CELL MARQUE 6600 Sierra College Blvd. • Rocklin, CA 95677 USA • 800-665-7284

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# CD2 (MRQ-11)

*For In Vitro Diagnostic Use (IVD)*
English: Instructions For Use

**Presentation**
Anti-CD2 is a mouse monoclonal antibody from supernatant diluted in phosphate buffered saline, pH 7.4, with protein base, and preserved with sodium azide.

**Applications**
Human T lymphocytes were initially distinguished from B lymphocytes by their ability to produce spontaneous rosettes with sheep red blood cells, a phenomenon mediated by the CD2 molecule, a glycosylated transmembrane receptor molecule also referred to as T11 antigen or LFA-3 antigen (leukocyte function associated antigen -3). Three functionally important epitope groups have been defined on the humans CD2 molecule, designated T111, T112, and T113, (CD2R). T111, is the epitope responsible for E-rosetting and T cell stimulation through this epitope and is mediated by an IL-2 dependent pathway (Meur et al, 1984; Knowles, 1984). Stimulation of the T112 and T113 epitopes occurs via an alternative pathway (Meur et al, 1984; Knowles, 1984).

CD2 is one of the earliest T cell lineage restricted antigens to appear during T cell differentiation and only a rare CD2+ cell can be found in the bone marrow. It is found in all T-lymphocytes and natural killer cells but not in B cells or any other cell population. CD2 binds to its counter receptor CD-58 (LFA-3), a member of the Ig gene superfamily, which located on the surface of target cells. CD2 binding to LFA-3 activates T cells and may also have a role in prothymocyte homing as it is known to mediate thymocyte-thymic epithelium adhesion. Although it is known that CD2 appears after CD7 but before CD1, its temporal relationship with CD3 is less definite, with some recent evidence suggesting that CD3 appears in the cytoplasm before CD2 (Osborn et al, 1995).

CD2 can be considered a pan-T cell antigen and is therefore useful for the identification of virtually all normal T lymphocytes. It is also very useful in the assessment of lymphoid malignancies as it is expressed in the majority of precursor and post-thymic lymphomas and leukemias and is not expressed by B neoplasms (Foon & Todd, 1986). As with other pan-T cell antigens, CD2 may be aberrantly deleted in some neoplastic T cell population, especially peripheral T cell lymphomas. Rarely slg+ B cell neoplasms have been described to form spontaneous E-rosettes but these reactions are not mediated via the CD2 receptor (Knowles, 1989).

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|---|---|
| **Reactivity** | Paraffin, frozen |
| **Control** | Lymph node , tonsil |
| **Visualization** | Cytoplasmic, membranous |
| **Stability** | Up to 36 months; store at 2-8°C |
| **Isotype** | $IgG_1/K$ |

*Antibody color does not affect performance*

| **Description** | **Ventana®* Cat. No.** |
|---|---|
| 50 test dispenser | 760-4377 |

**Preparation**
1. Cut 3-4 µm section of formalin-fixed, paraffin-embedded tissue and place on positively charged slides; dry overnight at 58° C.

**Recommended Ventana®* Staining Procedure**
1. Load slides, antibody, and UltraView™ detection kit dispensers onto BenchMark®* instrument.
2. Select CC1 Mild pretreatment.
3. Antibody incubation should be set for 16 minutes at 37° C.
4. Start the run.
5. When the staining run is complete, move slides from instrument and rinse well with wash buffer.
6. Coverslip.

**References**
1. Aguilera NS, Chen J, Bijwaard KE, Director-Myska AE, Barekman CL, Millward C, Lichy J, Abbondanzo SL. Gene rearrangement and comparative genomic hybridization studies of classic Hodgkin lymphoma expressing T-cell antigens. Arch Pathol Lab Med. 2006 Dec;130(12):1772-9.
2. Barrionuevo C, Zaharia M, Martinez MT, Taxa L, Misad O, Moscol A, Sarria G, Guerrero I, Casanova L, Flores C, Zevallos-Giampietri EA. Extranodal NK/T-cell lymphoma, nasal type: study of clinicopathologic andprognosis factors in a series of 78 cases from Peru. Appl Immunohistochem Mol Morphol. 2007 Mar;15(1):38-44.
3. Bovenschen HJ, Seyger MM, Van de Kerkhof PC. Plaque psoriasis vs. atopic dermatitis and lichen planus: a comparison for lesional T-cell subsets, epidermal proliferation and differentiation. Br J Dermatol. 2005 Jul;153(1):72-8.
4. Foon KA, Todd RF. Immunologic classification of leukemia and lymphoma. Blood 1986; 68:1-31.
5. Gonzalez L, Anderson I, Deane D, et al. Detection of immune system cells in paraffin wax-embedded ovine tissues. Journal of Comparative Pathology 2001; 125:41-7.



EC REP EMERGO EUROPE
Molenstraat 15, 2513 BH, The Hague, NL.

CE *Material Safety Data Sheet available upon request.*

# Inline Dispenser Preparation, Handling & Storage Instructions

## Preparing For Use:

**Where Used:** For NexES® IHC, BenchMark® Series and Discovery® automated instruments, software version 8.0 and higher.

**STEP 1: Shipping Key Removal**
To remove the Shipping Key (shown in Figure A), remove the Nozzle Cap, hold the dispenser upright and pull the Key Tab to disengage it from each end. DO NOT cover the nozzle tip as it could permanently damage the dispenser. DO NOT depress the dispenser while removing the key as it could waste reagent. Discard the shipping key.

**STEP 2: Preparing the Dispenser for Use**
Remove the Nozzle Cap and place on the Nozzle Cap Holder. Fluid may be present inside the Nozzle Cap. Install the dispenser on the reagent carousel. The Inline Dispenser has been designed to be "Prepared for Use" by the NexES software Version 8.0 or higher. Before each run, the software will detect a new dispenser on the carousel and prime it automatically. Manually priming the dispenser is not necessary and should NEVER be done as it could waste reagent and decrease the number of available dispenses.

Note - All earlier software installations: After removing the shipping key, remove the nozzle cap and CHARGE THE DISPENSER BY RAPIDLY PUMPING 3 to 4 TIMES, keeping the dispenser in an upright position. Charging is only necessary prior to first time use. (See Inspect Prime Before Use section.)

**STEP 3: Dispenser Storage & Handling**
To insure reliable operation, the dispenser must always be capped when not in use and should NEVER be manually dispensed. (See the Do's and Don't section.)

## Do's and Don't-

**DO:**
1. Check priming chamber and meniscus before each use. (See Inspect Prime Before Use).
2. Store nozzle cap on dispenser. A holder is provided.
3. Cap dispenser when not in use to prevent evaporation. Dispensers mounted on the reagent tray can be capped (from underneath the tray) when not in use.
4. Store dispensers in an upright position in a rack and on the reagent carousel.
5. When mounting the dispenser on the carousel, grasp the coupler to avoid accidental manual dispensing.

**DON'T:**
1. Do not manually dispense when inverted (upside down). Prime will be lost and may be impossible to restore.
2. Do not manually dispense with the nozzle cap in place. This can permanently damage the dispenser.
3. Do not manually dispense or prime prior to each use. This is not necessary and wastes reagent.
4. Do not hold the barrel in the down position. Fluid can leak from the dispenser when the barrel is depressed.
5. Do not stack carousels with dispensers installed. This can cause the dispensers to leak.

## Inspect Prime Before Use:

Remove the nozzle cap and refer to Fig. B.

## Dispenser Is Ready For Use When:

1. A meniscus is present in the area shown in Figure B.
2. The priming chamber contains liquid.

*If one or both of these conditions is not satisfied, consult Signs of Trouble and What to Do section.*

## Signs Of Trouble & What To Do:

1. Priming chamber empty. If there is no liquid in the priming chamber, re-prime the dispenser (see Re-Priming the Dispenser section).
2. Meniscus absent. If no meniscus is visible in the nozzle area, manually charge the dispenser once. If this does not resolve the condition, re-prime the dispenser (see Re-Priming the Dispenser section). If condition reoccurs, contact your local Ventana Customer Support Center.
3. Leaking dispenser. External fibers (from clothing or other sources) can cause dispenser to leak. Use in a clean environment.
4. Blocked dispenser. The normal performance characteristics of the dispenser are such that particulates (i.e., fibers, precipitation) could cause a dispenser blockage. A sign of blockage could include higher reagent volume than expected, remaining within the dispenser, after a period of use. Blockage is also evidenced by the failure of the dispenser to yield fluid upon manual dispense, which can be tested by the steps listed in the Re-Priming the Dispenser section. If blockage is suspected (or if foreign material is observed in the dispenser), contact the Ventana Customer Support Center.

*NOTE: DO NOT manually dispense or prime the dispenser unless absolutely necessary. Although Ventana pre-filled dispensers have been overfilled to insure a sufficient number of tests, manual dispensing or priming can cause insufficient tests remaining in the dispenser and may cause undesirable staining results.*

*Consult individual reagent package inserts for information on the utilization of appropriate Quality Control Procedures.*

## Re-priming The Dispenser:

Once primed, the dispenser should not lose prime if handled correctly. If re-priming is necessary, proceed as follows:
1. Aim the dispenser tip at a waste container. Remove the nozzle cap and depress the barrel (top of the dispenser). This should dispense a drop.
2. If no drop is dispensed, repeat Step 1, above, several times until a drop is ejected.
3. If a drop is ejected, proceed with instructions in Inspect Prime Before Use on this page.
4. If no drop is ejected, or inspection for prime (Step 3) fails, contact your local Ventana Customer Support Center.

**Contacting Ventana Technical Consultation Center**

If your dispenser does not look or perform as expected, please contact your local Ventana Customer Support Center for advice or return information. Please have the dispenser Lot Number (from the reagent label) handy when you call.



**CONTACT INFORMATION:**
Ventana Medical Systems, Inc.
1910 Innovation Park Drive
Tucson, Arizona 85755
U.S.A.
+1 520 887-2155
+1 800 227 2155 (USA)

EC REP

Roche Diagnostics GmbH
Sandhofer Strasse 116
D-68305 Mannheim
Germany

*Figure A*

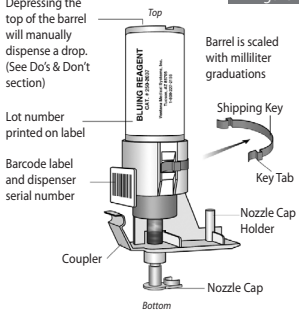


*Figure B*