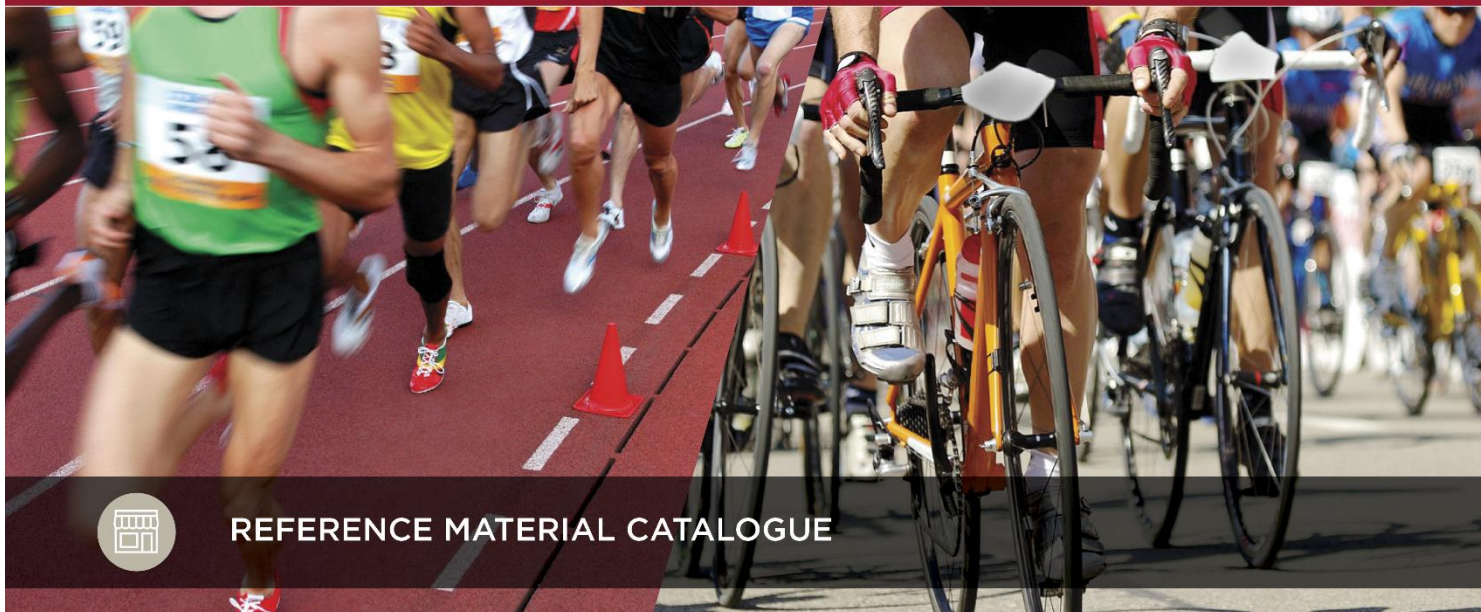




Australian Government
Department of Industry,
Innovation and Science

National Measurement Institute



Sports Doping Control Reference Material Catalogue (Steroids, Steroid Metabolites and Stimulants)

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	NMI reference	Unit of issue (mg)	Cost (A\$)	
			Domestic (excl GST)	International
SYNTHETIC STEROIDS AND METABOLITES				
Androstan-4,6-dienes				
Androstan-4,6-diene-17 β -ol-3-one	S007	1 (ampoule)	110	154
Bolasterone metabolites				
7 α ,17 α -Dimethyl-5 β -androstane-3 α ,17 β -diol	D614	1	141	198
7 α ,17 α -Dimethyl-5 β -androstane-3 α ,17 β -diol glucuronide	D628	1	171	240
Boldenone and metabolites				
Boldenone (1,4-Androstadiene-17 β -ol-3-one)	S008b	10	110	154
Boldenone cypionate	S032	5	141	198
d ₃ -17 β -Boldenone	D581b	1 (ampoule)	141	198
17 β -Boldenone sulfate (Et ₃ N salt)	D931	5	141	198
17 β -Boldenone glucuronide (K ⁺ salt)	D862	1	207	290
d ₃ -17 β -Boldenone sulfate (Et ₃ N salt)	S013	1 (ampoule)	171	240
17 α -Boldenone (Epiboldenone)	D582	1 (ampoule)	110	154
5 β -Androst-1-en-17 β -ol-3-one	D564	1 (ampoule)	110	154
5 β -Androst-1-en-17 β -ol-3-one glucuronide (free acid)	D935	1 (ampoule)	141	198
5 β -Androst-1-en-3 α -ol-17-one	S022	1 (ampoule)	110	154
Calusterone and metabolites				
Calusterone	D618	1	141	198
7 β ,17 α -Dimethyl-5 β -androstane-3 α ,17 β -diol	D624	1 (ampoule)	141	198
7 β ,17 α -Dimethyl-5 β -androstane-3 α ,17 β -diol glucuronide	D629	1	171	240
Clostebol metabolite				
4-Chloro-4-androsten-3 α -ol-17-one	D563	1 (ampoule)	110	154
Danazol metabolites				
2 α -Hydroxymethylethisterone*	D920	1	110	154
Drostanolone, esters, and metabolites				
Drostanolone	S026	20	141	198
Drostanolone enanthate	S027	40	110	154
Drostanolone propionate	S025	20	110	154
2 α -Methyl-5 α -androstan-3 α -ol-17-one	D567	1	110	154
2 α -Methyl-5 α -androstan-3 α -ol-17-one-3 β -D-glucuronide (Na salt)	D601	1	141	198

	NMI reference	Unit of issue (mg)	Cost (A\$)	
			Domestic (excl GST)	International
Finasteride metabolites				
Carboxy finasteride* (exhausted)	D910	1	110	154
Fluoxymesterone metabolites				
9 α -Fluoro-17,17-dimethyl-18-nor-androstan-4,13-diene-11 β -ol-3-one	D571	1 (ampoule)	110	154
9 α -Fluoro-17 α -methyl-4-androsten-3 α ,6 β ,11 β ,17 β -tetra-ol	D616	1 (ampoule)	110	154
6 β -Hydroxyfluoxymesterone	D617	1 (ampoule)	110	154
Formebolone metabolite				
2-Hydroxymethyl-17 α -methylandrosta-11 α ,17 β -diol-3-one	D622	1 (ampoule)	141	198
Furazabol metabolite				
16 β -Hydroxyfurazabol	D602	1	110	154
4-Hydroxysteroids				
4-Hydroxytestosterone	D851b	1 (ampoule)	141	198
4-Hydroxyandrostendione (Formestane)	D852b	1 (ampoule)	141	198
4-Hydroxynandrolone (Oxabolone)	D853c	1 (ampoule)	110	154
Mesterolone and metabolites				
Mesterolone	S037	20	110	154
1 α -Methyl-5 α -androstan-3 α -ol-17-one	D557	1	110	154
1 α -Methyl-5 α -androstan-3 α -ol-17-one glucuronide	D598	1	141	198
1 α -Methyl-5 α -androstan-3 α ,17 β -diol	D556	1	110	154
1 α -Methyl-5 α -androstan-3 α ,17 β -diol glucuronide	D599	1	141	198
Metenolone metabolites				
1-Methylene-5 α -androstan-3 α -ol-17-one	D619	1 (ampoule)	110	154
1-Methylene-5 α -androstan-3 α -ol-17-one glucuronide	D597	1	141	198
Methandienone and metabolites				
Methandienone	D630	10	110	154
17-Epimethandienone	D562	1	110	154
6 β -Hydroxymethandienone	D565	1 (ampoule)	110	154
Epimetendiol	D638	1 (ampoule)	171	240
17,17-Dimethyl-18-nor-5 β -androsta-1,13-diene-3 α -ol	D639	1 (ampoule)	171	240

	NMI reference	Unit of issue (mg)	Cost (A\$)	
			Domestic (excl GST)	International
17,17-Dimethyl-18-norandrosta-1,4,13-trien-3-one	D576	5	141	198
Methasterone				
Methasterone	S021	20	110	154
Methyltestosterone metabolites				
17 α -Methyl-5 α -androstane-3 α ,17 β -diol	D560	1 (ampoule)	110	154
17 α -Methyl-5 β -androstane-3 α ,17 β -diol	D561	1 (ampoule)	110	154
d3-17 α -Methyl-5 β -androstan-3 α ,17 β -diol	D928	1	110	154
17α-Methyl-1-testosterone				
17 β -Hydroxy-17 α -methyl-5 α -androst-1-ene-3-one	D904	1	110	154
Nandrolone and metabolites				
Nandrolone	S038	10	110	154
d ₃ -17 β -Nandrolone	D583	5	207	290
d ₃ -17 β -Nandrolone sulfate (Et ₃ N salt)	D782b	1 (ampoule)	141	198
¹³ C ₂ -17 β -Nandrolone	D679	5	171	240
17 β -Nandrolone decanoate	D684	10	110	154
17 β -Nandrolone glucuronide (K ⁺ salt)	D861	1	207	290
17 β -Nandrolone phenylpropionate	S029	20	110	154
17 β -Nandrolone sulfate (Na ⁺ salt)	D809b	1	110	154
17 α -Nandrolone (epi-nandrolone)	D722d	1 (ampoule)	110	154
17 α -Nandrolone sulfate	D783	5	207	290
d ₄ -19-Noretiocholanolone	D742	1 (ampoule)	141	198
19-Noretiocholanolone	D554	1 (ampoule)	110	154
19-Noretiocholanolone glucuronide (Na salt)	D595	1 (ampoule)	141	198
d ₄ -19-Norandrosterone	D584c	1 (ampoule)	141	198
d ₄ -19-Norandrosterone glucuronide (Na ⁺ salt)*	D898	1	110	154
19-Norandrosterone	D555	1 (ampoule)	110	154
19-Norandrosterone glucuronide (Na ⁺ salt)	D596	1 (ampoule)	141	198
19-Norandrosterone sulfate (Et ₃ N salt)	D841b	1 (ampoule)	110	154
5(10)-Estrone-3 β ,17 α -diol	D926	1 (ampoule)	110	154
Norbolethone and metabolites				
Norbolethone (13 β ,17 α -diethyl-gonan-4-ene-17 β -ol-3-one)	D825b	1	171	240
13 β ,17 α -Diethyl-5 β -gonane-3 α ,17 β -diol (major metabolite)*	D818	1 (ampoule)	110	154

	NMI reference	Unit of issue (mg)	Cost (A\$)	
			Domestic (excl GST)	International
13 β ,17 α -Diethyl-5 α -gonane-3 α , 17 β -diol (minor metabolite)*	D820	1 (ampoule)	110	154
Norethandrolone metabolite				
17 α -Ethyl-5 α -estrane-3 α , 17 β -diol	D558	1	110	154
17 α -Ethyl-5 β -estrane-3 α , 17 β -diol	D559	1	110	154
17 α -Hydroxyethyl-5 β -estrane-3 α , 17 β -diol †	S015	1	110	154
Oral turinabol and metabolites (dehydrochloromethyltestosterone)				
Oral turinabol	D613	1 (ampoule)	110	154
Oxandrolone and metabolite				
17-Epioxandrolone	D620	1 (ampoule)	110	154
Oxandrolone	S040	20	110	154
Prostanozol metabolites				
3'-Hydroxy-5 α -androstan[3,2-c]pyrazol-17-one †	S016	1 (ampoule)	110	154
4 α /4 β -Hydroxy-5 α -androstan[3,2-c]pyrazol-17-one †	S019	1 (ampoule)	110	154
16 β -Hydroxy-5 α -androstan[3,2-c]pyrazol-17-one †	S017	1 (ampoule)	110	154
Stanozolol and metabolites				
Stanozolol	D646	10	110	154
3'-Hydroxystanozolol	D577	1 (ampoule)	110	154
3'-Hydroxystanozolol glucuronide	D640	1 (ampoule)	171	240
4 α -Hydroxystanozolol	D642	1	110	154
4 β -Hydroxystanozolol	D641	0.5 (ampoule)	110	154
16 β -Hydroxystanozolol	D621	1 (ampoule)	141	198
1-Testosterone				
1-Testosterone (5 α -Androst-1-en-3-one-17 β -ol)	D767b	1	207	290
5 α -Androst-1-ene-3 β ,17 β -diol	D871	1	110	154
Tetrahydrogestrinone and precursors				
Gestrinone	D860	10	110	154
Tetrahydrogestrinone (THG)	D872e	1	207	290
Trenbolone and metabolite				
Trenbolone acetate	S024	20	110	154
Trenbolone enanthate	S028	5	110	154
17 α -Trenbolone (Epi-trenbolone)	D708	5	207	290
ENDOGENOUS STEROIDS AND METABOLITES				

	NMI reference	Unit of issue (mg)	Cost (A\$)	
			Domestic (excl GST)	International
Testosterone and metabolites				
16,16,17-d ₃ -Testosterone	D546	1 (ampoule)	141	198
16,16,17-d ₃ -Testosterone glucuronide (sodium salt)	S036	1 (ampoule)	110	154
16,16,17-d ₃ -Testosterone sulfate	D506	1 (ampoule)	141	198
19-d ₃ -Testosterone	D644	1	207	290
Testosterone	M914b	10	110	154
Testosterone glucuronic acid	D507d	1 (ampoule)	141	198
Testosterone sulfate (Et ₃ N salt)	D508	1 (ampoule)	110	154
Testosterone acetate	S042	10	110	154
Testosterone cypionate	S018	20	110	154
Testosterone decanoate	D683	10	110	154
Testosterone enanthate	D773c	25	110	154
Testosterone isocaproate (4-methylpentanoate)	D688b	10	110	154
Testosterone phenylpropionate	S030	20	110	154
Testosterone propionate	D710	50	110	154
d ₃ -Epiandrosterone	D548	1 (ampoule)	141	198
d ₄ -Epiandrosterone	S001	1 (ampoule)	141	198
d ₃ -Epiandrosterone glucuronide	D604	1	207	290
d ₃ -Epiandrosterone sulfate	D591	1	141	198
Epiandrosterone	D547	1 (ampoule)	110	154
Epiandrosterone glucuronic acid	D603e	1	207	290
Epiandrosterone sulfate	D605	1	110	154
d ₄ -Androsterone	D549	1	141	198
d ₄ -Androsterone glucuronide	D829d	1 (ampoule)	141	198
d ₄ -Androsterone sulfate	D587	1	141	198
Androsterone	D550	10	110	154
Androsterone glucuronic acid	D572	1	141	198
Androsterone sulfate (Na ⁺ salt)	D610b	1	110	154
d ₅ -Etiocyanolone	D528	1 (ampoule)	141	198
d ₅ -Etiocyanolone sulfate	D606	1	141	198
Etiocyanolone	D551b	1 (ampoule)	110	154
Etiocyanolone glucuronic acid	D607	1	141	198
Etiocyanolone sulfate	D608	1 (ampoule)	110	154

	NMI reference	Unit of issue (mg)	Cost (A\$)	
			Domestic (excl GST)	International
d ₃ -5 α -Dihydrotestosterone	D552	1	141	198
d ₃ -5 α -Dihydrotestosterone glucuronide free acid	D573b	1	141	198
d ₃ -5 α -Dihydrotestosterone sulfate	D590	1	141	198
5 α -Dihydrotestosterone	D680	10	110	154
5 α -Dihydrotestosterone glucuronide free acid	S006	1	141	198
5 α -Dihydrotestosterone sulfate	D609	1	110	154
5 α -Androstane-3 α ,17 β -diol	D634	1	110	154
d ₃ -5 α -Androstane-3 α ,17 β -diol	D593	1	141	198
5 α -Androstane-3 α ,17 β -diol-17- β -glucuronic acid	S002	1	110	154
5 α -Androstane-3 α ,17 β -diol-3- β -glucuronic acid	S004	1	141	198
5 α -Androstane-3 β ,17 β -diol	D635	1	141	198
d ₃ -5 α -Androstane-3 β ,17 β -diol	D594	1	141	198
5 β -Androstane-3 α ,17 β -diol	D636	1	110	154
5 β -Androstane-3 α ,17 β -diol-17- β -glucuronic acid	S005	1	141	198
5 β -Androstane-3 α ,17 β -diol-3- β -glucuronic acid	S003	1	141	198
d ₅ -5 β -Androstane-3 α ,17 β -diol	D580	1	141	198
5 β -Androstane-3 β ,17 β -diol	D637	1	141	198
d ₅ -5 β -Androstane-3 β ,17 β -diol	S014	1	110	154
5 α -Androstane-3 β ,17 β -diol-3- β -glucuronic acid	D678	1	141	198
5 α -Androstane-3 β -ol-17-one-3-glucuronide Na ⁺ salt	S031	1	110	154
Prohormones and metabolites				
19-d ₃ -Androstendione (no longer available)	D645	1 (ampoule)	207	290
Androstendione	M955	10	110	154
1,4-Androstadiene-3,17-dione (Boldendione)	D878	1	110	154
Dehydroepiandrosterone (DHEA)	D796b	10	110	154
6 β -Hydroxyandrosterone	D886b	1	171	240
7 β -Hydroxy DHEA	D865b	1	110	154
19-Norandrostendione (Estrendione)	D721	10	110	154
HORMONE ANTAGONISTS AND MODULATORS				
Aromatase inhibitors				
Bis-(4-cyanophenyl)methanol (Letrozole metabolite)*	D909c	1	110	154
Selective estrogen receptor modulators (SERMs)				

	NMI reference	Unit of issue (mg)	Cost (A\$)	
			Domestic (excl GST)	International
3-Hydroxy-4-methoxytamoxifen*	D921	1	110	154
Other anti-estrogenic substances				
4-Hydroxycyclofenil*	D930	1 (ampoule)	110	154
GROWTH PROMOTANTS AND METABOLITES				
Zearalenone	P1787	10	171	240
α -Zearalenol	P1795	5	250	350
β -Zearalenol	P1796	5	250	350
α -Zearalanol	P1801	5	110	154
β -Zearalanol	P1802	5	110	154
d ₉ -Clenbuterol	M954	1	171	240
STIMULANTS				
Carphedon	D891b	10	110	154
Crotethamide* (currently not available)	M450	50	110	154
Cropropamide* (currently not available)	M451	25	110	154
Cyclazadone [†]	D914	10	141	198
Famprofazone	D893	20	110	154
Fenbutrazate hydrochloride [†]	D915	1 (ampoule)	141	198
Fencamine [†]	D913	10	141	198
Fenproporex hydrochloride	D500b	25	110	154
Fenethylamine hydrochloride	D543b	20	141	198
Heptaminol hydrochloride*	M299	50	110	154
6-Hydroxybromantan* (currently not available)	D889	10	110	154
Isometheptene mucate	D940	20	141	198
Mefenorex hydrochloride	D283b	50	110	154
(\pm)-4-Methylamphetamine hydrochloride	D895	10	171	240
dl-Norephedrine hydrochloride (Phenylpropanolamine)	M296	100	110	154
(+)-Norpseudoephedrine hydrochloride (Cathine)	M297	50	110	154
Ortetamine hydrochloride [†]	D912	10	207	290
Oxilofrine hydrochloride	D892	5	110	154
Salbutamol	M898b	10	141	198
d ₃ -Salbutamol	D939	1	141	198
Salmeterol hydroxynaphthoate	M904	50	141	198
Selegiline hydrochloride	D822	50	141	198

	NMI reference	Unit of issue (mg)	Cost (A\$)	
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SYNTHETIC CANNABINOIDS				
AM1220 1-[(1-Methylpiperidin-2-yl)methyl]-3-(1-naphthoyl)-indole	D982	20	110	154
AM2201 [1-(5-Fluoropentyl)-3-(1-naphthoyl)-indole]	D983	20	110	154
JWH-018 [<i>N</i> -Pentyl-3-(1-naphthoyl)indole]	D955	20	141	198
JWH-210 [<i>N</i> -Pentyl-3-(4-ethyl-1-naphthoyl)indole]	D984	5	110	154
XLR-11 [1-(5-Fluoro-pentyl)-3-(2,2,3,3-tetramethylcyclopropoyl)indole]	D1000	25	110	154
PDE-5 INHIBITORS				
Tadalafil	D941	20	141	198
COMMERCIAL MATERIALS SUPPLIED WITH THE MANUFACTURER'S CERTIFICATE OF ANALYSIS (these materials have not been certified by NMI)				
Bupranolol hydrochloride	M558	20	110	154
Dextromoramide tartrate	D529	50	110	154
Dipipanone hydrochloride	M642	20	110	154
Etilephrine hydrochloride	M880	50	141	198
Propylhexedrine	M394	50	110	154
Terbutaline sulfate	M647	20	110	154
Trimeperidine hydrochloride	M605	20	110	154

*Production funded by the US Anti-Doping Agency.

†Production funded by the Australian Government through the Anti-Doping Research Program.

NOTES

1. Restrictions on Issue

The steroid and steroid metabolite reference materials are generally available to WADA accredited laboratories. Laboratories which **do not have** WADA accreditation must provide documented evidence, signed by the company manager, that these materials will not be used for unethical purposes related to commercial human sports drug analysis and that they will not be provided to other laboratories who may be engaged in this analysis.

2. Classes of Reference Materials available from NMI

The majority of products listed in this catalogue are classified as certified reference materials in accordance with the definition detailed in ISO 17034:2016(E) *General requirements for the competence of reference materials producers*.

2.1 NMI Reference Materials

Reference Materials (RMs) produced by NMI are prepared in accordance with our accreditation from NATA to ISO 17034:2016(E) *General requirements for the competence of reference materials producers*. RMs are supplied with product information sheets and SDS, and have demonstrated homogeneity and stability.

2.2 NMI Certified Reference Materials

Certified Reference Materials (CRMs) produced by NMI have established metrological traceability to the SI unit for mass (kg). All purity values, stated as a mass fraction, are reported with the associated uncertainty in the certificate of analysis.

2.3 Other Standards

In addition to materials certified by NMI, we maintain a limited collection of agrochemical and veterinary materials obtained from various sources. They are provided with the most current certification information available. In addition to the minimum fee, purchase costs incurred by NMI to obtain individual compounds are recovered on a

pro-rata basis. Individual unit issue size varies depending on the amount available and the difficulty of obtaining replacement compound.

All care is taken in the storage and handling of these materials however they are not independently certified by NMI.

We endeavour to provide material with currently valid certification but cannot do so in all cases.

3. Ampouled Materials

For each ampouled reference material the product information sheet / certificate of analysis will state the mass of analyte dispensed into each ampoule. For reference materials with certified reference material status the mass of analyte will be reported with an associated uncertainty.

4. GST charges (Australian customers only)

The prices quoted are EXCLUSIVE of Goods and Services Tax (GST). The current GST rate is 10%. Upon delivery of the requested reference materials NMI will issue valid tax invoices and, if required, adjustment notes as per the requirements of the GST legislation.

5. Deliver Fee

Delivery and handling fees apply for all orders and vary with destination. Please check the applicable rates when ordering.

6. For Further Information

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