Heat traps} <p>WARNING</p> <p>Group F24S 2070/62 is incomplete pending reclassification of documents from group F24S 2023/88.</p> <p>Groups F24S 2023/88 and F24S 2070/62 should be considered in order to perform a complete search.</p>
70/00	<p>Details of absorbing elements</p> <p>WARNING</p> <p>Group F24S 70/00 is incomplete pending reclassification of documents from group F24S 80/00.</p> <p>Groups F24S 80/00 and F24S 70/00 should be considered in order to perform a complete search.</p>		
70/10	<ul style="list-style-type: none"> characterised by the absorbing material (absorbing coatings or surface treatment for increasing absorption F24S 70/20) 		
70/12	<ul style="list-style-type: none"> made of metallic material 		
70/14	<ul style="list-style-type: none"> made of plastics 		
70/16	<ul style="list-style-type: none"> made of ceramic; made of concrete; made of natural stone 		
70/20	<ul style="list-style-type: none"> characterised by absorbing coatings; characterised by surface treatment for increasing absorption <p>WARNING</p> <p>Group F24S 70/20 is impacted by reclassification into group F24S 70/225.</p> <p>Groups F24S 70/20 and F24S 70/225 should be considered in order to perform a complete search.</p>		
70/225	<ul style="list-style-type: none"> for spectrally selective absorption <p>WARNING</p> <p>Group F24S 70/225 is incomplete pending reclassification of documents from groups F24S 70/20, F24S 70/25, and F24S 70/275.</p> <p>All groups listed in this Warning should be considered in order to perform a complete search.</p>		
70/25	<ul style="list-style-type: none"> Coatings made of metallic material <p>WARNING</p> <p>Group F24S 70/25 is impacted by reclassification into group F24S 70/225.</p> <p>Groups F24S 70/25 and F24S 70/225 should be considered in order to perform a complete search.</p>		
70/275	<ul style="list-style-type: none"> Coatings made of plastics <p>WARNING</p> <p>Group F24S 70/275 is impacted by reclassification into group F24S 70/225.</p> <p>Groups F24S 70/275 and F24S 70/225 should be considered in order to perform a complete search.</p>		
70/30	<ul style="list-style-type: none"> Auxiliary coatings, e.g. anti-reflective coatings 		
		2080/01	<ul style="list-style-type: none"> {Selection of particular materials}
		2080/011	<ul style="list-style-type: none"> {Ceramics}
		2080/012	<ul style="list-style-type: none"> {Concrete}
		2080/013	<ul style="list-style-type: none"> {Foams}
		2080/014	<ul style="list-style-type: none"> {Carbone, e.g. graphite}
		2080/015	<ul style="list-style-type: none"> {Plastics}
		2080/016	<ul style="list-style-type: none"> {Textiles; Fabrics}
		2080/017	<ul style="list-style-type: none"> {Natural materials, e.g. wood}
		2080/018	<ul style="list-style-type: none"> {Recycled materials}
		2080/03	<ul style="list-style-type: none"> {Arrangements for heat transfer optimization}
		2080/05	<ul style="list-style-type: none"> {Flow guiding means; Inserts inside conduits}
		2080/07	<ul style="list-style-type: none"> {Arrangements for one-way heat transfer, e.g. thermal diodes}
		2080/09	<ul style="list-style-type: none"> {Arrangements for reinforcement of solar collector elements}
		80/10	<ul style="list-style-type: none"> Materials for heat-exchange conduits
		80/20	<ul style="list-style-type: none"> Working fluids specially adapted for solar heat collectors
		80/30	<ul style="list-style-type: none"> Arrangements for connecting the fluid circuits of solar collectors with each other or with other components, e.g. pipe connections; Fluid distributing means, e.g. headers
		80/40	<ul style="list-style-type: none"> Casings
		80/45	<ul style="list-style-type: none"> characterised by the material
		80/453	<ul style="list-style-type: none"> made of metallic material
		80/457	<ul style="list-style-type: none"> made of plastics
		80/50	<ul style="list-style-type: none"> Elements for transmitting incoming solar rays and preventing outgoing heat radiation; Transparent coverings <p>WARNING</p> <p>Group F24S 80/50 is impacted by reclassification into groups F24S 80/56 and F24S 80/58.</p> <p>Groups F24S 80/50, F24S 80/56, and F24S 80/58 should be considered in order to perform a complete search.</p>
		2080/501	<ul style="list-style-type: none"> {Special shape}
		2080/502	<ul style="list-style-type: none"> {in the form of multiple covering elements}

- 2080/503 . . . {in the form of curved covering elements}
 80/52 . . characterised by the material (for preventing heat loss [F24S 80/56](#))

WARNING

Group [F24S 80/52](#) is impacted by reclassification into groups [F24S 80/56](#) and [F24S 80/58](#).

Groups [F24S 80/52](#), [F24S 80/56](#), and [F24S 80/58](#) should be considered in order to perform a complete search.

- 80/525 . . . made of plastics

WARNING

Group [F24S 80/525](#) is impacted by reclassification into groups [F24S 80/56](#) and [F24S 80/58](#).

Groups [F24S 80/525](#), [F24S 80/56](#), and [F24S 80/58](#) should be considered in order to perform a complete search.

- 80/54 . . using evacuated elements

WARNING

Group [F24S 80/54](#) is impacted by reclassification into groups [F24S 80/56](#) and [F24S 80/58](#).

Groups [F24S 80/54](#), [F24S 80/56](#), and [F24S 80/58](#) should be considered in order to perform a complete search.

- 80/56 . . characterised by means for preventing heat loss

WARNING

Group [F24S 80/56](#) is incomplete pending reclassification of documents from groups [F24S 80/50](#), [F24S 80/52](#), [F24S 80/525](#), and [F24S 80/54](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 80/58 . . characterised by their mountings or fixing means

WARNING

Group [F24S 80/58](#) is incomplete pending reclassification of documents from groups [F24S 80/50](#), [F24S 80/52](#), [F24S 80/525](#), and [F24S 80/54](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 80/60 . Thermal insulation (transparent coverings [F24S 80/50](#))

- 80/65 . . characterised by the material

- 80/70 . Sealing means

- 90/00 Solar heat systems not otherwise provided for**

- 90/10 . using thermosiphonic circulation

WARNING

Group [F24S 90/10](#) is incomplete pending reclassification of documents from group [F24S 10/90](#).

Group [F24S 90/10](#) is also impacted by reclassification into groups [F24S 10/90](#) and [F24S 10/95](#).

All groups listed in this Warning should be considered in order to perform a complete search.

2201/00 Prediction; Simulation