This Class 544 is considered to be an integral part of Class 260 (see the Class 260 schedule for the position of this Class in schedule hierarchy). This Class retains all pertinent definitions and class lines of Class 260.

ORGANIC COMPOUNDS (CLASS 532, SUBCLASS 1)

.HETEROCYCLIC CARBON COMPOUNDS CONTAINING A HETERO RING HAVING CHALCOGEN (I.E., OXYGEN, SULFUR, SELENIUM, OR TELLURIUM) OR NITROGEN AS THE ONLY RING HETERO ATOMS (Class 540, subclass 1)

1 ..Hetero ring is six-membered having two or more ring hetero atoms of which at least one is nitrogen (e.g., selenazines, etc.)

2 ...Six-membered hetero ring consists of oxygen, sulfur, nitrogen and carbon (e.g., oxathiazines, etc.)

3 ...Six-membered hetero ring consists of sulfur, nitrogen, and carbon

4 ....Heavy metal or aluminum containing

5 ....Plural sulfurs in the six-membered hetero ring (e.g., dithiazines, etc.)

6 ....Spiro

7 ....Plural nitrogens in the six-membered hetero ring (e.g., thiatriazines, etc.)

8 .....Thiadiazines

9 ......Polycyclo ring system having the thiadiazine ring as one of the cyclos

10 ....Bicyclo ring system having the thiadiazine ring as one of the cyclos

11 ....Benzothiadiazines

12 ....1,2,4-benzothiadiazines

13 ....Sulfamyl or substituted sulfamyl containing

14 ....Polycyclo ring system having the six-membered hetero ring as one of the cyclos

31 .....Phenothiazine as three cyclos of polycyclo ring system having at least four cyclos

32 .....Tricyclo ring system having the six-membered hetero ring as one of the cyclos

33 ......1,2- or 2,1-Thiazine ring in the tricyclo ring system (e.g., hydrogenated 1,2-benzothiazine in tricyclo ring system, etc.)

34 ......Plural ring nitrogens in the tricyclo ring system

35 ......Phenothiazines (including hydrogenated)

36 ....Purification or recovery

37 ....Nitrogen bonded directly to phenothiazine ring system

38 ....Carbon bonded directly to ring nitrogen of phenothiazine ring system

39 ....Divalent chalcogen double bonded directly to the carbon

40 ....Additional chalcogen bonded directly to the carbon

41 ....Nitrogen containing substituent bonded to nitrogen of phenothiazine ring system

42 ....Nitrogen containing hetero ring in the nitrogen containing substituent (e.g., oxazole, etc.)

43 ....Plural hetero rings in the nitrogen containing substituent

44 ....Piperazine ring in the nitrogen containing substituent

45 ....Chalcogen in the nitrogen containing substituent

46 ....Chalcogen in the nitrogen containing substituent

47 .....Bicyclo ring system having the six-membered hetero ring as one of the cyclos

48 ......Three or more ring hetero atoms in the bicyclo ring system

49 ......Benzothiazines (including hydrogenated)

50 ....1,3- or 3,1-benzothiazines

94 .....Plural oxygens bonded directly to the oxazine ring 3,1-Benzoxazine-2,4- diones (including hydrogenated)
95 .....Three or more ring hetero atoms in the polycyclo ring system
96 .....Additional hetero ring containing
97 .....Chalcogen bonded directly to the oxazine ring
98 ....1,4-Oxazines
99 .....Polycyclo ring system having the oxazine ring as one of the cyclos
100 .....Anthrone or anthraquinone in the polycyclo ring system
101 .....Tricyclo ring system having the oxazine ring as one of the cyclos
102 .....Phenoxazines (including hydrogenated)
103 .....Plural nitrogens bonded directly to the phenoxazine
104 .....Sulfur containing
105 .....Bicyclo ring system having the oxazine ring as one of the cyclos (e.g., benzoxazines, etc.)
106 .....Morpholines (i.e., fully hydrogenated 1,4-oxazines
107 .....Addition salts of morpholine which is unsubstituted or hydrocarbyl substituted only
108 .....N, N-dihydrocarbyl morpholinium
109 .....Hetero ring in ionically bonded moiety
110 .....Phosphorus or sulfur in ionically bonded moiety
111 .....Additional nitrogen containing hetero ring (e.g., thiazetidine, etc.)
112 .....Triazine ring
113 .....1,3,5-Triazine ring
114 .....Diazine ring
115 .....The diazine ring is one of the cyclos in a polycyclo ring system
116 .....The diazine ring is one of the cyclos in a bicyclo ring system
117 .....Three or more ring hetero atoms in the bicyclo ring system
118 .....Four or more ring nitrogens in the bicyclo ring system
119 .....Acyclic nitrogen containing
120 .....1,4-Diazine ring
121 .....Piperazine ring
122 .....1,3-Diazine ring
123 .....Oxygen bonded directly to the diazine ring
124 .....Six-membered ring consisting of one nitrogen and five carbons (e.g., pyridine, etc.)
125 .....The additional six-membered hetero ring is one of the cyclos in a polycyclo ring system
126 .....The additional six-membered hetero ring is one of the cyclos in a tricyclo ring system
127 .....The additional six-membered hetero ring is one of the cyclos in a bicyclo ring system
128 .....Quinoline or isoquinoline (including hydrogenated)
129 .....Piperidine ring
130 .....Double bonded divalent chalcogen containing
131 .....Double bonded divalent chalcogen containing
132 .....Five-membered hetero ring having two or more ring hetero atoms of which at least one is nitrogen
133 .....The five-membered hetero ring has at least sulfur and nitrogen as ring hetero atoms
134 .....Plural sulfurs or nitrogens in the five-membered hetero ring (e.g., thiatriazole, etc.)
135 .....Benzothiazoles (including hydrogenated)
136 .....Polysulfide containing chain between morpholine ring and benzothiazole ring system

137 .....The five-membered hetero ring has at least oxygen and nitrogen as ring hetero atoms
138 .....Oxadiazole ring (including hydrogenated)
139 .....1,3-Diazole ring (including hydrogenated)
140 .....1,2-Diazole ring (including hydrogenated)
141 .....Five-membered hetero ring consisting of one nitrogen and four carbons
142 .....The five-membered hetero ring is one of the cyclos in a polycyclo ring system
143 .....The five-membered hetero ring is one of the cyclos in a bicyclo ring system
144 .....Chalcogen bonded directly to the bicyclo ring system
145 .....Sulfur containing hetero ring (e.g., thioxane, etc.)
146 .....Thiophene ring (including hydrogenated)
147 .....Additional oxygen containing hetero ring
148 .....Plural ring hetero atoms in the additional hetero ring
149 .....The additional hetero ring is six-membered
150 .....The additional six-membered hetero ring is one of the cyclos in a polycyclo ring system
151 .....The additional six-membered hetero ring is one of the cyclos in a bicyclo ring system
152 .....The additional hetero ring is five-membered
153 .....The five-membered hetero ring is one of the cyclos in a polycyclo ring system
154 .....Polycyclo-carbocyclic ring system having at least three cyclos
155 .....Tricyclo having three six-membered carbocyclic rings
156 .....Anthrone or anthraquinone
157 .....Phosphorus attached directly or indirectly to morpholine ring by nonionic bonding
158 .....Sulfur attached directly or indirectly to morpholine ring by nonionic bonding
159 .....Nitrogen attached directly or indirectly to morpholine ring by nonionic bonding
160 .....Double bonded divalent sulfur
161 .....Double bonded divalent sulfur
162 .....Nitrogen attached directed or indirectly to morpholine ring by nonionic bonding
163 .....Cyano containing
164 .....Morpholine ring bonded directly to the nitrogen
165 .....Carbocyclic ring bonded directly to the nitrogen
166 .....Morpholine ring bonded directly to the carbocyclic ring
167 .....Nitro bonded directly to the carbocyclic ring
168 .....Oxygen double bonded and acyclic nitrogen bonded directly to the same carbon
169 .....A ring bonded directly to the carbon
170 .....Oxygen attched directly or indirectly to morpholine ring by nonionic bonding
171 .....The oxygen is in a -COO- group
172 .....Carbonyl of -COO- group bonded directly to a ring
173 .....The oxygen is bonded directly to a ring
174 .....Ether containing
175 .....The oxygen is in a carbonyl group
176 .....The carbonyl is bonded directly to nitrogen of morpholine ring
177 .....Ether containing
178 .....N-hydrocarbyl morpholines
179 ...Tetrazines
180 ...Triazines
181 ....Heavy metal or aluminum containing
182 ....Asymmetrical (e.g., 1, 2, 4-triazines, etc.)
183 .....Polycyclo ring system having the asymmetrical triazine ring as one of the cyclos

184 ......Four or more ring hetero atoms in the polycyclo ring system
185 ....Hexamethylenetetramines
186 .....Processes
187 ....Anthrone or anthraquinone containing
188 .....Polycyclo ring system having the anthrone or anthraquinone and at least one hetero ring as cyclos
189 .....Sulfur containing
190 ....Cyanuric chloride or dichloroisocyanuric acid salt
191 .....Processes utilizing cyanogen chloride reactant
192 ....Cyanuric acid per se or salt thereof
193 ....Trimerization process to form the triazine ring
193.1 ....Stilbene containing
193.2 .....Plural triazine rings containing
194 ....Substituent nitrogen bonded directly to carbon of the triazine ring
195 .....Phosphorus containing
196 .....Three substituent nitrogens bonded directly to the three carbons of the triazine ring
197 ......Additional ring containing
198 ....Hetero ring
199 ......Halogen or sulfur containing
200 ......Melamine per se, or salt thereof
201 ....Processes utilizing urea or biuret reactant
202 ....Processes utilizing cyanamide or dicyanamide reactant
203 ....Purification or recovery
204 .....Two substituent nitrogens bonded directly to two carbons of the triazine ring
205 ......Guanamines
206 ....Additional ring containing
207 ....Hetero ring
208 ......Additional ring containing
209 ....Hetero ring
210 ......Sulfur containing
211 .....Additional ring containing
212 ......Hetero ring
213 .....Sulfur containing
214 ....Phosphorus containing
215 ....Chalcogen or halogen containing substituent
216 .....Bonded to triazine ring carbon
217 ......Halogen bonded directly to triazine ring carbon
218 ....Chalcogen bonded directly to triazine ring carbon
219 ......Chalcogen bonded directly to triazine ring carbon
220 ....Divalent chalcogen double bonded directly to triazine ring carbon
221 ....To three ring carbons
222 ....Nitrogen containing substituent
223 ....To two ring carbons
224 ...The six-membered hetero ring consists of two nitrogens and four carbons (e.g., 1,2-diazines, etc.)
225 ....Heavy metal or aluminum containing
226 .....Arsenic or zinc containing
227 .....Mercury containing
228 ......Purine containing (including hydrogenated)
229 ....Boron or silicon containing
230 ....Spiro
231 .....Spiro diazine
232 ....Phosphorus attached directly or indirectly to a 1,2-diazine ring by nonionic bonding
233 ....Polycyclo ring system having a 1,2-diazine ring as one of the cyclos
234 .....Tricyclo ring system having the 1,2-diazine ring as one of the cyclos
235 .....Bicyclo ring system having the 1,2-diazine ring as one of the cyclos
236 ......At least three ring nitrogens in the bicyclo ring system
237 ......Phthalazines (including hydrogenated)
238 ....1,2-diazines which contain an additional hetero ring
239 ....Chalcogen bonded directly to ring carbon of a 1,2-diazine ring
240 .....Plural chalcogens bonded directly

241 .....Halogen attached directly to the 1,2-diazine ring by nonionic bonding
242 ....1,3-diazines
243 .....Phosphorus attached directly or indirectly to the diazine ring by nonionic bonding
244 ......Polycyclo ring system having the diazine ring as one of the cyclos
245 .....Polycyclo ring system having the diazine ring as one of the cyclos
246 ......Tetracyclo ring system having the diazine ring as one of the cyclos
247 ....Three or more ring hetero atoms in the tetracyclo ring system
248 ....Ring carbon is shared by three of the cyclos (e.g., anthrapyrimidine, etc.)
249 ......Tricyclo ring system having the diazine ring as one of the cyclos
250 ....Three or more ring hetero atoms in the tricyclo ring system
251 ....Four or more ring nitrogens in the tricyclo ring system
252 ....Ring nitrogen is shared by two of the cyclos
253 ......Bicyclo ring system having the diazine ring as one of the cyclos
254 ....At least five ring hetero atoms in the bicyclo ring system
255 ....Four ring hetero atoms in the bicyclo ring system
256 ....Four ring nitrogens in the bicyclo ring system
257 ....Pteridines (including hydrogenated)
258 ....Nitrogen bonded directly to the pteridine ring system
259 ....Plural nitrogens bonded directly to the pteridine ring system
260 ....At 2- and 4-positions
261 ....Pteroyl per se or having -C(=X)-, wherein X is chalcogen, bonded directly to acyclic nitrogen of otherwise unsubstituted pteroyl
262 ....The other cyclo in the bicyclo ring system is five-membered
263 ....Ring nitrogen is shared by two cyclos
264 ....Purines (including hydrogenated)
265 ....Chalcogen bonded directly to ring carbon of the purine ring system
266 ....At 2-,6-, and 8-positions
267 ....At 2- and 6-positions (e.g., theophyllines, etc.)
268 ....Additional polycyclo ring system, which is not another purine, having a hetero ring as one of the cyclos
269 ....Additional hetero ring which is unsaturated and is not one of the cyclos of a purine ring system
270 ....Plural ring nitrogens in the additional hetero ring
271 ....Having -C(=X)-, wherein X is chalcogen attached directly or indirectly to the purine ring system by nonionic bonding or halogen bonded directly at 8-position (e.g., theophylline acetate, 8-chlorotheophylline, etc.)
272 ....Nitrogen attached directly or indirectly to the purine ring system by nonionc bonding
273 ....Positions other than 2- and 6- are unsubstituted or hydrocarbyl or hydro- carboyl substituted only (e.g., theophylline, etc.)
274 ....Caffeine per se, theobromine per se, or salt thereof
275 ....Recovery of caffeine per se, theobromine per se, or salt thereof, from natural or waste material

276 .....Nitrogen attached directly or indirectly to the purine ring system by nonionic bonding
277 .....Nitrogen attached directly or indirectly to the purine ring system by nonionic bonding
278 .....Three ring hetero atoms in the bicyclo ring system
279 .....Three ring nitrogens in the bicyclo ring system
280 .....The other cyclo in the bicyclo ring system is five-membered
281 .....Ring nitrogen is shared by the two cyclos
282 .....Ring nitrogen is shared by two cyclos
283 .....The other cyclo in the bicyclo ring system is a benzene ring (e.g., quinazoline, etc.)
284 .....Additional nitrogen containing unsaturated hetero ring (e.g., thiazole, etc.)
285 .....Chalcogen bonded directly at 2- and 4-positions
286 .....Chalcogen bonded directly at 2-position
287 .....Chalcogen bonded directly at 4-position
288 .....Sulfur bonded directly at 6-position
289 .....Carbocyclic ring bonded directly at 2-position
290 .....Carbocyclic ring bonded directly at 3-position
291 .....Nitrogen bonded directly at 2- and 4-positions
292 .....Nitrogen bonded directly at 2-position
293 .....Nitrogen bonded directly at 4-position
294 .....Polycyclo-carbocyclic ring system having at least three cyclos
295 .....Plural diazine rings
296 .....Plural 1,3-diazine rings
297 .....Nitrogen attached directly at 2-position by nonionic bonding and sulfur bonded directly to the nitrogen
298 .....Chalcogen bonded directly to diazine ring carbon
299 .....At 2-, 4-, and 6-positions (e.g., barbituric acid, etc.)
300 .....Additional hetero ring which is unsaturated
301 .....Nitrogen attached directly or indirectly to the diazine ring by nonionic bonding
302 .....Additional chalcogen attached directly or indirectly to the diazine ring by nonionic bonding
303 .....Halogen attached directly or indirectly to the diazine ring by nonionic bonding
304 .....Alicyclic ring attached directly or indirectly to the diazine ring by nonionic bonding
305 .....Phenyl bonded directly at 5-position
306 .....Acyclic ethylenic or acetylenic unsaturation containing
307 .....Plural alkyl groups bonded directly at 5-position
308 .....Plural diverse alkyl groups bonded directly at 5-position
309 .....At 2-position and at 4- or 6-position
310 .....Additional hetero ring which is unsaturated
311 .....Nitrogen attached directly or indirectly to the diazine ring by nonionic bonding
312 .....5-position is unsubstituted or alkyl substituted only
313 .....Halogen attached directly to the diazine ring by nonionic bonding
314 .....Additional chalcogen attached directly or indirectly to the diazine ring by nonionic bonding
315 .....At 2-position
316 .....Nitrogen attached directly or indirectly to the diazine ring by nonionic bonding
317 .....The nitrogen is bonded directly at 4- or 6-position
318 .....Additional chalcogen attached directly or indirectly to the diazine ring by nonionic bonding

319 ......At 4- or 6-position
320 ....Nitrogen attached directly at 2-position by nonionic bonding
321 ....Carbocyclic ring containing
322 .....Nitrogen attached directly to diazine ring by nonionic bonding
323 ......At 2-position and at 4- or 6-position
324 ....Additional hetero ring which is unsaturated
325 ....Substituent on 5-position contains carbocyclic ring
326 ......At 4- or 6-position
327 ....Sulfur attached indirectly to the diazine ring by nonionic bonding (e.g., thiamines, etc.)
328 ....Additional hetero ring which is unsaturated
329 ....Carbonyl attached directly or indirectly to the diazine ring by nonionic bonding
330 ......At 2-position
331 ....Additional hetero ring which is unsaturated
332 ....Chalcogen attached indirectly to the diazine ring by nonionic bonding
333 .....Additional hetero ring which is unsaturated
334 .....Halogen attached directly to the diazine ring by nonionic bonding
335 .....Chalcogen attached indirectly to the diazine ring by nonionic bonding
336 ....1,4-diazines
337 .....Phosphorus attached directly or indirectly to the diazine ring by nonionic bonding
338 .....Polycyclo ring system having the diazine ring as one of the cyclos
339 ......Heptacyclo ring system having the diazine ring as one of the cyclos (e.g., indanthrones, etc.)
340 ....Chalcogen attached indirectly to the heptacyclo ring system by nonionic bonding
341 ....Halogen, nitrogen, or carbon attached directly to the heptacyclo ring system by nonionic bonding
342 ......Pentacyclo ring system having the diazine ring as one of the cyclos
343 ......Tetracyclo ring system having the diazine ring as one of the cyclos (e.g., benzophenazines, etc.)
344 ......Tricyclo ring system having the diazine ring as one of the cyclos
345 ....Three or more ring hetero atoms in the tricyclo ring system
346 ....Ring nitrogen is shared by two of the cyclos (e.g., ergot, alkaloids, etc.)
347 ....Phenazines (including hydrogenated)
348 ....Nitrogen attached directly to the phenazine ring system by nonionic bonding
349 ......Bicyclo ring system having the diazine ring as one of the cyclos
350 ....Three or more ring hetero atoms in the bicyclo ring system
351 ....Triethylene diamines
352 ....Process of forming, purifying, or recovering triethylene diamine per se, or salt thereof
353 ....Quinoxalines (including hydrogenated)
354 ....Chalcogen bonded directly to diazine ring carbon
355 ....Having -C(=X)-, wherein X is chalcogen, bonded directly to diazine ring carbon
356 ....Halogen or nitrogen attached directly to diazine ring carbon by nonionic bonding
357 .....Plural diazine rings
358 .....Piperazines (i.e., fully hydrogenated 1,4-diazines)
359 ......Additional hetero ring containing
360 ....Six-membered ring consisting of one nitrogen and five carbons (e.g., pyridine, etc.)

361 .....The additional six-membered hetero ring is one of the cyclos in a polycyclo ring system

362 .....The additional six-membered hetero ring is one of the cyclos in a bicyclo ring system

363 .....Quinoline or isoquinoline (including hydrogenated)

364 .....At least three hetero rings containing

365 .....Having -C(=X)-, wherein X is chalcogen, bonded directly to ring carbon of the additional six-membered hetero ring (e.g., nicotinic acid, etc.)

366 .....Five-membered hetero ring having two or more ring hetero atoms of which at least one is nitrogen

367 .....Ring chalcogen in the five-membered hetero ring

368 .....The five-membered hetero ring is one of the cyclos in a polycyclo ring system

369 .....1,3-oxazole ring or 1,3-thiazole ring (including hydrogenated)

370 .....1,3-diazole ring (including hydrogenated)

371 .....1,2-diazole ring (including hydrogenated)

372 .....Five-membered hetero ring consisting of one nitrogen and four carbons

373 .....The five-membered hetero ring is one of the cyclos in a bicyclo ring system

374 .....Ring chalcogen in the additional hetero ring

375 .....Polycyclo ring system having the additional hetero ring as one of the cyclos

376 .....Bicyclo ring system having the additional hetero ring as one of the cyclos

377 .....Plural ring chalcogens in the bicyclo ring system

378 .....Plural ring chalcogens in the polycyclo ring system or the piperazine ring bonded directly to the polycyclo ring system

379 .....The additional hetero ring is five-membered and unsaturated (e.g., thienyl piperazines, etc.)

380 .....Polycyclo-carbocyclic ring system having at least three cyclos

381 .....Piperazine ring bonded directly to the polycyclo-carbocyclic ring system

382 .....Nitrogen attached directly to the piperazine ring by nonionic bonding

383 .....Chalcogen attached directly to piperazine ring nitrogen by nonionic bonding

384 .....Chalcogen bonded directly to piperazine ring carbon

385 .....Plural chalcogens bonded directly to piperazine ring carbons

386 .....Having -C(=X)-, wherein X is chalcogen, bonded directly to the piperazine ring

387 .....Plural -C(=X)- groups bonded directly to the piperazine ring

388 .....Chalcogen or acyclic nitrogen bonded directly to at least one of the -C(=X) groups

389 .....The -C(=X)- is part of a -C(=X)X- group, wherein the X's are the same or diverse chalcogens

390 .....Halogen or acyclic nitrogen bonded directly to the -C(=X)- group

391 .....Carbocyclic ring containing

392 .....Phenyl or naphthyl bonded directly to ring nitrogen of the piperazine ring

393 .....Acyclic nitrogen bonded directly to a -C(=X)- group, wherein X is chalcogen

394 .....The other ring nitrogen has a substituent which includes chalcogen single bonded to acyclic carbon

395 .....The other ring nitrogen is unsubstituted or alkyl substituted only, or salt thereof

396 .....Plural carbocyclic rings bonded directly to the same acyclic carbon

397 .....Chalcogen bonded directly to the carbon
398 .....Chalcogen attached indirectly to the piperazine ring by nonionic bonding
399 .....The chalcogen, X, is in a -C(=X)- group
400 .....Acyclic nitrogen bonded directly to the -C(=X)- group
401 .....The chalcogen is single bonded to both acyclic carbon and hydrogen
402 .....Nitrogen attached indirectly to the piperazine ring by nonionic bonding
403 .....Carbocyclic ring containing
404 .....N-hydrocarbyl piperazines
405 .....Additional hetero ring which is unsaturated
406 .....Having -C(=X)-, wherein X is chalcogen, bonded directly to the diazine ring
407 .....Nitrogen attached directly to the diazine ring by nonionic bonding
408 .....Chalcogen bonded directly to diazine ring carbon
409 .....Halogen attached directly to the diazine ring by nonionic bonding
410 .....Unsubstituted or hydrocarbyl substituted only, or salt thereof

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