



INTERNATIONAL NARCOTICS CONTROL BOARD

FENTANYL-RELATED SUBSTANCES^a WITH NO KNOWN LEGITIMATE USES

No.	Uses ^b	Common Substance Name	Other/ Alternative Substance Name(s) ^c	Abbreviations	CAS No. ^d	Intl Ctrl. ^e
1	Unknown	2,2'-difluorofentanyl	N-(1-(2-fluorophenethyl)piperidin-4-yl)-N-(2-fluorophenyl)propionamide; 2'-ortho-difluorofentanyl; 2'-fluoro ortho-fluorofentanyl			
2	Unknown	2-fluoro butyrfentanyl	N-(2-fluorophenyl)-N-(1-phenethylpiperidin-4-yl) butyramide			
3	No Known Uses	2-fluorofentanyl	ortho-fluorofentanyl; N-(2-fluorophenyl)-N-(1-phenethylpiperidin-4-yl)propionamide	2-FF; o-FF		
4	Unknown	2-furanylethyl fentanyl	N-[1-[2-(2-furanyl)ethyl]-4-piperidinyl]-N-phenyl-propanamide		1443-49-8 (HCl)	
5	Unknown	2-isopropylfentanyl	2-isopropyl furanyl fentanyl; ortho-isopropyl furanyl fentanyl; N-(2-isopropylphenyl)-N-(1-phenethylpiperidin-4-yl)furan-2-carboxamide; 2-Furanylfentanyl ortho-2-isopropylphenyl analogue	2-isopropyl Fu-F		
6	Unknown	2-methoxy furanyl fentanyl	N-(2-methoxyphenyl)-N-[1-(2-phenylethyl)-4-piperidinyl]-2-furancarboxamide; 2-Furanylfentanyl ortho-2-methoxyphenyl analogue; ortho-methoxy furanyl fentanyl	2-methoxy FuF; 2-Meo-FuF	101343-50-4	
7	Unknown	2-methyl furanyl fentanyl	N-(1-phenethylpiperidin-4-yl)-N-(o-tolyl)furan-2-carboxamide	2-methyl FuF		
8	Unknown	3-allyl fentanyl	N-phenyl-N-[1-(2-phenylethyl)-3-(prop-2-en-1-yl)piperidin-4-yl]propanamide		82208-84-2	
9	Unknown	3-fluoro butyrfentanyl	N-(3-fluorophenyl)-N-(1-phenethylpiperidin-4-yl) butyramide			
10	Unknown	3-fluorofentanyl	meta-fluorofentanyl; N-(3-fluorophenyl)-N-(1-phenethylpiperidin-4-yl)propionamide; N-(3-fluorophenyl)-N-[1-(2-phenylethyl)-4-piperidinyl]propanamide			
11	Unknown	3-furanyl fentanyl	N-phenyl-N-[1-(2-phenylethyl)piperidin-4-yl]furan-3-carboxamide			
12	Unknown	3-methylbutyr fentanyl	N-[3-methyl-1-(2-phenylethyl)piperidin-4-yl]-N-phenylbutanamide	3-MBF	97605-09-9	
13	No Known Uses	3-methylfentanyl	N-[3-methyl-1-(2-phenethyl)piperidin-4-yl]-N-phenylpropanamide; mefentanyl	3-MF; F7209	42045-86-3	1961/ I,IV
14	No Known Uses	3-methylthiofentanyl	N-[3-methyl-1-[2-(thiophen-2-yl)ethyl]piperidin-4-yl]-N-phenylpropanamide; N-[3-methyl-1-[2-(2-thienyl)ethyl]-4-piperidinyl]propionamide		86052-04-2; 742029-96-5 (cis); 131690-45-4 (cis, HCl)	1961/ I,IV
15	Unknown	3-phenylpropanoylfentanyl	N-phenyl-N-[1-(2-phenylethyl)-4-piperidinyl]-benzenepropanamide; N-phenyl-N-[1-(2-phenylethyl)piperidin-4-yl]-3-phenylpropanamide; N-(1-phenethylpiperidin-4-yl)-N,3-diphenylpropanamide; β'-phenyl fentanyl		79279-02-0	
16	Unknown	4'-methyl acetylfentanyl	N-[1-[2-(4-methylphenyl)ethyl]-4-piperidinyl]-N-phenylacetamide; Acetyl fentanyl 4-methylphenethyl analogue; para-methylphenethylacetylfentanyl		1071703-95-1	
17	Unknown	4-chloro furanyl fentanyl	N-(4-chlorophenyl)-N-(1-phenethylpiperidin-4-yl)furan-2-carboxamide	4-chloro FuF		
18	No Known Uses	4-fluorobutyrfentanyl	N-(4-fluorophenyl)-N-(1-phenethylpiperidin-4-yl) butyramide; N-(4-fluorophenyl)-N-[1-(2-phenylethyl)piperidin-4-yl]butanamide; para-fluorobutyryl fentanyl	4-FBF; 4F-BF; p-FBF	244195-31-1	
19	No Known Uses	4-fluoroisobutyrfentanyl	para-fluoroisobutyrfentanyl; N-(4-fluorophenyl)-N-(1-phenethylpiperidin-4-yl)isobutyramide	4-FIBF, pFIBF, 4F-iBF	244195-32-2	1961/I
20	Unknown	4'-methoxy fentanyl	p-methoxy fentanyl; N-(4-Methoxyphenyl)-N-(1-phenethyl-4-piperidinyl)propanamide			
21	Unknown	4"-methoxy fentanyl	N-[1-[2-(4-methoxyphenyl)ethyl]piperidin-4-yl]-N-phenylpropanamide			
22	No Known Uses	4-methoxybutyrfentanyl	N-(4-methoxyphenyl)-N-[1-(2-phenylethyl)piperidin-4-yl] butanamide; N-(4-methoxyphenyl)-N-(1-phenethylpiperidin-4-yl)butyramide; para-methoxybutyrfentanyl	4-MeO-BF		
23	Unknown	4-methoxyfuranyl fentanyl	para-methoxyfuranyl fentanyl; N-(4-methoxyphenyl)-N-(1-phenethylpiperidin-4-yl)furan-2-carboxamide	4-methoxy Fu-F; p-methoxy Fu-F		
24	Unknown	4-methoxymethyl fentanyl	N-[4-(methoxymethyl)-1-(2-phenylethyl)piperidin-4-yl]-N-phenylpropanamide	R-30490	60618-49-7	
25	Unknown	4-phenylfentanyl	N-phenyl-N-[4-phenyl-1-(2-phenylethyl)piperidin-4-yl]propanamide			
26	Unknown	acetyl carfentanil	Methyl 4-[acetyl(phenyl)amino]-1-(2-phenylethyl)piperidine-4-carboxylate			
27	No Known Uses	acetylfentanyl	desmethyl fentanyl; N-[1-(2-phenylethyl)-4-piperidinyl]-N-phenylacetamide; N-phenyl-N-[1-(2-phenylethyl)piperidin-4-yl]acetamide	AF; MCV4848; NIH10485	3258-84-2; 117332-89-5 (HCl)	1961/ I,IV



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28	Unknown	acetyl norfentanyl	N-phenyl-N-(piperidin-4-yl)acetamide		22352-82-5 (HCl)	
29	No Known Uses	acetyl- <i>alpha</i> -methylfentanyl	α -methylacetyl fentanyl; N-phenyl-N-[1-(1-phenylpropan-2-yl)piperidin-4-yl]acetamide; N-[1-(α -methylphenethyl)-4-piperidyl]acetanilide		101860-00-8	1961/ I,IV
30	No Known Uses	acrylfentanyl	acryloylfentanyl; N-phenyl-N-[1-(2-phenylethyl)piperidin-4-yl]prop-2-enamide		82003-75-6 (base); 79279-03-1 (HCl)	1961/I
31	Unknown	<i>alpha</i> -methylbutyryl fentanyl	N-[1-(1-methyl-2-phenylethyl)-4-piperidinyl]-N-phenyl-butanamide; <i>alpha</i> -methyl fentanyl butanamide analogue			
32	No Known Uses	<i>alpha</i> -methylfentanyl	N-phenyl-N-[1-(1-phenylpropan-2-yl)piperidin-4-yl]propanamide; N-[1-(α -methylphenethyl)-4-piperidyl]propionanilide; α -methylfentanyl		79704-88-4; 1443-44-3 (HCl)	1961/ I,IV
33	No Known Uses	<i>alpha</i> -methylthiofentanyl	N-phenyl-N-[1-[1-(thiophen-2-yl)propan-2-yl]piperidin-4-yl]propanamide; N-[1-[1-methyl-2-(2-thienyl)ethyl]-4-piperidyl]propionanilide		103963-66-2	1961/ I,IV
34	Unknown	benzodioxole fentanyl	N-[1-phenethylpiperidin-4-yl]-N-phenylbenzo[d][1,3]dioxole-5-carboxamide	benzodioxole-F, BZD-F		
35	Unknown	benzoyl fentanyl	N-(1-phenethylpiperidin-4-yl)-N-phenylbenzamide			
36	Unknown	benzoylbenzyl fentanyl	N-(1-benzylpiperidin-4-yl)-N-phenylbenzamide			
37	Unknown	benzylfentanyl	N-phenyl-N-[1-(phenylmethyl)-4-piperidinyl]-propanamide; N-(1-benzylpiperidin-4-yl)-N-phenylpropanamide; 1-Benzyl-4-(N-phenylpropion-amido)piperidine	R-4129	1474-02-8; 5156-58-1 (HCl)	
38	Unknown	benzylfuranyl fentanyl	<i>N</i> -(1-benzyl-4-piperidyl)- <i>N</i> -phenyl-furan-2-carboxamide	Benzyl FuF		
39	No Known Uses	<i>beta</i> -hydroxy-3-methylfentanyl	N-[1-(2-hydroxy-2-phenethyl)-3-methylpiperidin-4-yl]-N-phenylpropanamide; Ohmefentanyl		78995-14-9	1961/ I,IV
40	No Known Uses	<i>beta</i> -hydroxyfentanyl	N-[1-(2-hydroxy-2-phenethyl)piperidin-4-N-phenylpropanamide; N-[1-(β -hydroxyphenethyl)-4-piperidyl]propionanilide		78995-10-5; 1473-95-6 (HCl)	1961/ I,IV
41	Unknown	<i>beta</i> -methyl fentanyl	N-phenyl-N-[1-(2-phenylpropyl)-4-piperidinyl]-propanamide		1443-43-2 (HCl)	
42	Unknown	brifentanil	Acetamide, N-(1-(2-(4-ethyl-4,5-dihydro-5-oxo-1H-tetrazol-1-yl)ethyl)-3-methyl-4-piperidinyl)-N-(2-fluorophenyl)-2-methoxy-, cis-; rel-N-((3R,4S)-1-[2-(4-ethyl-5-oxo-4,5-dihydro-1H-tetrazol-1-yl)ethyl]-3-methylpiperidin-4-yl)-N-(2-fluorophenyl)-2-methoxyacetamide	A-3331	101345-71-5	
43	No Known Uses	butyrylfentanyl	butyrylfentanyl; N-(1-phenethylpiperidin-4-yl)-N-phenylbutyramide; fentanyl butanamide analogue	BF; NIH-10486	1169-70-6; 1443-52-3 (HCl)	1961/I
44	Unknown	butyryl norfentanyl	N-phenyl-N-4-piperidinyl-butanamide			
45	Unknown	butyryl-F-fentanyl N-benzyl analogue	N-(1-benzylpiperidin-4-yl)-N-(4-fluorophenyl)butyramide			
46	Unknown	crotonyl fentanyl	(2E)-N-phenyl-N-[1-(2-phenylethyl)-4-piperidinyl]-2-butanamide; (E)-N-(1-phenethylpiperidin-4-yl)-N-phenylbut-2-enamide		760930-59-4	
47	Unknown	cyclohexyl fentanyl	N-(1-phenethylpiperidin-4-yl)-N-phenylcyclohexanecarboxamide			
48	No Known Uses	cyclopentyl fentanyl	cyclopentanoyl fentanyl; N-(1-phenethylpiperidin-4-yl)-N-phenylcyclopentanecarboxamide	CP-F		
49	No Known Uses	cyclopropyl fentanyl	N-(1-phenethylpiperidin-4-yl)-N-phenylcyclopropanecarboxamide			
50	Unknown	despropionyl-2-fluorofentanyl	N-(2-fluorophenyl)-1-phenethylpiperidin-4-amine	2F-ANPP	864422-91-3	
51	Unknown	despropionyl 3-Methylfentanyl	3-methyl-N-phenyl-1-(2-phenylethyl)piperidin-4-amine	3-Methyl 4-ANPP	144480-31-9	
52	Unknown	despropionyl <i>ortho</i> -Methylfentanyl	N-(<i>o</i> -tolyl)-1-(2-phenylethyl)piperidin-4-amine; despropionyl <i>o</i> -methylfentanyl; despropionyl 2-methylfentanyl; <i>ortho</i> -methyl 4-ANPP	<i>o</i> -Methyl-ANPP	28456-18-0	
53	Unknown	fentanyl 4-N-propyl analogue	N-(1-propyl-4-piperidinyl)propionanilide; N-(1-propyl-4-piperidinyl)-N-phenylpropanamide			
54	Unknown	fentanyl isothiocyanate	N-[1-[2-(4-isothiocyanatophenyl)ethyl]piperidin-4-yl]-N-phenylpropanamide		85951-63-9	
55	Unknown	meta-methyl acetyl fentanyl	N-(3-methylphenyl)-N-[1-(2-phenylethyl)-4-piperidinyl]-acetamide; fentanyl <i>meta</i> -tolyl acetyl analogue		1443-51-2 (HCl)	
56	Unknown	meta-methylfentanyl	N-(3-methylphenyl)-N-(1-phenethylpiperidin-4-yl)propanamide; N-(3-Methylphenyl)-N-[1-(2-phenylethyl)-4-piperidinyl]propanamide; fentanyl <i>meta</i> -tolyl analogue		1465-22-1 (HCl)	
57	Unknown	fentanyl N-oxide	N-[1-oxido-1-(2-phenylethyl)piperidin-4-yl]-N-phenylpropanamide	Fentanyl impurity A	85893-37-4 (HCl)	
58	Unknown	<i>ortho</i> -methyl acetyl fentanyl	1-(2-phenylethyl)-4-(2-methyl-N-acetanilido)piperidine; N-(2-methylphenyl)-N-(1-phenethylpiperidin-4-yl)acetamide; N-(1-			

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			phenethylpiperidin-4-yl)-N-(o-tolyl)acetamide; 2-methyl acetyl fentanyl; o-methyl acetyl fentanyl			
59	Unknown	fentanyl propyl acetyl analogue	N-phenyl-N-[1-(3-phenylpropyl)piperidin-4-yl]acetamide			
60	Unknown	fentanyl propyl analogue	N-Phenyl-N-[1-(3-phenylpropyl)-4-piperidinyl]propanamide			
61	No Known Uses	furanylfentanyl	N-phenyl-N-[1-(2-phenylethyl)piperidin-4-yl]furan-2-carboxamide; 2-Furanyl fentanyl; N-phenyl-N-[1-(2-phenylethyl)-4-piperidinyl]-2-furancarboxamide	FU-F	101345-66-8; 101365-56-4 (HCl)	1961/I
62	Unknown	furanyl norfentanyl				
63	Unknown	hydrocinnamoyl fentanyl	N-(1-phenethylpiperidin-4-yl)-N-phenyl-(3-phenyl)propionamide; 3-phenylpropionyl fentanyl			
64	No Known Uses	isobutyrylfentanyl	isobutyrylfentanyl; 2-methyl-N-phenyl-N-[1-(1-phenylpropan-2-yl)piperidin-4-yl]propanamide; N-(1-phenethylpiperidin-4-yl)-N-phenylisobutyramide		119618-70-1; 117332-90-8 (HCl)	
65	Unknown	isobutyryl-F-fentanyl N-benzyl analogue	N-(1-benzylpiperidin-4-yl)-N-(4-fluorophenyl)isobutyramide			
66	Unknown	lofentanil	3-methyl carfentanil; methyl rel(-)-(3R,4S)-3-methyl-1-(2-phenylethyl)-4-[phenyl(propanoyl)amino]piperidine-4-carboxylate		61380-40-3	
67	No Known Uses	methoxyacetylfentanyl	2-methoxy-N-(1-phenethylpiperidin-4-yl)-N-phenylacetamide; 2-methoxy-N-phenyl-N-[1-(2-phenylethyl)-4-piperidinyl]-acetamide		101365-54-2 (HCl)	
68	Unknown	mirfentanil	N-[1-(2-phenylethyl)piperidin-4-yl]-N-(pyrazin-2-yl)furan-2-carboxamide		117523-47-4	
69	Unknown	N-ethyl carfentanil	1-ethyl-4-[(1-oxopropyl)phenylamino]-4-piperidinecarboxylic acid, methyl ester; N-ethyl norcarfentanil; N-ethyl remifentanil; N-ethyl norremifentanil			
70	Unknown	hexanoyl fentanyl	N-(1-phenethylpiperidin-4-yl)-N-phenylhexanamide; N-phenyl-N-[1-(2-phenylethyl)piperidin-4-yl]hexanamide			
71	Unknown	N-isopropyl carfentanil	1-isopropyl-4-[(1-oxopropyl)phenylamino]-4-piperidinecarboxylic acid, methyl ester; N-isopropyl norcarfentanil; N-isopropyl remifentanil; N-isopropyl norremifentanil			
72	Unknown	N-methyl carfentanil	1-methyl-4-[(1-oxopropyl)phenylamino]-4-piperidinecarboxylic acid, methyl ester; N-methyl norcarfentanil; N-methyl remifentanil; N-methyl norremifentanil	R-32395	59708-50-8	
73	Unknown	N-methyl norfentanyl	N-(1-methyl-4-piperidyl)-N-phenyl-propanamide; N-(1-methyl-4-piperidinyl)-N-phenyl-propanamide; N-methylfentanyl; methyl 1-methyl-4-[phenyl(propanoyl)amino]piperidine-4-carboxylate		24775-71-1 (HCl)	
74	Unknown	norcarfentanil	4-[(1-oxopropyl)phenylamino]-4-piperidinecarboxylic acid, methyl ester		61085-87-8 (HCl)	
75	Unknown	norfentanyl	N-phenyl-N-4-piperidinyl-propanamide	NSC89293	1609-66-1	
76	Unknown	norsufentanil	N-[4-(methoxymethyl)-4-piperidinyl]-N-phenyl-propanamide	R30451	61086-18-8	
77	Unknown	N-propyl carfentanil	1-propyl-4-[(1-oxopropyl)phenylamino]-4-piperidinecarboxylic acid, methyl ester; N-propyl norcarfentanil; N-propyl remifentanil; N-propyl norremifentanil			
78	No Known Uses	ocfentanil	Ocfentanyl; N-(2-Fluorophenyl)-2-methoxy-N-[1-(2-phenylethyl)piperidin-4-yl]acetamide		101343-69-5; 112964-97-3 (HCl)	1961/I
79	Unknown	ortho-methyl acetylfentanyl	N-(1-phenethylpiperidin-4-yl)-N-(o-tolyl)acetamide			
80	Unknown	ortho-methyl acryl fentanyl	N-(1-phenethylpiperidin-4-yl)-N-(o-tolyl)acrylamide; 2-methyl acrylfentanyl; o-methyl acryloylfentanyl			
81	No Known Uses	ortho-methyl methoxyacetyl fentanyl	2-methoxy-N-(o-tolyl)-N-[1-(2-phenylethyl)-4-piperidinyl]-acetamide; o-methyl methoxyacetylfentanyl; 2-Methyl Methoxyacetylfentanyl	ortho-Me-MeO-Ace-Fentanyl		
82	No Known Uses	para-chloroisobutyrylfentanyl	N-(4-chlorophenyl)-N-(1-phenethylpiperidin-4-yl)isobutyramide; N-(4-chlorophenyl)-2-methyl-N-[1-(2-phenylethyl)-4-piperidyl]propanamide	4-Cl-iBF, 4Cl-iBF		
83	No Known Uses	para-fluorofentanyl	4-fluoro fentanyl; N-(4-fluorophenyl)-N-[1-(2-phenylethyl)piperidin-4-yl]propanamide; 4'-fluoro-N-(1-phenethyl-4-piperidyl)propionamide	4-FF; p-FF; NIH10491	90736-23-5; 117332-92-0 (HCl)	1961/I, IV
84	No Known Uses	tetrahydrofuranylfentanyl	N-phenyl-N-[1-(2-phenylethyl)piperidin-4-yl]tetrahydrofuran-2-carboxamide; N-phenyl-N-[1-(2-phenylethyl)piperidin-4-yl]oxolane-2-carboxamide	THF-F		1961/I
85	Unknown	tetramethylcyclopropanefentanyl	N-phenyl-N-[1-(2-phenylethyl)piperidin-4-yl]-2,2,3,3-tetramethylcyclopropane-1-carboxamide; Tetramethylcyclopropane-F	TMCP-fentanyl, TMCP-F		
86	Unknown	thienyl fentanyl	N-phenyl-N-[1-(thiophen-2-ylmethyl)piperidin-4-yl]propanamide; N-phenyl-N-[1-(2-thienylmethyl)-4-piperidinyl]-propanamide		117332-93-1 (HCl)	
87	Unknown	2-thiofuranyl fentanyl	N-(1-phenethylpiperidin-4-yl)-N-phenylthiophene-2-carboxamide; thiofuranyl fentanyl; 2-thiophenyl fentanyl; thiophene fentanyl			



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88	No Known Uses	thiofentanyl	N-phenyl-N-[1-[2-(thiophen-2-yl)ethyl]piperidin-4-yl]propanamide; N-[1-[2-(2-thienyl)ethyl]-4-piperidyl]propionanilide		1165-22-6; 79278-88-9 (HCl)	1961/ I,IV
89	Unknown	trefentanyl	N-[1-[2-(4-ethyl-5-oxo-4,5-dihydro-1H-tetrazol-1-yl)ethyl]-4-phenylpiperidin-4-yl]-N-(2-fluorophenyl)propanamide	A-3665	120656-74-8; 120656-93-1 (HCl)	
90	No Known Uses	valerylfentanyl	N-phenyl-N-[1-(2-phenylethyl)-4-piperidinyl]-pentanamide; N-phenyl-N-[1-(2-phenylethyl)piperidin-4-yl]pentanamide; pentanoylfentanyl	VF	122882-90-0; 117332-91-9 (HCl)	
91	No Known Uses	beta-Hydroxythiofentanyl	N-(1-(2-hydroxy-2-(thiophen-2-yl)ethyl)piperidin-4-yl)-N-phenylpropionamide; β -hydroxythiofentanyl		1474-34-6	
92	Unknown	omega-hydroxyfentanyl	3-hydroxy-N-phenyl-N-[1-(2-phenylethyl)piperidin-4-yl]propanamide; ω -hydroxyfentanyl		83708-11-6	
93	Unknown	2-methylfentanyl	N-[2-methyl-1-(2-phenethyl)piperidin-4-yl]-N-phenylpropanamide		1443-53-4 (HCl)	

(Status: 24 June 2018)

^a Fentanyl-related substances include those with a chemical structure related to fentanyl.

^b No known uses is defined as one or more Governments or regional or international organizations having had reviewed the substance and found no legitimate use. Unknown refers to substances for which the Board is unaware of any Governments or regional or international organizations having reviewed or identified any legitimate use for the substance.

^c Different chemicals names are separated by a semi-colon (;).

^d Chemical Abstract Services (CAS) registry numbers may not currently be available for all substances. CAS numbers are unique for every form of a substance (e.g., salts and isomers). Therefore, there may be more than one CAS number.

^e International control refers to the appropriate United Nations Conventions and schedule which the substance is listed. Not all substances under international control have legitimate uses.