Test Definition: SEMB

Semen Analysis with Strict Morphology, Semen

Overview

Useful For

Determining male fertility status

Selecting the most cost-effective therapy for treating male-factor infertility

Quantifying the number of germinal and white blood cells per milliliter of semen

Profile Information

Test Id	Reporting Name	Available Separately	Always Performed
FER	Semen Analysis	Yes	Yes
MSTC	Strict Criteria Sperm Morphology	Yes	Yes

Method Name

FER: Manual

MSCT: Kruger Criteria Strict Morphology

NY State Available

No

Specimen

Specimen Type

Semen

Ordering Guidance

This test should not be used to check patient's sterility following a vasectomy. For such cases, order POSV / Post Vasectomy Check, Semen.

Semen analysis specimens submitted to Mayo Clinic Laboratories are not acceptable for fructose testing due to the use of dilution media. For specimen requirements for fructose testing in azoospermia patients, see FROS2 / Fructose, Qualitative, Semen.

Submit separate specimen to rule-out ejaculatory duct blockage. Positive result indicates no blockage.

Shipping Instructions

Specimen must arrive within 24 hours of collection. Send specimen Monday through Thursday only and not the day before a holiday. If holiday falls on a Saturday, holiday will be observed on the preceding Friday. Sunday holidays are

observed on the following Monday. Specimen should be collected and packaged as close to shipping time as possible. Laboratory does not perform testing on weekends.

Necessary Information

Include the following information:
-**Semen volume (required)**
-Viscosity
-pH
-Appearance (color)
-Number of days of sexual abstinence

Specimen Required

Patient Preparation: Patient should have 2 to 7 days of sexual abstinence at the time of semen collection for accurate results.
Supplies: Semen Analysis Kit - Dilution Media (T178)
Specimen Volume: Total ejaculate
Collection Instructions:
See Semen Collection Specimen Preparation and Packaging Instructions included with the kit
1. Prior to use, allow dilution medium to warm to room temperature for 45 to 60 minutes.
2. Allow semen to liquefy at room temperature for up to 30 minutes.
3. Use sterile volumetric pipet or tube for volume measurement.
4. Pour liquefied semen into 50-mL dilution medium container within 60 minutes of semen collection time, cap tightly, but do not overtighten, and gently mix.
Note: Proper temperature maintenance of specimen throughout processing and shipping is critical. All materials the specimen is exposed to should be at room temperature (20–28 degrees C).

Specimen Minimum Volume

See Specimen Required

Reject Due To

All specimens will be evaluated at Mayo Clinic Laboratories for test suitability.

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Semen	Ambient	36 hours	

Clinical & Interpretive

Clinical Information

Infertility affects 1 out of 6 couples of child-bearing age. Approximately 40% of infertility has a female-factor cause and 40% a male-factor cause. The remaining 20% of infertility is due to a combination of male- and female-factor disorders or is unexplained.

Semen is composed of spermatozoa suspended in seminal fluid (plasma). The function of the seminal fluid is to provide

nutrition and volume for conveying the spermatozoa to the endocervical mucus. Male infertility can be affected by a number of causes. Chief among these is a decrease in the number of viable sperm. Other causes include sperm with abnormal morphology and abnormalities of the seminal fluid. One of the more successful treatments for male and female infertility is in vitro fertilization (IVF). Male partners are tested with the strict criteria sperm morphology test prior to IVF to assist in the diagnosis of male-factor defects.

Abnormalities in sperm morphology are related to defects in sperm transport, sperm capacitation, the acrosome reaction, binding and penetration of the zona pellucida, and fusion with the oocyte vitelline membrane. All steps are essential to normal fertility.

Strict criteria sperm morphology testing also greatly assists with selecting the most cost-effective in vitro sperm processing and insemination treatment for the couple's IVF cycle. Sperm with severe head abnormalities are unlikely to bind to the zona pellucida. These patients may require intracytoplasmic sperm injection in association with their IVF cycle to ensure optimal levels of fertilization are achieved. This, in turn, provides the patient with the best chance of pregnancy.

Multiple semen analyses are usually conducted over the course of the spermatogenic cycle (approximately 70 days).

Reference Values

SEMEN ANALYSIS
Appearance: normal
Volume: > or =1.5 mL
pH: > or =7.2
Motile/mL: > or =6.0 x 10(6)
Sperm/mL: > or =15.0 x 10(6)
Motility: > or =40%
Grade: > or =2.5
Note: Multiple laboratory studies have indicated that semen parameters for motility and grade on average retain 80% of original parameters when our shipping method is used for transport. Using these averages, samples with 32% to 39% motility and grade of 2 may be in the normal range if testing was performed shortly after collection. Therefore, these borderline patients may need to collect another sample at a local fertility center to verify fertility status.
Motile/ejaculate: > or =9.0 x 10(6)
Viscosity: > or =3.0
Agglutination: > or =3.0
Supravital: > or =58% live
Fructose: positive
Note: Fructose testing cannot be performed on semen analysis specimens shipped through Mayo Clinic Laboratories. If patient is azoospermic, refer to FROS2 / Fructose, Qualitative, Semen. Submit separate specimen to rule-out ejaculatory duct blockage. Positive result indicates no blockage.

STRICT MORPHOLOGY
Normal forms: > or =4.0% normal oval sperm heads
Germ cells: <4 x 10(6) (normal)
> or =4 x 10(6)/mL (elevated germinal cells in semen are of unknown clinical significance)
White blood cell count:

<1 x 10(6) (normal)
> or =1 x 10(6)/mL (elevated white blood cells in semen are of questionable clinical significance)

Interpretation
Semen specimens can vary widely in the same man from specimen to specimen. Semen parameters falling outside of the normal ranges do not preclude fertility for that individual. Multiple samples may need to be analyzed prior to establishing patientâ€™s fertility status.

Sperm are categorized according to strict criteria based on measurements of head and tail sizes and shapes. Sperm with abnormalities in head/tail size/shape may not be capable of completing critical steps in sperm transport and fertilization.

Cautions
Results may be unreliable if specimen transportation requirements are not followed.

Clinical Reference
1. WHO laboratory manual for the examination of human semen and processing. 5th ed. World Health Organization; 2010
2. WHO laboratory manual for the examination and processing of human semen. 6th ed. World Health Organization; 2021

Performance

Method Description
Semen Analysis:
The sample is measured for volume and analyzed microscopically to determine the number of sperm present, the number of moving or motile sperm, and the properties of the sperm motility.(WHO laboratory manual for the examination and processing of human semen. 6th ed. World Health Organization; 2021)

Strict Morphology:
Sperm is categorized according to strict criteria based on measurements of head and tail sizes and shapes. Sperm with abnormalities in head/tail size/shape are not capable of completing steps in the sperm transport and fertilization process. Quantification of germinal and white blood cells (WBC) in semen is performed because the presence of germinal and WBC may indicate disorders in spermatogenesis and genital tract inflammation, respectively. The information collected will help to determine the most cost-effective therapy for treating male-factor infertility.(Wazzan W, Thomas A: Genital infection and male infertility. AFS Annual Meeting, Postgraduate course, 1990; Menkveld R, Oettle E, Kruger T, et al: Atlas of Human Sperm Morphology. Williams and Wilkins, 1991; Scoring is based on a modified method of WHO laboratory manual for the examination and processing of human semen. 6th ed. World Health Organization; 2021)

PDF Report
No

Day(s) Performed
Monday through Friday

Report Available
1 to 4 days

Specimen Retention Time
See Individual Test IDs

Performing Laboratory Location
Mayo Clinic Laboratories - Rochester Main Campus

Fees & Codes

Fees
- Authorized users can sign in to Test Prices for detailed fee information.
- Clients without access to Test Prices can contact Customer Service 24 hours a day, seven days a week.
- Prospective clients should contact their account representative. For assistance, contact Customer Service.

Test Classification
This test has been cleared, approved, or is exempt by the US Food and Drug Administration and is used per manufacturer's instructions. Performance characteristics were verified by Mayo Clinic in a manner consistent with CLIA requirements.

CPT Code Information
89310-Semen Analysis
89398-Strict Criteria Sperm Morphology
If both components performed,
89322-Semen Analysis with Strict Morphology

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
SEMB	Semen Analysis with Strict Morphology	54231-6

Result ID	Test Result Name	Result LOINC® Value
ABSTN	Abstinence	10587-4
CLST1	Collection Site	56816-2
TY	Study Type	54453-6
CNTN	Container Type	74384-9
APP3	Appearance	13359-5
VL53	Semen Volume	3160-9
PH1	pH	2752-4
MOTML	Motile/mL	42531-4
SPML	Sperm/mL	9780-8

MOTY	Motility	In Process
GR2	Grade	13942-8
MOTEJ	Motile/Ejaculate	In Process
VISC	Viscosity	32789-0
AGGLU	Agglutination	33217-1
STAIN	Supravital Stain	101570-0
FRCT	Fructose	13943-6
CMT45	Comment	48767-8
OVAL2	Strict Morph NL	10622-9
ACRSM	Acrosome Defect	In Process
HDSAB	Head Shape Abnormal	In Process
HDZAB	Head Size Abnormal	In Process
MD	Midpiece Defect	10603-9
TAILD	Tail Defect	10604-7
DBLF	Double Forms	In Process
MULTI	Multiple Defects	In Process
GERM3	Germ Cells/mL	10576-7
WBC6	WBC/mL	10579-1
CMT56	Comment	48767-8