Automated Urine Particle Digital Imaging Device

UD-10™

Atlas of urine sediment digital images

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www.sysmex.com/us
Digital imaging of urine sediment

The Sysmex UD-10 Automated Urine Particle Digital Imaging Device is an integral part of the UN-Series Automated Urinalysis System. A high-performance digital camera captures microscope-quality images, and the particles are grouped by size and presented to the operator for classification. As a complementary device to the UF-5000 Automated Particle Analyzer, the UD-10 offers digital reviews for identifying pathological elements flagged at the UF-5000.

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**Squamous epithelial cells (superficial layer)**

**UD-10 classifies these cells under Classes 4 – 6**

- **Class 4 (maximum diameter: 16 – 36 µm)**

**Class 5 (maximum diameter: 36 – 71 µm)**

- **Class 6 (maximum diameter: 71 – 101 µm)**

**Squamous epithelial cells (intermediate layer)**

**UD-10 classifies these cells under Class 4 or Class 5**  
*The basal layer cells can appear in Class 3*

- **Class 4 (maximum diameter: 16 – 36 µm)**

**Class 5 (maximum diameter: 36 – 71 µm)**

*Although each cell/particle type will fall predominately within a certain size range, there is no direct link between the size groupings and the cell or particle type.*
Urothelial cells/Transitional epithelial cells

UD-10 classifies these cells under Classes 4 – 7. *The basal layer cells can appear in Class 3

- Class 4 (maximum diameter: 16 – 36 μm)
- Class 5 (maximum diameter: 36 – 71 μm)
- Class 6 (maximum diameter: 71 – 101 μm)
- Class 7 (maximum diameter: 101 – 151 μm)

Renal tubular epithelial cells

UD-10 classifies these cells under Class 4 or Class 5. *The basal layer cells can appear in Class 3

- Class 4 (maximum diameter: 16 – 36 μm)
- Class 5 (maximum diameter: 36 – 71 μm)

*Although each cell/particle type will fall predominately within a certain size range, there is no direct link between the size groupings and the cell or particle type.*
### Non-glomerular red blood cells

UD-10 classifies these particles under Classes 2 – 3

- **Class 2** (maximum diameter: 6 – 10 μm)

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- **Class 3** (maximum diameter: 10 – 16 μm)

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### Glomerular (dysmorphic) red blood cells

UD-10 classifies these particles under Classes 2 – 3

- **Class 2** (maximum diameter: 6 – 10 μm)

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- **Class 3** (maximum diameter: 10 – 16 μm)

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**Note:** Although each cell/particle type will fall predominately within a certain size range, there is no direct link between the size groupings and the cell or particle type.
White blood cells

UD-10 classifies these cells under Class 2 and Class 3 (white blood cells may sometimes appear in Class 4 or above)

- **Class 2** (maximum diameter: 6 – 10 μm)

- **Class 3** (maximum diameter: 10 – 16 μm)

- **Class 4** (maximum diameter: 16 – 36 μm)

*Although each cell/particle type will fall predominately within a certain size range, there is no direct link between the size groupings and the cell or particle type.*
**Casts**  UD-10 classifies these particles under Classes 4 – 8

- **Class 4 (maximum diameter: 16 – 36 μm)**

- **Class 7 (maximum diameter: 101 – 151 μm)**

- **Class 8 (maximum diameter: > 151 μm)**

*Although each cell/particle type will fall predominately within a certain size range, there is no direct link between the size groupings and the cell or particle type*.
Casts  UD-10 classifies these particles under Classes 4 – 8

• Class 5 (maximum diameter: 36 – 71 μm)

• Class 6 (maximum diameter: 71 – 101 μm)

*Although each cell/particle type will fall predominately within a certain size range, there is no direct link between the size groupings and the cell or particle type.*
Bacteria

According to the size of "bacteria chain" or "bacteria cluster", the captured items are classified into respective classes.

- **Class 2 (maximum diameter: 6 – 10 μm)**

- **Class 3 (maximum diameter: 10 – 16 μm)**

- **Class 4 (maximum diameter: 16 – 36 μm)**

- **Class 5 (maximum diameter: 36 – 71 μm)**

**Although each cell/particle type will fall predominately within a certain size range, there is no direct link between the size groupings and the cell or particle type**.
**Fungi**

According to the size of "budding yeast cluster", the captured items are classified into respective classes.

- **Class 2 (maximum diameter: 6 – 10 μm)**

- **Class 3 (maximum diameter: 10 – 16 μm)**

- **Class 4 (maximum diameter: 16 – 36 μm)**

*Although each cell/particle type will fall predominately within a certain size range, there is no direct link between the size groupings and the cell or particle type.*
**Seminal component**

UD-10 classifies these cells under Class 4 and Class 5.
- **Class 4** (maximum diameter: 16 – 36 µm)
  - Spermatozoa

- **Class 5** (maximum diameter: 36 – 71 µm)
  - Spermatozoa

**Crystal component**

UD-10 classifies crystals from Class 2 to Class 4. It should be checked whether the observation results are almost similar to the ones from UF-5000.
- **Class 2** (maximum diameter: 6-10 µm)
- **Class 3** (maximum diameter: 10-16 µm)
- **Class 4** (maximum diameter: 16-36 µm)

Oval-shaped calcium oxalate crystals are observed. Calcium oxalate crystals show various shapes (e.g., regular octahedron, dumbbell-like, biscuit-like, and elliptical).

*"Although each cell/particle type will fall predominately within a certain size range, there is no direct link between the size groupings and the cell or particle type"."