KOVA® GLASSTIC® SLIDE 10 WITH GRIDS

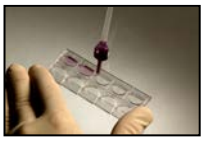
INSTRUCTIONS FOR USE

The KOVA Glasstic Slide 10 with quantitative grid is designed to be used with the standardized hygienic KOVA Microscopic Urinalysis System:

Transfer **12mL** of the urine specimen from the **KOVA Cup** to the **KOVA Tube**. Secure the **KOVA Cap** on the **KOVA Tube** and then centrifuge at **400 rcf** (-1500 rpm) for **5 minutes**.

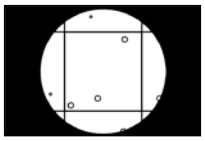
Insert the **KOVA Petter** firmly to the bottom of the tube and make sure the clip on the bulb is hooked on the outside edge of the **KOVA Tube** and decant. **1.0mL** of sediment will be trapped by the **KOVA Petter**.

Gently resuspend using the **KOVA Petter**. Add **1 drop** of **KOVA Stain** prior to resuspension, if necessary, for improved quantitation.



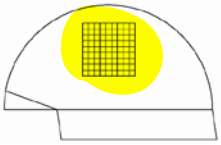
Using the **KOVA Petter**, transfer the sample to the cut-out notch on the slide chamber. Place the pipette parallel to the slide when filling the chamber. Avoid touching the V-shaped barrier while dispensing the fluid. Incorrect positioning in dispensing may cause overflowing from one chamber to the next. Careful addition of samples ensures the hygienic handling properties of the **KOVA System**.

By capillary action 6.6 µL of the sample will be drawn into the **KOVA Slide** 10 chamber resulting in a homogenous suspension of the sediment.
Do not reuse KOVA products.



Quantitate the casts at low power (100x). Quantitate all cells at high power (400x). Count the cells **within** the lines of the small 0.33 mm square grid (as shown). Refer to the value table for the cell count per µL of patient sample.

VALUE TABLE



KOVA Glasstic Slide 10 with Grid Chamber

CAT/REF: 87144

Chamber Volume:
6.6µL
Chamber Depth:
0.1 mm
Outer Grid Dimension:
3 mm x 3 mm
Volume within Grid:
0.9µL
Small Grid Size:
0.33 mm x 0.33 mm
Small Grid Volume:
0.01111µL

Low Cell Count Samples:
Count the total cells of a specific type contained in **10** small grids within different quadrants of the counting grid.

Total Cells	Cells / µL
1	1
2	2
3	2
4	3
5	4
6	5
7	5
8	6
9	7
10	8
11	8
12	9
13	10
14	11
15	11
16	12
17	13
18	14
19	15
20	15
21	16
22	17
23	18
24	18
25	19
26	20
27	21
28	21

Higher Cell Count Samples:
Count the total cells of a specific type contained in **5** small grids within different quadrants of the counting grid.

Total Cells	Cells / µL
5	8
6	9
7	11
8	12
9	14
10	15
11	17
12	18
13	20
14	21
15	23
16	24
17	26
18	28
19	29
20	31
21	32
22	34
23	35
24	37
25	38
30	46
35	54
40	61
45	69
50	77
60	92
70	107

NOTE: For samples that are less than 12mL, reduce the centrifuged quantity to 6mL and double the results obtained before using the table (above).

Cell Type	Normal
Leukocytes	0-4/µL
Erythrocytes	0-2/µL

Borderline	Pathological*
4-6/µL	> 6/µL
2-3/µL	> 3/µL

Alternative Calculation: Determine the **average** number of cells per **small** grid and then use the following multiplication factor to calculate the cells per µL.

To calculate cells / µL using KOVA Glasstic Slide 10 with Grid:

- For uncentrifuged or neat samples, multiply the average cells obtained per small grid x **90**.
- For 10mL samples concentrated to 1mL, multiply the average cells obtained per small grid x **9**.
- For 10mL samples concentrated to 0.5mL, multiply the average cells obtained per small grid x **4.5**.
- For 12mL samples concentrated to 1mL (KOVA System), multiply the average cells obtained per small grid x **7.5**.

Calculation example (Using KOVA System 12mL to 1mL method):

Cells	Grids Counted	Total Cells	Average Cells / Grids	Multiple x Factor (7.5)	Cells per µL of Samples
Leukoytes	10	5	0.5	0.5 x 7.5	3.8
Erythrocytes	10	14	1.4	1.4 x 7.5	10.5

* Reference: Aiken, C.D. and Sokeland, J. (1983). Urologie. Thiems, Stuttgart, Ninth Edition, p.79

KOVA® GLASSTIC® SLIDE 10 WITH GRIDS

VALUE TABLE
UNDILUTED, UNCENTRIFUGED URINE OR BODY FLUID SPECIMENS

LOW CELL COUNT SAMPLES
Count the total cells of a specific type contained in **36** small grids or 4 complete quadrants of the counting grid.

Total Cells	Cells/µL	Cells/mL
1	3	2,500
2	5	5,000
3	8	7,500
4	10	10,000
5	13	12,500
6	15	15,000
7	18	17,500
8	20	20,000
9	23	22,500
10	25	25,000
11	28	27,500
12	30	30,000
13	33	32,500
14	35	35,000
15	38	37,500
16	40	40,000
17	43	42,500
18	45	45,000
19	48	47,500
20	50	50,000
25	63	62,500
30	75	75,000
40	100	100,000
50	126	125,500

Alternative Calculation:
Multiply the average number of cells per small grid by 90 to obtain cells per µL; multiply by 90,000 to obtain cells per mL.

HIGH CELL COUNT SAMPLES
Count the total cells of a specific type contained in **10** small grids in different quadrants of the counting grid.

Total Cells	Cells/µL	Cells/mL
1	9	9,000
2	18	18,000
3	27	27,000
4	36	36,000
5	45	45,000
6	54	54,000
7	63	63,000
8	72	72,000
9	81	81,000
10	90	90,000
20	180	180,000
25	225	225,000
30	270	270,000
35	315	315,000
40	360	360,000
50	450	450,000
60	540	540,000
70	630	630,000
80	720	720,000
90	810	810,000
100	900	900,000
150	1350	1,350,000
200	1800	1,800,000
250	2250	2,250,000

Alternative Calculation:
Multiply the average number of cells per small grid by 90 to obtain cells per µL; multiply by 90,000 to obtain cells per mL.

DILUTED BODY FLUIDS CALCULATION METHOD:

Cells / µL = Average number of cells per small grid x 90 (multiplication factor) x dilution

e.g., Spinal fluid diluted 1:10; a total of 50 RBC's counted in 10 small grids

$$\text{RBC}/\mu\text{L} = \frac{50 \text{ cells}}{10 \text{ grids}} \times 90 \text{ (factor)} \times 10 \text{ (dilution)}$$

$$= 5 \times 900 = 4{,}500 \text{ RBC's}/\mu\text{L}$$

e.g., Semen diluted 1:20; a total of 150 sperm counted in 5 small grids

$$\text{Sperm}/\mu\text{L} = \frac{150}{5} \times 90 \text{ (factor)} \times 20 \text{ (dilution)}$$

$$= 30 \times 1800 = 54{,}000 \text{ sperm}/\mu\text{L}$$

TOTAL CELL COUNT NORMAL RANGES [1]

FLUID	CELL TYPE	NORMAL	ABNORMAL	FLUID	CELL TYPE	NORMAL	ABNORMAL
Urine (2)	Leukocytes Erythrocytes	0-6/µL 0-3/µL	> 6/µL > 3/µL	Synovial	Leukocytes Erythrocytes	< 200/µL < 2,000/µL	> 200/µL > 2,000/µL
CSF (Adult Range)	Leukocytes	0-5/µL	> 5/µL	Pleural	Leukocytes	< 1,000/µL	> 1,000/µL
				Pericardial	Leukocytes	< 1,000/µL	> 1,000/µL
Seminal	Sperm	40,000/µL - 160,000/µL	< 40,000/µL	Pertoneal	Leukocytes Erythrocytes	< 300/µL < 100,000/µL	> 300/µL > 100,000/µL

References: (1) Strasinger, S.K. (1985) **Urinalysis and Body Fluids**, F.A. Davis, Philadelphia • (2) Alken, C.D., and Sokeland, J. (1983) **Urologie**, Thiems, Stutgart, Nineth Edition, pg. 79

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EC REP

1. U.S. Patent Number: 4,563,332
2. U.S. Patent Numbers: 4,997,268 – 5,128,802

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