

Birlinn® BCR-ABL1 p210 IS Control Panel C240

INTENDED USE:

The Birlinn® BCR-ABL1 p210 IS Control Panel C240 is intended for use as an unassayed external quality control to monitor the performance of *in vitro* laboratory nucleic acid detection and quantification of *BCR-ABL1* (p210) fusion gene using molecular test systems. The Birlinn BCR-ABL1 p210 IS Control Panel C240, with assigned values traceable to World Health Organization (WHO), allows monitoring of assay performance reporting on the international scale.

The Philadelphia chromosome, a translocation between the *ABL1* gene on chromosome 9 and the *BCR* gene on chromosome 22, designated as t(9;22), generates the fusion gene *BCR-ABL1* which is present in most chronic myelogenous leukemia patients. Quantitative monitoring of *BCR-ABL1* transcripts in patient blood is an important tool for measuring response to therapy. In 2009, the WHO developed a panel of four *BCR-ABL1* primary standards to establish an international scale (IS), a standardized method for reporting assay results as a ratio of fusion transcripts to control gene transcripts (%IS), useful to the harmonization of patient care across laboratories worldwide.^{1,2} The %IS can also be expressed as molecular response (MR), the log reduction from a standardized baseline of 100% on the IS. The Birlinn BCR-ABL1 p210 IS Control Panel C240 kit is traceable to the WHO International Genetic Reference Panel for Quantitation of *BCR-ABL1* Translocation (WHO Reference Panel), NIBSC code 09/138.^{3,4}

PRODUCT SUMMARY and PRINCIPLE:

The Birlinn BCR-ABL1 p210 IS Control Panel C240 consists of three components. Each component contains an increasing concentration of *BCR-ABL1* (e14a2/b3a2) RNA transcript mixed with a fixed concentration of *ABL1* RNA transcript to produce three levels 0.01%, 0.1%, and 1%. The %IS values provided are traceable to WHO Reference Panel, NIBSC code 09/138, and are assigned to each lot of the Birlinn BCR-ABL1 p210 IS Control Panel C240 according to NIBSC Instructions for Use.⁴

Quality controls can be used for routine monitoring of test systems, validation, verification, proficiency assessment, and training procedures. Quality controls that are consistent from lot to lot assist the laboratory in identifying shifts, trends, and increased frequency of random errors caused by variations in the test system, such as failing reagents, malfunctioning equipment, or environmental contamination. Early investigation can prevent failed assay runs and incorrect patient test results.

Validation and Value Assignment

MMQCI manufactured 3 lots of Birlinn BCR-ABL1 p210 IS Control Panel C240 and tested them alongside the WHO Reference Panel, using one reagent lot of the REALQUALITY RQ-BCR-ABL p210 One-Step assay. Linear Regression was applied and a lot-specific Correction Factor (CF) was calculated to assign WHO-traceable %IS values to each level of Birlinn BCR-ABL1 p210 IS Control Panel C240 for all 3 lots according to NIBSC Instructions for Use.⁴

COMPOSITION:

The Birlinn BCR-ABL1 p210 IS Control Panel C240 is comprised of 6 tubes, 2 tubes of each %IS level. The tubes contain 20µL of synthetic *BCR-ABL1* RNA transcript and synthetic *ABL1* control gene RNA transcript provided in a ready-to-use solution. Each of the components can be directly used in a reverse transcription reaction, followed by amplification of cDNA for detection of *BCR-ABL1/ABL1* using the laboratory's system. The Birlinn BCR-ABL1 p210 IS Control Panel C240 materials are provided in a background of total RNA at a concentration of 400ng/µL and may be diluted as a patient sample to provide the recommended sample input for the assay to be used.

STORAGE and STABILITY:

The Birlinn BCR-ABL1 p210 IS Control Panel C240 should be stored at -25°C to -15°C and is stable through the expiration date printed on the kit label when consistently stored frozen. Do not freeze/thaw more than 5 times. Discard after use according to your local and federal regulations.

PRECAUTIONS and WARNINGS:

- This product is intended for *in vitro* diagnostic use only.
- This product is clear in appearance.
- Do not freeze/thaw more than 5 times.
- This product does not contain any biological material of human or animal origin. Universal Precautions are NOT required when handling this product.
- Quality control materials should be used in accordance with local, state, and federal regulations and accreditation requirements.
- The Birlinn BCR-ABL1 p210 IS Control Panel C240 cannot be cloned, sold, or transferred without the explicit written consent of MMQCI.

RECOMMENDED INSTRUCTION FOR USE:

1. Allow the Birlinn BCR-ABL1 p210 IS Control Panel C240 component to be tested to come completely to room temperature (18°C to 25°C), approximately 10-15 minutes.
2. Immediately before pipetting, thoroughly mix the controls by flicking the tube 20x followed by 2 pulse vortexes, 2-3 seconds each at maximum speed. Quick spin tube to remove droplets from cap.
3. Carefully pipette each component according to the assay Manufacturer's instructions for patient samples. If a dilution is required for sample concentrations of 400ng/µL, dilute the Birlinn BCR-ABL1 p210 IS Control Panel C240 components in the same manner. *Note: It is recommended to use a minimum of 5µL of the Birlinn BCR-ABL1 p210 IS Control Panel C240 material for optimal performance.*

Dilution Protocol Example:

1. In a labeled 1.5mL LoBind tube, pipette 5µL of well-mixed Birlinn BCR-ABL1 p210 IS Control Panel C240 component into 45µL of molecular grade H₂O to make a 1:10 dilution.
2. Mix the dilution by 20x inversions, followed by 2 pulse vortexes, 3-5 seconds. Quick spin to remove all liquid from cap prior to use.
4. Continue with the assay procedure according to manufacturer's instructions.
5. Discard after use according to local and federal regulations, or store remaining material at -25°C to -15°C.

EXPECTED VALUES:

Locate the appropriate WHO-traceable %IS values assigned to your lot of Birlinn BCR-ABL p210 IS Control Panel C240 on the lot specific Data Sheet. It is important to notice that the WHO-traceable values were assigned by testing with one lot of REALQUALITY RQ-BCR-ABL p210 One-Step assay. The reported % values of C240 may vary among laboratories, reagent lots, operators and test systems. Each laboratory should establish their own % ranges.

ORDERING INFORMATION:

Birlinn BCR-ABL1 p210 IS Control Panel C240

Part Number: C240

Kit Contains: 6 tubes x 20µL;

2 tubes each of 0.01%IS, 0.1%IS, and 1%IS

References

¹Branford S et al. Desirable performance characteristics for BCR-ABL measurement on an international reporting scale to allow consistent interpretation of individual patient response and comparison of response rates between clinical trials. *Blood* 2008, 112:3330-38.

²White HE et al. Establishment of the first World Health Organization International Genetic Reference Panel for quantitation of BCR-ABL mRNA. *Blood* 2010, 116:e111-117.

³Cross et al. Development and evaluation of a secondary reference panel for BCR-ABL1 quantification on the International Scale. *Leukemia* 2016 30, 1844-1852.

⁴1st WHO International Genetic Reference Panel for Quantitation of BCR-ABL Translocation, NIBSC code: 09/138 Instructions for use (Version 9.0, Dated 22/10/2020).