

Summary of safety and clinical performance

SpermGrad™/SpermGrad™ RTU

This summary of safety and clinical performance (SSCP) is intended to provide public access to an updated summary of the main aspects of the safety and clinical performance of the device.

The SSCP is not intended to replace the Instructions for Use (IFU) as the main document to ensure the safe use of the device, nor is it intended to provide diagnostic or therapeutic suggestions to intended users or patients.

The following information is intended for users/healthcare professionals.

1 Device identification and general information

1.1	Device trade name	SpermGrad/SpermGrad RTU
1.2	Manufacturer's name and address	Vitrolife Sweden AB, Gustaf Werners gata 2, SE-421 32 Västra Frölunda, Sweden
1.3	Manufacturer's single registration number (SRN)	SE-MF-000002389
1.4	Basic UDI-DI	735002591ABDDK
1.5	Global Medical Device Nomenclature (GMDN) code	44046
1.6	Class of device	Class III
1.7	Year when the first certificate (CE) was issued covering the device	MDD: 2002 (SpermGrad); 2012 (SpermGrad RTU) MDR: 2024
1.8	Authorized representative if applicable; name and SRN	Not applicable
1.9	NB's name (the NB that will validate the SSCP) and the NB's single identification number	DNV Product Assurance AS Veritasveien 1, 1363 Høvik, Norway, 2460

2 Intended use of the device

2.1 Intended purpose

SpermGrad/SpermGrad RTU are medical devices intended for use in assisted reproductive technology (ART) as media for gradient sperm separation.

2.2 Indication and target population

The indication for use for SpermGrad/SpermGrad RTU is "medium for gradient sperm separation".

The target population is an adult or reproductive-age population that undergoes *in vitro* fertilization (IVF) treatment or fertility preservation.

2.3 Contraindications and/or limitations

None.

3 Device description

3.1 Description of the device

SpermGrad/SpermGrad RTU are bicarbonate- and HEPES-buffered media containing silane-coated silica particles. Based on their Indication for Use, SpermGrad/SpermGrad RTU will have sperm contact.

The devices are sterile filtered, antibiotic-free, and supplied in 30 mL and 125 mL bottles (Figure 1). They are available both as stock requiring dilution and as a ready-to-use (RTU) formulation.



Figure 1. SpermGrad/SpermGrad RTU

3.2 A reference to previous generation(s) or variants if such exists, and a description of the differences

There have been no previous versions of SpermGrad/SpermGrad RTU on the market.

3.3 Description of any accessories which are intended to be used in combination with the device

Not applicable.

3.4 Description of any other devices and products which are intended to be used in combination with the device

General equipment and sterile non-toxic disposables for the IVF lab including centrifuge, G-IVF PLUS and SpermRinse.

4 Risks and warnings

4.1 Residual risks and undesirable effects

All known and foreseeable risks and undesirable side-effects associated with the use of SpermGrad/SpermGrad RTU were identified, evaluated, and reduced as far as possible through risk management. As the devices are not intended for patient contact and contain no medicinal substances, no risks were identified that could impact patient or end user health. All identified risks are related to the gametes and/or embryos and are acceptable after implementation of risk control measures.

4.2 Warnings and precautions

Precautions related to the use of SpermGrad/SpermGrad RTU are listed.

- Discard product if bottle integrity is compromised. Do not use SpermGrad if it appears cloudy.
- Re-use may result in microbiological contamination and/or property changes in the product.
- To avoid contamination Vitrolife strongly recommends that media should be opened and used only with aseptic technique.
- The risks of reproductive toxicity and developmental toxicity for IVF media, including Vitrolife's IVF media, have not been determined and are uncertain.
- Not for injection.
- Any serious incident that has occurred in relation to the device should be reported to the manufacturer.
- Discard the product according to standard clinical practice for medical hazardous waste when the procedure is finished.

4.3 Other relevant aspects of safety, including a summary of any field safety corrective action (FSCA including FSN) if applicable

No FSCAs have been taken for SpermGrad/SpermGrad RTU during their lifecycles.

5 Summary of clinical evaluation and post-market clinical follow-up

5.1 Summary of clinical data related to equivalent device, if applicable

Not applicable.

5.2 Summary of clinical data from conducted investigations of the device before the CE-marking, if applicable

No pre-market clinical investigations were performed.

5.3 Summary of clinical data from other sources, if applicable

A systematic literature search was conducted to identify clinical data on the safety and performance of SpermGrad/SpermGrad RTU. The sperm motility post-preparation rate reported after the use of SpermGrad/SpermGrad RTU [1, 2] align with the ESHRE competency value of $\geq 90\%$ [3]. The fertilization rates reported after use of SpermGrad/SpermGrad RTU [1, 4-12] align with the ESHRE competency values [3]. Clinical pregnancy rates (CPRs) reported following the use of SpermGrad/SpermGrad RTU [1, 8, 12-15] are generally consistent with the European results published by ESHRE [16]. Several studies reported data on live births after the use of SpermGrad/SpermGrad RTU [1, 8, 9, 13-15, 17], which supports the safety of the devices.

According to the results from the literature search, no deviations were identified in the safety or performance of the devices. No post-market clinical follow-up (PMCF) studies have been conducted for SpermGrad/SpermGrad RTU. However, findings from a PMCF end user survey confirm the safety and performance of SpermGrad/SpermGrad RTU and ensure the continued acceptability of the benefit-risk ratio. No emerging risks or unknown side-effects were identified, and no known side-effects and/or contraindications were found. SpermGrad and SpermGrad RTU have been on the market since 2002 and 2012, respectively, and no non-serious incidents or undesirable side-effects have been reported with a frequency or severity that would negatively impact their benefit-risk profile.

5.4 An overall summary of the clinical performance and safety

According to the Indication for Use, the clinical benefit of SpermGrad/SpermGrad RTU is as media to support gradient sperm separation. The sperm motility post-preparation rate reported after the use of SpermGrad/SpermGrad RTU [1, 2] align with the ESHRE competency value of $\geq 90\%$ [3]. The fertilization rates reported after use of SpermGrad/SpermGrad RTU [1, 4-12] align with the ESHRE competency values [3]. CPRs reported following the use of SpermGrad/SpermGrad RTU [1, 8, 12-15] are generally consistent with the European results published by ESHRE [16]. Several studies reported data on live births after the use of SpermGrad/SpermGrad RTU [1, 8, 9, 13-15, 17], which supports the safety of the devices. Data from post-market surveillance, including a PMCF end user survey, and risk management also support the safety and performance of SpermGrad/SpermGrad RTU. There are no indications of any negative effects from use of SpermGrad/SpermGrad RTU. No new risks have been identified or are expected when the devices are used according to their Indications for Use. Therefore, the benefit-risk profile is acceptable according to current knowledge/state of the art.

5.5 Ongoing or planned post-market clinical follow-up

There are no ongoing or planned PMCF studies for SpermGrad/SpermGrad RTU. However, general PMCF procedures, such as screening scientific literature, searching adverse event databases and performing a PMCF end user survey will be performed.

6 Possible diagnostic or therapeutic alternatives

ART is a treatment option for patients failing to conceive naturally as well as patients who have tried other treatments such as medications and surgical procedures without success. There are no other therapeutic alternatives at this stage.

Fertility preservation can serve as a therapeutic alternative for patients undergoing ART, offering a proactive measure to safeguard reproductive potential, particularly in cases where medical conditions or treatments may impact fertility.

Sperm preparation is a critical step in ART cycles to ensure optimal sperm quality and to remove seminal plasma and contaminating debris that may adversely affect fertilization. Devices with similar intended use as SpermGrad/SpermGrad RTU are available in the European Union and other international markets.

The conventional swim-up (SU) method and density gradient centrifugation (DGC) are the most commonly used and widely accepted sperm preparation techniques [18]. Several studies have investigated which sperm selection technique offers superior safety and effectiveness; however, the findings remain inconsistent and inconclusive. Advanced sperm selection techniques, such as magnetic-activated cell sorting (MACS), hyaluronan binding, and microfluidic methods, require further research to evaluate their impact on ART outcomes.

At present, there is no consensus supporting the use of one specific sperm separation medium over another. The selection of an appropriate medium should be determined by individual laboratories based on their specific procedures and requirements.

7 Suggested profile and training for users

The end user (IVF professional) is expected to be trained and qualified within the ART field and use the devices according to their IFU. As no special design feature or safety concerns were identified SpermGrad/SpermGrad RTU, no specific training is required for end-users.

8 Reference to any harmonized standards and common specifications applied

- Medical Devices Regulation (EU) 2017/745 (MDR)
- EN ISO 13485:2016. Medical devices — Quality management systems — Requirements for regulatory purposes
- EN ISO 14971:2019. Medical devices — Application of risk management to medical devices
- EN ISO 15223-1:2016. Medical devices — Symbols to be used with medical device labels, labelling and information to be supplied — Part 1: General requirements
- ISO/TR 20416:2020. Medical devices — Post-market surveillance for manufacturers
- EN ISO 20417:2021. Medical devices — Information to be supplied by the manufacturer
- MEDDEV 2.7/1 revision 4. Clinical evaluation – A guide for manufacturers and notified bodies under Directives 93/42/EEC and 90/385/EEC. June 2016
- MDCG 2020-6 Regulation (EU) 2017/745: Clinical evidence needed for medical devices previously CE marked under Directives 93/42/EEC or 90/385/EEC. A guide for manufacturers and notified bodies. April 2020
- MDCG 2019-9 Rev.1. Summary of safety and clinical performance. A guide for manufacturers and notified bodies. March 2022

The conformity assessment will be performed according to the procedure outlined in Annex IX of the MDR (EU) 2017/745.

9 Revision history

SSCP revision number	Date issued	Change Description	Revision validated by the Notified Body
1	2021-10-07	Initial version of SSCP for SpermGrad/SpermGrad RTU (REP-4270)	
2	2022-09-16	Update to address NCs: update concerns sections; 1, 6 & 8 (REP-4270)	☒ Yes Validation language: English
3	2022-12-15	Annual update in 2022	
4	2023-10-12	Annual update in 2023	
5	2025-01-02	Annual update in 2024	
6	See publish date	Edit Section 6 and adjust the citation format	☒ Yes Validation language: English

Doc. ID:
REP-4270Version:
7.0Publish date:
2025/12/10

SSCP revision number	Date issued	Change Description	Revision validated by the Notified Body
7	See publish date	Annual update in 2025	☒ Yes Validation language: English

References.

1. Stigliani, S., et al., Effect of human papillomavirus infection on semen quality and assisted reproductive technology outcomes: a prospective observational cohort study. BMC Med, 2025. **23**(1): p. 310.
2. Wang, Q., et al., Optimizing the high-quality embryo rate in couples with male factor infertility: insights from predictive modeling and causal effect estimations. CEOG, 2025. **52**.
3. ESHRE Special Interest Group of Embryology and Alpha Scientists in Reproductive Medicine, The Vienna consensus: report of an expert meeting on the development of ART laboratory performance indicators. Reprod Biomed Online, 2017. **35**(5): p. 494-510.
4. Jiang, R., et al., Exploring key embryonic developmental morphokinetic parameters that affect clinical outcomes during the PGT cycle using time-lapse monitoring systems. BMC Pregnancy Childbirth, 2024. **24**(1): p. 870.
5. Lo, W.C., et al., The fertility outcome of assisted oocyte activation combined with spindle view-assisted intracytoplasmic sperm injection in patients with low fertilization rate. Taiwan J Obstet Gynecol, 2024. **63**(4): p. 513-517.
6. Williams, A., et al., Hyaluronan Sperm Selection during ICSI (HA-ICSI) Increases Embryo Utilization in Couples with Male Factor Infertility. Fertility & Reproduction, 2024. **06**(01): p. 28-36.
7. Zander-Fox, D., et al., Improved fertilization, degeneration, and embryo quality rates with PIEZO-intracytoplasmic sperm injection compared with conventional intracytoplasmic sperm injection: a sibling oocyte split multicenter trial. Fertil Steril, 2024. **121**(6): p. 971-981.
8. Zhang, K., et al., Decreased AKAP4/PKA signaling pathway in high DFI sperm affects sperm capacitation. Asian J Androl, 2024. **26**(1): p. 25-33.
9. Altakroni, B., et al., DNA damage in prepared semen is negatively associated with semen quality and fertilisation rate in assisted reproduction technology (ART) treatment. Hum Fertil (Camb), 2025. **28**(1): p. 2442450.
10. Liu, M., et al., Antinuclear antibodies do not affect euploidy rate in preimplantation genetic testing for aneuploidy. Reprod Biomed Online, 2025. **50**(6): p. 104734.
11. Wang, H., et al., Human oocyte zona pellucida abnormalities: evaluation of clinical impact for different zona pellucida abnormalities and role of using assisted hatching. J Assist Reprod Genet, 2025. **42**(1): p. 303-317.
12. Meng, X., et al., The influence of male HBV infection on sperm quality, embryonic development, and assisted reproductive outcomes. Hum Reprod, 2024. **39**(1): p. 43-52.
13. Cannarella, R., et al., Sperm-carried IGF2: towards the discovery of a spark contributing to embryo growth and development. Mol Hum Reprod, 2024. **30**(9).
14. Chen, X., et al., Rescue intracytoplasmic sperm injection improved cumulative live birth rate for cycles with second polar body extrusion rate <50% in young women: generalized addictive model. Fertil Steril, 2025. **123**(3): p. 415-427.
15. Elbashira, S., et al., Impact of varicocelelectomy prior ICSI on clinical and neonatal outcomes: A multilevel analysis. Arab J Urol., 2025.
16. Smeenk, J., et al., ART in Europe, 2020: results generated from European registries by ESHRE. Hum Reprod, 2025. **40**(11): p. 2038-2055.
17. Karino, A., et al., Intraovarian Injection of Lyophilized Platelet-Rich Plasma in Patients with Poor Ovarian Response. Fertility & Reproduction, 2024. **06**(02): p. 77-84.
18. ESHRE Guideline Group on Good Practice in IVF Labs, et al., Revised guidelines for good practice in IVF laboratories (2015). Hum Reprod, 2016. **31**(4): p. 685-6.

(End of document)