# HumaSRate 24$^{PT}$

## Sets new standards in ESR automation

> Use of EDTA primary tubes – no ESR tubes needed

> Real sedimentation with excellent Westergren correlation

> Unlimited use control without consumption

**HEMATOLOGY**



**HUMAN**

Diagnostics Worldwide

# Erythrocyte Sedimentation Rate (ESR)

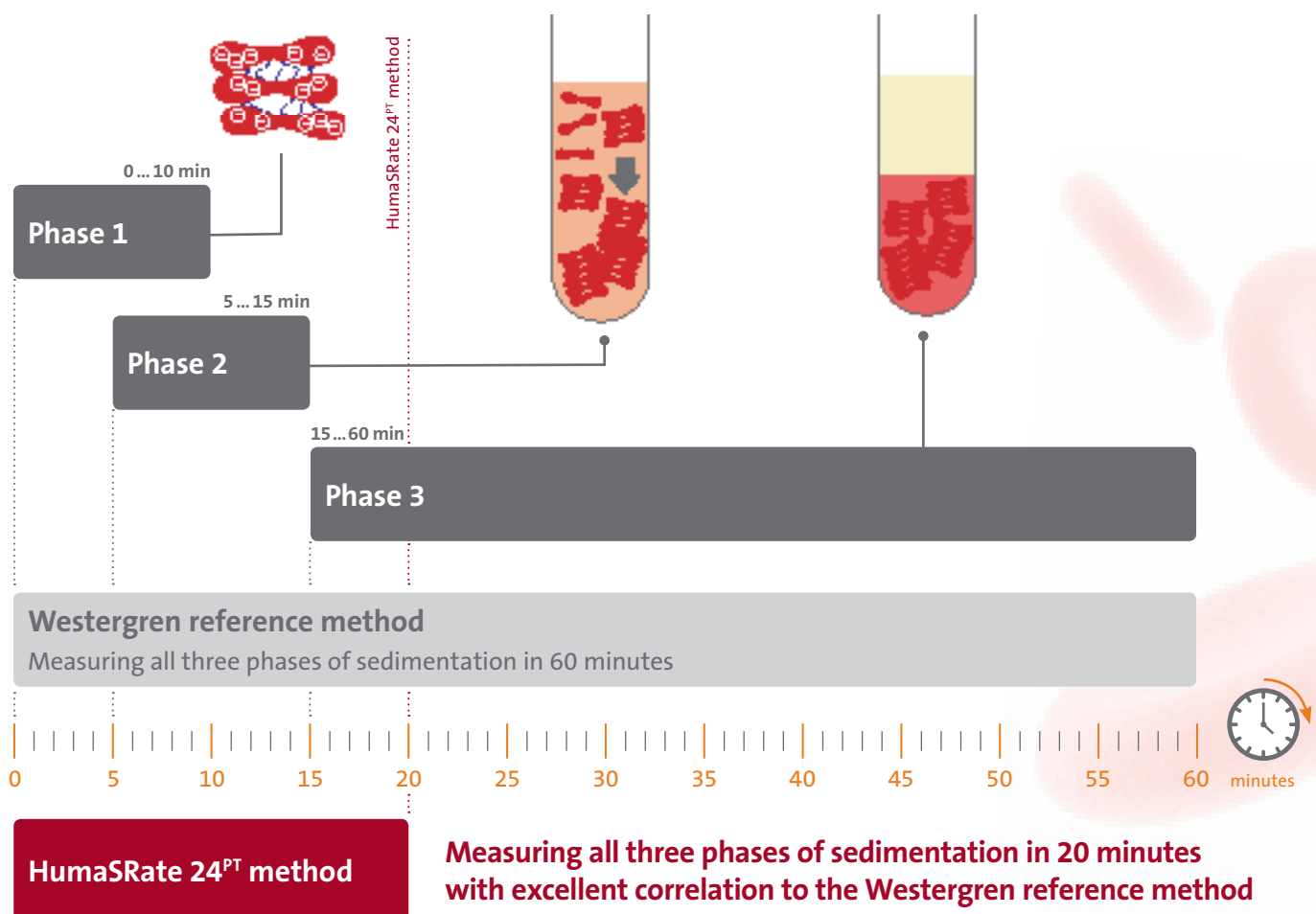## The value of real RBC sedimentation rate

### Erythrocyte sedimentation occurs in three phases[1]

RBC (red blood cells) sedimentation is defined by the balance between plasma protein fibrinogen and the negative charge of the erythrocytes.

**Phase 1** **Aggregation:** Erythrocyte aggregation is the reversible clumping of red blood cells
**Phase 2** **Sedimentation:** Erythrocytes aggregate in a special way to form rouleaux and fall down
**Phase 3** **Packing:** Sculptured rouleaux formations gather at the bottom

HumaSRate 24[PT] method

**Phase 1**  0 … 10 min

**Phase 2**  5 … 15 min

**Phase 3**  15 … 60 min

**Westergren reference method**
Measuring all three phases of sedimentation in 60 minutes

0    5    10    15    20    25    30    35    40    45    50    55    60    minutes

**HumaSRate 24[PT] method**

**Measuring all three phases of sedimentation in 20 minutes with excellent correlation to the Westergren reference method**

**Agglutination methods**
Measuring a value which cannot reflect all three phases in 20 seconds and has low correlation to Westergren[2]

*«Only ESR methods that measure all three phases of sedimentation can achieve a good correlation with Westergren.*
*Methods that only reflect 20 seconds of aggregation show a low correlation to Westergren![2]»*

## Clinical significance of the ESR parameter

During inflammations, the high fibrinogen level causes RBC's to stick to each other forming stacks (rouleaux), which settle faster and lead to higher ESR readings.

> ESR is a non-specific test to detect the presence of inflammation caused by one or more conditions such as infections, tumors or autoimmune diseases.[3]

> ESR helps to diagnose and monitor specific conditions such as temporal arteritis, systemic vasculitis, polymyalgia rheumatica or rheumatic arthritis.[4]



## Advantages of HumaSRate 24[PT] method in comparison to Westergren

> Fully automated, less demand on staff time
> Faster reporting, digital data processing and temperature correction
> High reliability by ready-to-use control material
> Cost efficiency by the use of EDTA tubes
> High accuracy by a continuous sedimentation curve recording with blood smear correction

## Advantages of HumaSRate 24[PT] method in comparison to the agglutination method (20 sec)

> Providing real ESR readings with excellent correlation to Westergren
> Providing normal value ranges and flagging of abnormal samples
> More economical by lower instrument costs

# HumaSRate 24$^{PT}$

## Sets new standards in ESR automation

### Automated system – walk away capability

> Batch mode – up to 8 samples
> STAT mode capability
> 24 samples / hour
> Time to result: 20 min
> Integrated mixer and printer
> Bidirectional LIS connectivity
> Identification of patient ID via integrated barcode reader
> Touchscreen with intuitive user interface
> Storage capacity of 5,000 results
> Temperature correction according to Manley

### Real sedimentation measurement – high accuracy and precision

> Unique sedimentation curve with continuous scan technology
> Excellent correlation to Westergren by recording of all three phases of sedimentation

### Primary EDTA tubes instead of ESR tubes – convenient & cost-efficient

> ESR (citrate) tubes eliminated
> EDTA tubes – routine in hematology for complete blood count testing (CBC)
> ESR is always requested together with CBC

### Unlimited use control – no consumption, accurate results

> QC control for daily use
> Supported by QC software module (unique in automated sedimentation)
> Can be reused during the full shelf-life of 6 months

# ESR Testing with EDTA Tubes

## Sets new standards in efficiency and convenience

### Benefits using EDTA instead of ESR tubes

#### Cost-efficiency

> ESR tubes are not necessary
> Blood transfer disposables are not needed
> Unlike ESR tubes, no expiration of test credits

#### Less demand on staff time

> Simply insert the primary EDTA tubes and walk away
> No need for an extra blood collection

#### Flexibility

> Get an ESR reading anytime from a CBC tube where EDTA is standard
> Possibility of a combined report for both, CBC and ESR in about 20 min

*«EDTA, not citrate is now recommended by ICSH as an anticoagulant!»*
*(International Council for Standardization in Haematolgy)[5]*

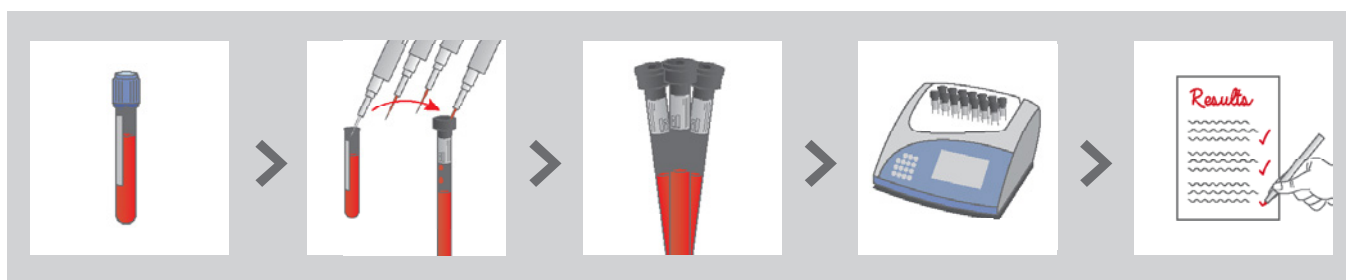### Workflow efficiency and flexibility with EDTA tubes
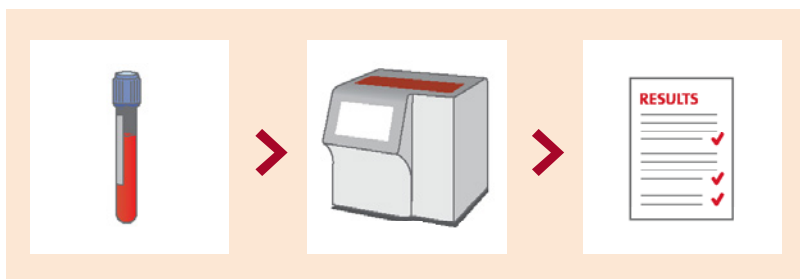


*EDTA sample*          *HumaSRate 24[PT]*          *Reporting in 20 minutes*

*«The EDTA tube is usually used first for a CBC count and is therefore available.»*

### Conventional ESR analyzer – inefficient as many manual steps are necessary
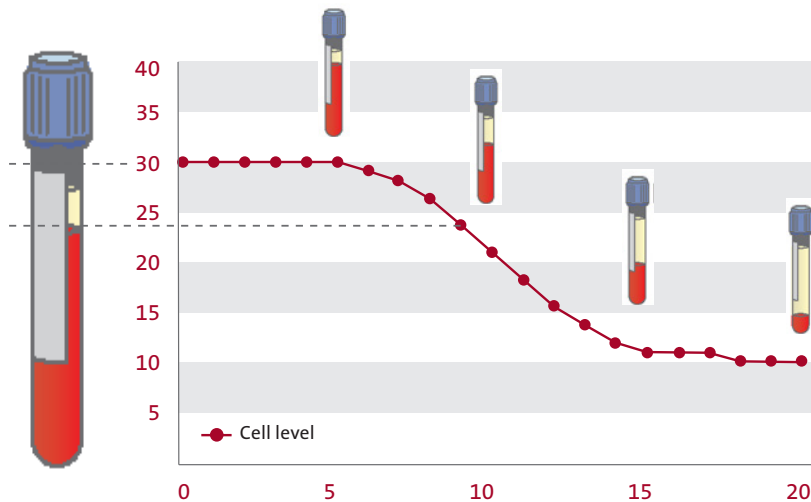


*EDTA sample*          *Sample transfer*          *Mixing*          *ESR analyzer*          *Manual reporting, no printout / storage*
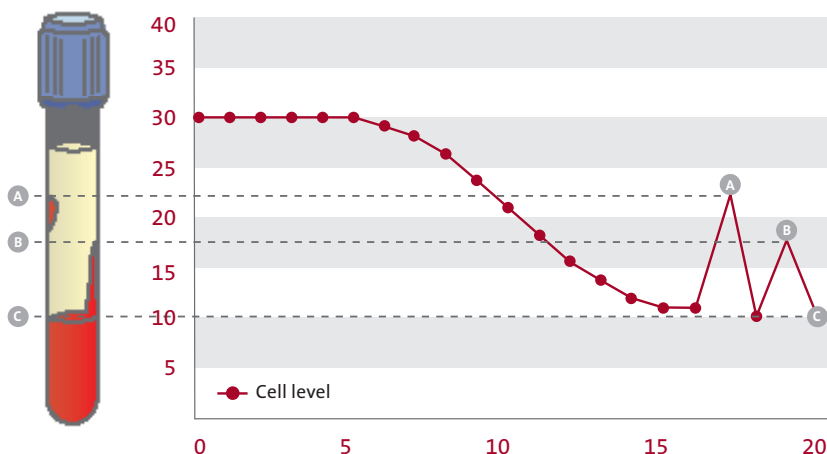
# Real Sedimentation Measurement

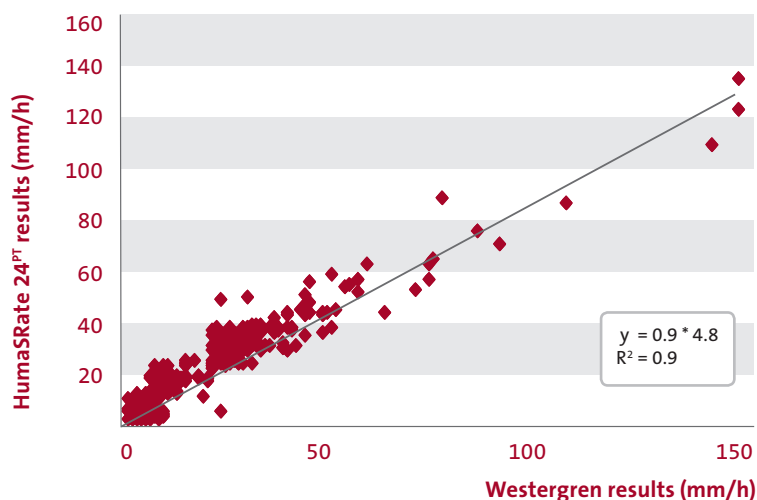## Sets new standards with continuous scan technology

### Unique sedimentation curve



Accurate results with unique sedimentation curve – continuous recording every 10 seconds. An ESR curve offers more information than only an ESR reading after 20 minutes. Up to three labels on the EDTA tube do not affect reading.

### Errors from blood smears on the tube wall are eliminated



Unclear sedimentation levels are corrected. Errors by blood smears on the tube wall are eliminated by sedimentation curve algorithm.

### Excellent correlation to Westergren reference method[6]



$$y = 0.9 * 4.8$$
$$R^2 = 0.9$$

HumaSRate 24$^{PT}$ continuous scan technology includes all 3 phases of real sedimentation measurement and ensures an excellent correlation to Westergren. Physicians get the results they are used to, for a profound diagnosis.
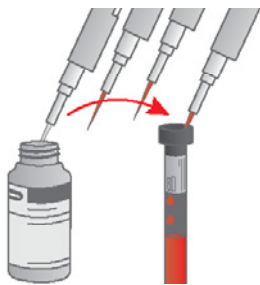
# Unlimited Use Control
## Sets new standards in quality control

### Control without consumption

> QC control for daily use

> No consumption of the control material
  even at daily use

> Can be reused during the full shelf-life
  of 6 months

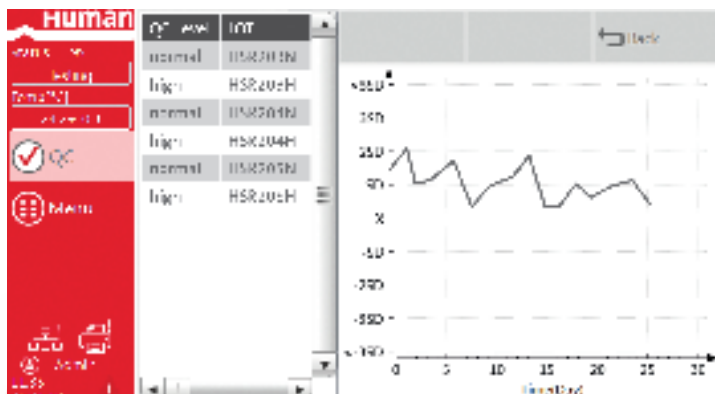> Control can be applied anytime in batch mode,
  and no extra run is necessary

### Conventional ESR analyzer

> Control consumption for citrate tubes: 1.2 ml

> Manual pipetting necessary

### HumaSRate 24[PT] quality control

> Ready to use

> No pipetting of the control material into
  an ESR tube needed
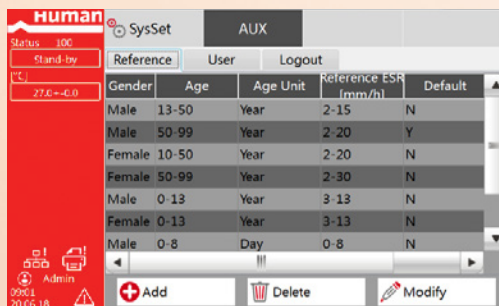
### QC software module –
### unique in sedimentation

Based on unlimited use controls, the QC software
module with Levey-Jennings diagram guarantees
full control over correct ESR readings.

# HumaSRate 24<sup>PT</sup>
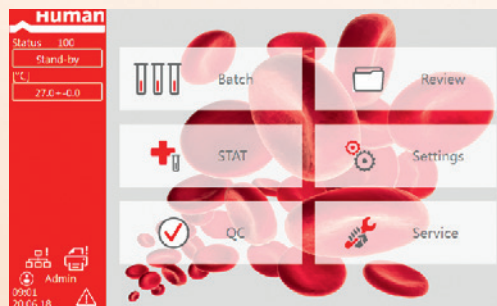
## Sets new standards in result flagging

### Easy interpretation with ICON based HUMAN software

> HumaSRate 24<sup>PT</sup> is the first ESR analyzer providing normal values of patients

> The flagging of abnormal samples by the analyzer is another novelty in ESR diagnostics

> Intuitive menu guidance with clear structured screens



*Providing normal values of samples*



*ICON based intuitive user interface*

## Ordering information

REF

**HumaSRate 24<sup>PT</sup>**　　　　　　15024

> ESR analyzer incl. 3 Smart Cards a 1,200 tests

**Smart Card for HumaSRate 24<sup>PT</sup>**　15024/12

> 1200 tests

**HSRate-Control**　　　　　　15024/40

> Normal and high level 2 x 2 ml

**HumaTube K3-EDTA**　　　　　73040/12

> 3 ml, PET ( 12 x 100 tubes)

**Printer Paper**　　　　　　15024/100

> 57 x 30 mm (5 rolls)

1) Erythrocyte sedimentation rate (ESR). National Institute of Open Schooling, India. Retrieved 8 April 2018.
2) Hüseyin Yaman, Comparisons of Two Different Autoanalyzers for Erythrocyte Sedimentation Rate According to Westergren M. Faculty of Medicine Medical Biochemistry Department of Education Trabzon/Turkey, Lab Expo 2017 [PS-054].
3) Kellner C, Erythrocyte Sedimentation Rate, Medscape Reference. Aug 1, 2014.
4) Caylor T, Recognition and Management of Polymyalgia Rheumatica and Giant Cell Arteritis, Am Fam Physician. 2013 Nov 15; 88(10) : 676 − 684.
5) ICSH recommendations for measurement of erythrocyte sedimentation rate. International Council for Standardization in Haematology (Expert Panel on Blood Rheology). J.Clin.Pathol 1993; 46 : 198 − 203
6) Design verification report on HumaSRate 24<sup>PT</sup>, data on file at HUMAN

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