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API MASS BALANCE | MODEL ILLUSTRATION

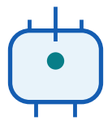
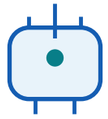
AGOMELATINE

Source: client-supplied 1-Agomelatine.xlsx • Six worksheets reviewed

PROCESS & MATERIALS

GROSS INPUT	GROSS OUTPUT	MASS CLOSURE	FINAL AGOMELATINE	REPORTED YIELD
31.07 kg	31.07 kg	100.0%	1.00 kg	49.5%
MB-reported charge	MB-reported streams	on recorded gross basis	MB final API	basis needs review

PROCESS FLOW | From starting materials to final Agomelatine

Reaction	Separation	Stage-A	Reaction	Isolation	Purification	Final API
						
Starting material, ammonia, Raney nickel, hydrogen	Filtration and distillation	In-situ intermediate reported: 1.33 kg	Methanol, acetic anhydride; work-up	Toluene, filtration and first drying	Water washes, filtration and ETP stream	Final drying -> Agomelatine 1.00 kg

INPUT / CHARGE | as listed in MB

No.	Material / stream	kg
1	2-(7-methoxynaphthalen-1-yl)acetonitrile	1.33
2	Liquor ammonia	6.67
3	Raney nickel	0.33
4	Hydrogen gas	1.00
5	Methanol	5.00
6	Acetic anhydride	1.01
7	Toluene	4.40
8	Water (8 + 2 kg)	10.00
9	Stage-A (internal intermediate)	1.33
WORKBOOK TOTAL		**31.07 kg**

OUTPUT / STREAMS | grouped from MB

No.	Output stream / category	kg
1	Evaporation losses (7 entries)	5.89
2	Aqueous ETP / filtrate to ETP	13.80
3	Solid waste	0.35
4	Distillate	4.50
5	Filtrate (other stream)	4.20
6	Stage-A (internal transfer)	1.33
7	Agomelatine (final API)	1.00
WORKBOOK TOTAL		**31.07 kg**

SOURCE-CHECK NOTES

01 INTERNAL TRANSFER
Stage-A 1.33 kg appears as both an input and an output; 31.07 kg is a gross recorded balance.

02 YIELD BASIS
Workbook states theoretical yield 1.23 and yield 49.5%. Direct 1.00 / 1.23 = 81.3%; confirm basis.

03 CHARGE LIST SCOPE
CC and moles list 7 materials (19.74 kg). MB additionally includes water 10 kg and Stage-A 1.33 kg.

04 UNRELATED WORKSHEET
Sheet1 contains Tetracycline HCl inputs; excluded from Agomelatine calculations.

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