ASAT (GOT) FS* (IFCC mod.)
with/without Pyridoxal-5-Phosphate FS (P-5-P)

Order Information
Cat. No. Kit size
1 2601 99 10 021 R1 5 x 20 mL + R2 1 x 25 mL
1 2601 99 10 028 R1 5 x 80 mL + R2 5 x 100 mL
1 2601 99 10 023 R1 1 x 800 mL + R2 1 x 200 mL
1 2601 99 10 704 R1 8 x 50 mL + R2 8 x 12.5 mL
1 2601 99 10 917 R1 8 x 60 mL + R2 8 x 15 mL
1 2601 99 90 314 R1 10 x 20 mL + R2 2 x 30 mL

For determination with P-5-P additionally required:
2 5010 99 10 030 6 x 3 mL

Intended Use
Diagnostic reagent for quantitative in vitro determination of ASAT (GOT) in serum or plasma on photometric systems.

Summary
Alanine Aminotransferase (ALAT/ALT), formerly called Glutamic Pyruvic Transaminase (GPT) and Aspartate Aminotransferase (ASAT/AST), formerly called Glutamic Oxalacetic Transaminase (GOT) are the most important representatives of a group of enzymes, the aminotransferases or transaminases, which catalyze the conversion of α-keto acids into amino acids by transfer of amino groups. As a liver specific enzyme, ALAT is only associated with severe, often chronic liver diseases. [1,2]

Method
Optimized UV-test according to IFCC (International Federation of Clinical Chemistry and Laboratory Medicine) [modified]

ASAT
L-Aspartate + 2-Oxoglutarate L-Glutamate + Oxalacetate

MDH
Oxalacetate + NADH + H* L-Malate + NAD*

Addition of pyridoxal-5-phosphate (P-5-P), recommended by IFCC, stabilizes the activity of transaminases and avoids falsely low values in samples containing insufficient endogenous P-5-P, e.g. from patients with myocardial infarction, liver disease and intensive care patients [1,3].

Reagents
Components and Concentrations
R1: TRIS pH 7.65 110 mmol/L
L-Aspartate 320 mmol/L
MDH (malate dehydrogenase) ≥ 800 U/L
LDH (lactate dehydrogenase) ≥ 1200 U/L
R2: 2-Oxoglutarate 85 mmol/L
NADH 1 mmol/L
Pyridoxal-5-Phosphate FS
Good’s buffer pH 9.6 100 mmol/L
Pyridoxal-5-phosphate 13 mmol/L

Storage and Reagent Stability
The reagents are stable up to the end of the indicated month of expiry, if stored at 2 – 8°C and contamination is avoided. Do not freeze the reagents and protect them from light.

Warnings and Precautions
1. The reagents contain sodium azide (0.95 g/L) as preservative. Do not swallow! Avoid contact with skin and mucous membranes.
2. Reagent 1 contains animal material. Handle the product as potentially infectious according to universal precautions and good clinical laboratory practices.
3. In very rare cases, samples of patients with gammopathy might give falsified results [4].
4. Please refer to the safety data sheets and take the necessary precautions for the use of laboratory reagents. For diagnostic purposes, the results should always be assessed with the patient’s medical history, clinical examinations and other findings.
5. For professional use only.

Waste Management
Refer to local legal requirements.

Reagent Preparation
Substrate Start
The reagents are ready to use.

Sample Start
without P-5-P
Mix 4 parts of R1 + 1 part of R2
(e.g. 20 mL R1 + 5 mL R2) = mono reagent
Stability: 4 weeks at 2 – 8°C
5 days at 15 – 25°C

Sample Start
with P-5-P
Mix 4 parts of R1 + 1 part of R2
Stability: 6 days at 2 – 8°C
24 hours at 15 – 25°C

Materials Required
General laboratory equipment

Specimen
Serum or heparin plasma

Stability [5]:
4 days at 20 – 25°C
7 days at 4 – 8°C
3 months at −20°C

Only freeze once. Discard contaminated specimens.

Assay Procedure
Applications for automated systems are available on request.

Wavelength 340 nm, Hg 365 nm, Hg 334 nm
Optical path 1 cm
Temperature 37°C
Measurement Against air

Substrate Start
Sample/Calibrator 100 µL
Reagent 1 1000 µL
Mix, incubate for 5 min., then add:
Reagent 2 250 µL
Mix, read absorbance after 1 min. and start stopwatch. Read absorbance again after 1, 2 and 3 min.
Sample Start
Do not use sample start with P-5-P.

<table>
<thead>
<tr>
<th>Sample/Calibrator</th>
<th>100 µL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mono reagent</td>
<td>1000 µL</td>
</tr>
</tbody>
</table>

Mix, read absorbance after 1 min. and start stopwatch. Read absorbance again after 1, 2 and 3 min.

Calculation

With factor
From absorbance readings calculate ΔA/min and multiply by the corresponding factor from table below:

ΔA/min x factor = ASAT activity [U/L]

Substrate Start

| 340 nm | 2143 |
| 334 nm | 2184 |
| 365 nm | 3971 |

Sample Start

| 340 nm | 1745 |
| 334 nm | 1780 |
| 365 nm | 3235 |

With calibrator

\[ \text{ASAT [U/L]} = \frac{\Delta A/\text{min. Sample}}{\text{ΔA/min. Calibrator}} \times \text{Conc. Calibrator [U/L]} \]

Conversion Factor

\[ \text{ASAT [U/L]} \times 0.0167 = \text{ASAT [µkat/L]} \]

Calibrators and Controls
DiaSys TruCal U calibrator is recommended for calibration. This method has been standardized against the original IFCC formulation. Use DiaSys TruLab N and P for internal quality control. Each laboratory should establish corrective action in case of deviations in control recovery.

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Kit size</th>
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<tbody>
<tr>
<td>5 9100 99 10 063</td>
<td>20 x 3 mL</td>
</tr>
<tr>
<td>5 9100 99 10 064</td>
<td>6 x 3 mL</td>
</tr>
<tr>
<td>5 9000 99 10 062</td>
<td>20 x 5 mL</td>
</tr>
<tr>
<td>5 9000 99 10 061</td>
<td>6 x 5 mL</td>
</tr>
<tr>
<td>5 9050 99 10 062</td>
<td>20 x 5 mL</td>
</tr>
<tr>
<td>5 9050 99 10 061</td>
<td>6 x 5 mL</td>
</tr>
</tbody>
</table>

Performance Characteristics

Data evaluated on BioMajesty® JCA-BM6010/C

Exemplary data mentioned below may slightly differ in case of deviating measurement conditions.

with P-5-P

Measuring range on automated systems up to 600 U/L. ASAT activities for manual procedure up to ΔA/min. of 0.16 at 340 and 334 nm or 0.08 at 365 nm. When values exceed these limits samples should be diluted 1 + 9 with NaCl solution (9 g/L) and the result multiplied by 10.

Limit of detection** 1.2 U/L

Interfering substance | Interferences ≤ 10% up to |
<table>
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<tr>
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<tbody>
<tr>
<td>Ascorbic acid</td>
<td>30 mg/dL</td>
</tr>
<tr>
<td>Bilirubin (conjugated and unconjugated)</td>
<td>60 mg/dL</td>
</tr>
<tr>
<td>Hemoglobin</td>
<td>100 mg/dL</td>
</tr>
<tr>
<td>Lipemia (triglycerides)</td>
<td>200 mg/dL</td>
</tr>
</tbody>
</table>

For further information on interfering substances refer to Young DS [6].

Reference Range

<table>
<thead>
<tr>
<th>With P-5-P</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Women [7]</td>
<td>&lt; 31 U/L</td>
</tr>
<tr>
<td>Men [7]</td>
<td>&lt; 35 U/L</td>
</tr>
<tr>
<td>Children [1]</td>
<td>1 – 3 Year(s)</td>
</tr>
<tr>
<td></td>
<td>4 – 6 Years</td>
</tr>
<tr>
<td></td>
<td>7 – 9 Years</td>
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<tr>
<td></td>
<td>10 – 12 Years</td>
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<tr>
<td></td>
<td>13 – 15 Years</td>
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<tr>
<td></td>
<td>16 – 18 Years</td>
</tr>
</tbody>
</table>
Without P-5-P

<table>
<thead>
<tr>
<th></th>
<th>&lt; 31 U/L</th>
<th>&lt; 0.52 µkat/L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women</td>
<td>&lt; 35 U/L</td>
<td>&lt; 0.58 µkat/L</td>
</tr>
</tbody>
</table>

Each laboratory should check if the reference ranges are transferable to its own patient population and determine own reference ranges if necessary.

**Literature**


* Fluid Stable