

BLOOD COLLECTION TUBES

-GTO-



1. Red Cap (Plain / Clot Activator)

Additive

- None or clot activator (silica)

Specimen

- Serum

Common Tests

- Serology (HIV, Hepatitis, VDRL)
 - Blood bank tests (crossmatch, antibody screening – if no gel)
 - Hormone assays
 - Drug levels
 - Chemistry tests requiring serum

Special Requirements

- Allow blood to clot **20–30 minutes**
 - Centrifuge before testing
 - **Do not mix aggressively**

2. Yellow Cap (SST – Serum Separator Tube)

Additive

- Clot activator + **gel separator**

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Specimen

- Serum

Common Tests

- Routine biochemistry
- Lipid profile
- Liver function tests (LFT)
- Renal function tests (RFT)
- Thyroid function tests (TFT)

Special Requirements

- Allow complete clotting before centrifugation
- Gel forms a barrier between serum and cells

3. Purple / Lavender Cap

Additive

- EDTA (K_2 or K_3)

Specimen

- Whole blood

Common Tests

- Complete Blood Count (CBC / FBC)
- Peripheral blood film
- HbA1c
- ESR (automated methods)
- CD4 count

Special Requirements

- Mix gently **8–10 inversions**
- Do **not** centrifuge for CBC
- Prevent clotting immediately after collection

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4. Black Cap

Additive

- Sodium citrate (3.8%)

Specimen

- Whole blood

Common Tests

- ESR (Westergren method)

Special Requirements

- Must be filled **exactly to the mark**
- Blood-to-anticoagulant ratio is critical
- Mix gently

5. Light Blue Cap

Additive

- Sodium citrate (3.2%)

Specimen

- Plasma

Common Tests

- Coagulation studies:
 - PT / INR
 - APTT
 - D-dimer
 - Fibrinogen
 - Coagulation factor assays

Special Requirements

- Fill tube **completely** (9:1 blood-to-citrate ratio)
- Mix gently 3–4 times
- Centrifuge promptly if plasma is needed

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6. Green Cap

Additive

- **Heparin (Lithium or Sodium)**

Specimen

- **Plasma**

Common Tests

- Electrolytes
- Blood gases (if specified)
- Ammonia
- Some emergency chemistry tests

Special Requirements

- Mix immediately to prevent clotting
- Not suitable for coagulation or blood bank tests

7. Grey Cap

Additive

- **Sodium fluoride + Potassium oxalate**

Specimen

- **Plasma**

Common Tests

- Fasting blood glucose
- Random blood sugar
- Oral glucose tolerance test (OGTT)
- Lactate

Special Requirements

- Inhibits glycolysis (prevents glucose breakdown)
- Mix gently after collection
- Ideal for delayed processing

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8. White / Pearl Cap (if present in similar sets)

Additive

- EDTA + gel separator

Specimen

- Plasma

Common Tests

- Molecular diagnostics
- Viral load testing
- PCR-based tests

Special Requirements

- Centrifuge promptly
- Avoid contamination

⚠ Important General Notes

- **Order of draw matters** to prevent additive contamination
- Tubes must be **mixed gently**, not shaken
- Incorrect filling can invalidate results
- Always match tube type to test requested

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Blood Collection Tubes & Their Uses



Red Top Tube

Additive: None / Clot Activator

Sample: Serum

Uses:

- Biochemistry tests
- Serology
- Hormone levels



Yellow / Gold Top (SST)

Additive: Clot Activator + Gel

Sample: Serum



Uses:

- Liver Function Test (LFT)
- Lipid Profile
- Thyroid Tests



Purple / Lavender Top

Additive: EDTA



Sample: Whole Blood

Uses:

- CBC
- ESR
- HbA1c



Prevents clotting & preserves cells



Blue Top

Additive: Sodium Citrate

Sample: Plasma

Uses:

- PT / INR
- APTT
- Coagulation Studies



Green Top

Additive: Heparin

Grey Top

Additive: Sodium Fluoride + Potassium Oxalate

Sample: Plasma



Uses:

- Blood Glucose
- Lactate



Prevents glucose breakdown



Black Top

Additive: Sodium Citrate (Special Ratio)

Sample: Whole Blood

Uses:

- ESR (Westergren Method)



Pink Top

Additive: EDTA

Sample: Whole Blood

Uses:

- Blood Grouping
- Cross-Matching (Blood Bank)



Royal Blue Top

Additive: None / EDTA / Heparin

Uses:

- Heavy Metal Tests (Lead, Zinc, Copper)

Order of Draw (Important for Exams & Practice)



1. Blood Culture



2. Blue



3. Red / Yellow



4. Green



5. Purple / Pink



6. Grey