

### Recommended Minimum Performance Limits for Common DFC Drugs and Metabolites in Urine Samples

This is **not** a complete list of drugs encountered in DFC but does include the more commonly encountered drugs. Use the specific case history and demographics to determine the most likely drug(s) in each case. The SOFT DFSA Committee originally compiled the list as a guidance document for laboratories performing analyses of samples from alleged DFSA victims and for nurses, law enforcement, attorneys, and other users of forensic toxicology services. It was first published in the December 2005 issue of *ToxTalk*. The SOFT DFC Committee periodically updates this list. The detection limits are derived from the literature or are an estimated concentration from a single dose. The recommended detection limits should be achievable using analytical instrumentation considered standard in most laboratories today. This list is designed to encourage laboratories to evaluate their current capabilities, make improvements where necessary, and communicate to their customers if they cannot meet the recommended detection limits. This latest update aligns the recommended minimum performance limits with *ANSI/ASB Standard 121: Standard for the Analytical Scope and Sensitivity of Forensic Toxicological Testing of Urine in Drug-Facilitated Crime Investigations* (2021). Target analytes listed in **RED** are found in both documents.

Parent Drug	Target Analyte(s)	Selected Trade Names and Street Names <sup>1</sup>	Recommended Min Performance Limits
<b>Analgesics</b>			
Buprenorphine	Buprenorphine Norbuprenorphine	Buprenex, Suboxone	1 ng/mL (nanograms per milliliter)
Fentanyl	<b>Fentanyl</b> <b>Norfentanyl</b>	Actiq, Duragesic, Fentora, Sublimaze	
Codeine	<b>Codeine</b> <b>Morphine</b>	Tylenol 3, Tylex	10 ng/mL
Dihydrocodeine	Dihydrocodeine	Paramol, Remedeine	
Heroin*	6-monoacetylmorphine <b>Morphine</b>	<i>Smack, horse, dope</i>	
Hydrocodone	<b>Hydrocodone</b> Dihydrocodeine <b>Hydromorphone</b> Norhydrocodone	Anexsia, Hycodan, Lorcet, Lortab, Norco, Panacet, Vicodin, Zydone, Vics, Tabs	
Hydromorphone	Hydromorphone	Dilaudid, Palladone	
Meperidine	Meperidine Normeperidine	Demerol, Mepergan	

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Methadone	Methadone EDDP	Dolophine, Methadose	10 ng/mL
Morphine	Morphine	Avinza, Astramorph, Duramorph, Kadian, MSIR, MS Contin, Oramorph, Roxanol	
Oxycodone	<b>Oxycodone</b> Noroxycodone <b>Oxymorphone</b>	Oxycontin, Oxyir, Percocet, Percodan, Percolone, Roxicet, Roxicodone, Tylox, <i>Oxy, Hillbilly Heroin</i>	
Oxymorphone	Oxymorphone	Numorphan, Opana, <i>Blues, Oranges</i>	
Propoxyphene*	Propoxyphene Norpropoxyphene	Darvon, Darvocet, Wygesic	
Tapentadol	Tapentadol Desmethyltapentadol	Nucynta, Palexia, Tapal	
Tramadol	<b>Tramadol</b> <i>n</i> -desmethyltramadol <i>o</i> -desmethyltramadol	Ultram, Ultracet	
<b>Antidepressants</b>			
Amitriptyline	<b>Amitriptyline</b> <b>Nortriptyline</b>	Elavil, Endep	10 ng/mL
Citalopram Escitalopram	Citalopram	Celexa, Cipramil, Lexapro	
Desipramine	Desipramine	Norpramin, Pertofrane	
Doxepin	Doxepin Nordoxepin	Adapin, Prudoxin, Sinequan, Zonalon	
Fluoxetine	Fluoxetine Norfluoxetine	Prozac, Sarafem	

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Imipramine	<b>Imipramine</b> <b>Desipramine</b>	Tofranil	10 ng/mL
Nortriptyline	Nortriptyline	Aventyl, Pamelor	
Norvenlafaxine	Norvenlafaxine	Pristiq	
Paroxetine	Paroxetine	Asimia, Paxil	
Sertraline	Sertraline Norsertraline	Zoloft	
Trazodone	Trazodone <b>1-(3-Chlorophenyl)piperazine (mCPP)</b>	Desyrel	
Venlafaxine	Venlafaxine Norvenlafaxine	Effexor	
<b>Antihistamines and cough/cold treatment</b>			
Brompheniramine	<b>Brompheniramine</b>	Alatapp, Bromaline, Bromanate, Bromfed, Bromphen, Dimetane, Dimetapp, Myphetane, Polytine, Puretane	10 ng/mL
Carbinoxamine	Carbinoxamine	Arbinoxa, Palgic	
Cetirizine	Cetirizine	Zyrtec	
Chlorpheniramine	<b>Chlorpheniramine</b>	Aller Chlor, Chlor-trimeton, Coricidin, Deconamine, Efidac, Kronofed, Teldrin	
Dextromethorphan	Dextromethorphan ( <b>methorphan</b> ) Dextrophan	Benylin, Delsym, Romilar	
Diphenhydramine	<b>Diphenhydramine</b>	Banophen, Belix, Benadryl, Dermarest, Excedrin PM, Hydramine, Sleepinal, Sleep-Eze 3, Tylenol PM, Unisom Sleep Gels	
Doxylamine	<b>Doxylamine</b>	Bendectin, Unisom	
Hydroxyzine	Hydroxyzine, Cetirizine <b>Norchlorcyclizine</b>	Atarax, Vistaril	

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Meclizine	Meclizine	Antivert	10 ng/mL
Promethazine	Promethazine	Phenergan, Zipan	
Tetrahydrozoline	Tetrahydrozoline	Murine, Visine	
<b>Antipsychotics</b>			
Chlorpromazine	Chlorpromazine	Thorazine	10 ng/mL
Clozapine	Clozapine Norclozapine	Clozaril, Leponex	
Olanzapine	Olanzapine	Zyprexa	
Quetiapine	Quetiapine Norquetiapine 7-Hydroxyquetiapine	Seroquel	
Thioridazine	Thioridazine	Mellaril	
Ziprasidone	Ziprasidone	Geodon, Zeldox	
<b>Barbiturates</b>			
Amobarbital*	Amobarbital	Amytal	25 ng/mL
Pentobarbital	Pentobarbital	Nembutal	
Primidone	Primidone, Phenobarbital	Mysoline	
Secobarbital	Secobarbital	Seconal, Tuinal	
Butalbital	<b>Butalbital</b>	Esgic, Fioricet, Fiorinol, Fiorpap	100 ng/mL
Phenobarbital	<b>Phenobarbital</b>	Luminol, Phenobarbitone	
<b>Benzodiazepines</b>			
Many benzodiazepines are bio-transformed into glucuronide-conjugated metabolites. To improve detection limits and extend detection time, it is recommended that laboratories use instrumental techniques that will detect the glucuronide metabolites or hydrolyze urine specimens to free the conjugate before extraction.			
Alprazolam	Alprazolam <b>α-hydroxyalprazolam</b>	Niravam, Xanax, <i>Barrs</i>	5 ng/mL
Clonazepam	Clonazepam <b>7-aminoclonazepam</b>	Clonapin, Klonopin, Rivotril	

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Flunitrazepam*	Flunitrazepam 7-aminoflunitrazepam	Rohypnol, Roofies	5 ng/mL
Lorazepam	<b>Lorazepam</b>	Ativan	
Triazolam	Triazolam α-hydroxytriazolam	Halcion	
Bromazepam*	Bromazepam α-hydroxybromazepam	Lectopam, Lexillum, Lexotan	10 ng/mL
Chlordiazepoxide	Chlordiazepoxide Nordiazepam	Libritabs, Librium	
Clobazam	Clobazam	Onfi, Urbanol	
Clorazepate	<b>Nordiazepam</b> <b>Oxazepam</b> Temazepam	Azene, Tranxene, clorazepic acid	
Clotiazepam*	Clotiazem	Clozan	
Diazepam	Diazepam <b>Nordiazepam</b> <b>Oxazepam</b> Temazepam	Diastat, Dizac, Valium	
Estazolam (desmethylalprazolam)	Estazolam	Prosom	
Etizolam*	Etizolam	Etilaam	
Flubromazepam*	Flubromazepam	Novel psychoactive substance	
Flurazepam	Flurazepam Desalkylflurazepam	Dalmane	
Loprazolam*	Loprazolam	Dormonox, Havlane, Somnovit	
Lormetazepam* (methyl-lorazepam)	Lormetazepam	Dilamet, Ergocalm, Loramet, Noctamid	

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Midazolam	Midazolam α-hydroxymidazolam	Versed	10 ng/mL
Oxazepam	<b>Oxazepam</b>	Serax	
Phenazepam*	Phenazepam	Fenazepam (used in Russia) is available on the internet	
Prazepam*	Prazepam	Centrac, Centrax	
Temazepam	<b>Temazepam</b> <b>Oxazepam</b>	Normison, Restoril	
Tetrazepam*	Tetrazepam	Clinoxan, Relaxam, Spasmorelax	
<b>High Dose Sedatives</b>			
Ethanol	<b>Ethanol</b>	Alcohol, ethyl alcohol, <i>Booze</i>	0.01 gram percent (grams per 100 milliliters)
Gamma-hydroxybutyrate ( <i>GHB</i> )	<b>GHB</b>	<i>Xyrem, Easy, Lay, G, Georgia Home Boy, Grievous Bodily Harm, Liquid E, Liquid Ecstasy, Liquid G, Liquid X, Salty Water, Scoop, Soap</i>	10,000 ng/mL = 10 mcg/mL (micrograms per milliliter)
Gamma-butyrolactone ( <i>GBL</i> )	<b>GHB</b>	<i>Blue Nitro, G3, Gamma G, G.H. Revitalizer, Insom-X, Invigorate, Remforce, Renewtrient, Verve</i>	
1, 4-Butanediol ( <i>1,4-BD</i> )	<b>GHB</b>	<i>Enliven, Inner G, Revitalize Plus, Serenity, Somato Pro, Sucol B, Thunder Nectar, Weight Belt Cleaner, White Magic</i>	10,000 ng/mL = 10 mcg/mL (micrograms per milliliter)

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<b>Miscellaneous</b>			
Carisoprodol	<b>Carisoprodol</b> <b>Meprobamate</b>	Soma	100 ng/mL
Clonidine	Clonidine	Catapres, Kapvay, Nexiclon	1 ng/mL
Cyclobenzaprine	<b>Cyclobenzaprine</b> Norcyclobenzaprine	Flexeril	10 ng/mL
Eszopiclone	Zopiclone Zopiclone-n-oxide	Lunesta	10 ng/mL
Gabapentin	Gabapentin	Neurontin	1000 ng/mL = 1 mcg/mL
Ketamine	Ketamine <b>Norketamine</b>	Ketalar, Ketaject, <i>Special K</i>	10 ng/mL
Meprobamate	<b>Meprobamate</b>	Equagesic, Equanil, Miltown	100 ng/mL
Phencyclidine (PCP)*	PCP	Sernyl	10 ng/mL
Phenytoin	Phenytoin	Dilantin, diphenylhydantoin	25 ng/mL
Pregabalin	Pregabalin	Lyrica	500 ng/mL
Suvorexant	Suvorexant	Belsomra	10 ng/mL
Scopolamine	Scopolamine	Isopto Hyoscine, Scopace, Transderm Scop	10 ng/mL
Tetrahydrocannabinol (THC)	<b>11-Nor-9-carboxy-THC</b>	<i>Cannabis sativa</i> , dronabinol, marijuana, Marinol	10 ng/mL
Topiramate	Topiramate	Topamax	50 ng/mL
Valproic Acid	Valproic Acid	Depacon, Depakene, Depakote, Valproate	5,000 ng/mL = 5mcg/mL
Zaleplon	Zaleplon	Sonata, Zereene	10 ng/mL
Zopiclone	<b>Zopiclone</b> Zopiclone-n-oxide	Lunesta, Zimovane	10 ng/mL
Zolpidem	Zolpidem <b>Zolpidem-phenyl-4-carboxylic acid</b>	Ambien	10 ng/mL

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<b>Stimulants</b>			
Amphetamine	<b>Amphetamine</b>	Adderall	25 ng/mL
Methamphetamine	<b>Methamphetamine</b> <b>Amphetamine</b>	Desoxyn, <i>Crystal Meth, Ice, Speed</i>	
Methylenedioxyamphetamine* (MDA)	<b>MDA</b>	<i>Ecstasy</i>	
Methylenedioxymethamphetamine* (MDMA)	<b>MDMA</b> <b>MDA</b>	<i>Ecstasy</i>	
Cocaine	Cocaine <b>Benzoyllecgonine</b> Cocaethylene Methylecgonine	<i>Coke</i>	50 ng/mL
Methylphenidate	Methylphenidate Ritalinic Acid	Ritalin	

<sup>1</sup> For a more comprehensive list of slang terms, see also, **Drug Slang Code Words**, DEA Intelligence Report DEA-HOU-DIR-020-17, published May 2017. Accessed June 7, 2017 at <https://ndews.umd.edu/sites/ndews.umd.edu/files/dea-drug-slang-code-words-may2017.pdf>

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