510(k) Summary

Applicant Contact Information:

Applicant:	Instrumentation Laboratory Co.
Address:	113 Hartwell Avenue Lexington, MA 02421
Contact Person:	Carol Marble, Regulatory Affairs Director
Phone Number:	781-861-4467
Fax Number:	781-861-4207

FEB - 5 2010

Revision Date: August 12, 2009

Device Trade Names:

HemosIL® D-Dimer HS 500
HemosIL® D-Dimer HS 500 Controls

Device Regulatory Information:

Regulation Nos.:	21 CFR 864.7320 (Assay); 21 CFR 864.5425 (Controls)
Regulation Names:	Fibrinogen and Fibrin Split Products, Antigen, Antiserum, Control (Assay) Plasma, Coagulation Controls (Controls)
Regulatory Class:	Class II
Product Codes:	DAP (Assay) and GGN (Controls)
Panel:	Hematology

Predicate Devices:

K040882	VIDAS® D-Dimer Exclusion™ Assay
K070927	HemosIL® D-Dimer HS
K972696	HemosIL® D-Dimer Controls

Device Descriptions:

HemosIL D-Dimer HS 500: The D-Dimer HS 500 Latex Reagent is a suspension of polystyrene latex particles of uniform size coated with the $F(ab')_2$ fragment of a monoclonal antibody highly specific for the D-Dimer domain included in fibrin soluble derivatives. The use of the $F(ab')_2$ fragment allows a more specific D-Dimer detection avoiding the interference of some endogenous factors like the Rheumatoid Factor. When a plasma containing D-Dimer is mixed with the Latex Reagent and the Reaction Buffer included in the HemosIL D-Dimer HS 500 kit, the coated latex particles agglutinate. The degree of agglutination is directly proportional to the concentration of D-Dimer in the sample and is determined by measuring the decrease of transmitted light caused by the aggregates (turbidimetric immunoassay).

HemosIL D-Dimer HS 500 Controls: The Low and High D-Dimer HS 500 Controls are prepared by means of a dedicated process and contain different concentrations of partially purified D-Dimer obtained by digestion of Factor XIIIa cross-linked human fibrin with human plasmin.

Device Intended Uses:

HemosIL D-Dimer HS 500: Automated latex enhanced immunoassay for the quantitative determination of D-Dimer in human citrated plasma on the ACL TOP® Family Systems for use, in conjunction with a clinical pretest probability (PTP) assessment model to exclude venous thromboembolism (VTE) in outpatients suspected of deep venous thrombosis (DVT) and pulmonary embolism (PE).

HemosIL D-Dimer HS 500 Controls: For the quality control of the D-Dimer HS 500 assay performed on the ACL TOP® Family Systems.

510(k) Summary (Cont.)

Substantial Equivalence:

Differences and Similarities	New Device: HemosIL D-Dimer HS 500	Predicate Device (K070927): HemosIL D-Dimer HS	Predicate Device (K040882): VIDAS D-Dimer Exclusion Assay
Indications for Use	HemosIL D-Dimer HS 500 is an automated latex enhanced immunoassay for the quantitative determination of D-Dimer in human citrated plasma on the ACL TOP Family Systems for use in conjunction with a clinical pretest probability (PTP) assessment model to exclude venous thromboembolism (VTE) in outpatients suspected of deep venous thrombosis (DVT) and pulmonary embolism (PE).	Same	VIDAS D-Dimer Exclusion assay is an automated quantitative test for use on the VIDAS analyzers for the immunoenzymatic determination of fibrin degradation products (FbDP) in citrated human plasma using the ELFA techniques (Enzyme Linked Fluorescent Assay). The VIDAS D-Dimer Exclusion assay is indicated for use in conjunction with a clinical pretest probability (PTP) assessment model to exclude deep venous thrombosis (DVT) and pulmonary embolism (PE) in outpatients suspected of DVT and PE.
Physical Format	Liquid Latex Reagent	Lyophilized Latex Reagent	Ready-to-use strips
Assay Principle	Latex-enhanced immunoturbidimetric assay	Same	Two-step enzyme immunoassay sandwich method with a final fluorescent detection
Instrument Platforms	ACL TOP family of analyzers	Same	VIDAS instruments
Sample Type	Citrated Plasma	Same	Same
Calibrator	Same as K070927 (included in kit)	D-Dimer Calibrator (included in kit)	D-Dimer Calibrator (included in kit)
Quality Controls	HemosIL D-Dimer HS 500 Controls (sold separately)	HemosIL D-Dimer Controls (sold separately)	Vidas D-Dimer Controls C1 and C2 (included in kit)
Detection Limit	203 ng/mL	21 ng/mL	45 ng/mL (FEU)
Linear Range	215-128000 ng/mL with Auto Rerun	150 - 69000 ng/mL with Auto Rerun	45-10000 ng/mL (FEU)
Clinical Cut-off	500 ng/mL	230 ng/mL	500 ng/mL (FEU)

510(k) Summary (Cont.)

Summary Performance Data:

Precision

Within run (repeatability) and total (within device) precision was assessed over multiple runs using the two levels of HemosIL D-Dimer HS 500 Controls and a low D-Dimer plasma pool on an ACL TOP instrument:

ACL TOP Family	Mean (U/mL)	CV % (Within run)	CV % (Total)
D-Dimer Plasma Pool	423	7.2	9.5
Low D-Dimer HS 500 Control	877	2.9	8.9
High D-Dimer HS 500 Control	2469	2.5	7.3

Method Comparison

An in-house method comparison study was performed to compare the performance of HemosIL D-Dimer HS 500 on an ACL TOP instrument versus the VIDAS D-Dimer Exclusion Assay with the following results:

n	Slope	r
100	1.00	0.981

Outcome Study

An outcome study was performed on 295 frozen samples from patients admitted consecutively to an emergency unit with suspected PE or DVT (frequency of venous thromboembolic disease: 25.4%). Of the 295 samples, 75 were confirmed as VTE positive (47 PE and 28 DVT) by standard objective tests and the remaining 220 were confirmed as negative.

Instrument	N	Cut-off	% Sensitivity (95% CI)	% Specificity (95% CI)	% NPV (95% CI)
ACL TOP	295	500 ng/mL	100% (95.2% to 100%)	42.3% (35.7% - 49.1%)	100% (96.1% to 100%)

510(k) Summary (Cont.)

Summary Performance Data (Cont.):

A multi-center management study was performed at four hospitals on 747 samples from patients admitted consecutively to the emergency unit with suspected DVT or PE . 401 patients were suspected of DVT and 346 patients were suspected of PE. As part of the study, patients underwent a PTP (pretest probability) assessment using the Wells model and were classified as having a high, moderate or low probability of DVT or PE. Patients with a negative D-Dimer test result and a low PTP score underwent no further diagnostic testing and were followed-up after 3 months for development of DVT or PE. For patients with a negative D-Dimer test result and a moderate PTP, it was the physician's decision whether to follow-up after 3 months or to undergo imaging techniques. Patients with a positive D-Dimer test result or a high PTP score underwent imaging techniques.

The overall prevalence DVT in the total population of samples was 22.4% (90/401). The overall prevalence of PE in the total population of samples was 15.0% (52/346). As of the 3 month follow-up, none of the patients that were negative through D-Dimer testing had developed DVT or PE.

The sensitivity, specificity and negative predictive value (NPV) of HemosIL D-Dimer HS 500 for DVT and PE using the previously established clinical cut-off of 500 ng/mL is summarized below with the corresponding 95% confidence intervals (CI):

DVT Performance	All samples	High PTP	Low + Moderate PTP
n	401	79	322
Sensitivity	100.0% (90/90) (96.0%-100.0%)	100.0% (45/45) (92.1%-100.0%)	100.0% (45/45) (92.1%-100.0%)
Specificity	42.1% (131/311) (36.6%-47.8%)	32.4% (11/34) (17.4%-50.5%)	43.3% (120/277) (37.4%-49.4%)
Negative Predictive value	100.0% (131/131) (97.2%-100.0%)	100.0% (11/11) (71.5%-100.0%)	100.0% (120/120) (97.0%-100.0%)
Positive Predictive value	33.3% (90/270) (27.7%-39.3%)	66.2% (45/68) (53.7%-77.2%)	22.3% (45/202) (16.7%-28.6%)
Prevalence	22.4% (90/401) (18.5%-26.8%)	57.0% (45/79) (45.3%-68.1%)	14.0% (45/322) (10.4%-18.2%)

PE Performance	All samples	High PTP	Low + Moderate PTP
n	346	24	322
Sensitivity	100.0% (52/52) (93.2%-100.0%)	100.0% (9/9) (66.4%-100.0%)	100.0% (43/43) (91.8%-100.0%)
Specificity	48.3% (142/294) (42.5%-54.2%)	33.3% (5/15) (11.8%-61.6%)	49.1% (137/279) (43.1%-55.1%)
Negative Predictive value	100.0% (142/142) (97.4%-100.0%)	100.0% (5/5) (47.8%-100.0%)	100.0% (137/137) (97.3%-100.0%)
Positive Predictive value	25.5% (52/204) (19.7%-32.0%)	47.4% (9/19) (24.4%-71.1%)	23.2% (43/185) (17.4%-30.0%)
Prevalence	15.0% (52/346) (11.4%-19.2%)	37.5% (9/24) (18.8%-59.4%)	13.4% (43/322) (9.8%-17.6%)

DEPARTMENT OF HEALTH & HUMAN SERVICES

Food and Drug Administration
10903 New Hampshire Avenue
Document Mail Center - WO66-G609
Silver Spring, MD 20993-0002

FEB 05 2010

Instrumentation Laboratory Co.
c/o Ms. Carol Marble, Regulatory Affairs Director
113 Hartwell Avenue
Lexington, MA 02421

Re: k090264
Trade/Device Name: HemosIL D-Dimer HS 500 and HemosIL D-Dimer HS 500 Controls
Regulation Number: 21 CFR 864.7320
Regulation Name: Fibrinogen/fibrin degradation products assay
Regulatory Class: Class II
Product Code: DAP, GGN
Dated: August 12, 2009
Received: August 13, 2009

Dear Ms. 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. 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.

If your device is classified (see above) into class II (Special Controls), it may be subject to such additional controls. Existing major regulations affecting your device can be found in Title 21, Code of Federal Regulations (CFR), Parts 800 to 895. 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 Parts 801 and 809); medical device reporting (reporting of medical device-related adverse events) (21 CFR 803); and good manufacturing practice

requirements as set forth in the quality systems (QS) regulation (21 CFR Part 820). This letter will allow you to begin marketing your device as described in your Section 510(k) premarket notification. The FDA finding of substantial equivalence of your device to a legally marketed predicate device results in a classification for your device and thus, permits your device to proceed to the market.

If you desire specific advice for your device on our labeling regulation (21 CFR Parts 801 and 809), please contact the Office of *In Vitro* Diagnostic Device Evaluation and Safety at (301) 796-5450. 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 http://www.fda.gov/MedicalDevices/Safety/ReportaProblem/default.htm for the CDRH's Office of Surveillance and Biometrics/Division of Postmarket Surveillance.

You may obtain other general information on your responsibilities under the Act from the Division of Small Manufacturers, International and Consumer Assistance at its toll-free number (800) 638-2041 or (301) 796-7100 or at its Internet address http://www.fda.gov/cdrh/industry/support/index.html.

Sincerely yours,

for Maria M. Chan, Ph.D.
Director
Division Immunology and Hematology Devices
Office of *In Vitro* Diagnostic Device Evaluation and Safety
Center for Devices and Radiological Health

Enclosure

Indications for Use Statement

510(k) Number (if known): K090264

Device Names: HemosIL® D-Dimer HS 500
HemosIL® D-Dimer HS 500 Controls

Indications for Use:

HemosIL D-Dimer HS 500 is an automated latex enhanced immunoassay for the quantitative determination of D-Dimer in human citrated plasma on the ACL TOP® Family Systems for use, in conjunction with a clinical pretest probability (PTP) assessment model to exclude venous thromboembolism (VTE) in outpatients suspected of deep venous thrombosis (DVT) and pulmonary embolism (PE).

HemosIL D-Dimer HS 500 Controls are intended for the quality control of the D-Dimer HS 500 assay performed on the ACL TOP® Family Systems.

For *in vitro* diagnostic use.

Prescription Use √ (Part 21 CFR 801 Subpart D) **OR** Over-The-Counter Use _____ (21 CFR 807 Subpart C)

(PLEASE DO NOT WRITE BELOW THIS LINE - CONTINUE ON ANOTHER PAGE IF NEEDED)

Concurrence of CDRH, Office of In Vitro Diagnostic Devices (OIVD)

Division Sign-Off

Office of In Vitro Diagnostic
Device Evaluation and Safety

510(k) K090264