

If you are having trouble viewing a table because it looks merge. dont look at the html format. click on this link to go directly to the sheet->

https://docs.google.com/spreadsheets/d/1W-iH9WvnlFr5LKA7MdefB2uZ4AaLp7w_uDuvDxdPWA8

Another method to calculate the best maps to grind
[Credit goes to elmoe0715](#)
[Arknights Material Farming with API Fetcher](#)

Removed LTF (1/3 T2 mats) map and full T1 mats - because its better to view LTF 1/12 T1+1/3 T2 mats

How maps are compared
Calculating 'Sanity Ratio'
measurement unit

First, Each item is assigned its lowest sanity cost per 1 item based on the best map for that item.
 Using the Assigned sanity for each item, we calculate the Sum of each item assigned sanity cost per item times its drop rate divide by the sanity cost of map, which is called the Sanity Ratio. we compare each map **sanity ratio** and can determine which maps are better long term because it will yeild a better return rate of items
 $\text{Sanity Ratio} = (\text{Assign sanity value of Item 1}) \cdot (\text{Drop rate of item 1}) + (\text{Assign sanity value of Item 2}) \cdot (\text{Drop rate of item 2}) \dots / (\text{Sanity cost of map})$
The Sanity Ratio is being compared to items within their maps and thus we can make a ranking of which maps are better.
THIS DOES NOT MEAN A MAP WILL DROP X SANITY WORTH OF DROP PER SANITY SPENT. It is a unit we used to mesasure the Value of a map. This is used to RANK the maps

How this sheet differs from other sheet/table/chart.

This sheet caclulate all drops from the map including Exp tickets/ Pure gold/ LMD from workshop/ T1 mats (full value or 1/3value)(Calculation differ on each tab)(Includes byproduct calculation)

Excluding item from Sanity Ratio calculation

Removing Exp tickets/Pure gold from calculation basically means maps that drop exp ticket/pure gold are valued at Zero sanity saved. This should be perfer only at end game when exp ticket/pure gold are not as vauable. This massively affects ch 1/2/3 maps as lower maps have a higher drop rate of exp ticket/ pure gold. Can be used for a higher % of sanity spent towards materials instead of exp
 Another way to look at the benefit of removing Exp ticket/pure gold from calcaution/
 lets take the map 1-7, about 13% of sanity spent is used toward exp/pure gold and 87% on items.
 while in the map 5-10, 100% of the sanity is spent on items.
 Some spreadsheet /table/ Chart will exclude T1 mats from calculation, but i would argue that T1 mats should be counted because T1 mats can be converted to T2 mats and save sanity that way.
 Removing any items from the Sanity Ratio calculation will change the ranking of maps, thus is why different spreadsheet/table/chart will offer different place to grind for best usage of sanity.
 An Example of how excluding items from sanity raito can change the ranking of maps:
 Take Orirock Cube for example. the map 1-7 has a Sanity Raito of 1.5 and the map 5-10 has 1.24 sanity ratio. (calculating everything)
 Removing all exp ticket /pure gold from calculation will drop Sanity raito of the map 1-7 to 1.30 and map 5-10 to 1.24
 Then removing T1 mats from the maps. 1-7 Sanity raito drops to 1.09. 5-10 sanity raito is 1.24.
 5-10 doesnt have any exp ticket/pure gold drops or have any T1 mats drop, so the sanity ratio stayed the same.
 Only calculating T2/T3 mats. 5-10 will beat 1-7 in the long term grind.

Byproduct calculation
 Added to all the sheets

E1 Catapult/ E0 Ceylon, E1 Sussurro are the best operator to use for an increased byproduct rate for elite materials. Small invest for the 80% byproduct rate/ She has a 80% bonus for elite material and will increase the byproduct rate to 18% chance
 I think the byproduct item is random with equal chance of same tier as the crafting material. (needs more data)
 Other operators with 80% byproduct rate: E0 Nian (100%), E2 Blue Poison, E2 Meteorite
 Calculation
 $\text{T2 mats value} = 18\% \cdot (\text{T1 mats} \times 3 + \text{LMD Cost} - (\text{Avg of all T1 mats value})) + 82\% \cdot (\text{T1 mats} \times 3 + \text{LMD cost})$
 $\text{T1 mats value} = \frac{\text{T2 mats value} - \text{LMD cost} + (\text{avg of all T1 mats value})}{3}$
 The math is circular, therefore I estimate the best value for the avg of all T1 mats values

Data is collected from-> <https://penguin-stats.io/result/item>

Tabs

Individual mats This tab shows the map best to grind to spend the least amount of sanity to obtain one certain item
 Looking to get the material fast, use this tab
 The Smol Chart A very dumbdown version of this sheet. Data based on 1/3 T1 mats. Its the map i would recommend if you want to see the deital version
 Long term Farm (1/3 T1/T2 mats) This chart reduce T1/T2 mats to 1/3 value. Use this chart when you are convert all T1/T2 mats into T3
 Long term Farm (1/3 T1/T2 mats) (-exp) This chart reduce T1/T2 mats to 1/3 value. Use this chart when you are convert all T1/T2 mats into T3 and removes exp/pure godl value from maps
 Drop Rate Tab This is just my data collection from penguin stats
 Drop Rate Last update 9/9/2020
Post suggestion/freeback here https://www.reddit.com/r/arknights/comments/fdybns/maps_to_grind_materials_short_termlong_term/
 Images from <https://github.com/Aceship/>
 My other guide https://docs.google.com/document/d/1QYdNSiUNXK4R7i0KWhtdzvweEajVc4GPdYFf_xYdA/edit
 Reddit [u/FivePlop](#)
 Discord O_O#8135

Edits made

4/7 Fix Loxic value from ch 6-11 to 2-9, since Ch 6 isint out yet
 added byproduct calculation in Long term(T1 mats full value)
 added byproduct calculation in Long term(1/3 T1 mats)
 added byproduct calculation in Long term(1/3 T1 mats) (-exp)
 added byproduct calculation in Long term(1/3 T1/T2 mats) (needs more thinking as i'm not 100% on byproduct calculation on orirock/oriron)

4/9 Added assign value sheet
 Added New table Long term farm (1/3 T1/T2 mats)(-exp)

4/10 adjusted Smol chart- according to new ranking due to byproduct calculation

4/22 Add Obsidian infinite Raffle shop

5/21 Add API connector to update drop rate

6/12 Add Event Shop for CC

6/28 Working on ch 6.




7/27 Removed LTF (1/3 T2 mats) map - because its better to view LTF 1/12 T1+1/3 T2 mats

7/31 Added Comparing Orundum pack

8/1 Added Base operators

8/27 added Story of afternoon maps

9/9 Added Cc# shop

T1	Drop Rate	Map	Sanity / Item	Sanity Ratio	T2	Drop Rate	Map	Sanity / Item	Sanity Ratio	Notable Drops	T3	Drop Rate	Map	Sanity / Item	Sanity Ratio	Notable Drops
 Orirock Rock	364.68%	S2-5	1.69	0.83	 Orirock Cube	31.31%	4-4	57.49	1.59	Loxic Kohl	 Orirock Cluster	Grind orirock cube (1-7) and Convert to Orirck Cluster				
					31.71%	5-5	56.76	1.49	Oriron Cluster							
					31.64%	4-7	56.89	1.41	Maganese Ore							
					124.40%	1-7	4.82	1.39								
					21.31%	3-3	70.39	1.36	Grindstone							
					35.45%	4-10	59.24	1.38	Integrated Device							
31.82%	5-2	56.57	1.33	Sugar Pack												
					185.92%	5-10	11.30	1.23	Integrated Device							

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This is your Target material

This is the target material's drop rate on the map

Map of the material

Sanity/ Item = the estiamted Sanity it will cost to grind one item of the target material. (sanity of map divided by drop rate)

Sanity Ratio is used to compare map. Sanity Ratio is calculated by all the drops times its drop rate then divide by sanity cost of the map.

Look at this to compare the maps, the higher number the better the return of item of sanity saved. best usage of sanity.

The map's Notable Drop





















Chart is good for 2 item grinding, like if you need mag ore and orirock then best place is 4-7 to grind both

























As you can see 4-4 is the best sanity ratio map with 1.58 and have a 30.65% orirock cube drop rate. 4-4 offer Loxic as its main drop but If you do not need Loxic, then you should grind somewhere else.

If you are still confused go to 'smol chart' to see a small version of the sheet

we can compare 1-7 to 5-10, 1-7 has a sanity ratio of 1.38 and 5-10 has a sanity ratio of 1.24 therefore 1-7 is about 11% better than 5-10. (exp included) (if exp ticket is removed, then 5-10 is better)























Recommend Farming T3 mats before farming T2 mats because friend shop/ T3 maps could drop T2 mats that you may need.

T1	Map	T2	Map	T3	Map	T3	Map	
	S2-5		1-7		Grind 1-7 to Craft		4-9 2-10	Green highlight= best for long term benefit
Orirock Rock		Orirock Cube		Orirock Cluster		RMA70-12		
	2-3		4-10 S3-4		3-4 or 4-10 3-4		4-8 3-3	Yellow Highlight= best for short term benefit
Damaged Device		Device		Integrated Device		Grindstone		
	S2-7		3-8 S3-2		3-8 2-6		4-4 2-9,6-11	
Ester		Polyester		Polyester Pack		Loxic Kohl		
	S2-8		S4-1 S3-3		S4-1 Grind S3-3 to craft		4-7 3-2	
Oriron Shard		Oriron		Oriron Cluster		Maganese Ore		
	S2-6		4-2 S3-1		4-2 2-5		S3-6	
Sugar Substitut		Sugar		Sugar Pack		Incandescent Alloy		
	S2-9		4-5 3-7		4-5 or 3-1 3-1		S5-7 S4-10	
Diketon		Polyketon		Aketon		Coagulating Gel		


















T1		Drop Rate	Map	Sanity / Item	T2		Drop Rate	Map	Sanity / Item	T3		Drop Rate	Map	Sanity / Item	
Orirock Rock		364.68%	S2-5	3.29	Orirock Cube		124.40%	1-7	4.82	Orirock Cluster		Grind orirock cube (1-7) and Convert to Orirck Cluster			
Damaged Device		145.80%	2-3	8.23	Device		91.68%	S3-4	16.36	Integrated Device		27.75%	3-4	54.05	
Ester		251.62%	S2-7	4.77	Polyester		152.56%	S3-2	9.83	Polyester Pack		36.70%	2-6	32.70	
Oriron Shard		190.81%	S2-8	6.29	Oriron		121.32%	S3-3	12.36	Oriron Cluster		Grind oriron (S3-3) and convert to Oriron Cluster			
Sugar Substitue		246.30%	S2-6	4.87	Sugar		151.38%	S3-1	9.91	Sugar Pack		36.96%	2-5	32.47	
Diketon		192.86%	S2-9	6.22	Polyketon		122.84%	3-7	12.21	Aketon		36.57%	3-1	41.02	
					Crafting	It is more efficient to grind Orirock cube/ Oriron and to convert to Orirock cluster /Oriron cluster				RMA70-12		27.60%	2-10	54.35	
											Grindstone		31.62%	3-3	47.44
Short Term		Looking to obtain item quickly then grind at the these maps									Loxic Kohl		49.09%	6-11	42.78
											Maganese Ore		37.01%	3-2	40.53
											Alloy		38.66%	S3-6	38.80
									Gel		28.60%	S4-10	62.94		

Craft all T4 materials

T1 mats value is reduced to 1/12 of T3 mats + T2 mats reduce to 1/3 of T3 mats. (Crafting T1/T2 mats into T3)

T1	Drop Rate	Map	Sanity / Item	Sanity Ratio	T2	Drop Rate	Map	Sanity / Item	Sanity Ratio	Notable Drops	T3	Drop Rate	Map	Sanity / Item	Sanity Ratio	Notable Drops
 Orirock Rock	364.68%	S2-5	1.69	0.79	 Orirock Cube	31.71%	5-5	56.76	1.46	Oriron Cluster	 Orirock Cluster	45.03%	4-6	39.98	1.20	Grinding 5 orirock cube from 1-7 and crafting to orirock cluster would cost ~24.1 sanity (24.9 sanity accounting for LMD in workshop) (22.97 sanity accounting for LMD+byproduct) Grinding at 2-4 would cost ~ 28.4 sanity for orirock cluster
						31.31%	4-4	57.49	1.36	Loxic Kohl						
						124.40%	1-7	4.82	1.37	ROCKS!						
						31.64%	4-7	56.89	1.36	Maganese Ore						
						21.31%	3-3	70.39	1.32	Grindstone						
						31.82%	5-2	56.57	1.29	Sugar Pack						
35.45%	4-10	59.24	1.34	Integrated Device												
					185.92%	5-10	11.30	1.23	Integrated Device							
 Damaged Device	145.80%	2-3	8.23	0.83	 Device	12.52%	4-4	143.75	1.36	Loxic	 Integrated Device	30.23%	4-10	69.48	1.34	Optimized Device
						12.42%	5-5	144.96	1.46	Oriron Cluster						
						75.79%	6-11	27.71	1.29	Loxic						
						12.64%	4-7	142.44	1.36	Maganese Ore						
						8.47%	3-3	177.18	1.32	Grindstone						
						14.00%	4-10	149.99	1.34	Integrated Device						
						13.29%	5-2	135.49	1.29	Sugar Pack						
						12.57%	4-6	143.25	1.20	Orirock Cluster						
91.68%	S3-4	16.36	1.08													
 Ester	251.62%	S2-7	4.77	0.87	 Polyester	8.18%	4-8	256.65	1.46	Grindstone	 Polyester Pack	46.74%	SV-5	32.09	1.36	Event
						8.78%	4-9	239.26	1.40	RMA70-12		36.70%	2-6	32.70	1.32	
						11.54%	6-4	156.00	1.32	Polyester Pack/Lump						
						11.03%	6-2	163.21	1.30	Maganese Ore						
						10.55%	4-5	170.66	1.34	Aketon		39.47%	3-8	45.60	1.31	Polyester Lump
						10.55%	3-8	170.57	1.31	Polyester Pack						
						14.04%	3-4	106.87	1.32	Integrated Device						
						152.56%	S3-2	9.83	1.10			48.97%	5-3	36.75	1.28	
						15.85%	S4-1	113.59	1.57	Oriron Cluster						
						15.67%	4-2	114.86	1.44	Sugar Pack						
 Oriron Shard	190.81%	S2-8	6.29	0.94	 Oriron	105.72%	5-7	19.86	1.40	Grindstone	 Oriron Cluster	31.61%	S4-1	56.95	1.57	Oriron Block
						10.56%	2-10	142.09	1.35	RMA70-12						
						10.42%	3-1	143.97	1.35	Aketon						
						121.32%	S3-3	12.36	1.26							
						19.51%	S4-1	92.26	1.57	Oriron Cluster						
 Sugar Substitute	246.30%	S2-6	4.87	0.86	 Sugar	19.94%	4-2	90.27	1.44	Sugar Pack	 Sugar Pack	39.64%	4-2	45.41	1.44	Sugar Lump
						84.92%	5-3	21.20	1.28	Polyester Pack						
						13.03%	2-10	115.13	1.35	RMA70-12						
						12.75%	3-1	117.69	1.35	Aketon						
						12.90%	3-7	116.24	1.13	Polyketon						
						151.38%	S3-1	9.91	1.11							
 Diketone	192.86%	S2-9	6.22	0.86	 Polyketon	6.74%	4-8	311.51	1.46	Grindstone	 Aketon	36.57%	3-1	41.02	1.35	
						7.28%	4-9	288.47	1.40	RMA70-12						
						8.92%	6-2	201.72	1.30	Mag Ore						
						10.55%	3-1	142.20	1.35	Aketon						
						100.34%	6-16	20.93	1.30	Integrated Device						
						122.84%	3-7	12.21	1.13							
Why T1 mats reduce to 1/12 value of T3 mats? This is good when you dont need T1 mats and is converting the T1 mats to T2 mats to T3 mats The true value of T1 mats is [(value of T3 mats)-(LMD from workshop)+avg T1 mats]/(# of T1 mats to make T2 mats)-LMD+avg T2 mats]/(# of T2 to make T3)	Note: GRIND T3 MATS BEFORE T2 MATS					 RMA70-12	30.01%	4-9	69.98	1.40	RMA70-24					
	Maps that are excluded: if the target item's drop rate is lower than 5% if a map with a higher sanity ratio of the same Notable drop, the lower sanity ratio map is excluded if maps have a lower sanity ratio then the map with the lowest sanity cost of the item						27.60%	2-10	54.35	1.35						
							34.96%	4-8	60.07	1.46	Grindstone Pentahydrate					
							34.52%	5-7	60.84	1.40	Oriron					
							31.62%	3-3	47.44	1.32						
Why T2 mats reduce to 1/3 value of T3 mats? This is good when you dont need T2 mats and is converting the T2 mats to T3 mats. The true value of T2 mats is [(value of T3 mats)-(LMD from workshop)]/(# of T2 mats to make T3 mats)						 White Horse Kohl Device	37.26%	4-4	48.31	1.36						
							49.09%	6-11	42.78	1.29						
							26.49%	2-9	45.31	1.07						
							29.61%	4-7	60.80	1.36						
							29.70%	6-2	60.61	1.30						
					37.01%	3-2	40.53	1.32	Maganese Trihydrate							
					Crafting	It is more efficient to grind Orirock cube/ Oriron and to convert to Orirock cluster /Oriron cluster	 Incandescent Alloy	32.40%	6-12	55.55	1.34					
								38.66%	S3-6	38.80	1.32					
								29.81%	S5-8	60.38	1.31					
							 Coagulating Gel	39.88%	SV-7	45.14	1.80	Event				
								25.52%	S5-7	70.54	1.57					
								28.60%	S4-10	62.94	1.34					

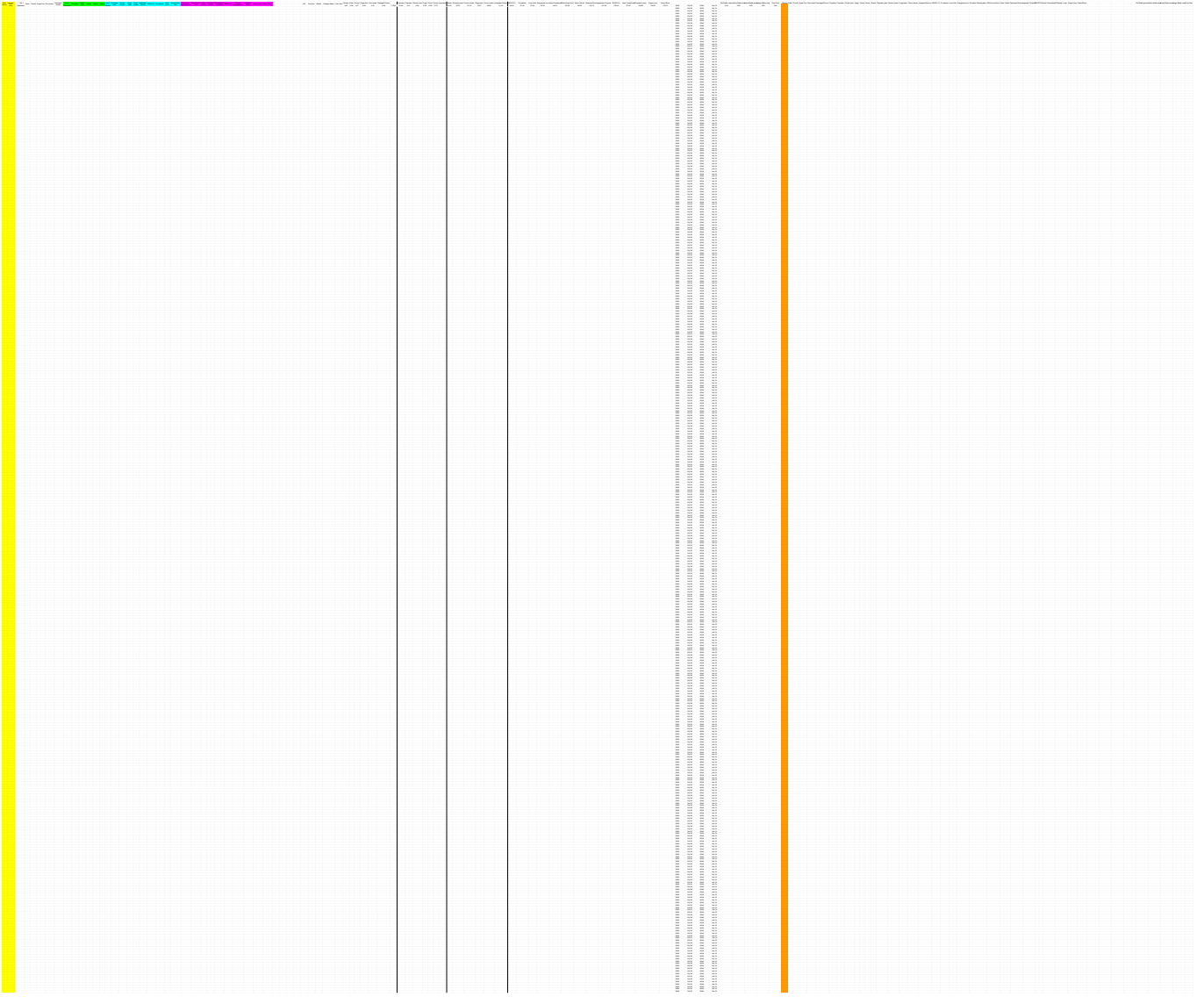
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						31.64%	4-7	56.89	1.35	Maganese Ore								
						35.45%	4-10	59.24	1.33	Integrated Device								
						185.92%	5-10	11.30	1.23	Integrated Device								
 Damaged Device	145.80%	2-3	8.23	0.83	 Device	12.40%	1-7	4.82	1.17	ROCKS!	 Integrated Device	30.23%	4-10	69.48	1.33	Optimized Device		
						12.52%	4-4	143.75	1.35	Loxic								
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 Ester	251.62%	S2-7	4.77	0.87	 Polyester	8.18%	4-8	256.65	1.46	Grindstone	 Polyester Pack	46.74%	SV-5	32.09	1.33	Polyester Lump		
						8.78%	4-9	239.26	1.40	RMA70-12								
						11.54%	6-4	156.00	1.32	Polyester Pack/Lump								
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						84.92%	5-3	21.20	1.28	Aketon								
						12.90%	3-7	116.24	1.11	Polyketon								
						151.38%	S3-1	9.91	1.08									
						7.28%	4-9	288.47	1.40	RMA70-12								
 Diketon	192.86%	S2-9	6.22	0.86	 Polyketon	6.74%	4-8	311.51	1.46	Grindstone	 Aketon	31.19%	4-5	57.72	1.34	Keton Colloid		
						8.92%	6-2	201.72	1.30	Mag Ore								
						10.55%	3-1	142.20	1.32	Aketon								
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						7.28%	4-9	288.47	1.40	RMA70-12								
Why T1 mats reduce to 1/12 value of T3 mats? This is good when you dont need T1 mats and is converting the T1 mats to T2 mats to T3 mats The true value of T1 mats is [(value of T3 mats)-(LMD from workshop)+avg T1 mats]/(# of T1 mats to make T2 mats)-LMD+avg T2 mats]/(# of T2 to make T3)					Note: GRIND T3 MATS BEFORE T2 MATS Maps that are excluded: if the target item's drop rate is lower than 5% if a map with a higher sanity ratio of the same Notable drop, the lower sanity ratio map is excluded if maps have a lower sanity ratio then the map with the lowest sanity cost of the item					30.01%					4-9	69.98	1.40	RMA70-24
Why T2 mats reduce to 1/3 value of T3 mats? This is good when you dont need T2 mats and is converting the T2 mats to T3 mats. The true value of T2 mats is [(value of T3 mats)-(LMD from workshop)]/(# of T2 mats to make T3 mats)					Why exclude Exp ticket/pure gold? This should be prefer only at mid or end game when exp ticket are not as vauable. This massively affects ch 1/2/3 maps as lower maps have a higher drop rate of exp ticket/ pure gold. Can be used for a higher % of sanity spent towards item instead of exp					27.60%					2-10	54.35	1.33	
										34.96%					4-8	60.07	1.46	Grindstone Pentahydrate
										34.52%					5-7	60.84	1.40	Oriron
										31.62%					3-3	47.44	1.30	
										37.26%					4-4	48.31	1.35	White Horse Kohl
										49.09%					6-11	42.78	1.29	Device
										26.49%					2-9	45.31	0.97	
										29.61%					4-7	60.80	1.35	
										29.70%					6-2	60.61	1.30	
										37.01%					3-2	40.53	1.30	
										38.66%					S3-6	38.80	1.305	
										32.40%					6-12	55.55	1.303	
										29.81%					S5-8	60.38	1.294	
										39.88%					SV-7	45.14	1.77	Event
										25.52%					S5-7	70.54	1.57	
										28.60%					S4-10	62.94	1.33	

#		friend credit	Sanity Saved / item	Sanity per friend credit	
1	Recruitment Permit	160		ALWAY BUY	
3	carbon brick	200	7.95	0.119	buy only if base not fully upgraded
5	Carbon Stick	160	3.75	0.117	buy only if base not fully upgraded
1	Device	160	16.36	0.102	
2	Oriron	240	12.36	0.103	
2	Polyketon	240	12.21	0.102	
3	Skill Summary-2	200	6.67	0.100	This list ranks all the item in the friend credit store by how much sanity saved per friend credit. Always buy discounted item first Never Buy Expedition Ticket
2	Sugar	200	9.91	0.099	
2	Polyester	200	9.83	0.098	
5	Skill Summary-1	160	3.00	0.094	
20	Furniture Part	160	0.66	0.082	
25	Furniture Part	200	0.66	0.082	
6	Pure Gold	160	2.10	0.079	
1800	LMD	100	0.00	0.076	
3600	LMD	200	0.00	0.076	
9	Frontline Battle Record	200	1.62	0.073	
9	Drill Battle Record	100	0.81	0.073	
3	orirock cube	200	4.82	0.072	
1	damage device	80	5.54	0.069	
2	Oriron shard	120	4.21	0.070	
2	Diketone	120	4.15	0.069	
2	sugar sub	100	3.39	0.068	
2	Esters	100	3.36	0.067	
24	Carbon Brick (Furniture part)	200	0.61	0.060	Buy Carbon Brick if you are convert to Furniture parts (Does not account for byproduct)
20	Carbon Stick (Furniture part)	160	0.61	0.050	Buy Carbon Brick if you are convert to Furniture parts (Does not account for byproduct)
2	Orirock	80	1.69	0.042	

	Green Ticket	Sanity	Sanity Saved per ticket			
Headhunting permit	450	1061	2.36	All Tier one is worth buying		
Coagulating Gel	40	62.94	1.57	Buying Headhunting depends if you value Gacha pulls more than saving sanity of materials. if you consider orundum farming then it is better to buy Headhunting permit.		
Loxic Kohl	30	42.78	1.43			
Oriron Cluster	35	48.33	1.38	It is better early game to buy mats than the headhunting permit		
RMA70-12	45	54.35	1.21			
Integrated Device	45	54.05	1.20	This table represent a short term sanity saving		
Grindstone	40	47.44	1.19			
Aketon	35	41.02	1.17	Recruitment Tickets is worth it because it offers simialr value in the long run (math below)		
Mag Ore	35	40.53	1.16	How i obtain the estimate chance is from my recording usage of recruitment permit (assuming P6 all 4/3 stars)		
Incandescent Alloy	35	38.80	1.11			
Polyester Pack	30	32.70	1.09	Estimated chances	tickets	
Sugar Pack	30	32.47	1.08	5/6 stars	1%	5 yellow
Orirock Cluster	25	22.99	0.92	4star	25%	30 green 1 yellow
				3star	74%	10 green
				Overall	14.9	green
					0.3	yellow
				Overall 1 recruitment will return 14.9 green and 0.29 yellow		





Pack	Reset	Total item given	Price (\$USD)	Orundum	Orundum per dollar	Sanity from Item	Sanity per Dollar	Other				
Monthly Card	Can buy up to 90 days	6 OP 200 orundum per day for 30 days 1 Emergency Sanity potion(60 Sanity) per day for 30 days	\$4.99	7,080	1,419	1,800	361					Sanity per furnitr
Starter Pack	No	Gummy 1 Headhunting Permit 10k LMD 20 Drill Battle Record (4k Exp)	\$0.99	600	606	56	57	Gummy				0.656
Starter Headhunting Pack	No	2 Ten-roll Headhunting	\$19.99	12,000	600	0						
\$1 Originium (2x bonus)	No	3 OP	\$0.99	540	545	0						
Monthly Headhunting Pack	Monthly	42 OP + 10 Headhunting permit	\$25.99	13,560	522	0						
\$15 Originium (2x bonus)	No	40 OP	\$14.99	7,200	480	0						
\$30 Originium (2x bonus)	No	80 OP	\$29.99	14,400	480	0						
\$50 Originium (2x bonus)	No	132 OP	\$49.99	23,760	475	0						
\$100 Originium (2x bonus)	No	260 OP	\$99.99	46,800	468	0						
\$5 Originium (2x bonus)	No	12 OP	\$4.99	2,160	433	0						
\$100 Originium		185 OP	\$99.99	33,300	333	0						
\$50 Originium		90 OP	\$49.99	16,200	324	0						
\$30 Originium		50 OP	\$29.99	9,000	300	0						
\$15 Originium		24 OP	\$14.99	4,320	288	0						
\$5 Originium		7 OP	\$4.99	1,260	253	0						
Starter Upgrade Pack	No	13 OP 40k LMD 20 Tactical Battle Record 30 Frontline Battle Record 40 Drill Battle Record 10 Skill Summary 2 30 Skill Summary 1 4 Device 5 Polyketon 5 Oriron 7 Polyester 7 Sugar 10 Orirock Cube	\$9.99	2,340	234	?	#VALUE!					
\$1 Originium		1 OP	\$0.99	180	182							
Starter Furniture Pack	No	6 OP 2400 Furniture Part	\$9.99	1,080	108	1,574	158					
Weekly Growth Pack	Weekly	80k LMD 10 Strategic battle Record 25 Tactical battle Record 50 Frontline Battle Record 20 Skill Summary 2 40 Skill Summary 1 10 Caron Stick 360 Furniture Part	\$9.99	0	0	?	#VALUE!					
NOTE Orundum per dollar is only calculating orundum+ OP convert to orundum +headhunting permit convert to orundum Sanity is calculating the Estimated Sanity Saved from all the items given												
Past Deal												
Half Year Anniv. Resource Pack	Yes	90 OP 10 Headhunting Permits 200k LMD 4 Chip Catalyst 20 Strategic Battle Record 50 Tactical Battle Record 100 Frontline Battle Record 20 Skill Summary 3 50 Skill Summary 2	\$49.99	22,200	444	2,274 [1]	45					
Half Year Anniv. Special Pack	Yes	51 OP 2020 Orundum 10 Headhunting Permits 1000 Furniture Parts	\$29.99	17,200	574	656	22					

Yellow Highlight=Best in slot				Best operators to use in each layout, if you are missing an operators just use the next highest bonus you have'		
Gray= Not released yet in EN				2 Trading Post 4Factory 3 Power Plant		
Factory (Exp)				2 Trading Post 4Factory 3 Power Plant		
FEater	E0 +30% (upgraded at E2)	E2 +35%		1st Trading Post	1st Factory (exp)	3 Power plants
Conviction	E1 +35%			Exusiai E2+35%	Feater E2 +35%	Grey: E0 +20%
Vigna	E0 +30%			Lapland+o%	Vigna +30%	Liskarm: E2 +20%
Castle-3	Lv30 +30%			Texas+65%	Castle-3 +30%	Pick one from below
Shirayuki	E1 +30%			Amiya/Swire +7%		Ifrit: E2+15%
Frostleaf	E1 +30%			Total=107%	total =105%	Glaucus: E2 +15%
Scene	E0 15% to 25%	E2 storage capacity +12		2nd Trading Post	2nd Factory (exp)	Shaw: E1 +15%
Click	E0 mood reduction per hour -0.25	E1 storage capacity +12		Snowsant: E2+35%	Shirayuki E1 +30%	Rotating Team
Factory (Gold)				Gummy: +30%		
Purestream	E2 +20% per Trading post			Midnight: +30%	Frostleaf E1 +30%	Pick one from below
Gravel	E1 +35%			Amiya/Swire +7%	Vannilla E0+25%	Ifrit: E2+15%
Haze	E0 +30%			Total= 102%	Total=85%	Glaucus: E2 +15%
Spot	E1 +30%			TP Rotating Team (Any 3)	3rd Factory (Pure Gold)	Shaw: E1 +15%
Factory (Originium)				Catapult: +30%		
Eyjafjalla	E0 +35%			Yato: +30%	Waai Fu E2 +40%	Factory Rotating Team
Ceylon	E2 +35%			Mousse: +30%	Mayer E2 +30%	Vanilla:
Earthspirit	E1 +35%			Ambriel: +30%	Jessica E0 +25%	Perfumer:
Lava	E1 +35%			Fang: +30%	Total= 95%	Steward:
Midnight	E1 +30%			Haze: +30%	4th Factory (Pure Gold)	Popukar:
Factory (Any)				Noir Corna E0+10%		
Weedy	E0 production from other operators reduced to 0, however increase production by +10% for every existing Power Station	E2 production from other operators reduced to 0, however increase production by +15% for every existing Power Station			Ceobe E2 +25%	Ptilopsis:
Waai Fu:	E0 remove Morale Reduction effects from operators	E2: gain % from others, up to 40%			Total= 87%	
Eunectes	E0 -production from other operators reduced to 0, however increase production by +5% for every existing Power Station (Skill upgrade at E2)	E2 -production from other operators reduced to 0, however increase production by +10% for every existing Power Station		2 Trading Post 5 Factory 2 Power Plant		
Mayer:	E2 +30%			1st Trading Post	1st Factory (exp)	2 Power plants
Jessica:	E0 +25%			Exusiai E2+35%	Feater E2 +35%	Grey: E0 +20%
Vanilla:	E0 +25%			Lapland+o%	Vigna +30%	Liskarm: E2 +20%
Perfumer:	E1 +25%			Texas+65%	Castle-3 +30%	
Steward:	E1 +25%			Amiya/Swire +7%	total =107%	Power Plant Rotating Team
Popukar:	E0 +25%, -12 Capacity and +0.25 Morale Reduction			Total=107%	total =105%	Pick one from below
Ptilopsis:	E0 +15%	E2 +25%		2nd Trading Post	2nd Factory (exp)	Ifrit: E2+15%
Silence:	E0 +15%	E2 +25%		Snowsant: E2+35%	Shirayuki E1 +30%	Glaucus: E2 +15%
Asbestos	E0 +25%, storage capacity -12 and mood reduction per hour +0.25 (stack with E2)	E2 storage capacity +16 and mood reduction per hour -0.25		Gummy: +30%	Frostleaf E1 +30%	Shaw: E1 +15%
Ceobe	E0 +8 Capacity and -0.25 Morale Reduction	E2 +20 to +25%	Best with Vermeil	Midnight: +30%	Vannilla E0+25%	
Fang:	E0 +20% to 25%			Amiya/Swire +7%		
Kroos:	E0 +15% to 25%			Total= 102%	Total=85%	
Meteor:	E0 +15%			Rotating Team (Any 3)	3rd Factory (Pure Gold)	5th Factory (Flex)
Yato:	Lv30 +15%			Catapult: +30%	Waai Fu E2 +40%	Vanilla:
Noir Corne:	E0 +10% and +10 Capacity			Yato: +30%	Mayer E2 +30%	Perfumer:
Cardigan:	E0 +10% and +6 Capacity			Mousse: +30%	Jessica E0 +25%	Steward:
Beagle:	E0 +10% and +6 Capacity			Ambriel: +30%	Total= 95%	Total= 75%
Cuora:	E0 +10% and +10 Capacity			Fang: +30%	4th Factory (Pure Gold)	Rotating Team (Flex)
Scavenger:	E1 +8 Capacity and -0.25 Morale Reduction			Haze: +30%	Vermeil +16%+20%+16%	Popukar:
Vermeil:	E0 +8 Capacity and -0.25 Morale Reduction	E1 +2% for every +1 Capacity from Operators			Noir Corna E0+10%	Ptilopsis:
Vulcan:	E0 -5%, +16 Capacity and -0.15 Morale Reduction	E2 -5%, +18 Capacity and -0.25 Morale Reduction			Ceobe E2 +25%	Silence:
Trading Post				Total= 87%		
Shamare	E0 Slightly increase the appearance rate of high volume orders of precious metals (affected by work duration) and mood reduction per hour -0.25	E2 order acquisition efficiency from other operators reduced to 0, however each operator grants +45% order acquisition efficiency to self. Additionally, mood reduction per hour of all operators +0.25				
Exusiai	E0 +20%	E2 +35%				
Lapland	E0 -0.1 Morale Reduction and +2 Order Limit	E2 -0.1 Morale Reduction and +4 Order Limit				
Texas	E0 With Lapland, +65% and +0.3 Morale Reduction	E2 With Exusiai, -0.3 Morale Reduction				
Snowsant:	E0 +5% per 5% of other Operators, 25% cap (upgraded at E2)	E2 Gain % from others up to 35%				
Gummy:	E0 +30% and -0.25 Morale Reduction					
Midnight:	E0 +30% and -0.25 Morale Reduction					
Catapult:	E0 +30% and -0.25 Morale Reduction					
Yato:	E0 +30%					
Mousse:	E0 +30%					
Ambriel:	E1 +30%					
Fang:	E1 +30%					
Matoimaru:	E1 +30%					
Sora:	E2 +30%					
Bison:	E0 +20%	E2 +30% and +1 Order Limit				
Croissant:	E0 +20%	E2 +30% and +1 Order Limit				
Haze:	E1 +30%	Better in factory (+30% pure gold)				
Melantha:	E0 +25% and +1 Order Limit					
Gitano:	E0 +25% and +1 Order Limit					
Orchid:	E1 +25% and +1 Order Limit					
Deepcolor:	E0 +20%					
Adnachi:	E0 +20%					
Vanilla:	E1 +20%					
Cuora:	E1 +20%					
Silverash:	E0 +15% and +1 Order Limit	E2 +20% and +3 Order Limit				
Matterhorn:	E0 +15% and +1 Order Limit					

Courier:	E0 +15% and +1 Order Limit		
Cliffheart:	E2 +15% and +2 Order Limit		
Noir Corne:	Lv30 +10% and +1 Order Limit		
Plume:	E1 +10% and +1 Order Limit		
Bibeak:	E0 slightly increase the appearance rate of high volume orders of precious metals (affected by work duration) and mood reduction per hour -0.25	E2 increase the appearance rate of high volume orders of precious metals (affected by work duration) and mood reduction per hour -0.25	
Steward:	E0 -0.25 Morale Reduction and +3 Order Limit		
Rope:	E1 -0.25 Morale Reduction and +3 Order Limit		
Myrtle:	E0 -0.25 Morale Reduction and +3 Order Limit		
Jaya:	E0- order acquisition efficiency +4% for every 1 difference between the number of currently held orders and the order limit	E1- order limit -1 for every 10% efficiency provided by other operators. Additionally, order acquisition efficiency +4% per 1 currently held order	
Power Plant			
Greyy:	E0 +20%		
Liskarm:	E0 +15%	E2 +20%	
Ifrit:	E0 +10%	E2 +15%	
Glaucus:	E0 +10%	E2 +15%	
Shaw:	E1 +15%		
Puresteam:	E0 +15%		
Thermal-EX:	E0 +10%	M 30 mood reduction per hour -0.52	
Blaze:	E0 +10%		
Lava:	E0 +10%		
Lancet-2:	E0 +10%		
Castle-3:	E0 +10%		
Control Center			
Amiya:	E0 +7% for trading Post	Amiya and Swire Skill DO NOT STACK	
Swire:	E0 +7% for trading Post		
Control Center(Mood reducer for control center operators)			
Projekt Red:	E0 -0.05 mood in control center		
Nearl:	E0 -0.05 mood in control center		
Dobermann:	E0 -0.05 mood in control center		
Scavenger:	E0 -0.05 mood in control center		
Greythroat:	E0 -0.05 mood in control center	This only affect operators in control center	
Dur-nar:	E0 -0.05 mood in control center		
Executor:	E0 -0.05 mood in control center		
Reed:	E0 -0.05 mood in control center		
Hung	E2 -0.05 to Operators in the Control Center per Li's Detective Agency in the Control Center and reduce morale reduction for those Operators.		
Chen	E0 -0.05 to Operators in the Control Center per Lungmen Guard Bureau Operator in the Control Center.		
Leizi	E0 lightly increase the bias of operators in Reception finding clues from their own faction, however slightly increase mood reduction per hour of all operatives in the Command Center	E2 slightly increase the bias of operators in Reception finding clues from their own faction	
Poca	E0 for every operator from Ursus Student Council in the Command Center, mood reduction per hour of all operators in the Command Center -0.05		
Aak:	E0 Increases bias of Operators finding clues in their own faction in Reception Room but increases morale reduction per hour for Operators in Control Center		
Eunectes	E2 - if Lancet-2 is stationed at a Power Station, it will be considered as having 2 additional Power Stations (only affects facility count)		
Dorm (Boost ALL)			
Durin	E0 +0.2 All and -0.1 Self	Lv30 +0.25 All and -0.1 Self	
Ambriel	E0 +0.2 All and -0.1 Self		
Zima	E0 +0.15 All	E2 +0.2 All	
Nightingale	E0 +0.1 All	E2 +0.2 All	
Siege	E0 +0.15 All	E2 +0.2 All	
Podenco	E1 +0.15 All		
Sora	E0 +0.15 All		
Amiya	E2 +0.15 All		
Hellagur	E1 +0.1 All	E2 +0.1 All and +0.55 Self	
Bagpipe	E0 +0.1 All		
Dorm (Boost one)			
Shining	E0 +0.55	E2 +0.75	
Conviction	E0 +0.7		
Lancet-2	Lv30 +0.65		
Podenco	E0 +0.55	E1 +0.65	
Hibiscus	E0 +0.55		
Ansel	E0 +0.55		
Myrrh	E1 +0.55		
Meteor	E1 +0.55		
Tomimi	E0 +0.55 Gavial recieves additional +0.45		
Schwarz	E0 +0.55, Ceylon receives additional +0.45		
Pramanix	E0 +0.5 and +0.25 Self		
Nearl	E2 +0.5 and +0.25 Self		
Aciddrop	E1 +0.35 and +0.35 Self		
Gummy	E1 +0.35 and +0.35 Self		
Savage	E2 +0.35 and +0.35 Self		

Mousse	E1 +0.3 and +0.3 Self		
Cliffheart	E0 +0.25 and +0.5 Self		
Beagle	E1 +0.2 and +0.4 Self		
Cardigan	E1 +0.2 and +0.4 Self		
Office			
Eyjafjalla:	E2 +45%		
Provence:	E0 +30%	E2 +45%	
Orchid:	E0 +40%		
Ethan:	E0 +40%		
Aciddrop	E0 +40%		
Utage	E1 +40%		
Earthspirit:	E0 +30%		
Tsukinogi	E0 +30%	E2 Additionally, further increase accumulation of networking resources by +5% for every Open Recruitment slot (excluding the initial slot)	
Nightmare:	E2 +40%		
Poca	E2 +20% and Whenever a refresh count is gained, increase the chance of obtaining clues from Ursus Student Council (affected by work duration and Open Recruitment slots)		
Rangers:	E0 +20%		
WorkShop (random Material)			
Mayer	E0 +65%		
Estelle	E0 +60%		
Deepcolour	E1 +60%		
Magallan	E0 +50%	E2 4+ Morale consumes 2 instead	
Hung	E0 +50%		
Spot	E0 +50%		
Rangers	Lv30, +50%		
Adnachiel	E1 +50%		
Gravel	E0 +40%		
Melantha	E1 +40%		
WorkShop (Elite Material)			
Nian	E0 +100%, consumes 2 extra mood		
Chiave	E0 recipes which consume 4 mood will have -1 mood consumed	E2- +90% for Device- type	
Ceylon	E0 +80%		
Blue Poison	E0 +75%	E2 +80%	
Meteorite	E0 +75%	E2 +80%	
Catapult	E1 +80%		
Sussurro	E1 +80%		
Sesa	E0 recipes which consume 4 mood will have -2 mood consumed	E2 +75%	
Folinic	E0 +75%	E2 recipes which consume 2 mood will have -1 mood consumed	
Perfumer	E0 +75%		
Myrrh	E0 +75%		
Gavial	E0 +75%		
Ansel	E1 +75%		
Hibiscus	E1 +70%		
Workshop (Base Material)			
Blaze	E2 +80%		
Leonhardt	E0 +75%	E2-recipes which consume 2 mood will have -1 mood consumed	
Shaw	E0 +70%		
Workshop (Skill Summary)			
Hellagur	E0 +80%		
Flamebringer	E0 +70%	E2 +80%	
Matoimaru	E0 +70%		
Savage	E0 +70%		
WorkShop (Chip)			
Bagpipe	E2 +80%		
Cutter	E0 +70%	E1 recipes which consume 2 mood will have -1 mood consumed	
Beehunter	E1 +70%		
12F	Lv30 +70%		
Reception Room			
Clue 1	Saria:	E0 +10%	E2 +10% and easier to obtain from Rhine Labs
Clue 2	May:	E0 +20%	E1 +20% and easier to obtain from Penguin Logistics
	Mostima:	E0 +10%	E2 +10% and easier to obtain from Penguin Logistics
Clue 3	Jessica:	E1 +10% and easier to obtain from Blacksteel	
Clue 4	Istina:	E2 +10% and easier to obtain from Ursus Student Council	

[1] =200000/(7500/30)---LMD
+4*90/(21/30)---chip (20*2000+50*1000+100*400)/(7400/30) ---exp ticket
300+132.5 - skill summary