

		28	...Organic
		29	..Organic liquid
		30	...And gas addition thereto
		31	...Hydrocarbon
		32	...Halogen containing
		33	...Oxygen containing
		34	.Gas or vapor treating
		35	..Using halogen containing substance including liquids vaporizable upon contacting spent catalyst or sorbent
1	HAVING FOREIGN OR DIVERSE FUNCTION (E.G., PREVENT CORROSION, ETC.)	36	...Fluorine containing
2	.With structure having utility in addition to support or carrier	37	...Simultaneously or subsequently adding free oxygen or use of oxyhalogen compound
3	TO BE USED AS A MELT	38	..Treating with free oxygen containing gas
4	IN FORM OF A MEMBRANE	39	...And forming useful by-product
5	IRRADIATION BY, OR APPLICATION OF, ELECTRICAL, MAGNETIC OR WAVE ENERGY	40	...And adding heat by admixing solid heat carrier
6	CONTROL RESPONSIVE TO SENSED CONDITION	41	...In gaseous suspension (e.g., fluidized bed, etc.)
7	BIOSPECIFIC MATERIAL, OR PRODUCED BY ENZYME OR MICROORGANISM	42	...And substantially complete oxidation of carbon monoxide to carbon dioxide within regeneration zone
8	FORMING OR TREATING A SPHERE, PROCESS ONLY	43	...Plural distinct serial combustion stages
9	.Forming other than by liquid immersion	44	...Indirectly heating or cooling spent material within regeneration zone or prior to entry into regeneration zone
10	.Treating preformed sphere only	45	...Moving bed (e.g., vertically or horizontally, etc., moving bulk material)
11	INCLUDING ION EXCHANGING, EXCEPT ZEOLITES OR PRODUCT THEREOF	46	...Generally concurrent flow of oxygen containing gas and material
12	.For regenerating or rehabilitating catalyst or sorbent	47	...Generally countercurrent flow of oxygen containing gas and material
20	REGENERATING OR REHABILITATING CATALYST OR SORBENT	48	...Generally transverse (i.e., lateral) flow of oxygen containing gas relative to material
21	.Including segregation of diverse particles	49	...Plural distinct oxidation stages
22	.Treating with a liquid or treating in a liquid phase, including dissolved or suspended	50	...Reactive gas treating after oxidation
23	.. "Wet air combustion" oxidation of material submerged in liquid	51	...Oxidation gas comprises essentially steam and oxygen
24	..Including intended dissolution or precipitation of a substantial amount of an ingredient of the ultimate composition	52	...With control of oxygen content in oxidation gas
25	..Using salt or alkaline substance	53	..Elemental hydrogen
26	...Ammonia or derivative thereof		
27	..Using acid		

54	..Ammonia or derivative thereof	102	.Plural component system
55	..Steam		comprising A - Group I to IV
56	.By heat		metal hydride or
60	ZEOLITE OR CLAY, INCLUDING		organometallic compound - and
	GALLIUM ANALOGS		B - Group IV to VIII metal,
61	.Gallium containing		lanthanide or actinide compound
62	.Including organic component		- (i.e., alkali metal, Ag, Au,
63	.And additional AL or Si		Cu, alkaline earth metal, Be,
	containing component		Mg, Zn, Cd, Hg, Sc, Y, Al, Ga,
64	..Zeolite		In, Tl, Ti, Zn, Hf, Ge, Sn or
65	...And rare earth metal (Sc, Y or		Pb hydride or organometallic
	Lanthanide)containing		compound and Ti, Zr, Hf, Ge,
66	...And Group VIII (Iron Group or		Sn, Pb, V, Nb, Ta, As, Sb, Bi,
	Platinum Group) metal		Cr, Mo, W, Po, Mn, Tc, Re, Iron
	containing		group, Platinum group, atomic
67	..Mixed zeolites		number 57 to 71 inclusive or
68	..Mixed with clay		atomic number 89 or higher
69	..Heterogeneous arrangement		compound)
70	...Gelling in presence of zeolite	103	..Component A metal is Group IA,
71	...ZSM Type		IIA or IIIA and component B
72	..Mixed clays		metal is Group IVB to VIIB or
73	.And Group III or rare earth		VIII (i.e., alkali metal,
	metal (Al, Ga, In, Tl, Sc, Y)		alkaline earth Metal, Be, Mg,
	or Lanthanide containing		Al, Ga, In or Tl and Ti, Zr,
74	.And Group VIII (Iron Group or		Hf, V, Nb, Ta, Cr, Mo, W, Mn,
	Platinum Group) containing		Tc, Re, iron Group or Platinum
75	.Including chemical reduction of		group) (e.g., Ziegler
	exchanged cation	104	Catalyst, etc.)
76	.Coprecipitation		...Preparing catalyst or
77	.ZSM type	105	precursor
78	.Mordenite type		...Including comminuting (e.g.,
79	.Faujasite type (e.g., X or Y,	106	milling, grinding, etc.)
	etc.)	107	...Fluidized bed feature
80	.Clay		...Including heating to higher
81	..Acid treating	108	temperature
82	...Plural acid treatment		...Utilizing hydrocarbon
83	...Sulfuric or hydrochloric acid		containing unsaturation not
84	..And metal, metal oxide, or	109	part of benzene ring
	metal hydroxide		...Utilizing high molecular
85	.Activating treatment	110	weight synthetic polymer
86	..Utilizing ammonium ions		...Including plural additions of
87	.Support per se	111	Component A
100	CATALYST OR PRECURSOR THEREFOR		...Utilizing water or compound
101	.Making catalytic electrode,		containing hydroxy bonded to
	process only	112	carbon
		113	...Containing iodine
			...Containing two or more
		114	different Component B metals
			...Containing hydrides or
			organometallic of two or more
			different Component A metals
		115	...Magnesium containing
		116	....And compound containing
			Silicon-Hydrogen or Silicon-
			Carbon bond

117	...Component B metal is other than titanium or vanadium	155	...Including phosphorus or sulfur or compound containing nitrogen or phosphorus or sulfur
118	...And a third component C (i.e., an additive other than a saturated hydrocarbon or an aromatic hydrocarbon free of aliphatic or cycloaliphatic unsaturation)	156	...Including alcohol, phenol, or ether
119	...Non-metallic inorganic halogen containing	157	..Alkali metal bonded to carbon
120	...Elemental oxygen or nonmetallic inorganic oxygen-containing material, other than water	158	..Compound with Silicon-hydrogen bond or organic compound with silicon-carbon bond
121	...Nonmetallic organic phosphorus containing	159	..Resin, natural or synthetic, polysaccharide or polypeptide
122	...Nonmetallic organic sulfur containing	160	..Peroxygen compound containing
123	...Nonmetallic organic nitrogen containing	161	..With metal carbonyl or carbon monoxide complex
124	....Including element in addition to carbon, hydrogen, and nitrogen (e.g, nitro, etc.)	162	..Organic phosphorus or nitrogen, except the ammonium ion
125	...Nonmetallic organic oxygen containing	163	...Phthalocyanine
126	....Ether	164	...Quaternary ammonium or phosphonium
127	....Ester	165	...Copper containing
128	...Nonmetallic organic halide	166	...Rhodium containing
129	...Metal compound other than which could be produced in situ by reaction of a Group IA, IIA, or Group IIIA metal compound present with a titanium or vanadium compound present	167	...Organic nitrogen containing
130	....Lead compound	168	..Organic sulfur compound
131	....Tin compound	169	..With metal halide
132	....Aluminum compound	170	..With metal carboxylate or metal compound and carboxylic acid or anhydride
133	....Magnesium compound	171	..Organic compound contains metal (e.g., Na-O-Ethyl, etc.)
134	.....Halogen containing	172	..Alcohol, phenol, ether, aldehyde or ketone
150	.Organic compound containing	173	..Elemental metal in organic dispersing medium
151	..Method of making including comminuting of solid material (e.g., grinding, crushing, etc.)	174	.Inorganic carbon containing
152	..Organic compound including carbon-metal bond	175	..Cyanide
153	...Diverse metals bonded to carbon	176	..Hydroxycarbonate
154	...Including metal compound containing different metal than that bonded to carbon	177	..Carbide
		178	...Silicon carbide
		179	...Group VA (N, P, As, Sb, Bi) containing
		180	..Elemental carbon
		181	...And halogen containing
		182	...And metal, metal oxide, or metal hydroxide
		183	....Of Group II (i.e., alkaline earth, Be, Mg, Zn, Cd or Hg)
		184	....Of Group I (i.e., alkali, Ag, Au or Cu)
		185	....Of Group VIII (i.e., iron or platinum group)
		200	.Nitrogen compound containing
		201	..Nitrate
		202	.Boron or compound containing same

203	..Boron halide	235	....Group III or rare earth metal, metal oxide, or metal hydroxide containing (i.e., Sc, Y, Al, Ga, In, Tl or lanthanide)
204	..And Group VI metal containing (i.e., Cr, Mo, W or Po)	236	....Group IV metal, metal oxide, or metal hydroxide, (i.e., Ti, Zr, Hf, Ge, Sn or Pb)
205	...And bismuth containing	237	...Metal, metal oxide, or metal hydroxide containing
206	..Molybdenum containing	238	....Of Group III metal (i.e., Sc, Y, Al, Ga, In or Tl)
207	..And Group VIII metal containing (i.e., iron or platinum group)	239	....Of Group IV metal (i.e., Ti, Zr, Hf, Ge, Sn or Pb)
208	.Phosphorus or compound containing same	240	..With metal, metal oxide, or metal hydroxide
209	..And vanadium containing	241	...Of Group VII (i.e., Mn, Tc or Re)
210	..And Group VI metal (i.e., Cr, Mo, W or Po,)	242	...Of Group IV (i.e., Ti, Zr, Hf, Ge, Sn or Pb)
211	...Molybdenum	243	...Of Group I (i.e., Alkali, Ag, Au or Cu)
212	....And bismuth containing	244	....Of copper
213	..And Group VIII metal containing (i.e., iron or platinum group)	245	....And group VIII metal containing (i.e., iron or platinum group)
214	..And silicon containing	246	...Of Group V (i.e., V, Nb, Ta, As, Sb or Bi)
215	.Selenium or tellurium or compound containing same	247	...Of vanadium
216	.Sulfur or compound containing same	248	....And Group VI metal (i.e., Cr, Mo., W or Po)
217	..Sulfate	249	....Of antimony or bismuth
218	...And Group I metal containing (i.e., alkali, Ag, Au or Cu)	250	...Of Group II (i.e., alkaline earth, Be, Mg, Zn, Cd or Hg)
219	..And Group VI metal containing (i.e., Cr, Mo, W or Po)	251	...Magnesium
220	..Molybdenum containing	252	....And Group VIII metal containing (i.e., iron or platinum group)
221	...And Group VIII metal containing (i.e., iron or platinum group)	253	....Of zinc, cadmium, or mercury
222	..And Group VIII metal containing (i.e., iron or platinum group)	254	...Of Group VI (i.e., Cr, Mo, W or Po)
223	...Platinum group (i.e., Ru, Rh, Pd, Os, Ir, Pt)	255	...Molybdenum
224	.Halogen or compound containing same	256	...Chromium
225	..Copper halide	257	....And Group VIII metal containing (i.e., iron or platinum group)
226	..And Group II metal (i.e., alkaline earth, Be, Mg, Zn Cd or Hg)	258	...Of Group VIII (i.e., iron or platinum group)
227	..And Group IV metal (i.e., Ti, Zr, Hf, Ge, Sn or Pb)	259	....Nickel
228	..And Group VI metal (i.e., Cr, Mo, W or Po)	260	....Cobalt
229	..And Group VIII metal (i.e., iron or platinum group)	261	....Platinum group (i.e., Ru, Rh, Pd, Os, Ir or Pt)
230	...Platinum group (i.e., Ru, Rh, Pd, Os, Ir or Pt)	262	....Platinum or palladium
231	..And Group III metal (i.e., Sc, Y, Al, Ga, In or Tl)		
232	.Silicon containing or process of making		
233	..Forming silica gel		
234	...Coprecipitating		

263	...Of Group III or lanthanide group (i.e., Sc, Y, Al, Ga, In, Tl, or atomic number 57 to 71 inclusive)	327	....And Group III metal containing (i.e., Sc, Y, Al, Ga, In or Tl)
300	.Metal, metal oxide or metal hydroxide	328	...And Group II metal containing (i.e., alkaline earth, Be, Mg, Zn, Cd or Hg)
301	..Raney type	329	...Zinc containing
302	..Of lanthanide series (i.e., atomic number 57 to 71 inclusive)	330	...And Group I metal containing (i.e., alkali, Ag, Au or Cu)
303	...Lanthanum	331	...Copper containing
304	...Cerium	332	...And Group III metal containing (i.e., Sc, Y, Al, Ga, In or Tl)
305	..Of Group VI (i.e., Cr, Mo, W or Po)	333	....Of palladium
306	...And Group II metal containing (i.e., alkaline earth, Be, Mg, Zn, Cd or Hg)	334	....Of platinum
307	....Zinc	335	....Of nickel
308	...And Group IV metal containing (i.e., Ti, Zr, Hf, Ge, Sn or Pb)	336	....Of iron
309	....Titanium containing	337	...Of nickel
310	....Tin containing	338	...Of iron
311	...And Group V metal containing (i.e., V, Nb, Ta, As, Sb or Bi)	339	...Of palladium or platinum
312	....Vanadium containing	340	..Of Group II (i.e., alkaline earth, Be, Mg, Zn, Cd or Hg)
313	...And Group VIII metal containing (i.e., iron or platinum group)	341	...And Group III metal containing (i.e., Sc, Y, Al, Ga, In or Tl)
314	....Iron group metal and Group III metal containing (i.e., Fe, Co or Ni and Sc, Y, Al, Ga, In or Tl)	342	....Of zinc
315	....Nickel containing	343	...Of zinc
316	....Iron containing	344	..Of Group I (i.e., alkali, Ag, Au or Cu)
317	...And Group I containing (i.e., alkali, Ag, Au or Cu)	345	...Of copper
318	....Copper containing	346	....And Group III metal containing (i.e., Sc, Y, Al, Ga, In or Tl)
319	...Of chromium	347	...Of silver
320	....And Group III metal containing (i.e., Sc, Y, Al, Ga, In or Tl)	348	....And Group III metal containing (i.e., Sc, Y, Al, Ga, In or Tl)
321	...Of molybdenum	349	..Of Group IV (i.e., Ti, Zr, Hf, Ge, Sn or Pb)
322	....And Group III metal containing (i.e., Sc, Y, Al, Ga, In or Tl)	350	...Of titanium
323	...And Group III metal containing (i.e., Sc, Y, Al, Ga, In or Tl)	351	....And Group III metal containing (i.e., Sc, Y, Al, Ga, In or Tl)
324	..Of manganese	352	...Of tin
325	..Of Group VIII (i.e., iron or platinum group)	353	..Of Group V (i.e., V, Nb, Ta, As, Sb or Bi)
326	...Of platinum group metal and of iron group (i.e., Ru, Rh, Pd, Os, Ir, or Pt and Fe, Co or Ni)	354	...And Group III metal containing (i.e., Sc, Y, Al, Ga, In or Tl)
		355	..Of Group III (i.e., Sc, Y, Al, Ga, In or Tl)
		400	SOLID SORBENT
		401	.Organic
		402	..Synthetic resin
		403	..Protein
		404	..Carbohydrate
		405	.Inorganic gel containing (e.g., silicagel)

406	.Having specifically intended extraneously added iron group (i.e., Fe, Co, Ni) component	438	..Chemically reducing an oxide or product thereof
407	..Silicon containing	439	MISCELLANEOUS (E.G., CARRIER OR SUPPORT PER SE OR PROCESS OF MAKING, ETC.)
408	..Acid treated		
409	..Quartz		
410	..Magnesium silicate (e.g., abestos, vermiculite, etc.)		
411	..Having extraneously added alkali metal, or alkaline earth metal	<u>CROSS-REFERENCE ART COLLECTIONS</u>	
412	..Diatomaceous earth	500	STABILIZED
413	..Free carbon containing	501	.For multi-regenerability
414	..Aluminum containing	502	.Crystallinity
415	..Alumina (i.e., dialuminum trioxide)	503	.Crush strength
416	..Free carbon containing	504	.Abrasion resistance
417	..And specified adde active sorbent material	505	METHOD OF MAKING INORGANIC COMPOSITION UTILIZING ORGANIC COMPOUND (EXCEPT FORMIC, ACETIC, OR OXALIC ACID OR SALT THEREOF)
418	..Process utilizing solid or liquid source carbonizable material, or product thereof	507	.Synthetic resin, natural resin, polysaccharide, or polypeptide
419	...Producing diverse useful byproduct	508	.Sulfur containing organic compound
420	...Temperature vs. time factor	509	.Nitrogen containing organic compound
421	...Including recycling product or intermediate thereof to prior stage of process	510	..Also containing hydroxyl bonded to carbon, e.g., carboxylic acid, etc.
422	...Including diverting part of source to provide fuel for process	511	..Two or more nitrogen atoms bonded to different carbon atoms
423	...Adding nongaseous inorganic, or inorganic yielding component, prior to or during process	512	.Carboxylic acid or salt thereof other than formic, acetic, or oxalic acid
424	....Zinc containing	513	.Alcohol, phenol, or ether or metallate thereof
425	....Phosphorus containing	514	PROCESS APPLICABLE EITHER TO PREPARING OR TO REGENERATING OR TO REHABILITATING CATALYST OR SORBENT
426	....Acid	515	SPECIFIC CONTAMINANT REMOVAL
427	....Alkali metal, alkaline earth metal, or magnesium containing	516	.Metal contaminant removal
428	...Including pelletizing or briquetting and subsequently comminuting	517	.Sulfur or sulfur compound removal
429	....Using carbonaceous binder	518	.Carbonaceous contaminant
430	...Treating with gas	519	REAGENT GRADE (E.G., ULTRA PURE)
431	....Fluidized bed having specified parameter	520	SUPPRESSED SIDE REACTIONS
432	....Specified atmosphere	521	METAL CONTAMINANT PASSIVATION
433	.....Including free oxygen	522	RADIANT OR WAVE ENERGY ACTIVATED
434	.....And subsequent diverse gas	523	MISCELLANEOUS SPECIFIC TECHNIQUES OF GENERAL APPLICABILITY
435	.....Exposure to hot flue or exhaust gas	524	SPINEL
436	...Diverse temperatures	525	PEROVSKITE
437	...Specified source (e.g., peach pit, etc.)		

- 526 **SORBENT FOR FLUID STORAGE, OTHER
 THAN AN ALLOY FOR HYDROGEN
 STORAGE** **FOREIGN ART COLLECTIONS**
- 527.11 **MONOLITH OF PECULIAR STRUCTURE OR
 PHYSICAL FORM, WITH SPECIFIED
 HEAT EXCHANGE CAPABILITY** FOR 000 **CLASS-RELATED FOREIGN DOCUMENTS**
- 527.12 **PLURAL LAYERS ON A SUPPORT, EACH
 LAYER HAVING A DISTINCT
 FUNCTION**
- 527.13 .More than two overlapping layers
- 527.14 **SPECIFIED SUPPORT PARTICLES OF
 PECULIAR STRUCTURE OR PHYSICAL
 FORM (E.G., WHISKERS, FIBER
 PIECES, ETC.)**
- 527.15 .Layered deposition on support
 particle (i.e., on a carrier
 particle)
- 527.16 .Specified shape of support
 particle (e.g., hollow-carrier
 particle)
- 527.17 .Specified cross-section shape or
 area of elongated support
 particles (e.g., tape, with
 area of cross section stated)
- 527.18 **MONOLITH WITH SPECIFIED GAS FLOW
 PATTERNS (E.G., TURBULENT FLOW
 MONOLITH)**
- 527.19 **MONOLITH WITH SPECIFIED SHAPE OR
 DIMENSION OF CELL OPENING
 (E.G., HONEYCOMB, RINGS, ETC.)**
- 527.2 .Cell opening shape and
 dimensions are determined by
 the intersection of the woof
 and the warp of a woven
 structure (e.g., of a fabric
 or gauze, etc.)
- 527.21 .Cell openings are quadrilateral
 or triangular (e.g., pie
 shaped)
- 527.22 .Cell openings are spiral or
 corrugated
- 527.23 **SPECIFIED EXTERNAL OR INTERNAL
 SHAPE OR CONFIGURATION OF
 CATALYST REACTOR OR OF SORBENT
 CONVERTER**
- 527.24 **PECULIAR STRUCTURE OR PHYSICAL
 FORM (E.G., FOAM, SPONGE,
 FOIL, SACK, BAG, FIBER IN A
 MATRIX, MONOLITH,
 MICROSTRUCTURE
 (MICROCRACKING),
 MICROAGGREGATES, ETC.)**

