August 16, 2022

Instrumentation Laboratory Co.
Carol Marble
Sr. Regulatory Affairs Director
180 Hartwell Road
Bedford, Massachusetts 01730

Re: K213426
Trade/Device Name: HemosIL ReadiPlasTin
Regulation Number: 21 CFR 864.7750
Regulation Name: Prothrombin Time Test
Regulatory Class: Class II
Product Code: GJS
Dated: October 20, 2021
Received: October 21, 2021

Dear Carol Marble:

We have reviewed your Section 510(k) premarket notification of intent to market the device referenced above and have determined the device is substantially equivalent (for the indications for use stated in the enclosure) to legally marketed predicate devices marketed in interstate commerce prior to May 28, 1976, the enactment date of the Medical Device Amendments, or to devices that have been reclassified in accordance with the provisions of the Federal Food, Drug, and Cosmetic Act (Act) that do not require approval of a premarket approval application (PMA). You may, therefore, market the device, subject to the general controls provisions of the Act. Although this letter refers to your product as a device, please be aware that some cleared products may instead be combination products. The 510(k) Premarket Notification Database located at https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfpmn/pmn.cfm identifies combination product submissions. The general controls provisions of the Act include requirements for annual registration, listing of devices, good manufacturing practice, labeling, and prohibitions against misbranding and adulteration. Please note: CDRH does not evaluate information related to contract liability warranties. We remind you, however, that device labeling must be truthful and not misleading.

If your device is classified (see above) into either class II (Special Controls) or class III (PMA), it may be subject to additional controls. Existing major regulations affecting your device can be found in the Code of Federal Regulations, Title 21, Parts 800 to 898. In addition, FDA may publish further announcements concerning your device in the Federal Register.

Please be advised that FDA's issuance of a substantial equivalence determination does not mean that FDA has made a determination that your device complies with other requirements of the Act or any Federal statutes and regulations administered by other Federal agencies. You must comply with all the Act's

requirements, including, but not limited to: registration and listing (21 CFR Part 807); labeling (21 CFR Part 801 and Part 809); medical device reporting (reporting of medical device-related adverse events) (21 CFR 803) for devices or postmarketing safety reporting (21 CFR 4, Subpart B) for combination products (see https://www.fda.gov/combination-products/guidance-regulatory-information/postmarketing-safety-reporting-combination-products); good manufacturing practice requirements as set forth in the quality systems (QS) regulation (21 CFR Part 820) for devices or current good manufacturing practices (21 CFR 4, Subpart A) for combination products; and, if applicable, the electronic product radiation control provisions (Sections 531-542 of the Act); 21 CFR 1000-1050.

Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21 CFR Part 807.97). For questions regarding the reporting of adverse events under the MDR regulation (21 CFR Part 803), please go to https://www.fda.gov/medical-devices/medical-device-safety/medical-device-reporting-mdr-how-report-medical-device-problems.

For comprehensive regulatory information about medical devices and radiation-emitting products, including information about labeling regulations, please see Device Advice (https://www.fda.gov/medical-devices/device-advice-comprehensive-regulatory-assistance) and CDRH Learn (https://www.fda.gov/training-and-continuing-education/cdrh-learn). Additionally, you may contact the Division of Industry and Consumer Education (DICE) to ask a question about a specific regulatory topic. See the DICE website (https://www.fda.gov/medical-devices/device-advice-comprehensive-regulatory-assistance/contact-us-division-industry-and-consumer-education-dice) for more information or contact DICE by email (DICE@fda.hhs.gov) or phone (1-800-638-2041 or 301-796-7100).

Sincerely,

Min Wu
Branch Chief
Division of Immunology and Hematology Devices
OHT7: Office of In Vitro Diagnostics
Office of Product Evaluation and Quality
Center for Devices and Radiological Health

Enclosure

DEPARTMENT OF HEALTH AND HUMAN SERVICES
Food and Drug Administration

Indications for Use

Form Approved: OMB No. 0910-0120
Expiration Date: 06/30/2023
See PRA Statement below.

510(k) Number *(if known)*
K213426

Device Name
HemosIL ReadiPlasTin

Indications for Use *(Describe)*

HemosIL ReadiPlasTin is an in vitro diagnostic thromboplastin reagent, based on recombinant human tissue factor, for the quantitative determination, in human citrated plasma, of Prothrombin Time (PT) and Fibrinogen, on the ACL TOP Family and ACL TOP Family 50 Series of analyzers. The product is intended to be used for the evaluation of the extrinsic coagulation pathway and the monitoring of Oral Vitamin K Antagonist Therapy.

Type of Use *(Select one or both, as applicable)*

☒ Prescription Use (Part 21 CFR 801 Subpart D) ☐ Over-The-Counter Use (21 CFR 801 Subpart C)

CONTINUE ON A SEPARATE PAGE IF NEEDED.

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510(k) Summary

This 510(k) Summary of Safety and Effectiveness is being submitted in accordance with the requirements of the Safe Medical Device Act of 1990 and 21 CFR 807.92.

Submitter's Information	Instrumentation Laboratory Company 180 Hartwell Road Bedford, MA 01730-2443 (USA)

Contact Person	Carol Marble Senior Director of Quality Assurance and Regulatory Affairs Phone: 781-861-4467 Fax: 781-861-4207 Email: cmarble@werfen.com

Preparation Date	August 16, 2022

Device Trade Name	HemosIL ReadiPlasTin

Predicate Device	HemosIL ReadiPlasTin	K122584

Regulatory Information					
Analyte	**Regulation Section**	**Regulatory Description**	**Class**	**Product Code**	**Panel**
Prothrombin Time	864.7750	Prothrombin time test	II	GJS	81
Fibrinogen	864.7340	Fibrinogen determination system	II	GIS	

Device Description

The thromboplastin reagent included in the ReadiPlasTin kit, after mixing with the ReadiPlasTin Diluent, is a liposomal preparation that contains recombinant human tissue factor (RTF), re-lipidated in a synthetic phospholipid blend. In the PT test, the addition of the tissue thromboplastin (ReadiPlasTin reagent) to the patient plasma in the presence of calcium ions initiates the activation of the extrinsic pathway. This results ultimately in the conversion of fibrinogen to fibrin, with formation of a solid gel. The fibrinogen is quantitated (PT-based method) by relating the absorbance or light-scatter during clotting to a calibrator.

Intended Use / Indications for Use

HemosIL ReadiPlasTin is an *in vitro* diagnostic thromboplastin reagent, based on recombinant human tissue factor, for the quantitative determination, in human citrated plasma, of Prothrombin Time (PT) and Fibrinogen, on the ACL TOP Family and ACL TOP Family 50 Series of analyzers. The product is intended to be used for the evaluation of the extrinsic coagulation pathway and the monitoring of Oral Vitamin K Antagonist Therapy.

Reason for Submission

This Traditional 510(k) is being submitted to reformulate HemosIL ReadiPlasTin, adding EDTA as a stabilizer to improve reagent stability and also removing unnecessary fillers used to make acceptable appearing cakes after lyophilization. These filler ingredients are a carryover from a previous generation of lyophilized reagents. Since HemosIL ReadiPlasTin kit components are liquid, these filler ingredients serve no intended purpose.

There were **no** changes to the following with this submission:

- Intended use/indications for use
- Operating principle
- Labeled performance characteristics, ***except*** for the addition of daptomycin interference claims

Summary Comparison of Technological Characteristics (Predicate)		
Item	**Predicate (K122584)**	**Subject Device**
Similarities		
Trade Name	HemosIL ReadiPlasTin	Same
Manufacturer	Instrumentation Laboratory Company	Same
Intended Use/ Indications for Use	HemosIL ReadiPlasTin is an *in vitro* diagnostic thromboplastin reagent, based on recombinant human tissue factor, for the quantitative determination, in human citrated plasma, of Prothrombin Time (PT) and Fibrinogen, on the ACL TOP Family and ACL TOP Family 50 Series of analyzers. The product is intended to be used for the evaluation of the extrinsic coagulation pathway and the monitoring of Oral Vitamin K Antagonist Therapy.	Same
Test Principle	Prothrombin Time (PT): In the PT test, the addition of the tissue thromboplastin to the patient plasma, in the presence of calcium, initiates the activation of the extrinsic pathway. This results in the conversion of fibrinogen to fibrin, with the formation of a solid gel.	Same
	PT-derived Fibrinogen: Fibrinogen is quantitated (PT-based method) by relating the absorbance or light scatter during clotting to a calibrator.	Same
Sample Type	3.2% and 3.8% Citrated Plasma	Same
Measurement	Quantitative	Same
Reporting Units	PT: Seconds, % Activity, INR Fibrinogen: mg/dL, g/L	PT: Seconds, INR Fibrinogen: mg/dL, g/L

Summary Comparison of Technological Characteristics (Predicate) (Cont.)		
Item	**Predicate (K122584)**	**Subject Device**
Similarities (Cont.)		
Instrumentation	ACL TOP Family K160276 ACL TOP Family 50 Series K150877	Same
Quality Control	Automated QC	Same
Vial Content	Liquid	Same
On-Board Stability	10 days at 15°C on the instrument	Same
Open Vial Stability	10 days at 2-8°C in closed original vial	Same
Differences		
Formulation	Each ReadiPlasTin kit consists of: ReadiPlasTin Reagent: A solution of recombinant human tissue factor, synthetic phospholipids with stabilizers, preservative and buffer ReadiPlasTin Diluent: An aqueous solution of calcium chloride, polybrene and a preservative.	Same ***except*** the following formulation changes: 1. Addition of EDTA to ReadiPlasTin Reagent as a stabilizer for improved stability. 2. Removal of bovine gamma globulin (BGG) and trehalose from ReadiPlasTin Reagent and trehalose from ReadiPlasTin Diluent as inactive ingredients (fillers) with no intended purpose in liquid reagents. These ingredients are a carryover from a previous generation of lyophilized reagents.

Performance and Stability Studies

Performance and stability studies were performed to establish the safety and effectiveness of the reformulated HemosIL ReadiPlasTin. These studies included repeatability, fibrinogen linearity, conjugated bilirubin and daptomycin interference, method comparison, open vial and on-board instrument stability and real-time shelf-life stability.

The testing below and on the following pages met all acceptance criteria as follows.

Precision

Repeatability and within laboratory precision was assessed in accordance with CLSI EP05-A3 for 20 days, with 2 runs per day and 2 replicates per run for each sample level (n=80/instrument/lot), using 3 lots of HemosIL ReadiPlasTin on representative members of the ACL TOP Family and ACL TOP Family 50 Series.8 For PT, controls, as well as six native (unadulterated) patient samples, were tested; for fibrinogen, controls, as well as six fibrinogen sample pools at three levels, were tested.

The following tables include PT seconds, INR and fibrinogen precision data for representative systems each with one reagent lot.

Prothrombin Time (PT) Precision

System	Sample	Mean PT (Seconds)	Repeatability CV	Within Laboratory CV
ACL TOP Family	Normal Control	11.4	0.9%	1.1%
	Low Abnormal Control	22.5	1.0%	1.3%
	High Abnormal Control	37.5	0.6%	0.8%
	Sample 1	20.8	0.8%	1.1%
	Sample 2	31.4	0.9%	1.7%
	Sample 3	34.5	0.5%	0.8%
	Sample 4	39.6	0.7%	0.8%
	Sample 5	52.1	1.0%	1.7%
	Sample 6	48.3	0.9%	1.4%
	Sample	**Mean INR**	**Repeatability CV**	**Within Laboratory CV**
	Sample 1	1.81	1.0%	1.2%
	Sample 2	2.76	1.7%	2.0%
	Sample 3	3.04	0.7%	0.9%
	Sample 4	3.52	0.7%	0.8%
	Sample 5	4.66	1.2%	1.7%
	Sample 6	4.31	1.2%	1.5%

Prothrombin Time (PT) Precision				
System	**Sample**	**Mean PT (Seconds)**	**Repeatability CV**	**Within Laboratory CV**
ACL TOP Family 50 Series	Normal Control	11.8	0.7%	1.0%
	Low Abnormal Control	23.3	0.8%	0.9%
	High Abnormal Control	38.4	1.0%	1.0%
	Sample 1	21.4	0.7%	1.0%
	Sample 2	33.0	0.8%	1.0%
	Sample 3	36.2	0.7%	1.0%
	Sample 4	41.6	0.7%	1.2%
	Sample 5	53.2	1.1%	1.7%
	Sample 6	48.6	0.9%	1.6%
	Sample	**Mean INR**	**Repeatability CV**	**Within Laboratory CV**
	Sample 1	1.79	0.8%	1.1%
	Sample 2	2.79	1.0%	1.0%
	Sample 3	3.07	0.9%	1.0%
	Sample 4	3.54	1.2%	1.4%
	Sample 5	4.56	1.5%	2.0%
	Sample 6	4.16	1.2%	1.7%

Fibrinogen (Fib) Precision				
System	**Sample**	**Mean Fib (mg/dL)**	**Repeatability CV**	**Within Laboratory CV**
ACL TOP Family	Normal Control	329	1.1%	1.2%
	Low Abnormal Control	171	1.2%	1.5%
	Low Fibrinogen Control	130	1.8%	2.0%
	Sample 1	111	1.1%	1.2%
	Sample 2	116	1.1%	1.5%
	Sample 3	315	0.6%	0.8%
	Sample 4	338	0.8%	0.9%
	Sample 5	626	0.6%	0.8%
	Sample 6	636	0.8%	1.0%

Fibrinogen (Fib) Precision				
System	**Sample**	**Mean Fib (mg/dL)**	**Repeatability CV**	**Within Laboratory CV**
ACL TOP Family 50 Series	Normal Control	319	1.3%	1.4%
	Low Abnormal Control	157	1.0%	1.4%
	Low Fibrinogen Control	122	2.0%	2.3%
	Sample 1	106	1.2%	1.4%
	Sample 2	110	1.1%	1.3%
	Sample 3	307	0.9%	1.2%
	Sample 4	330	0.6%	0.9%
	Sample 5	624	0.7%	1.1%
	Sample 6	635	0.8%	1.2%

Fibrinogen Linearity

Fibrinogen linearity was assessed in accordance with CLSI EP06, 2nd Ed, using 3 lots of HemosIL ReadiPlasTin on representative members of the ACL TOP Family and ACL TOP Family 50 Series. The results for all 3 lots on both systems met acceptance criteria, supporting the labeled fibrinogen linearity claim of 60 to 700 mg/dL.

Interference

Interference was assessed for conjugated bilirubin and daptomycin in accordance with CLSI EP07, 3rd Ed, and CLSI EP37, 1st Ed, using 1 lot of HemosIL ReadiPlasTin on a representative member of the ACL TOP Family. The studies used two clinical sample levels each for PT (normal pooled plasma and a high INR clinical sample at 2.0-3.0 INR) and fibrinogen (normal pooled plasma and a low fibrinogen sample at ~100 mg/dL).

The results from these additional studies, along with the original interference studies under K122584, support the following labeled claims of no interference for:

UFH	**LMWH**	**Hemoglobin**	**Triglycerides**	**Bilirubin (Conjugated and Unconjugated)**	**Daptomycin**
Prothrombin Time (PT)					
1.0 IU/mL	1.4 IU/mL	500 mg/dL	1000 mg/dL	50 mg/dL	100 µg/mL
Fibrinogen					
1.5 IU/mL	1.7 IU/mL	500 mg/dL	600 mg/dL	50 mg/dL	200 µg/mL

Method Comparison

In-house method comparison was performed in accordance with CLSI EP09c on normal and abnormal samples, comparing HemosIL ReadiPlasTin to HemosIL RecombiPlasTin 2G on a representative member of the ACL TOP Family and a representative member of the ACL TOP Family 50 Series, with the following result(s):

System	Assay	n	Slope (95% CI)	Intercept (95% CI)	r
ACL TOP Family	PT (INR)	160	1.031 (1.009, 1.053)	-0.043 (-0.068, -0.018)	0.997
	PT (INR)	51	1.042 (1.006, 1.078)	0.011 (-0.072, 0.094)	0.998
	Fibrinogen (mg/dL)	135	0.975 (0.963, 0.986)	7.171 (3.842, 10.50)	0.995
ACL TOP Family 50 Series	PT (INR)	160	1.021 (0.999, 1.043)	-0.034 (-0.060, -0.009)	0.996
	PT (INR)	51	1.029 (0.992, 1.067)	0.023 (-0.061, 0.107)	0.997
	Fibrinogen (mg/dL)	134	1.015 (1.003, 1.027)	-0.811 (-4.148, 2.527)	0.994

Open Vial Stability

Open vial stability was assessed in accordance with CLSI EP25-A, using 3 lots of HemosIL ReadiPlasTin on a representative member of the ACL TOP Family. For PT, controls and four native (unadulterated) patient samples, were tested in eight replicates at each time interval to a point past claim; for fibrinogen, controls and six fibrinogen sample pools at three levels, were tested in eight replicates at each time interval to a point past claim.

The results support the following labeled open vial stability claim:

- Once prepared for use, 10 days at 2-8°C in closed original vial

On-board Instrument Stability

On-board instrument stability was assessed in accordance with CLSI EP25-A, using 3 lots of HemosIL ReadiPlasTin on a representative member of the ACL TOP Family. For PT, controls and four native (unadulterated) patient samples, were tested in eight replicates at each time interval to a point past claim; for fibrinogen, controls and six fibrinogen sample pools at three levels, were tested in eight replicates at each time interval to a point past claim.

The results support the following labeled on-board instrument stability claim:

- Once prepared for use, 10 days at 15°C on the ACL TOP Family and ACL TOP Family 50 Series

Real-time Shelf-life Stability

Real-time shelf-life stability continues to be assessed in accordance with CLSI EP25-A, using 3 lots of HemosIL ReadiPlasTin on a representative member of the ACL TOP Family. For PT, controls and four native (unadulterated) patient samples were tested in eight replicates at Time 0 and this testing continues at each predefined time interval; for fibrinogen, six fibrinogen sample pools at three levels, were tested in eight replicates at Time 0 and this testing continues at each predefined time interval. The study will continue to a point past final claim.

Conclusion

Results of the performance and stability studies for HemosIL ReadiPlasTin, with the modified formulation, demonstrate that the subject device is substantially equivalent to the predicate device, HemosIL ReadiPlasTin, last FDA cleared under K122584.