

- 250 **FLAMELESS OR GLOWLESS**
- 251 .Activatable by or containing water
- 252 ..Free metal-containing
- 253 ...With organic or second elemental material
- 265 **SOLIDIFIED LIQUID (E.G., GEL, ETC.)**
- 266 .Liquid alkanol base
- 267 ..With carbohydrate (e.g., cellulose compound, cotton, etc.)
- 268 .Liquid hydrocarbon base (e.g., gasoline, etc.)
- 269 ..With plant derivative of unknown composition (except rosin or rosin derivatives) or carbohydrate
- 270 ..With organic nitrogen compound
- 271 ..With organic polymer polymerized through olefinic or acetylenic bond (e.g., methacrylate polymers, polypropylene, etc.)
- 272 ..With organic -C(=X)X- compound, wherein the X's are the same or diverse chalcogens (e.g., aluminum carboxylates, rosin salts, etc.)
- 275 **CANDLE COMPOSITION**
- 280 **SOLID CARBONACEOUS FUEL DISPERSED IN A LIQUID MEDIUM (E.G., DISPERSED COAL, COKE, CARBON POWDER, PEAT, ETC.)**
- 281 .The liquid medium is, or contains, hydrocarbon
- 282 ..Liquid hydrocarbon, or liquid hydrocarbon and water, are the only components
- 300 **LIQUID FUELS (EXCLUDING FUELS THAT ARE EXCLUSIVELY MIXTURES OF LIQUID HYDROCARBONS)**
- 301 .Emulsion fuel (e.g., water-gasoline emulsions, etc.)
- 302 ..Alkanol component
- 303 .Oxo still bottoms containing (i.e., distillation residues from reaction product of carbon monoxide, hydrogen, and olefin)
- 304 .Organic compound of indeterminate structure which is a reaction product of an organic compound with sulfur halide or elemental sulfur containing
- 305 .Phosphosulfurized or phosphooxidized organic compound of indeterminate structure containing (i.e., reaction products of organic compounds with phosphorus sulfides or oxides)
- 306 .Rosin, tall oil, or derivatives thereof containing (except abietic acids or fatty acids derived therefrom)
- 307 .Plant or animal extract mixtures or extracts of indeterminate structure containing
- 308 ..Containing triglycerides (e.g., castor oil, corn oil, olive oil, lard, etc.)
- 309 .Organic oxidate of indeterminate composition containing (e.g., paraffin wax oxidate or petroleum oxidate, etc.)
- 310 ..Chemically reacted organic oxidate (e.g., esterified, etc.)
- 311 .Sludge, pitch, tar, or tar distillate containing
- 312 .Quinone or anthraquinone containing (e.g., quinhydrone, benzoquinones, etc.)
- 313 .Carbohydrate containing
- 314 .Boron containing
- 315 ..Phosphorus attached directly or indirectly to the boron
- 316 ..Three carbons or three fluorines bonded directly to the boron
- 317 ..Nitrogen attached directly or indirectly to the boron
- 318 ..Three identical or diverse chalcogens bonded directly to the boron
- 319 ...Carbon, chalcogen, and boron in the same ring
- 320 .Silicon containing
- 321 .Free metal or alloy containing
- 322 .Containing acyclic oxygen single bonded to acyclic oxygen (i.e., peroxy compounds)

- 323 .Containing -X-N(=X) or -X-N(=X)(=X) bonded directly to carbon, wherein the X's are the same or diverse chalcogens (e.g., thionitrite esters, etc.)
- 324 ..Nitrates or Thionitrates (i.e., -X-N(=O)(=O) bonded directly to carbon)
- 325 ...With organic non-nitrate nitrogen compound
- 326 ...With organic non-nitrate chalcogen compound
- 327 .Organic azide compound, or organic compound having acyclic nitrogen double bonded to acyclic nitrogen (e.g., diazo compounds, etc.)
- 328 ..Azo compound (i.e., each of the nitrogens is single bonded to carbon)
- 329 .Heterocyclic carbon compound containing a hetero ring having chalcogen or nitrogen as the only ring hetero atoms
- 330 ..Compound of indeterminate structure prepared by reacting a heterocyclic compound of known structure
- 331 ...The heterocyclic compound reactant is a dicarboxylic acid anhydride (e.g., reaction product of succinic anhydride with a polyamine, etc.)
- 332 ...The heterocyclic compound reactant is an oxirane (e.g., reaction product of epihalohydrin with amine, epoxide reactions, etc.)
- 333 ..The hetero ring contains six members including nitrogen and carbon
- 334 ...Chalcogen in the hetero ring
- 335 ...Plural nitrogens in the hetero ring (e.g., piperazines, etc.)
- 336Triazine or 1,3-diazine
- 337 ...Polymer or copolymer of a vinyl pyridine
- 338 ...Acyclic chalcogen or acyclic nitrogen bonded directly to ring carbon of the hetero ring
- 339 ...The hetero ring is unsubstituted or hydrocarbyl substituted only, or salts thereof (e.g., pyridyl salicylate salts, isoquinoline, etc.)
- 340 ..The hetero ring contains five members including nitrogen and carbon (e.g., pyrrolidones, porphines, etc.)
- 341 ...Chalcogen in the hetero ring
- 342 ...Plural nitrogens in the hetero ring (e.g., imidazolines, etc.)
- 343 ...At least three nitrogens in the hetero ring (e.g., triazoles, tetrazoles, etc.)
- 344 ...Having -C(=X)-, wherein X is chalcogen or NH, attached indirectly to the hetero ring by nonionic bonding
- 345 ...Carboxylic acid salt of the hetero ring compound, or a free carboxylic acid is present
- 346 ...Polymeric or copolymeric compound having plural occurrences of the hetero ring (e.g., alpha-olefin maleimide copolymers, etc.)
- 347 ...Acyclic chalcogen bonded directly to each carbon adjacent to the ring nitrogen (e.g., succinimides, etc.)
- 348 ...Substituent on the ring nitrogen contains an acyclic -C(=X)- group, wherein X is chalcogen
- 349 ..The hetero ring contains six members including carbon and chalcogen (e.g., six-membered sorbitans, ketone peroxides, etc.)
- 350 ..The hetero ring contains five members including carbon and chalcogen
- 351 ...Acyclic chalcogen bonded directly to ring carbon of the hetero ring (e.g., five-membered lactones, anhydrides, sorbitans, etc.)
- 352 ...Ring carbons of the hetero ring are unsubstituted or hydrocarbyl substituted only

- 353 ..The hetero ring contains three or four members
- 354 .Aluminum or heavy metal, other than lead, containing
- 355 ..Inorganic metal carbonyl compound (e.g., iron carbonyl, etc.)
- 356 ...With organic $-C(=O)O-$ containing compound (e.g., carboxylic acids, esters, etc.)
- 357 ..Inorganic compound of Zr, Cr, Cu, Zn, or Ni
- 358 ..Organic compound containing the heavy metal or aluminum
- 359 ...Metal carbonyl compound (e.g., cyclopentadienyl manganese tricarbonyl, etc.)
- 360Substituted or unsubstituted cyclopentadienyl manganese tricarbonyl, with an organic compound having $-C(=O)O-$ not bonded to heavy metal or aluminum etc.)
- 361 ...Five-membered, unsaturated carbocycle bonded directly to the heavy metal or aluminum (e.g., ferrocene, etc.)
- 362 ...Heavy metal or aluminum complex of compounds having two $-C(=X)-$ groups, wherein X is chalcogen, bonded to the same carbon, or enols thereof (e.g., iron acetylacetonate, etc.)
- 363 ...Heavy metal or aluminum carboxylate salt or complex
- 364The heavy metal is Cr, Zr, or a lanthanide
- 365 ...Heavy metal or aluminum sulfonate salt or complex
- 366 ..Heavy metal or aluminum salt of organic phosphorus acid
- 367 ..Nitrogen bonded directly or indirectly to the heavy metal or aluminum
- 368 ...Organic compound containing arsenic, antimony, or bismuth
- 369 .Containing $-O-S(=O)(=O)O-$ or $-O-S(=O)O-$ attached directly or indirectly to carbon by nonionic bonding (e.g., sulfate esters, sulfite esters, etc.)
- 370 .Containing organic $-S(=O)(=O)O-$ compound (i.e., sulfonates)
- 371 ..Nitrogen or $-C(=X)-$, wherein X is chalcogen, attached indirectly to the sulfonate group by nonionic bonding
- 372 ..Hydrazine or organic nitrogen compound salts of sulfonic acids
- 373 ..Overbased sulfonate or carbonated alkaline earth metal sulfonate
- 374 ..With organic $-C(=O)O-$ compound (e.g., carboxylic acids, esters, etc.)
- 375 .Containing compound having phosphorus bonded directly to chalcogen and directly or indirectly to carbon by nonionic bonding (e.g., alkyl acid phosphates, etc.)
- 376 ..Nitrogen attached to the phosphorus directly or indirectly by acyclic nonionic bonding
- 377 ...Lecithin or indeterminate structure reaction product thereof
- 378 ..Carbon bonded directly to the phosphorus
- 379 ..Chalcogen or halogen attached indirectly to the phosphorus by acyclic nonionic bonding
- 380 ..Organic nitrogen compound salt of organic phosphorus acids
- 381 ...Chalcogen or additional nitrogen in the organic nitrogen compound
- 382 ..Phosphorus triester
- 383 .Containing organic $-C(=X)X-$ compound, wherein the X's are the same or diverse chalcogens, with at least one X being sulfur
- 384 .Organic compound containing $-NC$ or $-CN$ group
- 385 .Containing organic $-C(=O)O-$ compound (e.g., fatty acids, etc.)
- 386 ..Compound of indeterminate structure prepared by reacting an organic $-C(=O)O-$ compound
- 387 ..Nitrogen or oxygen bonded directly to the carbon of the $-C(=O)O-$ group (e.g., carbamic and carbonic compounds, etc.)

388	..The single bonded oxygen is bonded directly to an additional carbon, which carbon may be single bonded to any element but may be multiple bonded only to carbon (i.e., carboxylic acid esters)	405	..Nitrogen attached indirectly to the -C(=O)O- group by acyclic nonionic bonding
389	...Plural -C(=O)O- groups attached to each other directly or indirectly by nonionic bonding (e.g., polyesters, half ester-half acid compounds, etc.)	406	...The nitrogen is bonded directly to an additional -C(=O)- group
390	...Halogen or sulfur attached indirectly to the -C(=O)O- by nonionic bonding	407	...Plural nitrogens or plural chalcogens attached indirectly to the -C(=O)O- group by acyclic nonionic bonding
391	...Nitrogen attached indirectly to the -C(=O)O- by nonionic bonding	408	..Organic nitrogen compound salt of carboxylic acids
392	....Product polymerized through an olefinic double bond	409	...Plural nitrogens in the organic nitrogen compound (e.g., diamines, aminoamides, guanidines, etc.)
393	...Copolymer of olefinically unsaturated hydrocarbon monomer and additional monomer (e.g., ethylene-vinyl acetate copolymers, etc.)	410	..Nitrogen or chalcogen attached indirectly to the -C(=O)O- group by nonionic bonding
394	....With organic nitrogen compound	411	..With alkanol, ketone, or phenol
395	....With additional synthetic nonhydrocarbon polymer	412	..Organic nitrogen compound containing
396	....One of the monomers contains a benzene ring (e.g., styrene, etc.)	413	..Nitro or nitroso bonded directly to carbon
397	...Polymer or copolymer of nonhydrocarbon olefinically unsaturated monomers polymerized through an olefinic double bond (e.g., trimer esters, etc.)	414	...The carbon is acyclic or alicyclic
398	...Mono- di-, or polyester of polycarboxylic acids	415	..Compound of indeterminate structure prepared by reacting a phenol, an aldehyde, and ammonia or substituted ammonia
399	..Nitrogen attached indirectly to the -C(=O)O- group by nonionic bonding	416	..The nitrogen is single bonded directly to nitrogen
400	...Chalcogen or halogen attached indirectly to the -C(=O)O- group by nonionic bonding	417	..Plural nitrogens bonded directly to the same -C(=X)- group, wherein X is chalcogen (e.g., ureas, etc.)
401	...Alkyl ester of formic or alkanolic acids	418	..Having -C(=X)- bonded directly to the nitrogen, wherein X is chalcogen
402	...With alkanol or dialkyl ether	419	...Additional nitrogen attached indirectly to the -C(=X)- group by acyclic nonionic bonding
403	..Plural -C(=O)O- groups attached to each other directly or indirectly by nonionic bonding	420	..Carbon double bonded to the nitrogen
404	...Carboxylic acid dimer, trimer, or homopolymer	421	...Plural nitrogens attached indirectly to each other by acyclic nonionic bonding
		422	..Quaternary ammonium salt or amine oxide
		423	..Chalcogen or phosphorus attached directly to the nitrogen by nonionic bonding

- 424 ..Benzene ring attached indirectly to the nitrogen by acyclic nonionic bonding
- 425 ...Additional nitrogen attached indirectly to the nitrogen by acyclic nonionic bonding
- 426 ..Benzene ring bonded directly to the nitrogen
- 427 ...Chalcogen attached directly or indirectly to the benzene ring by nonionic bonding
- 428 ...Acyclic carbon bonded directly to the nitrogen
- 429 ..The benzene ring is part of a polycyclo ring system
- 430 ...Plural nitrogens bonded to the same benzene
- 431 ...Plural rings bonded to the same nitrogen atom
- 432 ..Plural nitrogens attached indirectly to each other by acyclic nonionic bonding
- 433 ...Chalcogen attached indirectly to one of the nitrogens by acyclic nonionic bonding
- 434 ..Chalcogen or halogen attached indirectly to the nitrogen by acyclic nonionic bonding
- 435 .Sulfur or phosphorus attached directly or indirectly, by nonionic bonding, to carbon of an organic compound
- 436 .Organic oxygen compound containing (e.g., alicyclic alcohols, hypochlorites, etc.)
- 437 ..The oxygen is part of a -C(=O)-group
- 438 ..With alkanol or dialkyl ether
- 439 ...Acyclic ketone
- 440 ..Plural benzene rings bonded directly to each other or to the same acyclic carbon
- 441 ..Oxygen bonded directly to a polycyclo carbocyclic ring system
- 442 ..Plural oxygens bonded directly to the same monocyclic benzene ring
- 443 ..Plural oxygens attached indirectly to each other by acyclic nonionic bonding
- 444 ...Plural oxygens bonded directly to the same acyclic or alicyclic carbon (e.g., acetals, etc.)
- 445 ...All the oxygens are present as -OH groups (e.g., glycols, triols, etc.)
- 446 ..Alkanol compound with dialkyl ether compound
- 447 ..Ether
- 448 ...Dialkyl ether
- 449 ...Tertiary carbon bonded directly to the ether oxygen
- 450 ..Phenol or salt thereof
- 451 ..Alkanol
- 452 ...Mixture of alkanols
- 453 ...Dehydration processes, and products thereof
- 454 .Lead-containing organic compound
- 455 ..With inorganic additive
- 456 .Halogen bonded directly to carbon
- 457 .Inorganic component (e.g., carbon dioxide, etc.)
- 458 ..Nitrogen or sulfur containing (e.g., carbon disulfide, etc.)
- 459 .Solid hydrocarbon polymer containing
- 490 **PEAT**
- 491 .Briquet
- 492 .Process including heat
- 500 **PARTICULATE (E.G., POWDERED, ETC.)**
- 501 .Treated to reduce spontaneous ignition
- 502 .Solid particle containing liquid fuel
- 503 .Mixed with particles of different size
- 504 .Mixed with particles of different composition
- 505 .Process including removal of undesirable
- 506 **COMBINED WITH FRICTION IGNITING MASS OR SURFACE**
- 507 .Hand manipulable (e.g., match, etc.)
- 508 ..Plural integral (e.g., string, etc.)
- 509 ...Parallel
- 510 ..With scratcher
- 511 **MATCH SPLINT OR STICK**
- 512 .Process of making
- 519 **PROVIDED WITH WICK OR FUSE**
- 520 **FUEL PRODUCT HAVING PASSAGEWAY FOR GAS**
- 521 .Plural elements, with passageway unobstructed from side to opposite side

522	.Single element having aperture	562	...With paraffin, liquid hydrocarbon, or wax hydrocarbon
530	FUEL PRODUCT OF DEFINED SHAPE OR STRUCTURE		
531	.Composed of moveable (e.g., articulated, etc.) or readily-breakable sections	563	...With fibrous vegetable material, resin, or organic -C(=O)- compound (e.g., rosin, tall oil, tallow, pine resin, etc.)
532	.Shaped or arranged for easier ignition		
533	..And containing easier-igniting material	564	..Tar, pitch, or tar oil
534	...Material acts as at least part of a wrapper or packaging	565	...With nonfibrous carbohydrate (e.g., molasses, starch, etc.)
535	.Cylindrical (e.g., log, etc.)	566	...With elemental metal, metal oxide, limestone, or inorganic metal salt (e.g., lime, etc.)
540	WITH INCOMBUSTIBLE CARRIER (E.G., TORCH, ETC.)	567	...With fibrous vegetable material (e.g., cellulose, wood, paper, sawdust, etc.)
541	BUNDLED, COVERED OR WRAPPED	568	...Solid fuel, or solid fuel and water, are the only other components of the composition
542	COATED OR IMPREGNATED FOR EASIER IGNITION	569	..With bitumen or asphaltic material
543	.Solid fiber or particle in coating (e.g., sawdust, etc.)	570	...With elemental metal, metal oxide, limestone, or inorganic metal salt (e.g., lime, etc.)
544	.With wax	571	...With paraffin, liquid hydrocarbon, or wax hydrocarbon
545	.With normally-liquid material	572	..With paraffin, liquid hydrocarbon, or wax hydrocarbon
550	CONSOLIDATED SOLIDS (E.G., BRIQUETTE, ETC.)	573	...With resin or organic -C(=O)O- compound (e.g., rosin, tall oil, tallow, pine resin, carboxylic acid esters, etc.)
551	.Containing specified binder	574	...With preliminary purification of coal (e.g., oil agglomerates of desulfurized or deashed coal, etc.)
552	..With sewage, animal blood, or animal manure	575	...With elemental metal, metal oxide, limestone, or inorganic metal salt (e.g., lime, etc.)
553	..With synthetic organic polymer prepared by polymerizing specified monomer (e.g., polyacrylonitrile, urea-formaldehyde resins, etc.)	576	...With fibrous vegetable material (e.g., cellulose, wood, paper, sawdust, etc.)
554	..With vegetable flour, vegetable meal, or dairy product	577	..With nonfibrous carbohydrate (e.g., molasses, starch, etc.)
555	..With glue or gelatin	578	..With lignin, lignin derivative, or sulfite liquor (e.g., lignones, lignosulfonates, etc.)
556	..With nonproteinaceous organic nitrogen compound (e.g., hexamethylenetetramine, alkanolamine salts, etc.)	579	..With rubber, resin, or organic -C(=O)O- compound (e.g., rosin, tall oil, tallow, pine resin, carboxylic acids, etc.)
557	..With phosphorus- or boron-containing compound		
558	..With oxidant (e.g., nitrates, chlorates, chromates, permanganates, black manganese oxide, etc.)		
559	..With gypsum or silicon-containing material (e.g., clay, portland cement, water glass, etc.)		
560	...With nonfibrous carbohydrate (e.g., molasses, starch, etc.)		
561	...With pitch, tar, tar oil, or bitumen		

580 ..With limestone, elemental metal, elemental sulfur, or inorganic compound (except water)

589 .Vegetation or refuse

590 ..Wood, sawdust or paper

591 .Carbonized material (e.g., coke, etc.)

592 ."Low-rank" coal (e.g., lignite, etc.)

593 .Consolidation process using specified condition or technique

594 ..Predrying or moistening

595 ..Comminuting (e.g., grinding, etc.)

596 ..Pressing

597 ...With applied heat

598 ..Baking or drying of formed product

599 ..With chemical reaction (e.g., carbonizing.etc.)

600 **WITH APPEARANCE MODIFYING ADDITIVE OR TREATMENT**

601 **WITH ANTIFREEZING ADDITIVE OR TREATMENT**

602 **WITH ANTIDUSTING ADDITIVE**

603 **WITH COMBUSTION IMPROVER**

604 .Sulfur bindant

605 **FROM VEGETATION OR REFUSE**

606 .Wood, sawdust or paper

607 **CARBONIZED COMPONENT (E.G., COKE, ETC.)**

608 **"LOW-RANK" COAL (E.G., LIGNITE, ETC.)**

620 **COAL TREATING PROCESS OR PRODUCT THEREOF**

621 .Removal of undesirable

622 ..Sulfur

623 ...Using a transition metal-containing material

624 ...Using liquid aqueous material

625 ...And treatment with gas

626 ..Water (e.g., drying, etc.)

627 ..Ash or ash-former

628 **MISCELLANEOUS FUEL COMPOSITION**

629 **APPARATUS FOR MAKING OR TREATING FUEL COMPOSITION**

630 .Peat

631 ..Plural operations

632 ..With molding

633 ..Disintegrating

634 .Briquetting

635 ..Plural operations

636 ...With molding

639 .Liquid

640 **WALL DEPOSIT PREVENTING OR REMOVING COMPOSITION (E.G., SOOT REMOVAL, ETC.)**

641 **SOLID FUEL COMBUSTION IMPROVING COMPOSITION**

642 **FLAME COLORANT COMPOSITION**

643 **MATCH SCRATCHER COMPOSITION OR STRUCTURE**

CROSS-REFERENCE ART COLLECTIONS

901 **FUEL COMBINED WITH MATERIAL TO BE HEATED**

902 .Flameless or glowless, e.g., hair curler, etc.

903 **METHOD INCLUDING MEASURING, TESTING OR AUTOMATIC CONTROL**

904 **METHOD INVOLVING ELECTRIC OR WAVE ENERGY**

905 **METHOD INVOLVING ADDED CATALYST**

FOREIGN ART COLLECTIONS

FOR **CLASS-RELATED FOREIGN DOCUMENTS**

