Summary of Safety and Performance

Blood Grouping Reagents
Anti-A (Anti-ABO1) (Monoclonal)
Anti-B (Anti-ABO2) (Monoclonal)
Anti-D(DVI) (Anti-RH1) (Monoclonal)
Ortho BioVue® System
(ABD(DVI) Donor Confirmation Cassette)

REF **100 cassettes 6197778**

Device Identification and General Information

Ortho-Clinical Diagnostics
Felindre Meadows
Pencoed
Bridgend
CF35 5PZ
United Kingdom

SRN: GB-MF-000007774

Basic UDI-DI: 10758750034680MP

European Medical Device Nomenclature (EMDN) Description / Text:
Combined ABO Typing + Rhesus D

Class of Device: D

EC REP

Ortho-Clinical Diagnostics
1500 Boulevard Sébastien Brant,
B.P. 30335,
67411 Illkirch,
CEDEX,
France

SRN: FR-AR-000002720

Notified Body Name: TÜV SÜD Product Service GmbH
Single Identification Number: 0123

Year First CE Certificate issued under IVDR (2017/746): 2022

Intended Use

For *in vitro* diagnostic and laboratory professional use.
Anti-A (Anti-ABO1) (Monoclonal) / Anti-B (Anti-ABO2) (Monoclonal) / Anti-D(DVI) (Anti-RH1) (Monoclonal) Ortho BioVue® System (ABD(DVI) Donor Confirmation Cassette) is intended for manual, semi-automated, or automated qualitative column agglutination technology (CAT) tests in confirmation of human donor red blood cells for the presence or absence of the A (ABO1)/B (ABO2)/D(DVI) (RH1) antigens as part of the practice of transfusion medicine.

Exclusion: The ABD(DVI) Donor Confirmation Cassette is not intended for use with neonatal and patient samples.

Description of the Device

Principles of the Procedure

The procedure used with these reagents is based on the principle of agglutination. Normal human red cells, possessing antigens, will agglutinate in the presence of antibody directed toward the antigen. The Ortho BioVue System utilizes column agglutination technology, comprised of glass beads and reagent contained in a column. Upon addition of red blood cells and subsequent centrifugation of the cassette, agglutinated red blood cells are trapped by the glass beads and nonagglutinated red blood cells travel to the bottom of the column.

Materials Required but Not Provided

1. ORTHO VISION® Analyzer
2. ORTHO VISION® Max Analyzer
3. ORTHO™ Workstation
4. ORTHO OPTIX™ Reader
5. Micropipetter for delivery of 10 µL, 40 µL and 50 µL
6. Disposable pipette tips
7. Ortho BioVue System Work Rack
8. Liner Assembly, BioVue
9. Isotonic saline

Standards Reference

- EN ISO 14971:2019 Medical devices - Application of risk management to medical devices
- EN ISO 23640:2015 *In vitro* diagnostic medical devices - Evaluation of stability of *in vitro* diagnostic reagents
- EN 13641:2002 Elimination or reduction of risk of infections related to *in vitro* diagnostic reagents
- EN ISO 18113-1:2011 *In vitro* diagnostic medical devices - Information supplied by the manufacturer (labelling) - Part 1: Terms, definitions and general requirements
- EN ISO 18113-2:2011 *In vitro* diagnostic medical devices - Information supplied by the manufacturer (labelling) - Part 2: *In vitro* diagnostic reagents for professional use
- EN ISO 13485:2016 Medical devices - Quality Management Systems - Requirements for Regulatory Purposes (ISO 13485:2003)
- EN ISO 15223-1:2021 Medical devices - Symbols to be used with information to be supplied by the manufacturer - Part 1: General requirements
- EN 62366-1: 2015 Medical devices - Part 1: Application of usability engineering to medical devices.
- EN 13612:2002 Performance evaluation of *in vitro* diagnostic medical devices

Common Specification

Applicable.

COMMISSION IMPLEMENTING REGULATION (EU) 2022/1107 of 4 July 2022 laying down common specifications for certain class D *in vitro* diagnostic medical devices in accordance with Regulation (EU) 2017/746 of the European Parliament and of the Council.

Summary of the Performance Evaluation and Post-Market Performance Follow-Up (PMPF)

Summary of Clinical Evidence

The D antigen is composed of many epitopes. Most of the D positive red blood cells have a conventional RhD protein as discussed above. There are individuals with D variants which are lacking one or more epitopes of the D antigen on their red cells. One of the most prevalent of the D variants is DVI. An individual classified as DVI may develop an anti-D to the missing epitope if exposed to red blood cells that possess the complete D antigen, which could result in a transfusion reaction. Therefore, the use of a reagent able to detect the DVI epitope is especially useful when typing or confirming blood donations. The DVI epitope of the D antigen will be detected with the Anti-D(DVI) monoclonal antibodies present in Ortho BioVue Anti-D(DVI) reagent. Ortho's reagent contains a blend of two monoclonal antibodies which will detect most D variant expressions as well as the DVI variant.

The probability of a patient transfusion reaction caused by error in test detection of the antigens is minimized by professional clinical practice and clinical guidelines. The device performance capability is summarized in the

following table (see the device Instructions for Use at www.orthoclinicaldiagnostics.com for a complete description of performance and limitations.

Product (Product Code)	Performance Parameter	Summary of Device Capability
Blood Grouping Reagents Anti-A (Anti-ABO1) (Monoclonal) Anti-B (Anti-ABO2) (Monoclonal) Anti-D (DVI) (Anti-RH1) (Monoclonal) ABD(DVI) Donor Confirmation Cassette (6197778)	Clinical Performance	The device comparison with the commercially available reagents for ABO grouping detection by direct agglutination demonstrated: • 99.95 - 99.98% concordance for forward testing with 4253 samples. The device comparison with a commercially available reagent for D (RH1) including DVI detection by direct agglutination demonstrated: • 99.8% concordance for the detection of D (RH1) antigen including DVI with 5676 samples.
	Specific Performance Characteristics	The Anti-A (Anti-ABO1) reagent can detect most examples of the weak subgroups of the A antigen (such as A_2, A_3 and A_x) and may detect previously unrecognized A antigen in a small percentage of group B individuals referred to as B(A). This reagent does not react with Tn polyagglutinable cells. The Anti-B (Anti-ABO2) reagent can detect some examples of the weak subgroups of the B antigen (such as B_3, B_x and B_m). This reagent does not react with acquired B antigen or Tn polyagglutinable cells. The Anti-D(DVI) (Anti-RH1) reagent is a blend of two monoclonal antibodies (clones RUM-1 and P3x21223B10). Studies have shown that RUM-1 can detect most examples of weak and partial D (including weak D types 1, 2, 3 and 4.0 and D categories II, III, IV, V, VII, DBT and R^{Har}). The blend of RUM-1 and P3x21223B10 has been shown to detect weak and partial D, including DVI. 18 of 18 known DVI cells were detected with the Anti-D(DVI) reagent. Positive Rh(D) reactions of 2+ or less may indicate a weak D phenotype or spontaneous agglutination. Retesting with an alternative method will ensure the reactivity is due to the presence of the D-antigen and not due to spontaneous agglutination. This reagent may exhibit different serological activity when compared to other Anti-D reagents.
	Interference and cross-reactivity	Interfering substances such as hemolysis or lipemia and use of samples collected in various anticoagulants had no impact on the results obtained.

Post-Market Performance Follow-Up

Based on the clinical evidence and risk mitigation actions, there is no current need for a PMPF Plan for these reagents at this time for:

- Blood Grouping Reagents Anti-A (Anti-ABO1) (Monoclonal), Anti-B (Anti-ABO2) (Monoclonal), Anti-D(DVI) (Anti-RH1) (Monoclonal)

The existing quality system processes (design control, material control and production and process control) and routine post-market surveillance activities are deemed effective and sufficient to control and monitor the safety and performance of these reagents.

A PMPF Plan may subsequently be initiated based on information from routine post-market surveillance activities or by request/input from regulatory agencies, competent authorities and/or notified bodies.

Summary Field Safety Corrective Action/Field Safety Notice under the IVD Regulation

None Reported

Metrological Traceability

Traceability of Calibration

Not Applicable

Users

Laboratory Professional.

User Training

Laboratory staff should be trained to run immunohematological tests using either manual or semi-automated CAT techniques and CAT tests using ORTHO analysers, run quality controls and be able to troubleshoot unexpected results as described in the product Instructions For Use and / or Instrument Reference Guides.

Device Risks Information

Limitations of Procedure

1. ABD(DVI) cassette is intended for donor confirmation testing only.
2. The ABD(DVI) Donor Confirmation Cassette is not validated for use with neonatal and patient samples.
3. Results can only be used to confirm ABO group and D (including DVI) type.
4. The Test Procedure and Interpretation of Results must be followed closely to assure the accuracy of the test results. A laboratory that institutes the Ortho BioVue System should have a program that will train personnel on the proper use and handling of the product.
5. Due to antigen deterioration, aged red blood cells may exhibit weaker reactivity than fresh cells.
6. Enzyme-treated red blood cells should not be used with these reagents.
7. Red blood cells that appear to be D negative by this test method must be further tested for weak or partial D antigen by an acceptable test method when dictated by local requirements.
8. Refer to your local operating procedures to resolve discrepant results.
9. Invalid test results due to spontaneous agglutination may occur on rare occasions with the Anti-D(DVI) reagent when testing red blood cells heavily coated with antibodies.
10. Abnormal serum proteins in the test sample may cause red blood cells to aggregate, which may be interpreted as agglutination.
11. Plasma expanders have been shown to interfere with some blood bank tests. Data are not available concerning interference using the Ortho BioVue System. Problem-solving techniques should be used if interference is observed.
12. When using automated instruments, refer to the limitations contained in the operator's manual provided by the device manufacturer.
13. The observation of hemolysis in a column should be further investigated.
14. Mixed cell populations may be detected by the Ortho BioVue System as agglutinated red blood cells at the top of the bead column and unagglutinated red blood cells at the bottom of the column. Detection limits may vary from those observed by other techniques.

Warnings and Precautions

DANGER:

This product contains 1-Imidazole (CAS 288-32-4)

H360: May damage fertility or the unborn child. P201: Obtain special instructions before use. P202: Do not handle until all safety precautions have been read and understood. P280: Wear protective gloves and eye protection. P308 + P313: If exposed or concerned: Get medical advice/attention. P501: Dispose of contents/container to an approved waste disposal plant.

Refer to www.Orthoclinicaldiagnostics.com for the Safety Data Sheets and for Ortho contact information.

Caution: **Some of the components are of human and bovine origin. They should be handled using the same precautions as with any other blood or blood-derived product.**

1. Handle all blood and materials in contact with blood as if capable of transmitting infectious agents. It is recommended that blood and materials in contact with blood be handled using established good laboratory practices.
2. Some cassette components may be considered as hazardous or potentially infectious waste. Dispose of all materials according to applicable guidelines and regulations.

3. Improper storage conditions will adversely affect product performance.

Caution:	**Attached to the cassette tray is a temperature monitor label. If the red showing through on the circle of the label meets or exceeds the color standard in the corner of the label, the cassettes have been exposed to temperatures above 42 °C, which can affect the performance of the reagents contained in the cassettes. False negative results could occur with the use of these cassettes. Do not use the cassettes contained in the tray.**

4. Do not use reagents beyond their labeled expiration date.
5. Freezing of the cassettes or evaporation of the liquid due to heat may interfere with free passage of unagglutinated red blood cells through the glass bead column.
6. Do not use cassettes that appear damaged (i.e., break in foil seal or break, crack or bubble in the column) or exhibit drying (i.e., liquid level is at or below the top of the glass beads) or exhibit discoloration (due to bacterial contamination which can cause false reactions).
7. Use the ORTHO™ Workstation to provide the required centrifugation parameters for this system. Proper calibration of the centrifuge is essential to achieve accurate test results.
8. Improper use of the liner assembly or dropping the cassette after the insertion of the liner could result in cross contamination of reagents during pipetting.
9. Erroneous results may be obtained due to improper technique in performing any diagnostic test. The most common sources of such results are:
   - Use of red blood cell concentrations other than those described under Specimen Collection, Preparation and Storage section
   - Microbial contamination of supplementary materials used in the procedure
   - Use of specimens containing particulate matter (impedes the free flow of red blood cells through the column)
   - Use of severely hemolyzed samples (may interfere with reading reactions in the column)
10. In order to minimize the presence of bubbles with your Ortho BioVue cassettes, we recommend that if you normally store your cassettes in the refrigerator at 2–8 °C you should equilibrate your cassettes at room temperature (20–25 °C) for at least 96 hours prior to use.

Safe Disposal

Follow local disposal regulations based on your location along with recommendations and content in the Safety Data Sheet and/or refer to the chemical information provided in the Reagents section to determine the safe disposal of this product.

Specimen Collection, Preparation and Storage

- No special preparation of the donor is required prior to specimen collection.
- Blood should be collected by approved medical techniques.
- Samples should be tested as soon as possible following collection.
- If a delay in testing occurs, samples should be stored at 2–8 °C.
- Blood drawn into EDTA, heparin, or citrate containing anticoagulants should be tested within seven days.
- Donor blood, an integral segment from the bag, may be tested up to the expiration date of the unit of blood.
- Red blood cell suspensions can be prepared using the following combinations of saline and packed red blood cells:

Saline Volume	Packed Red Blood Cell Volume*	Red Blood Cell Concentration
1 mL	40 µL	3%
1 mL	50 µL	4%
1 mL	65 µL	5%
1 mL	10 µL	0.8%
0.8 mL	10 µL	1%

* Blood samples centrifuged at 900 to 1000 x g for 5 minutes will result in a packed red blood cell concentration of approximately 80%. These specifications for centrifugation eliminate over-packing of red cells which may result in false-positive results.

Revision History

Revision Number*	Date Issued	Change Description	Revision validated by the Notified Body
1.0	2022-12-01	Not Applicable	☒ Yes Validation language: English ☐ No Content not validated but reviewed by NB

*This SS&P was derived from the following Ortho Clinical Diagnostics, Inc. document: Pub No. J669182_e631301361_EN.