University of California, Davis Health System
Department of Pathology and Laboratory Medicine
Hematology

ESR by Alcor iSED — Technical Procedure #1205.t

PRINCIPLE

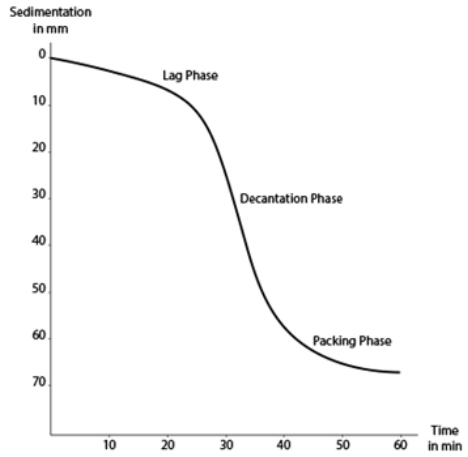
The Erythrocyte Sedimentation Rate (ESR) is a nonspecific laboratory test that can reveal inflammatory activity and monitor acute and chronic inflammation conditions, such as infections, cancers, or autoimmune diseases.

The iSED analyzer by Alcor Scientific Inc. uses quantitative capillary photometry (aggregation) to measure erythrocyte sedimentation rate (ESR) faster than traditional methods by capturing the kinetics of Red Blood Cell aggregation in a controlled testing environment during the most critical phase of sedimentation, commonly referred to as the lag or Rouleaux formation phase.

Phase 1: Lag Phase
This is the initial period of the curve and reflects the period during which individual erythrocytes aggregate to form rouleaux and the sedimentation begins

Phase 2: Decantation Phase
The plasma /erythrocyte interface falls more rapidly and the settling rate is more constant

Phase 3: Packing Phase
The red cells aggregates pile up at the bottom of the tube or container. The sedimentation slows down as a result of the interference of the accumulated red blood cells



SPECIMEN

- Venous whole blood collected into a 13x75 mm or MAPP EDTA tube. The minimum sample volume is 500ul whole blood. The volume required for testing is 100ul whole blood.
- Specimens must not be hemolyzed or clotted.
- Specimens stored at room temperature must have testing completed within 4 hours of collection
- Specimens placed on ice must have testing completed within 24 hours of collection. Samples must be at room temperature for at least 15 minutes before analyzing.

ESR by Alcor iSED **Technical Procedure #1205.t**

REAGENTS AND EQUIPEMENT

- Alcor Scientific Inc. iSED automated ESR analyzer ALCOR Scientific Inc. 20 Thurber Blvd. Smithfield, RI 02917 *techservice@alcorscientific.com*
- ISED 10,000 test card Alcor Scientific Inc. item #112-1000
- iWash cleansing agent Alcor Scientific Inc. item #112-12-001
- Seditrol ESR Quality Controls Alcor Scientific Inc. DSC06 6x4.5ml
- Thermal paper Alcor Scientific Inc. item #DS-05233
- Waste bottle Alcor Scientific Inc. item #112-12-002

MAINTENANCE AND QUALITY CONTROL

No calibration is required. No daily maintenance is required, other than keeping the analyzer free from dusty environments. Check interior surfaces and rear fan assembly for heavy dust accumulation and clean as needed.
The analyzer may call for an intensive cleaning. Press the blue scrub icon, and introduce a tube of bleach. Follow the prompts for the intensive clean.
The sample needle should be replaced after 30,000 piercings. Contact Technical Support for instructions 1-800-495-5270

- Seditrol ESR Quality Control
    - Seditrol ESR QC is stable to expiration date when stored unopened at 18^{o}-30^{0}C. Once opened it is stable for 31 days at room temperature.
    - To run touch the ‘Add Manual Sample” icon with pencil on the instrument’s touch screen.
    - The sample wheel rotates to position the next open slot in the sample entry port. The onscreen information bar will report “waiting sample” and the instrument will beep quietly for five seconds. As the five second window draws to a close, beeping will become faster.
    - Insert the barcoded Seditrol control, barcode facing right.

- Automatic sample processing then begins. The mix cycle is five minutes.
- Repeat for second control.

PROCEDURE

All sample mixing, sample extraction, sample reading and sample disposal is handled automatically by the instrument. Up to 20 sample tubes may be loaded into the sample wheel at any given time. Each sample is mixed for 5 minutes. After each sample is processed (19 seconds), the sample tube is ejected from the sample wheel and left in the sample collection tray.

 To enter barcoded samples:

- Touch the 'Add Sample' icon on the instrument's touch screen.
- The sample wheel rotates to position the next open slot in the sample entry port. The onscreen information bar will report "waiting sample" and the instrument will beep quietly for five seconds. As the five second window draws to a close, beeping will become faster.
- Insert the barcoded tube with the barcode oriented to the right. A red light will illuminate and a distinctive beep will sound when the barcode is successfully recognized.
- Automatic sample processing then begins. The mix cycle is five minutes.
- Repeat for next samples.

 To enter samples without barcodes:

- Touch the 'Add Manual Sample' icon on the instrument's touch screen.
- The instrument will prompt the operator to enter patient identification data manually using the alphanumeric keyboard. Patient information must be entered as:
  - Specimen number *or*
  - Medical Record Number *or*
  - Patients name

- Touch 'Select' icon to confirm information
- The sample wheel rotates to position the next open slot in the sample entry port. Insert the tube and sample processing will begin.

RESULTS

- Results will show on the screen and print. Results must have proper barcode identification to upload to LIS.
- Results will upload to the LIS and need to be final verified by CLS.

REPORTABLE RANGE

- 1-130 mm/hr

REFERENCE RANGE

Female	Age	Male
0 – 2 mm/hr	0 – 7 days	0 – 2 mm/hr
0 – 13 mm/hr	7 days – 13 years	0 – 13 mm/hr
0 – 20 mm/hr	13 years – 50 years	0 – 15 mm/hr
0 – 30 mm/hr	50 years and above	0 – 20 mm/hr

REFERENCES

- iSED Erythrocyte Sedimentation Rate analyzer Operator Manual, ALCOR Scientific Inc. (OMI 112-09-043)
- CLSI/NCCLS Clinical Laboratory Technical Procedure Manual, Approved Guideline, H02-A5, Fifth Edition May 2011

ESR by Alcor iSED **Technical Procedure #1205.t**

PROCEDURE HISTORY

Date	Written/ Revised By	Revision	Approved Date	Approved By
4/2018	L Gandy	New	6/18/2018	L Howell MD