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The symbols glossary is provided electronically and can be found in the Dialog section at www.diasorin.com using the part and lot numbers associated with the corresponding IVD product.

LIAISON® XL murex HCV Ab ([REF] 318240)

Caution: U.S. Federal Law restricts this device to sale by or on the order of a licensed practitioner

1. INTENDED USE

The LIAISON® XL murex HCV Ab is an *in vitro* chemiluminescent immunoassay for the qualitative determination of specific antibodies to hepatitis C virus (anti-HCV) in human adult and pediatric (2 – 21 years) serum and plasma (lithium and sodium heparin, sodium citrate and di-potassium EDTA) samples including separator tubes, on the LIAISON® XL Analyzer. It is intended to be used as an aid in the diagnosis of HCV infection. The assay may also be used as an aid in the diagnosis of HCV infection in pediatric subjects and in pregnant women. The test does not determine the state of infection or associated disease.

This assay is not intended for use in screening blood, plasma or tissue donors.

2. SUMMARY AND EXPLANATION OF THE TEST

Hepatitis C virus (HCV) was identified in 1988 as a single-stranded positive-sense RNA virus, globally distributed (1). Patients infected with HCV are generally asymptomatic during the acute stage of the disease, however, the small proportion of people who get sick during the acute infection may exhibit symptom such as jaundice, pain in the upper right part of the abdomen, and nausea for up to 12 weeks. Testing people with known risk factors is recommended by both the WHO and the CDC. Approximately 70 - 80% of infected individuals develop chronic hepatitis and, may eventually, acquire liver cirrhosis and hepatocellular carcinoma (2). Liver disease associated with chronic HCV infection is the leading cause of hepatocellular carcinoma and liver transplantation in the United States (3).
HCV is transmitted primarily through parenteral routes, like blood transfusion, haemodialysis and intravenous drug use. Based on HCV genotype testing, 6 different types (numbered 1 to 6), with defined subtypes (identified by lower-case letters as 1a, 1b, 1c, etc), of the virus have been identified. Some genotypes are particularly endemic in one or other geographic area. Genotypes (2 and 3) are more sensitive to antiviral treatment than others. Genotype 1 most commonly progresses to cirrhosis.
Screening for HCV antibodies is also aimed at curbing the risk of transmitting HCV infection, although the presence of HCV antibodies is not a diagnosis of hepatitis C (2). This immunoassay employs HCV polypeptides able to recognize antibodies directed to HCV. The polypeptides correspond to highly antigenic determinants of both the structural and non-structural regions of HCV (6).
The serologic window between HCV infection and the detectability of specific antibodies varies from patient to patient. Seroconversions occur on average 7-8 weeks after the onset of infection. Anti-HCV is detectable in 50-70% of patients at the onset of clinical symptoms and later in the remaining patients. In patients with spontaneously resolving infection, anti-HCV may persist throughout life, or decrease slightly while remaining detectable or gradually disappear after several years. Anti-HCV persists indefinitely in patients who develop a chronic infection, although antibodies may become undetectable in cases of profound immunodepression.
The presence of anti-HCV does not imply protective immunity. No vaccine is available for the treatment of this disease.

3. PRINCIPLE OF THE PROCEDURE

The method for qualitative determination of specific IgG to hepatitis C virus (HCV) is an indirect chemiluminescence immunoassay (CLIA). Two recombinant antigens (core and NS4) specific for HCV are used for coating magnetic particles (solid phase), while a third ready to use aqueous HCV antigen (biotinylated NS3) is also provided. During the first incubation, the biotinylated antigen is captured by streptavidin-coated magnetic particles, and HCV antibodies present in the calibrator, samples or controls bind to the solid phase through the recombinant HCV antigens. During the second incubation, a mouse monoclonal antibody to human IgG, linked to an isoluminol derivative (isoluminol-antibody conjugate), reacts with IgG to HCV already bound to the solid phase. After each incubation, the unbound material is removed with a wash cycle.
Subsequently, the starter reagents are added and a flash chemiluminescence reaction is thus induced. The light signal, and hence the amount of isoluminol-antibody conjugate, is measured by a photomultiplier as relative light units (RLU) and is indicative of IgG to HCV presence in the calibrator, samples or controls.

4. MATERIALS PROVIDED

Reagent integral

Magnetic particles [SORB] (2.5 mL)	Magnetic particles coated with HCV core and NS4 recombinant antigens (produced in baculovirus and *E. coli* respectively), streptavidin-coated magnetic particles, BSA, PBS buffer, EDTA, preservatives.
Calibrator [CAL] (3.5 mL)	Diluted and inactivated serum/plasma containing low anti-HCV levels, BSA, PBS buffer, EDTA, 0.2% ProClin® 300, an inert yellow dye.
HCV NS3 antigen [Ag] (3.0 mL)	Biotinylated HCV NS3 recombinant antigen (produced in *E.coli*), MES buffer, preservatives.
Specimen diluent [DIL|SPE] (18.5 mL)	BSA, casein, non-specific recombinant protein (produced in *E.coli*), phosphate buffer, EDTA, preservatives, an inert blue dye.
Conjugate [CONJ] (18.5 mL)	Mouse monoclonal IgG to human IgG conjugated to an isoluminol derivative, fetal calf serum, phosphate buffer, 0.2% ProClin® 300, preservatives, an inert red dye.
Number of tests	100

ProClin® is a trademark of the Dow Chemical Company (Dow) or an affiliated company of Dow. All reagents are supplied ready to use. The order of reagents reflects the layout of containers in the reagent integral.

Materials required but not provided

LIAISON® XL Analyzer

LIAISON® XL Cuvettes ([REF] X0016)

LIAISON® XL Disposable Tips ([REF] X0015)

LIAISON® XL Starter Kit ([REF] 319200)

LIAISON® Wash/System Liquid ([REF] 319100)

LIAISON® XL Waste Bags ([REF] X0025)

Additional required materials

LIAISON® XL MUREX Control HCV Ab ([REF] 318241).

5. WARNINGS AND PRECAUTIONS

- For *in vitro* diagnostic use only.
- For Prescription Use Only.
- All human blood source material used to produce the components provided derives from units found to be non-reactive for HBsAg, anti-HCV, anti-HIV-1, anti-HIV-2 when tested by an FDA-approved method, except for the calibrator, which is reactive for HCV antibodies. The units positive for HCV antibodies have been inactivated by heat treatment (60°C for one hour) during the manufacturing process. They may derive from HCV-infected patients and therefore should be considered as potentially infectious. Because no test method can offer complete assurance that laboratory specimens are pathogen-free, specimens should be handled at Biosafety Level 2, as recommended for any potentially infectious human serum or blood specimen in the CDCNIH manual, Biosafety in Microbiological and Biomedical Laboratories, 5th Edition, Feb. 2007, and CLSI Approved Guideline M29-A3, Protection of Laboratory Workers from Occupationally Acquired Infections.
- Observe the normal precautions required for handling all laboratory reagents.
- Disposal of all waste material should be in accordance with local guidelines.
- Do not eat, drink, smoke or apply cosmetics in the assay laboratory.
- Do not pipette by mouth.
- Strict adherence to the instructions is necessary to obtain reliable results.
- Avoid direct contact with potentially infected material by wearing laboratory coats, protective goggles, and disposable gloves.
- Wash hands thoroughly at the end of each assay.
- Avoid splashing or forming an aerosol. All drops of biological reagent must be removed with a 10% sodium hypochlorite solution (containing 0.5% active chlorine), and the means used must be treated as infected waste.
- All samples, biological reagents and disposable materials used in the assay must be considered as potentially able to transmit infectious agents. They should therefore be disposed of in accordance with the prevailing regulations and guidelines of the agencies holding jurisdiction over the laboratory and the regulations of each Country.
- Liquid waste must be decontaminated with sodium hypochlorite at a final concentration of 10% for at least half an hour.
- Any materials to be reused must be appropriately sterilized in compliance with the local laws and guidelines. A minimum of one hour at 121°C is usually considered adequate, though the users must check the effectiveness of their decontamination cycle by initially validating it and routinely using biological indicators.
- The LIAISON® Analyzer family should be cleaned and decontaminated on a routine basis. See the relevant Operator's Manual for the procedures.
- Do not use kits or components beyond the expiration date given on the label.
- Do not mix reagents from different reagents packs (even for the same reagent).
- Previously frozen samples should be thoroughly mixed after thawing and prior to testing.

Chemical Hazard and Safety Information

- Reagents in this kit are classified in accordance with the US OSHA Hazard Communication Standard; individual US State Right-to-Know laws and European Union EC Regulation 1272/2008 (CLP).
- Hazardous reagents are classified and labelled as follow:

REAGENTS:	[SORB]	[CAL], [DIL|SPE], [CONJ]	[CONJ]
CLASSIFICATION:	Eye irrit. 2 H319 Skin irrit. 2 H315	Skin sens. 1 H317	Specific target organ target organ toxicity – repeated exposure category 2 H373
SIGNAL WORD:	Warning	Warning	Warning
SYMBOLS / PICTOGRAMS:	 GHS07 Exclamation mark	 GHS07 Exclamation mark	 GHS08 Health hazard
HAZARD STATEMENTS:	H315 Causes skin irritation. H319 Causes serious eye irritation.	H317 May cause an allergic skin reaction.	H373 May cause damage to organs through prolonged or repeated exposure
PRECAUTIONARY STATEMENTS:	P264 Wash hands thoroughly after handling. P280 Wear protective gloves/protective clothing/ eye protection/face protection. P337+P313- If eye irritation persists: Get medical advice/attention.	P261 Avoid breathing dust/fume/gas/mist/ vapours/spray. P280 Wear protective gloves/protective clothing/eye protection/face protection. P333+P313- If skin irritation or rash occurs: Get medical advice/attention.	n.a
CONTAINS: (only substances prescribed pursuant to Article 18 of EC Regulation 1272/2008)	Trimethylyamine N-oxide dehydrate	Reaction mass of: 5-chloro-2-methyl-4- isothiazolin-3-one [EC no. 247-500-7] and 2-methyl-2H -isothiazol-3-one [EC no. 220-239-6] (3:1) (ProClin® 300)	. Ethylene Glycol

Reagents containing sodium azide

Sodium azide may react with lead or copper plumbing to form highly explosive metal azides. On disposal, flush with a large volume of water to prevent azide build-up. For further information, refer to "Decontamination of Laboratory Sink Drains to Remove Azide Salts," in the Manual Guide-Safety Management No. CDC-22 issued by the Centers for Disease Control and Prevention, Atlanta, GA, 1976.

For additional information see Safety Data Sheets available on www.diasorin.com.

6. PREPARATION OF REAGENT INTEGRAL

Please note the following important reagent handling precautions:

Resuspension of magnetic particles

Magnetic particles must be completely resuspended before the integral is placed on the instrument. Follow the steps below to ensure complete suspension:

Before the seal is removed, rotate the small wheel at the magnetic particle compartment until the color of the suspension has changed to brown. Gentle and careful side-to-side mixing may assist in the suspension of the magnetic particles (avoid foam formation). Visually check the bottom of the magnetic particle vial to confirm that all settled magnetic particles have been resuspended. Carefully wipe the surface of each septum to remove residual liquid.

Repeat as necessary until the magnetic particles are completely resuspended.

An incomplete magnetic particle resuspension may cause variable and inaccurate analytical results.

Foaming of reagents

In order to ensure optimal performance of the Integral, foaming of reagents should be avoided. Adhere to the recommendation below to prevent this occurrence:

- Visually inspect the reagents, to ensure there is no foaming present before using the Integral. If foam is present after resuspension of the magnetic particles, place the Integral on the instrument and allow the foam to dissipate. The Integral is ready to use once the foam has dissipated and the integral has remained onboard and mixing.

Loading of integral into the reagent area

– LIAISON® XL Analyzer is equipped with a built-in solid-state magnetic device which aids in the dispersal of microparticles prior to placement of a reagent integral into the reagent area of the analyzer. Refer to the analyzer operator's manual for details.

a. Insert the reagent integral into the dedicated slot.

b. Allow the reagent integral to remain in the solid-state magnetic device for at least 30 seconds (up to several minutes). Repeat as necessary.

Place the integral into the reagent area of the analyzer with the label facing left and let it stand for 15 minutes before using. The analyzer automatically stirs and completely resuspends the magnetic particles.

– Follow the analyzer operator's manual to load the specimens and start the run.

7. REAGENT INTEGRAL STORAGE AND STABILITY

Upon receipt, the Reagent Integral must be stored in an upright position to facilitate resuspension of magnetic particles. Refer to the Reagent Integral Preparation for resuspension instructions. When the Reagent Integral is stored sealed and kept upright, the reagents are stable at 2-8°C up to the expiration date. Do not freeze. The Reagent Integral should not be used past the expiration date indicated on the kit and Reagent Integral labels. After removing the seals, the Reagent Integral is stable for twelve (12) weeks when stored at 2-8°C in a refrigerator or on board the analyzer.

8. SPECIMEN COLLECTION AND PREPARATION

Either human serum, serum in serum-separating-tube (SST) or plasma may be used. The results obtained on the serum-plasma paired samples indicated that there is equivalence among serum (with and without gel SST), K_2 EDTA, Lithium Heparin, Sodium Heparin and Sodium Citrate. Preservatives with oxidative mechanisms must not be added to specimens, as they may affect the immunoreactivity of recombinant proteins used to detect anti-HCV antibodies.

Blood should be collected aseptically by venipuncture, allowed to clot (if applicable), and the serum or plasma separated from the red cells as soon as possible. Samples having particulate matter, turbidity, lipemia, or erythrocyte debris may require clarification by filtration or centrifugation before testing. Grossly hemolyzed or lipemic samples as well as samples containing particulate matter or exhibiting obvious microbial contamination should not be tested.

Check for and remove air bubbles and foam before assaying. A limited time of room temperature storage (between 18 and 30°C) for four (4) days does not influence the assay performance. If the assay is performed within seven (7) days of sample collection, the samples may be kept at 2-8°C; otherwise they should be aliquoted and stored for up to three (3) months deep-frozen (-20°C or below). If samples are stored frozen, mix thawed samples well before testing. Samples are stable through seven (7) freeze/thaw cycles. Self-defrosting freezers are not recommended for sample storage.

It is responsibility of the individual laboratory to use all available references and/or its own studies to determinate specific stability criteria for its laboratory.

The minimum specimen volume required for a single determination is 175 µL (25 µL specimen + 175 µL dead volume). Dead volume is the volume left at the bottom of the aliquot tube which the instrument cannot aspirate.

For shipping, use sterile containers and pack specimens in compliance with government regulations covering the transportation of etiologic agents. Ensure that specimens reach their destination within the following specifications:

- Plasma and Serum separated from the clot can be maintained at 2-8°C during transit. Do not exceed the maximum 2-8°C stability of seven (7) days.
- Plasma and Serum separated from the clot can be stored at -20°C or below and shipped with dry ice. Temperature level during entire shipment should be no greater (warmer) than -20°C.

9. ASSAY PROCEDURE

Strict adherence to the analyzer operator's manual ensures proper assay performance. Each test parameter is identified via information encoded in the reagent integral Radio Frequency Identification transponder (RFID Tag). In the event that the RFID Tag cannot be read by the analyzer, the integral cannot be used. Do not discard the reagent integral; contact your local DiaSorin technical support for instruction.

The analyzer operations are as follows:

1. Dispense specimen diluent into the reaction cuvettes.
2. Dispense coated magnetic particles.
3. Dispense calibrator, controls or specimens.
4. Dispense the NS3 antigen.
5. Incubate.
6. Wash with Wash/System liquid.
7. Dispense conjugate into the reaction cuvettes.
8. Incubate.
9. Wash with Wash/System liquid.
10. Add the Starter Reagents and measure the light emitted.

10. CALIBRATION

Assaying of the calibrator contained in the reagent integral allows the analyzer to set the assay cut-off. The calibrator solution allows four (4) calibrations to be performed.

Recalibration in triplicate is mandatory whenever at least one of the following conditions occurs:

- A new lot of reagent integral or Starter Kit is used.
- The previous calibration was performed more than eight (8) weeks before.
- The analyzer has been serviced.
- Control values lie outside the expected ranges

Refer to the analyzer operators manual for calibration instructions.

11. QUALITY CONTROL

Quality control must be performed once per day of use or in accordance with local, state, and/or federal regulations or accreditation requirements and your laboratory's quality control procedures. It is recommended that the user refer to CLSI document, C24-A3, and 42 CFR 493.1256(c) for guidance on appropriate quality control practices.
LIAISON® controls should be run in singlicate to monitor the assay performance.
If control values lie within the expected ranges, the test is valid. If control values lie outside the expected ranges, the test is invalid and patient results cannot be reported. Assay calibration should be performed if a control failure is observed and controls and specimens must be retested. The performance of other controls should be evaluated for compatibility with this assay before they are used. Appropriate value ranges should then be established for additional quality control materials.

12. LIMITATIONS OF THE PROCEDURE

A skillful technique and strict adherence to the instructions are necessary to obtain reliable results.
Bacterial contamination or heat inactivation of the specimens may affect the test results.
Warning - This test is suitable only for investigating single samples, not for diluted specimens, sample pools or heat-inactivated specimens.
A non-reactive test result for HCV antibodies does not exclude the possibility of exposure to or infection with HCV.
Falsely reactive results cannot be ruled out with any test kit, the percentage of which is related to specimen integrity, the specificity of the test kit, and the prevalence of the anti-HCV antibodies in the population being screened.
Diagnosis of infectious diseases should not be established on the basis of a single test result, but should be determined in conjunction with clinical findings and other diagnostic procedures as well as in association with medical judgement. A full differential diagnostic work-up for the diagnosis of hepatitis C and related clinical conditions includes examination of the patient's immune status and clinical history.
If LIAISON® XL MUREX HCV Ab results are inconsistent with clinical evidence, additional testing is suggested to confirm the result.
Results obtained with LIAISON® XL MUREX HCV Ab assay may not be used interchangeably with values obtained with different manufacturers' assay methods.

13. INTERPRETATION OF RESULTS

The presence or absence of HCV antibodies in the specimens is determined by comparing the chemiluminescence reaction signal to the cut-off value provided by the assay calibration.
The analyzer automatically calculates the signal-to- cutoff (S/CO) ratios, then grades the results.
For details, refer to the analyzer operator's manual.

The cut-off discriminating between the presence and absence of HCV Ab has a S/CO value of 1.0.

Patient results should be interpreted as follows:

- Samples with S/CO value of less than 0.80 are considered non-reactive for HCV antibodies.
- Samples with S/CO value equal to or greater than 1.00 are considered reactive for HCV antibodies..
- Samples with S/CO values greater than or equal to 0.80 and less than 1.00 are considered equivocal. Equivocal samples should be retested in duplicate in order to confirm the initial result. Samples having at least 2 out of the 3 results equal to or above S/CO value of 1.0 are considered reactive. Samples having at least 2 out of the 3 results less than S/CO value of 1.0 are considered non-reactive.

14. SPECIFIC PERFORMANCE CHARACTERISTICS

14.1 Summary of clinical performance

A multi-site clinical agreement study was conducted to determine the clinical performance of the LIAISON® XL MUREX HCV Ab assay on samples that would routinely be tested for hepatitis.
The LIAISON® XL MUREX HCV Ab clinical study population consisted of a total of 3649 specimens of which :

- 3251 were collected prospectively. They included individuals at increased risk of hepatitis C infection due to medical conditions, occupation, lifestyle, behavior, or known exposure event; individuals with signs and symptoms of a hepatitis infection; pediatric subjects (from 2 years to 21 years) at increased risk and/or sign and symptoms of hepatitis C infection; pregnant women with no known risk factor for hepatitis C infection; dialysis patients.
- 398 were collected retrospectively from subjects diagnosed with a current hepatitis C infection and from subjects with no HCV antibodies.
- Five (5) samples (3 prospective and 2 retrospective) were excluded from the analysis as HCV infection status could not be determined by the algorithm. After exclusions there were 3251 prospective samples and 398 retrospective samples. Overall, 3283 subjects were determined to be not HCV infected and 366 were classified as HCV infected by the reference assays.

A demographic summary of the overall risk specimen population by race, age and sex is provided in the following tables:

LIAISON® XL MUREX HCV Ab Expected Results by Age and Gender, Prospective Population

Age Range (years)	Gender	LIAISON® XL MUREX HCV Ab				
		Reactive		non reactive		Total
		n	%	n	%	
2-12	F	0	0.0	14	100.0	14
	M	0	0.0	18	100.0	18
13-18	F	0	0.0	60	100.0	60
	M	0	0.0	44	100.0	44

Age Range (years)	Gender	LIAISON® XL MUREX HCV Ab				
		Reactive		non reactive		Total
		n	%	n	%	
19-21	F	0	0.0	119	100.0	119
	M	0	0.0	74	100.0	74
22-29	F	10	1.6	624	98.4	634
	M	6	3.0	197	97.0	203
30-39	F	17	2.6	640	97.4	657
	M	21	9.2	207	90.8	228
40-49	F	18	7.5	221	92.5	239
	M	20	12.6	139	87.4	159
50-59	F	22	10.5	187	89.5	209
	M	33	17.5	156	82.5	189
60-69	F	13	9.2	129	90.8	142
	M	14	12.0	103	88.0	117
70-79	F	3	5.0	57	95.0	60
	M	4	7.5	49	92.5	53
80-89	F	0	0.0	14	100.0	14
	M	2	16.7	10	83.3	12
90-98	F	0	0.0	4	100.0	4
	M	0	NA	0	NA	0
Unk	Unk	0	0.0	2	100.0	2
Total		**183**	**5.6%**	**3068**	**94.4%**	**3251**

Demographics of Clinical Study Samples by Gender

Gender	Adult				Pediatric (2-21)				Unknown Age			
	Prospective		Retrospective		Prospective		Retrospective*		Prospective		Retrospective	
	n	%	n	%	n	%	n	%	n	%	n	%
Female	1959	67.1	113	30.7	193	58.7	6	26.1	0	0.0	0	0.0
Male	961	32.9	255	69.3	136	41.3	17	73.9	0	0.0	7	100.0
Unknown	0	0.0	0	0.0	0	0.0	0	0.0	2	100.0	0	0.0
Total	**2920**	**100.0**	**368**	**100.0**	**329**	**100.0**	**23**	**100.0**	**2**	**100.0**	**7**	**100.0**

*all subjects are 15 years and older

Demographics of Clinical Study Samples by Race

Race	Adult				Pediatric (2-21)				Unknown Age			
	Prospective		Retrospective		Prospective		Retrospective		Prospective		Retrospective	
	n	%	n	%	n	%	N	%	N	%	n	%
American Indian/ Alaskan Native	3	0.10	1	0.3	1	0.30	0	0.0	0	0.0	0	0.0
Asian	53	1.82	1	0.3	1	0.30	0	0.0	0	0.0	0	0.0
Black/ African American	796	27.26	108	29.3	50	15.20	15	65.2	0	0.0	0	0.0
Native Hawaiian or Other Pacific Islander	5	0.17	1	0.3	0	0.00	0	0.0	0	0.0	0	0.0
White	1517	51.95	244	66.3	86	26.14	8	34.8	1	50.0	7	100.0

Race	Adult				Pediatric (2-21)				Unknown Age			
	Prospective		Retrospective		Prospective		Retrospective		Prospective		Retrospective	
	n	%	n	%	n	%	N	%	N	%	n	%
Unknown	312	10.69	10	2.7	103	31.31	0	0.0	1	50.0	0	0.0
Other	234	8.01	3	0.8	88	26.75	0	0.0	0	0.0	0	0.0
Total	**2920**	**100.00**	**368**	**100.0**	**329**	**100.00**	**23**	**100.0**	**2**	**100.0**	**7**	**100.0**

Hepatitis C infection status was based on testing all prospective and retrospective samples with FDA approved HCV assays according to the HCV status algorithm below.

HCV Infection Status as Determined by FDA Approved HCV Assays

HCV Status Algorithm					
Reference Assay	**Comparator Assay 1**	**Comparator Assay 2**	**Intermediate HCV Status**	**HCV RNA by PCR**	**HCV Infection Status**
Reactive/ Equivocal	Non-Reactive	Non-Reactive	Not determined	Non-Reactive	Not HCV infected
Reactive/ Equivocal	Reactive	Non-Reactive	Not determined	Non-Reactive	Not determined
	Non-Reactive	Reactive			
Reactive/ Equivocal	Reactive	Non-Reactive	Not determined	Reactive	HCV Infected
	Non-Reactive	Reactive			
	Non-Reactive	Non-Reactive			
Non-Reactive	Not applicable		Not HCV infected	Not Applicable	Not HCV infected
Reactive/ Equivocal	Reactive	Reactive	HCV infected	Not Applicable	HCV Infected

The following tables show clinical comparison results of LIAISON® XL MUREX HCV Ab to HCV infection status as determined by the reference assays above with positive percent (%) agreement (PPA) and negative percent (%) agreement (NPA) and 95% confidence intervals (Wilson method). Samples are graded as reactive (R) or non-reactive (NR).

Clinical Agreement (Retrospective Populations)

HCV Category	HCV Infection Status				Total	PPA 95% CI Wilson Score	NPA 95% CI Wilson Score
	Not Infected		HCV Infected				
	LIAISON® XL MUREX HCV Ab		LIAISON® XL MUREX HCV Ab				
	R	NR	R	NR			
Subjects diagnosed with a current HCV Infection	1	10	187	0	198	(187/187) 100.0% *98.0%-100.0%*	(10/11) 90.9% *62.3%-98.4%*
Subjects with no HCV antibodies	1	199	0	0	200	NA	(199/200) 99.5% *97.2%-99.9%*
TOTAL	**2**	**209**	**187**	**0**	**398**	**(187/187) 100.0%** ***98.0%-100.0%***	**(209/211) 99.1%** ***96.6%-99.7%***

Clinical Agreement (Prospective Populations)

HCV Category	HCV Infection Status				Total	PPA 95% CI Wilson Score	NPA 95% CI Wilson Score
	Not Infected		HCV Infected				
	LIAISON® XL MUREX HCV Ab		LIAISON® XL MUREX HCV Ab				
	R	NR	R	NR			
Individuals at Risk for HCV infection (Adult)	2	1142	52	0	1196	(52/52) 100.0% *93.1%-100.0%*	(1142/1144) 99.8% *99.4%-100.0%*
Individuals with Signs and Symptoms of hepatitis C Infection	5	734	108	3	850	(108/111) 97.3% *92.4%-99.1%*	(734/739) 99.3% *98.4%-99.7%*
Pediatric (2-21 years) at risk or with signs and symptoms of hepatitis C infection	0	201	0	0	201	NA	(201/201) 100.0% *98.1%-100.0%*
Dialysis Patients	0	187	12	1	200	(12/13) 92.3% *66.7%-98.6%*	(187/187) 100.0% *98.0%-100.0%*
Pregnant Women (10 weeks to 39 weeks gestational age)	1	800	3	0	804	(3/3) 100.0% *43.8%-100.0%*	(800/801) 99.9% *99.3%-100.0%*
Total	**8**	**3064**	**175**	**4**	**3251**	**(175/179) 97.8%** ***(94.4%-99.1%)***	**(3064/3072) 99.7%** ***(99.5%-99.9%)***

Clinical Agreement pediatric population within age groups

HCV Category	Subject Age	HCV Infection Status				Total	PPA 95% CI Wilson Score	NPA 95% CI Wilson Score
		Not Infected		HCV Infected				
		LIAISON MUREX HCV Ab		LIAISON MUREX HCV Ab				
		R	NR	R	NR			
Prospective Pediatric Subjects (excluding pregnant subjects)	2-12 years	0	32	0	0	32	NA	(32/32) 100.0% *89.3%-100.0%*
	13-18 years	0	61	0	0	61	NA	(61/61) 100.0% *94.1%-100.0%*
	19-21 years	0	108	0	0	108	NA	(108/108) 100.0% *96.6%-100.0%*
	Subtotal	0	201	0	0	201	NA	(201/201) 100.0% *98.1%-100.0%*
Prospective Pediatric Pregnancy Samples								
	13-18 years	0	43	0	0	43	NA	(43/43) 100.0% *91.8%-100.0%*
	19-21	0	85	0	0	85	NA	(85/85) 100.0%

HCV Category	Subject Age	HCV Infection Status				Total	PPA 95% CI Wilson Score	NPA 95% CI Wilson Score
		Not Infected		HCV Infected				
		LIAISON MUREX HCV Ab		LIAISON MUREX HCV Ab				
		R	NR	R	NR			
	years							*95.7%-100.0%*
	Subtotal	0	128	0	0	128	NA	(128/128) 100.0% *97.1%-100.0%*
Retrospective Pediatric subjects	2-12 years	0	0	0	0	0	NA	NA
	13-18 years	0	1	0	0	1	NA	(1/1) 100.0% *20.7%-100.0%*
	19-21 years	0	18	4	0	22	(4/4) 100.0% *51.0%-100.0%*	(18/18) 100.0% *82.4%-100.0%*
	Subtotal	0	19	4	0	23	(4/4) 100.0% *51.0%-100.0%*	(19/19) 100.0% *83.2%-100.0%*
TOTAL		**0**	**348**	**4**	**0**	**352**	**(4/4) 100.0% *51.0%-100.0%***	**(348/348) 100.0% *98.9%-100.0%***

Cumulative Clinical Comparison versus the HCV Infection Status (Combined Prospective & Retrospective)

LIAISON® XL HCV Ab	HCV Infection Status			Total[3]
	Not HCV Infected	HCV Infected	Not Determined[1]	
Reactive	10	362	4	376
Not Reactive	3273	4[2]	1	3278
Total	**3283**	**366**	**5**	**3656**

[1]samples with a not determined HCV Infection Status were not included in PPA and NPA calculations.

[2]2 out of 4 samples resulted HCV RNA negative.

[3] There were a total of 10 initial Equivocal results which resolved to 6 HCV not infected, 2 HCV infected, and 2 HCV infected false positive

Positive Predictive Agreement (PPA): (362/366) 98.9% , Wilson Approach 95% CI: (97.2%-99.6%).
Negative Predictive Agreement (NPA): (3273/3283) 99.7%, Wilson Approach 95% CI (99.4%-99.8%).

14.2 Equivalence between Pediatric and Adult serum

Pediatric samples were tested to determine if these types of samples provide equivalent results to adult human serum.

A total of thirty (30) negative pediatric patient samples were used for this study. The pediatric samples encompassed the age range of two (2) years to twenty-one (21) years. Ten (10) negative pediatric samples were spiked with anti-HCV high positive sample to obtain high negative samples, low positive samples, and moderate positive samples. Adult negative pool samples were used as controls, by spiking with anti-HCV high positive sample to achieve the same three (3) levels of samples: high negative, low positive and moderate positive samples. Averaged results for each pediatric sample were compared to results obtained on adult samples. No significant difference was observed between the performance of pediatric and adult samples.

14.3. Within Laboratory Precision

A twenty (20) day reproducibility/precision study was performed by using a coded panel of eleven (11) serum samples that was prepared by either spiking or diluting samples as necessary to obtain negative, low positive and mid positive samples. Kit Control sets were also included in the 20-day study. The panel samples and kit controls were tested on three (3) LIAISON® XL MUREX HCV Ab kit lots in two (replicates) per run, two (2) runs per day for twenty (20) operating days on one (1) LIAISON® XL Analyzer. The CLSI document EP5-A3 was consulted in the preparation of the testing protocol.

			LIAISON® XL MUREX HCV Ab Assay All 3 Lots Combined									
Sample ID	N	Mean	Within-Run		Between-Run		Between-Day		Between-Lot		Within Laboratory Precision	
			SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV
Kit Ctrl Neg lot 1	240	0.08	0.01	10.5%	0.006	7.6%	0.004	5.1%	0.013	15.2%	0.017	20.6%
		5898*	677.2	11.5%	472.1	8.0%	421.4	7.1%	973.8	16.5%	1344	22.8%
Kit Ctrl Neg lot 2	240	0.10	0.009	8.8%	0.005	4.8%	0.007	7.4%	0.008	8.5%	0.015	15.1%
		7085*	646.8	9.1%	382.3	5.4%	528.8	7.5%	758.0	10.7%	1191	16.8%
Kit Ctrl Neg lot 3	240	0.09	0.005	6.0%	0.005	5.8%	0.006	7.1%	0.018	19.4%	0.020	22.3%
		6440*	390.4	6.1%	438.0	6.8%	474.7	7.4%	1374	21.3%	1567	24.3%
Kit Ctrl Pos lot 1	240	3.19	0.059	1.9%	0.103	3.2%	0.151	4.7%	0.208	6.5%	0.283	8.9%
Kit Ctrl Pos lot 2	240	2.92	0.062	2.1%	0.097	3.3%	0.139	4.7%	0.180	6.2%	0.255	8.7%
Kit Ctrl Pos lot 3	240	2.77	0.059	2.1%	0.083	3.0%	0.161	5.8%	0.194	7.0%	0.272	9.8%
HCV1U10	240	0.11	0.009	7.7%	0.010	9.1%	0.010	9.2%	0.028	25.4%	0.033	29.5%
		8065*	597.6	7.4%	717.2	8.9%	790.6	9.8%	2211	27.4%	2527	31.3%
HCV1U11	240	0.82	0.019	2.3%	0.033	4.0%	0.048	5.9%	0.064	7.8%	0.089	10.8%
HCV1U12	240	0.82	0.020	2.4%	0.033	4.1%	0.043	5.2%	0.066	8.1%	0.087	10.7%
HCV1U13	240	0.82	0.019	2.3%	0.029	3.5%	0.048	5.9%	0.065	7.9%	0.088	10.7%
HCV1U14	240	1.5	0.036	2.3%	0.063	4.1%	0.077	5.0%	0.142	9.3%	0.177	11.6%
HCV1U15	240	1.38	0.036	2.6%	0.050	3.6%	0.069	5.0%	0.109	7.9%	0.143	10.3%
HCV1U16	240	1.4	0.037	2.6%	0.051	3.5%	0.066	4.5%	0.109	7.5%	0.142	9.8%
HCV1U17	240	1.1	0.033	3.0%	0.032	2.9%	0.043	3.9%	0.108	9.8%	0.125	11.4%
HCV1U18	240	3.2	0.064	2.0%	0.108	3.3%	0.148	4.6%	0.212	6.6%	0.287	8.9%
HCV1U19	240	3.2	0.060	1.8%	0.098	3.0%	0.157	4.9%	0.216	6.7%	0.291	9.0%
HCV1U20	240	3.2	0.071	2.2%	0.092	2.8%	0.148	4.6%	0.196	6.0%	0.271	8.4%

*precision calculations based on signal (RLU).

14.4. Reproducibility

A 5-day reproducibility/precision study was conducted at three (3) laboratories (2 external and 1 internal). Each site used a different lot of LIAISON® XL MUREX HCV Ab assay. The coded panel used in the 5-day study was the same panel used in the 20-day study. The coded panel was tested at all three (3) sites, using six (6) replicates per run in one (1) run per day for five (5) operating days. The CLSI document EP15-A3 was consulted in the preparation of the testing protocol. The mean, standard deviation, and coefficient of variation (%CV) of the results were computed for each of the tested specimens across sites.

			LIAISON® XL MUREX HCV Ab Assay 5 Day Multi-Site / Multi-Lot									
Sample ID	N	Mean (S/CO)	Within-Run/Day		Between-Day		Within site/lot		Between-site/lot		Reproducibility (Total)	
			SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV
Kit Control Neg	90	0.074	0.002	2.8%	0.002	3.0%	0.003	4.0%	0.022	29.6%	0.022	29.9%
		4482*	131.4	2.9%	137.2	3.1%	182.3	4.1%	1134	25.3%	1149	25.6%
Kit Control Pos	90	2.9	0.136	4.7%	0.118	4.1%	0.172	5.9%	0.085	2.9%	0.192	6.6%
HCV1U10	90	0.100	0.004	4.2%	0.005	5.2%	0.006	6.4%	0.036	36.1%	0.037	36.7%
		6190*	160.7	2.6%	265.2	4.3%	303.1	4.9%	2210	35.7%	2231	36.0%
HCV1U11	90	0.818	0.028	3.4%	0.033	4.1%	0.042	5.1%	0.103	12.5%	0.111	13.5%
HCV1U12	90	0.810	0.026	3.2%	0.024	3.0%	0.034	4.2%	0.097	12.0%	0.103	12.7%
HCV1U13	90	0.818	0.026	3.1%	0.029	3.5%	0.037	4.5%	0.108	13.3%	0.115	14.0%
HCV1U14	90	1.5	0.058	3.8%	0.060	3.9%	0.080	5.2%	0.202	13.2%	0.217	14.2%
HCV1U15	90	1.4	0.045	3.2%	0.062	4.5%	0.075	5.3%	0.162	11.5%	0.178	12.7%
HCV1U16	90	1.5	0.064	4.4%	0.071	4.9%	0.091	6.3%	0.179	12.3%	0.201	13.8%
HCV1U17	90	1.1	0.037	3.3%	0.041	3.7%	0.053	4.7%	0.155	14.0%	0.163	14.7%
HCV1U18	90	3.3	0.101	3.1%	0.106	3.2%	0.140	4.3%	0.316	9.7%	0.346	10.6%
HCV1U19	90	3.2	0.095	2.9%	0.096	3.0%	0.130	4.0%	0.300	9.3%	0.327	10.1%
HCV1U20	90	3.3	0.113	3.5%	0.082	2.5%	0.132	4.0%	0.328	10.0%	0.354	10.8%

*precision calculations based on signal (RLU).

14.4. Analytical Sensitivity as Seroconversion Panel Performance

Twenty-one (21) commercially available HCV seroconversion panels were tested using LIAISON® XL MUREX HCV Ab and a commercially available FDA-approved Anti-HCV comparator assay to determine the sensitivity of the assay. The results are summarized in the following table:

Panel ID	LIAISON® XL MUREX HCV Ab		Anti-HCV Comparator assay		Difference of LIAISON® XL MUREX HCV Ab vs Comparator assay		Difference in # days between LIAISON XL MUREX HCV Ab vs Comparator
	Last day with non reactive results	First day with reactive results	Last day with non reactive results	First day with reactive results	Last day with non reactive results	First day with reactive results	
9041	31	62	31	62	0	0	0
9044	21	25	17	21	4	4	0
9045	32	37	32	37	0	0	0
9046	0	69	0	69	0	0	0
9047	21	28	21	28	0	0	0
9058	7	10	7	10	0	0	0
10057	37	152	37	152	0	0	0
10062	17	41	17	41	0	0	0
10071	75	77	77	82	-2	-5	5
10185	0	130	0	130	0	0	0
6220	10	18	10	18	0	0	0
6222	36	40	36	40	0	0	0
6224	11	19	11	19	0	0	0
6226	32	37	32	39	0	-2	2
6227	46	74	46	74	0	0	0
6229	10	17	10	17	0	0	0
PHV915	5	12	0	12	5	0	0
PHV917	22	85	22	85	0	0	0
PHV920	7	13	7	13	0	0	0
PHV922	3	7	10	14	-7	-7	7
PHV924	7	59	7	59	0	0	0

The sensitivity of the LIAISON® XL MUREX HCV Ab was comparable to the anti-HCV comparator assay in the twenty-one (21) seroconversion panels tested. The LIAISON XL MUREX HCV Ab was reactive in the same day as the reference assay in 18 of the 21 panels tested. The LIAISON XL MUREX HCV Ab was reactive earlier than the reference assay in 3 of the 21 panels tested (panels 10071, 6226, and PHV922).

14.5. Genotype detection

The study was performed to evaluate the ability of the LIAISON® XL MUREX HCV Ab assay to detect antibodies to various known HCV genotypes and subtypes. Thirty-one (31) specimens were available and consisted of the following genotypes, as determined by the specimen vendor with commercially available HCV RNA assays: 1, 2, 3, 4, 5 and 6. The specimens were tested with the LIAISON® XL MUREX HCV Ab assay and all detected as reactive.

14.6. Matrix Comparison

Thirty-two (32) paired sets of matched serum (with and without gel SST) and plasma (lithium and sodium heparin, sodium citrate and K_2 EDTA) were tested to determine if these sample types provide equivalent results on the LIAISON® XL MUREX HCV Ab assay. Each sample was divided into three aliquots. Two sets of aliquots were spiked with an anti-HCV high positive sample to achieve two (2) levels of samples: high negative and low positive samples. The third set of aliquots was un-spiked to serve as control samples. Where possible, native samples identified as high negative and low positive during the initial screening, were used instead of spiking these samples. The results of the negative and low positive samples did not change the classification of the expected result. The results obtained on the serum-plasma paired samples indicated that there is equivalence among serum (with and without gel SST), K_2 EDTA, lithium heparin, sodium citrate and sodium heparin plasma. The summarized results for the negative and low positive samples are presented in the tables below.

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Summarized results for sample equivalence test with high negative samples

X reference	**Serum without Gel SST**	**Serum without Gel SST**	**Serum without Gel SST**	**Serum without Gel SST**	**Serum without Gel SST**
y exam	**Serum with Gel SST**	**Na Citrate**	**K2 EDTA**	**Li Heparin**	**Na Heparin**
Slope (Passing Bablok fit)	1.000	1.000	1.000	0.9479	1.000
Is the slope in the range 0.9-1.1?	Yes	Yes	Yes	Yes	Yes
Intercept (Passing Bablok fit)	0	-1.832E-15	0.065	0.009948	0
Intercept (95% CI)	-3.331E-16 to 0.03086	-0.07289 to 0.006611	-0.6328E-16 to 0.1026	-0.03239 to 0.05421	-0.06704 to 0.04103
Do the intercept include zero?	Yes	Yes	Yes	Yes	Yes
Correlation (information only)	0.971	0.959	0.947	0.935	0.921

Summarized results for the low positive samples

X reference	**Serum without Gel SST**	**Serum without Gel SST**	**Serum without Gel SST**	**Serum without Gel SST**	**Serum without Gel SST**
y exam	**Serum with Gel SST**	**Na Citrate**	**K2 EDTA**	**Li Heparin**	**Na Heparin**
Slope (Passing Bablok fit)	0.9963	1.019	1.011	0.9521	1.022
Is the slope in the range 0.9-1.1?	Yes	Yes	Yes	Yes	Yes
Intercept (Passing Bablok fit)	187	-2839	3714	1463	-1984
Intercept (95% CI)	-2133 to 2889	-7421 to 1060	-2128 to 8480	2150 to 4567	-6976 to 2386
Do the intercept include zero?	Yes	Yes	Yes	Yes	Yes
Correlation (information only)	0.977	0.967	0.955	0.945	0.929

14.7 Potential interfering substances

Controlled studies of potentially interfering substances at two (2) anti HCV levels around the cutoff, showed no interference at the concentration for each substance listed below in the LIAISON® XL MUREX HCV Ab assay. The testing was based on CLSI-EP07.

Substances	Tested concentrations
Triglycerides	3000 mg/dL
Hemoglobin	1000 mg/dL
Unconjugated bilirubin	40 mg/dL
Conjugated bilirubin	40 mg/dL
Albumin	6000 mg/dL
Cholesterol total	400 mg/dL
Vitamin H (Biotin)	3510 ng/ml
Total protein	150 g/L
Immunoglobulin G	6 g/L
Ribavirin	120 mg/dL
Interferon-alpha2α	6000 IE/mL

14.8 Biotin Interference

Sample S/CO with no added biotin	% Bias for samples containing various concentrations of Biotin					
	Biotin concentrations (ng/mL)					
	50	100	500	1,000	2,000	3,510
0.80	7.9	-9.1	-17.0	-56.8	-61.8	*
1.77	1.9	-3.8	-15.1	-53.8 (FN) †	-58.7 (FN) †	*
0.89	*	*	*	*	*	-63.9
2.0	*	*	*	*	*	-66.5 (FN) †

* not tested

† FN = false non-reactive based S/CO 1.0

Specimens with biotin concentrations up to 100 ng/mL demonstrated < 10% negative bias in LIAISON XL MUREX HCV Ab S/CO values. Biotin concentrations greater than 100 ng/mL led to higher negative bias which can cause false non-reactive LIAISON XL MUREX HCV Ab results in samples with anti-HCV concentrations near the medical decision point.

The recommended daily intake for biotin is 30 µg and normal serum concentrations of biotin range from below 0.1 to 0.8 ng/mL (7). High doses of biotin (up to 30 mg per day) may be taken as a dietary supplement promoted for hair, nail, or skin benefits. Some pharmacokinetic studies have shown that in subjects taking daily doses of 5 mg, 10 mg and 20 mg of biotin, serum concentrations of biotin can reach up to 73 ng/mL, 141 ng/mL and 355 ng/mL (7), respectively, or up to 1160 ng/mL in plasma for subjects taking doses of biotin up to 300 mg/day (8). These studies were performed in a small number of apparently healthy, white subjects. Clearance of biotin could be different for other populations, for example patients with impaired renal function may have higher concentrations of biotin in serum.

14.9 Cross-reactivity

The cross-reactivity study for the LIAISON® XL MUREX HCV Ab assay was designed to evaluate potential interference from other viruses that may cause symptoms similar to HCV infection (HAV, HBV), other organisms that may cause infectious disease (CMV, HSV, EBV, T.cruzi, T. pallidum, HIV, HTLV) and from other conditions that may result from atypical immune system activity (i.e. rheumatoid factor, anti-nuclear antibodies, HAMA). One (1) specimen resulted reactive with LIAISON® XL MUREX HCV Ab out of the 393 assessed specimens.

Organism / Condition	N	Comparator HCV Ab assay Non-Reactive	
		LIAISON® XL MUREX HCV Ab	
		Non reactive	Reactive
CMV (anti-CMV positive)	13	13	0
EBV (anti-EBV positive)	15	15	0
HSV (anti-HSV positive)	15	15	0
Hepatitis A Virus (anti-HAV positive)	12	12	0
Hepatitis B Virus (anti-HBV positive)	14	14	0
HIV-1 (anti-HIV-1 positive)	8	8	0
HIV-2 (anti-HIV-2 positive)	12	12	0
HTLV-1/2 (anti-HTLV positive)	15	15	0
Hepatocellular carcinoma	12	12	0
C. trachomatis (anti-chlamidia positive)	15	15	0
E.Coli (anti-E.Coli positive)	15	15	0
N. gonorrhoea (anti-Neisseria positive)	15	15	0
T. pallidum (anti-treponema positive)	15	15	0
T.cruzi (anti-T. cruzi positive)	15	15	0
Anti-nuclear antibodies (ANA)	13	13	0
Rheumatoid Factor	14	14	0
HAMA	15	15	0
IgG monoclonal gammopathy	11	11	0
IgM monoclonal gammopathy	5	5	0
Multiple myeloma	14	14	0
Fatty liver disease	15	14	1
Non viral liver diseases (i.e. Auto-immune hepatitis)	14	14	0
Influenza vaccine recipients	15	15	0

The LIAISON XL MUREX HCV Ab was reactive in 1 out of 15 fatty liver disease specimens that reported anti-HCV non-reactive results with the comparator.

15. REFERENCES

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The symbols glossary is provided electronically and can be found in the Dialog section at www.diasorin.com using the part and lot numbers associated with the corresponding IVD product.

LIAISON® XL murex Control HCV Ab ([REF] 318241)

1. INTENDED USE

The LIAISON® XL murex Control HCV Ab (negative and positive) is intended for use as assayed quality control samples to monitor the performance of the LIAISON® XL MUREX HCV Ab assay. The performance characteristics of LIAISON® controls have not been established for any other assays or instrument platforms different from LIAISON® XL.
For details, refer to the Analyzer Operator's Manual.

Caution: **U.S. Federal Law restricts this device to sale by or on the order of a licensed practitioner**.

2. MATERIALS PROVIDED

Negative control [CONTROL|-] (2 x 1.0 mL)	Human serum/plasma non-reactive for HCV antigens and antibodies, 0.2% ProClin® 300, preservatives.
Positive control [CONTROL|+] (2 x 1.0 mL)	Inactivated human serum/plasma reactive for HCV antibodies, 0.2% ProClin® 300, preservatives.

ProClin® is a trademark of the Dow Chemical Company (Dow) or an affiliated company of Dow.
All reagents are supplied ready to use. The range of values of each control is reported on the certificate of analysis and indicates the limits established by DiaSorin for control values that can be obtained in reliable assay runs. Each laboratory is responsible for adopting different limits to meet individual requirements.

3. WARNINGS AND PRECAUTIONS

- For *in vitro* diagnostic use only.
- Controls are not kit lot specific and may be safely interchanged even with different reagent integral lots.
- The human blood source material used to produce the components provided in this kit derives from units found to be non-reactive for HBsAg, anti-HCV, anti-HIV-1, anti-HIV-2 when tested by an FDA-approved method, except for the positive control, which is reactive for HCV antibodies. The units positive for HCV antibodies have been inactivated by heat treatment (60°C for one hour) during the manufacturing process. They may derive from HCV-infected patients and therefore should be considered as potentially infectious. As, however, no test method can offer absolute assurance that pathogens are absent, all specimens of human origin should be considered potentially infectious and handled with care.
- Observe the normal precautions required for handling all laboratory reagents.
- Disposal of all waste material should be in accordance with local guidelines.
- he controls are not calibrators and should not be used for assay calibration.

4. SAFETY PRECAUTIONS

- Do not eat, drink, smoke or apply cosmetics in the assay laboratory.
- Do not pipette by mouth.
- Avoid direct contact with potentially infected material by wearing laboratory clothing, protective goggles, and disposable gloves.
- Wash hands thoroughly at the end of each assay.
- Avoid splashing or forming an aerosol. All drops of biological reagent must be removed with a sodium hypochlorite solution with 0.5% active chlorine, and the means used must be treated as infected waste.
- All samples and reagents containing biological materials used for the assay must be considered as potentially able to transmit infectious agents. The waste must be handled with care and disposed of in compliance with the laboratory guidelines and the statutory provisions in force in each Country.
- Any materials for reuse must be appropriately sterilized in compliance with the local laws and guidelines. Check the effectiveness of the sterilization/decontamination cycle.
- Do not use kits or components beyond the expiration date given on the label.

Chemical Hazard and Safety Information

• Reagents in this kit are classified in accordance with the US OSHA Hazard Communication Standard; individual US State Right-to-Know laws and European Union EC Regulation 1272/2008 (CLP).
• Hazardous reagents are classified and labelled as follow:

REAGENTS:	[CONTROL|-], [CONTROL|+]

CLASSIFICATION:	Skin sens. 1 H317
SIGNAL WORD:	Warning
SYMBOLS / PICTOGRAMS:	 GHS07 Exclamation mark
HAZARD STATEMENTS:	H317 May cause an allergic skin reaction.
PRECAUTIONARY STATEMENTS:	P261 Avoid breathing dust/fume/gas/mist/vapours/spray. P280 Wear protective gloves/protective clothing/eye protection/face protection. P363 Wash contaminated clothing before reuse
CONTAINS: (only substances prescribed pursuant to Article 18 of EC Regulation 1272/2008)	Reaction mass of: 5-chloro-2-methyl-4-isothiazolin-3-one [EC no. 247-500-7] and 2-methyl-2H -isothiazol-3-one [EC no. 220-239-6] (3:1). (ProClin® 300).)

For additional information see Safety Data Sheets available on www.diasorin.com**.**

5. STORAGE AND STABILITY

Upon receipt, the controls must be stored in an upright position to prevent adherence of the solution to the vial cap. Do not freeze. When controls are stored, sealed and kept upright, they are stable at 2-8°C up to the expiry date. The controls should not be used past the expiry date indicated on the vial labels.
After removing the seals, the control vial is stable for twelve (12) weeks when stored upright at 2-8°C. Avoid bacterial contamination of controls.

6. QUALITY CONTROL

Quality control should be performed once per day of use, or according to guidelines or requirements of local regulations or accredited organizations. It is recommended that the user refer to CLSI document, C24-A3, and 42 CFR 493.1256(c) for guidance on appropriate quality control practices. LIAISON® controls are intended to monitor for substantial reagent failure. Whenever LIAISON® controls lie outside the expected ranges, calibration should be repeated and controls and samples retested. Do not report patient results until control results are within expected ranges. Strict adherence to the instructions of the LIAISON® XL MUREX HCV Ab kit are necessary to obtain reliable results.

7. LIMITATIONS

The LIAISON® XL MUREX Control HCV Ab positive control will not ensure precision at the assay cut-off.
Control values for assays other the LIAISON® XL MUREX HCV Ab assay have not been established.
If users wish to use this control material with other assays, it is their responsibility to establish appropriate ranges.