

## API N-OXIDE IMPURITIES / METABOLITES

NAME OF PRODUCT	CAS NUMBER	MOLECULAR FORMULA	MOLECULAR WEIGHT	CHEMICAL NAME
Abiraterone Acetate N-Oxide	NA	C <sub>26</sub> H <sub>33</sub> NO <sub>3</sub>	407.56	(3β)-17-(3-Pyridinyl)androsta-5,16-dien-3-ol Acetate (Ester) N-Oxide; CB 7630 N-Oxide
Abiraterone N-Oxide	NA	C <sub>24</sub> H <sub>31</sub> NO <sub>2</sub>	365.52	3-((3S,8R,9S,10R,13S,14S)-3-hydroxy-10,13-dimethyl-2,3,4,7,8,9,10,11,12,13,14,15-den-17-yl)pyridine 1-oxide; 3-((3S,8R,9S,10R,13S,14S)-3-hydroxy-10,13-dimethyl-2,3,4,7,8,9,10,11,12,13,14,15-den-17-yl)pyridine 1-oxide
Almotriptan N-Oxide	603137-43-5	C <sub>17</sub> H <sub>25</sub> N <sub>3</sub> O <sub>3</sub> S	351.46	N,N-dimethyl-2-[5-(pyrrolidin-1-ylsulfonylmethyl)-1H-indol-3-yl]ethanamine oxide
Amiodarone N-Oxide	318267-30-0	C <sub>25</sub> H <sub>29</sub> I <sub>2</sub> NO <sub>4</sub>	661.30	2-(4-(2-butylbenzofuran-3-carbonyl)-2,6-diiodophenoxy)-N,N-diethylethanamine oxide
Amisulpride N-Oxide	71676-01-2	C <sub>17</sub> H <sub>27</sub> N <sub>3</sub> O <sub>5</sub> S	385.49	4-Amino-N-[(1-ethyl-1-oxido-2-pyrrolidinyl)methyl]-5-(ethylsulfonyl)-2-methoxybenzamide; 4-Amino-N-[(1-ethyl-2-pyrrolidinyl)methyl]-5-(ethylsulfonyl)-2-methoxybenzamide N-Oxide; Amisulpride EP Impurity F
Amitriptyline N-Oxide	4317-14-0	C <sub>20</sub> H <sub>23</sub> NO	293.40	3-(10,11-Dihydro-5H-dibenzo[a,d]cyclohepten-5-ylidene)-N,N-dimethyl-1-propanamine N-Oxide; 10,11-Dihydro-N,N-dimethyl-5H-Dibenzo[a,d]cycloheptene-Δ5,γ-propylamine N-Oxide; Amitriptyline Oxide; Amitriptylinoxide; Equilibrin
Aprepitant N-Oxide	172673-23-3	C <sub>23</sub> H <sub>21</sub> F <sub>7</sub> N <sub>4</sub> O <sub>4</sub>	550.43	[2R-[2α(R*),3α]]-5-[[2-[1-[3,5-Bis(trifluoromethyl)phenyl]ethoxy]-3-(4-fluorophenyl)-4-oxido-4-morpholinyl]methyl]-1,2-dihydro-3H-1,2,4-triazol-3-one
Aripiprazole N, N'-Dioxide	573691-13-1	C <sub>23</sub> H <sub>27</sub> Cl <sub>2</sub> N <sub>3</sub> O <sub>4</sub>	480.38	7-[4-[4-(2,3-Dichlorophenyl)-1,4-dioxido-1-piperazinyl]butoxy]-3,4-dihydro-2(1H)-quinolinone
Aripiprazole N-Oxide	573691-09-5	C <sub>23</sub> H <sub>22</sub> Cl <sub>2</sub> N <sub>3</sub> O <sub>3</sub>	464.38	7-[4-[4-(2,3-Dichlorophenyl)-1-oxido-1-piperazinyl]butoxy]-3,4-dihydro-2(1H)-quinolinone; Aripiprazole-N-oxide
Asenapine N-Oxide	128949-51-9	C <sub>17</sub> H <sub>16</sub> CINO <sub>2</sub>	301.78	(3aR-trans)-5-Chloro-2,3,3a,12b-tetrahydro-2-methyl-1H-dibenz[2,3:6,7]oxepino[4,5-c]pyrrole 2-Oxide
Azelastine N-Oxide	640279-88-5	C <sub>22</sub> H <sub>24</sub> CIN <sub>3</sub> O <sub>2</sub>	397.91	4-[(4-Chlorophenyl)methyl]-2-(hexahydro-1-methyl-1-oxido-1H-azepin-4-yl)-1(2H)-phthalazinone
Azithromycin N-Oxide	90503-06-3	C <sub>38</sub> H <sub>72</sub> N <sub>2</sub> O <sub>13</sub>	765.00	Azithromycin 3'-N-Oxide; (2R,3S,4R,5R,8R,10R,11R,12S,13S,14R)-13-[(2,6-Dideoxy-3-C-methyl-3-O-methyl- A-L-ribo-hexopyranosyl)oxy]-2-ethyl-3,4,10-trihydroxy-3,5,6,8,10,12,14-heptamethyl-11- [3,4,6-trideoxy-3-(dimethyloxidoamino)- A-D-xylo-hexopyranosyl]oxy]-1-oxa-6-azacyclopentadecan-15-one
Cetirizine N-Oxide	442863-80-1(FB)	C <sub>21</sub> H <sub>25</sub> CIN <sub>2</sub> O <sub>4</sub> . 2	404.90 72.92	(R)-[2-[4-(4-Chlorophenyl)phenylmethyl]-1-oxido-1-piperazinyl]ethoxy]acetic Acid

## API N-OXIDE IMPURITIES / METABOLITES



dihydrochloride		HCl		
Chlorphenamine N-Oxide dihydrochloride	120244-82-8 (FB)	C <sub>16</sub> H <sub>19</sub> ClN <sub>2</sub> O <sub>2</sub> HCl	290.80 72.92	3-(4-chlorophenyl)-N,N-dimethyl-3-(pyridin-2-yl)propan-1-amine oxide Di-Hydrochloride
Chlorpromazine N-Oxide	1672-76-0	C <sub>17</sub> H <sub>19</sub> ClN <sub>2</sub> OS	334.87	3-(2-Chloro-10H-phenothiazin-10-yl)-N,N-dimethylpropan-1-amine Oxide
Citalopram N-Oxide	63284-72-0	C <sub>20</sub> H <sub>21</sub> FN <sub>2</sub> O <sub>2</sub>	340.39	Citalopram USP Related Compound E;3-(5-cyano-1-(4-fluorophenyl)-1,3-dihydroisobenzofuran-1-yl)-N,N-dimethylpropan-1-amine oxide;3-(5-cyano-1-(4-fluorophenyl)-1,3-dihydroisobenzofuran-1-yl)-N,N-dimethylpropan-1-amine oxide; Citalopram N-oxide
Clarithromycin N-Oxide	118074-07-0	C <sub>38</sub> H <sub>69</sub> NO <sub>14</sub>	763.95	Clarithromycin impurity Q, Clarithromycin N-Oxide; 6-O-Methylerythromycin N-Oxide; Clarithromycin related compound Q
Clomiphene N-Oxide	97642-74-5	C <sub>26</sub> H <sub>28</sub> ClNO <sub>2</sub>	421.96	2-[4-(2-Chloro-1,2-diphenylethenyl)phenoxy]-N,N-diethyl-ethanamine N-Oxide; Clomifenoxide; Clomiphene N-Oxide
Clomipramine N-Oxide	14171-67-6	C <sub>19</sub> H <sub>23</sub> ClN <sub>2</sub> O	330.86	3-Chloro-10,11-dihydro-N,N-dimethyl-5H-dibenz[b,f]azepine-5-propanamine N-Oxide
Clozapine N-Oxide	N/A	C <sub>17</sub> H <sub>16</sub> ClN <sub>4</sub> O <sub>2</sub>	343.80	8-Chloro-11-(4-methyl-1-piperazinyl)-5H-dibenzo[b,e](1,4)diazepine N-oxide
Cyclobenzaprine N-Oxide	6682-26-4	C <sub>20</sub> H <sub>21</sub> NO	291.40	3-(5H-Dibenzo[a,d]cyclohepten-5-ylidene)-N,N-dimethyl-1-propanamine N-Oxide
Cyproheptadine N-Oxide	100295-63-4	C <sub>21</sub> H <sub>21</sub> NO	303.40	Cyproheptadine N-Oxide; 4-(5H-Dibenzo[a,d]cyclohepten-5-ylidene)-1-methyl-piperidine 1-Oxide
Dasatinib N-Oxide	910297-52-8	C <sub>22</sub> H <sub>26</sub> ClN <sub>7</sub> O <sub>3</sub> S	504.01	Dasatinib N-Oxide; N-[2-Chloro-6-methylphenyl]-2-[[6-[4-(2-hydroxyethyl)-1-piperazinyl]-2-methyl-4-pyrimidinyl]amino]-5-thiazolecarboxamide N-Oxide
Desloratadine Pyridine N-Oxide	169253-26-3	C <sub>19</sub> H <sub>19</sub> ClN <sub>2</sub> O	326.83	8-Chloro-6,11-dihydro-11-(4-piperidinylidene)-5H-benzo[5,6]cyclohepta[1,2-b]pyridine 1-Oxide
Desvenlafaxine-N-Oxide	NA	C <sub>16</sub> H <sub>25</sub> NO <sub>3</sub>	279.37	4-[2-(Dimethylamino)-1-(1-hydroxycyclohexyl)ethyl]phenol N-oxide
Dextromethorphan N-Oxide	1177494-18-6	C <sub>18</sub> H <sub>25</sub> NO <sub>2</sub>	287.40	(9 $\alpha$ ,13 $\alpha$ ,14 $\alpha$ )-3-Methoxy-17-MethylMorphinan17-Oxide; (9S,13S,14S)-3-Methoxy-17-MethylMorphinan 17-Oxide; (+)-DextroMethorphan N-Oxide
Donepezil N-Oxide	120013-84-5	C <sub>24</sub> H <sub>29</sub> NO <sub>4</sub>	395.49	rac-(cis/trans) Donepezil N-Oxide; 2,3-Dihydro-5,6-dimethoxy-2-[[cis/trans-1-oxido-1-(phenylmethyl)-4-piperidinyl]methyl]-1H-inden-1-one; (cis/trans)-2,3-Dihydro-5,6-dimethoxy-2-[[1-(phenylmethyl)-4-

## API N-OXIDE IMPURITIES / METABOLITES

				piperidinyl)methyl]-1H-Inden-1-one N-Oxide
Doxepin N-Oxide	22684-91-9	C <sub>19</sub> H <sub>21</sub> NO <sub>2</sub>	295.38	Doxepin N-Oxide; 3-Dibenz[b,e]oxepin-11(6H)-ylidene-N,N-dimethyl-1-propanamine N-Oxide; N,N-Diethyldibenzo[b,d]oxepin-11(6H), $\alpha$ -propylamine N-Oxide
Drotaverine N-Oxide	NA	C <sub>24</sub> H <sub>31</sub> NO <sub>5</sub>	413.51	(Z)-1-(3,4-Diethoxybenzylidiene)-6,7-diethoxy-1,2,3,4-tetrahydroisoquinolinyl-N-oxide
Eletriptan N-Oxide	1217641-89-8	C <sub>22</sub> H <sub>26</sub> N <sub>2</sub> O <sub>3</sub> S	398.52	3-[(2R)-1-Methyl-2-pyrrolidinyl]methyl]-5-[2-(phenylsulfonyl)ethyl]-1H-indole N Oxide
Erlotinib N-Oxide	NA	C <sub>22</sub> H <sub>23</sub> N <sub>3</sub> O <sub>5</sub>	409.44	4-((3-ethynylphenyl)amino)-6,7-bis(2-methoxyethoxy)quinazoline 1-oxide
Erythromycin N-Oxide	992-65-4	C <sub>37</sub> H <sub>67</sub> NO <sub>14</sub>	749.93	Erythromycin A N-oxide is a facile metabolite of erythromycin A
Etoricoxib N-Oxide	325855-74-1	C <sub>18</sub> H <sub>15</sub> ClN <sub>2</sub> O <sub>3</sub> S	374.85	Etoricoxib N1'-Oxide; 5-Chloro-6'-methyl-3-[4-(methylsulfonyl)phenyl]-2,3'-bipyridine 1'-Oxide
Fluconazole N-Oxide	N/A	C <sub>13</sub> H <sub>12</sub> F <sub>2</sub> N <sub>6</sub> O <sub>2</sub>	322.28	Fluconazole mono-N-Oxide
Fingolimod N-Oxide	NA	C <sub>18</sub> H <sub>31</sub> NO <sub>3</sub>		Fingolimod N-oxide
Gefitinib Morpholine N-oxide	847949-51-3	C <sub>22</sub> H <sub>24</sub> ClFN <sub>4</sub> O <sub>4</sub>	462.91	N-(3-Chloro-4-fluorophenyl)-7-methoxy-6-[3-(4-oxido-4-morpholinyl)propoxy]-4-quinazolinamine
Haloperidol N-Oxide	148406-51-3	C <sub>21</sub> H <sub>23</sub> ClFNO <sub>3</sub>	391.87	cis/trans-Haloperidol N-Oxide; 4-[4-(4-Chlorophenyl)-4-hydroxy-1-oxido-1-piperidinyl]-1-(4-fluorophenyl)-1-butanone; 4-[4-(4-Chlorophenyl)-4-hydroxy-1-piperidinyl]-1-(4-fluorophenyl)-1-butanone N-Oxide
Imatinib (Piperidine)-N,N-dioxide	571186-93-1	C <sub>29</sub> H <sub>31</sub> N <sub>7</sub> O <sub>3</sub>	525.60	4-[(4-Methyl-1,4-dioxido-1-piperazinyl)methyl]-N-[4-methyl-3-[[4-(3-pyridinyl)-2-pyrimidinyl]amino]phenyl]benzamide
Imatinib piperazine N-Oxide	571186-91-9	C <sub>29</sub> H <sub>31</sub> N <sub>7</sub> O <sub>2</sub>	509.62	4-[(4-Methyl-4-oxido-1-piperazinyl)methyl]-N-[4-methyl-3-[[4-(3-pyridinyl)-2-pyrimidinyl]amino]phenyl]benzamide; CGP 71422; Imatinib EP Impurity J
Imatinib (Pyridine) N-oxide	571186-92-0	C <sub>29</sub> H <sub>31</sub> N <sub>7</sub> O <sub>2</sub>	509.60	N-[4-Methyl-3-[[4-(1-oxido-3-pyridinyl)-2-pyrimidinyl]amino]phenyl]-4-[(4-methyl-1-piperazinyl)methyl]benzamide; CGP 7238
Ketoconazole N-Oxide	1392277-16-5	C <sub>26</sub> H <sub>28</sub> Cl <sub>2</sub> N <sub>4</sub> O <sub>5</sub>	547.44	rac-4-Acetyl-1-[4-(((2R,4S)-2-(2,4-dichlorophenyl)-2-((1H-imidazol-1-yl)methyl)-1,3-dioxolan-4-yl)methoxy)phenyl)piperazine N1-oxide
Lansoprazole Sulfone N-Oxide	953787-54-7	C <sub>16</sub> H <sub>14</sub> F <sub>3</sub> N <sub>3</sub> O <sub>4</sub> S	401.37	Lansoprazole Sulfone N-Oxide; 2-[[[3-Methyl-1-oxido-4-(2,2,2-trifluoroethoxy)-2-pyridinyl]methyl]sulfonyl]-1H-benzimidazole
Letrozole N-Oxide	N/A	C <sub>17</sub> H <sub>11</sub> N <sub>5</sub> O	301.31	1-(bis(4-cyanophenyl)methyl)-1H-1,2,4-triazole 2-oxide

## API N-OXIDE IMPURITIES / METABOLITES

Levofloxacin N-Oxide	117678-38-3	C <sub>18</sub> H <sub>20</sub> FN <sub>3</sub> O <sub>5</sub>	377.38	(S)-4-(6-carboxy-9-fluoro-3-methyl-7-oxo-2,3-dihydro-7H-[1,4]oxazino[2,3,4-ij]quinolin-10-yl)-1-methylpiperazine 1-oxide; 1-Methyl-4-[(9-fluoro-2,3-dihydro-6-carboxy-3α-methyl-7-oxo-7H-pyrido[1,2,3-de]-1,4-benzoxazin)-10-yl]piperazine 1-oxide
Linezolid N-Oxide	189038-36-6	C <sub>16</sub> H <sub>20</sub> FN <sub>3</sub> O <sub>5</sub>	353.35	N-[(5S)-3-[3-fluoro-4-(4-oxido-4-morpholinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide; (S)-N-[[3-[3-Fluoro-4-(4-oxido-4-morpholinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide
Loperamide <i>cis</i> -N-Oxide	109572-89-6	C <sub>29</sub> H <sub>33</sub> ClN <sub>2</sub> O <sub>3</sub>	493.04	Loperamide <i>cis</i> -N-Oxide; <i>cis</i> -4-(4-Chlorophenyl)-4-hydroxy-N,N-dimethyl-α,α-diphenyl-1-piperidinebutanamide 1-Oxide
Loperamide <i>trans</i> -N-Oxide	106900-12-3	C <sub>29</sub> H <sub>33</sub> ClN <sub>2</sub> O <sub>3</sub>	493.04	trans-4-(4-Chlorophenyl)-4-hydroxy-N,N-dimethyl-α,α-diphenyl-1-piperidinebutanamide 1-Oxide; Arrestal; Loperamide Oxide; R 58425; Loperamide related compound A
Loratadine N-Oxide	165739-62-8	C <sub>22</sub> H <sub>23</sub> ClN <sub>2</sub> O <sub>3</sub>	398.14	4-(8-Chloro-5,6-dihydro-1-oxido-11H-benzo[5,6]cyclohepta[1,2-b]pyridin-11-ylidene)-1-piperidinecarboxylic Acid Ethyl Ester; Sch 38554
Montelukast Sulfone N-Oxide	N/A	C <sub>35</sub> H <sub>35</sub> ClNO <sub>6</sub> S	633.19	(R,E)-2-(3-(1-((1-(carboxymethyl)cyclopropyl)methyl)sulfonyl)-3-(2-(2-hydroxypropan-2-yl)phenyl)propyl)styryl)-7-chloroquinoline 1-oxide
Mycophenolate Mofetil N-Oxide	224052-51-1	C <sub>23</sub> H <sub>31</sub> NO <sub>8</sub>	449.49	Mycophenolate Mofetil N-Oxide (EP Impurity G); (4E)-6-(1,3-Dihydro-4-hydroxy-6-methoxy-7-methyl-3-oxo-5-isobenzofuranyl)-4-methyl-4-hexenoic Acid 2-(4-Oxido-4-morpholinyl)ethyl Ester; EP Impurity G; Mycophenolate Mofetil EP Impurity G
Naratriptan N-Oxide	1159977-52-2	C <sub>17</sub> H <sub>25</sub> N <sub>3</sub> O <sub>3</sub> S	351.46	N-Nethyl-3-(1-methyl-1-oxido-4-piperidinyl)-1H-indole-5-ethanesulfonamide
Ofloxacin N-Oxide	104721-52-0	C <sub>20</sub> H <sub>24</sub> FN <sub>3</sub> O <sub>7</sub>	437.42	Ofloxacin N-Oxide Acetic Acid Salt (Mixture of Diastereomers); 9-Fluoro-2,3-dihydro-3-methyl-10-(4-methyl-4-oxido-1-piperazinyl)-7-oxo-7H-pyrido[1,2,3-de]-1,4-benzoxazine-6-carboxylic Acid Acetic Acid Salt
Olanzapine N-Oxide	174794-02-6	C <sub>17</sub> H <sub>20</sub> N <sub>4</sub> S	328.44	Olanzapine Related Compound C; Olanzapine N-oxide ;2-Methyl-4-(4-methyl-4-oxido-1-piperazinyl)-10H-thieno[2,3-β][1,5]benzodiazepine;2-Methyl-4-(4-methyl-4-oxido-1-piperazinyl)-10H-thieno[2,3-β][1,5]benzodiazepine;2-Methyl-4-(4-Methylpiperazin-1-yl)-10H-benzo[b]thieno[2,3-e][1,4]diazepine 4'-N-oxide
Omeprazole Sulfone N-Oxide	158812-85-2	C <sub>17</sub> H <sub>19</sub> N <sub>3</sub> O <sub>5</sub> S	377.42	Omeprazole Sulfone N-Oxide; 5-Methoxy-2-[(4-methoxy-3,5-dimethyl-1-oxido-2-

## API N-OXIDE IMPURITIES / METABOLITES

				pyridinyl)methyl]sulfonyl]- 1H-benzimidazole; Esomeprazole Impurity Impurity I
Osimertinib N,N'-Dioxide	NA	C <sub>28</sub> H <sub>33</sub> N <sub>7</sub> O <sub>4</sub>	531.61	Osimertinib Impurity Q
Osimertinib N'-Oxide		C <sub>28</sub> H <sub>33</sub> N <sub>7</sub> O <sub>3</sub>	515.61	Osimertinib Impurity L
Osimertinib N-Oxide	1975982-94-5	C <sub>28</sub> H <sub>33</sub> N <sub>7</sub> O <sub>3</sub>	515.61	Osimertinib Impurity M
Paliperidone N-Oxide	761460-08-6	C <sub>23</sub> H <sub>27</sub> FN <sub>4</sub> O <sub>4</sub>	442.49	Paliperidone N-Oxide; 3-[2-[4-(6-Fluoro-1,2-benzisoxazol-3-yl)-1-oxido-1-piperidinyl]ethyl]-6,7,8,9-tetrahydro-9-hydroxy-2-methyl-4H-pyrido[1,2-a]pyrimidin-4-one; 9-Hydroxy Risperidone N-Oxide; Paliperidone USP Related Compound D
Pantoprazole Sulphone N-Oxide	953787-55-8	C <sub>16</sub> H <sub>15</sub> F <sub>2</sub> N <sub>3</sub> O <sub>6</sub> S	415.38	Pantoprazole Sulfone N-Oxide; 6-(Difluoromethoxy)-2-[(3,4-dimethoxy-1-oxido-2-pyridinyl)methyl]sulfonyl]-1H-benzimidazole
Quetiapine-N-Oxide	1076199-40-0	C <sub>21</sub> H <sub>25</sub> N <sub>3</sub> O <sub>3</sub> S	399.52	2-[2-(4-Dibenzo[b,f][1,4]thiazepin-11-yl-1-piperazinyl)ethoxy]ethanol N-Oxide; Quetiapine-N-oxide ; Quetiapine Impurity H
Rabeprazole Sulfide N-Oxide	924663-40-1	C <sub>18</sub> H <sub>21</sub> N <sub>3</sub> O <sub>3</sub> S	359.45	2-[[4-(3-Methoxypropoxy)-3-methyl-1-oxido-2-pyridinyl)methyl]thio]-1H-benzimidazole
Raloxifene N-Oxide	N/A	C <sub>42</sub> H <sub>44</sub> N <sub>2</sub> O <sub>8</sub> S	736.89	[6-Hydroxy-2-(4-hydroxyphenyl)benzo[b]thien-3-yl][4-[2-(1-oxido-1-piperidinyl)ethoxy]phenyl]methanone; USP Raloxifene Related Compound C; Raloxifene EP Impurity C
Ranolazine Bis (N-Oxide)	1246816-00-1	C <sub>24</sub> H <sub>33</sub> N <sub>3</sub> O <sub>6</sub>	459.54	Ranolazine Bis(N-Oxide); N-(2,6-Dimethylphenyl)-4-[2-hydroxy-3-(2-methoxyphenoxy)propyl]-1-piperazineacetamide 1,4-Dioxide
Ranolazine N-Oxide	N/A	C <sub>24</sub> H <sub>33</sub> N <sub>3</sub> O <sub>5</sub>	443.54	1-(2-((2,6-dimethylphenyl)amino)-2-oxoethyl)-4-(2-hydroxy-3-(2-methoxyphenoxy)propyl)piperazine 1-oxide
Risperidone N-Oxide	832747-55-4	C <sub>23</sub> H <sub>27</sub> FN <sub>4</sub> O <sub>3</sub>	426.48	3-[2-[4-(6-Fluoro-1,2-benzisoxazol-3-yl)-1-oxido-1-piperidinyl]ethyl]-6,7,8,9-tetrahydro-2-methyl-4H-pyrido[1,2-a]pyrimidin-4-one
Rizatriptan N10-Oxide	260435-42-5	C <sub>15</sub> H <sub>19</sub> N <sub>5</sub> O	285.35	N,N-Dimethyl-5-(1H-1,2,4-triazol-1-ylmethyl)-1H-indole-3-ethanamine N-Oxide; Rizatriptan EP Impurity H
Roxithromycin N-Oxide	1460313-73-8	C <sub>41</sub> H <sub>76</sub> N <sub>2</sub> O <sub>16</sub>	853.06	2-[[3R,4S,5S,6R,7R,9R,10E,11S,12R,13S,14R)-14-ethyl-7,12,13-trihydroxy-4-(5-hydroxy-4-methoxy-4,6-dimethyl-tetrahydropyran-2-yl)oxy-10-(2-methoxyethoxymethoxyimino)-3,5,7,9,11,13-hexamethyl-2-oxo-oxacyclotetradec-6-yl]oxy]-3-hydroxy-N,N,6-trimethyl-tetrahydropyran-4-amine oxide

## API N-OXIDE IMPURITIES / METABOLITES

Sildenafil N-Oxide	1094598-75-0	C <sub>22</sub> H <sub>30</sub> N <sub>6</sub> O <sub>5</sub> S	490.58	Sildenafil-N-oxide; 5-[2-Ethoxy-5-[(4-methyl-4-oxido-1-piperazinyl) sulfonyl]phenyl]-1,6-dihydro-1-methyl-3-propyl-7H-pyrazolo[4,3-d]pyrimidin-7-one
Solifenacin N-Oxide	180272-28-0	C <sub>23</sub> H <sub>26</sub> N <sub>2</sub> O <sub>3</sub>	378.46	(1S)-3,4-dihydro-1-phenyl-2(1H)-isoquinolinecarboxylic Acid (3R)-1-Oxido-1 -azabicyclo[2.2.2]oct-3-yl Ester; Solifenacin-N-oxide
Sorafenib N-Oxide	583840-03-3	C <sub>21</sub> H <sub>16</sub> ClF <sub>3</sub> N <sub>4</sub> O <sub>4</sub>	480.82	4-[4-[[[[4-Chloro-3-(trifluoromethyl)phenyl]amino]carbonyl]amino]phenoxy]-N-methyl-2-pyridinecarboxamide 1-Oxide
Sumatriptan N-Oxide	212069-94-8	C <sub>14</sub> H <sub>21</sub> N <sub>3</sub> O <sub>3</sub> S	311.41	Sumatriptan N-Oxide ; 3-[2-(Dimethyloxidoamino)ethyl]-N-methyl-1H-indole-5-methanesulfonamide; GR 112504; Sumatriptan EP Impurity D
Tamoxifen N-Oxide	75504-34-6	C <sub>26</sub> H <sub>29</sub> NO <sub>2</sub>	387.53	(2-{4-[(1Z)-1,2-diphenylbut-1-en-1-yl]phenoxy}ethyl)dimethylamine oxide
Tofacitinib N-Oxide	2028267-73-2	C <sub>16</sub> H <sub>20</sub> N <sub>6</sub> O <sub>2</sub>	328.37	CP-690550 N-Oxide; (3R,4R)-4-Methyl-3-(methyloxido-7H-pyrrolo[2,3-d]pyrimidin-4-ylamino)-β-oxo-1-piperidinepropanenitrile
Tofacitinib pyrimidine N-oxide	NA	C <sub>16</sub> H <sub>20</sub> N <sub>6</sub> O <sub>2</sub>	328.37	
Tramadol N-Oxide	147441-56-3	C <sub>16</sub> H <sub>25</sub> NO <sub>3</sub>	279.38	1-[(1R,2R)-2-hydroxy-2-(3-methoxyphenyl)cyclohexyl]-N,N-dimethylmethanamine oxide
Venlafaxine N-Oxide	1021933-95-8	C <sub>16</sub> H <sub>25</sub> NO <sub>3</sub>	279.38	2-(1-hydroxycyclohexyl)-2-(4-hydroxyphenyl)-N,N-dimethylethan-1-amine oxide
Verapamil N-Oxide Hydrochloride	NA	C <sub>27</sub> H <sub>39</sub> ClN <sub>2</sub> O <sub>5</sub>	507.06	
Ziprasidone N-Oxide	188797-76-4	C <sub>21</sub> H <sub>21</sub> ClN <sub>4</sub> O <sub>2</sub> S	428.94	Ziprasidone N-Oxide; 5-[2-[4-(1,2-Benzothiazol-3-yl)-1-oxido-1-piperazinyl]ethyl]-6-chloro-1,3-dihydro-2H-indol-2-one
Zolmitriptan N-Oxide	251451-30-6	C <sub>16</sub> H <sub>21</sub> N <sub>3</sub> O <sub>3</sub>	303.36	(4S)-4-[[3-[2-(Dimethyloxidoamino)ethyl]-1H-indol-5-yl]methyl-2-oxazolidinone; Zolmitriptan USP Related Compound E