

1. IDENTIFICATION OF THE PRODUCT AND OF THE COMPANY

1.1 Identification of the product

Product Name: **HEMOSIL[®] FACTOR V REAGENT PLASMA**
 Product Number: **0020008800**

1.2 Use of the product: Kit for in vitro diagnostic use.

1.3 Company identification:

<p><u>MANUFACTURER:</u> Instrumentation Laboratory Co. 180 Hartwell Road, Bedford, MA 01730-2443 (USA) Tel. +1 800 678 0710 Fax +1 781 863 9928</p>	<p><u>DISTRIBUTOR EU:</u> Via Roma, 103 20040 Cavenago Brianza (Italy)</p> <p><u>DISTRIBUTOR US/CANADA:</u> Instrumentation Laboratory Co. 526 Route 303 Orangeburg, New York 10962 (US)</p>
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E-mail address of the competent person: infosds@mail.ilww.it

1.4 Emergency phone: +44 (0)3700 492 795
 +1 215 207 0061 (USA and Canada)

2. COMPOSITION/INFORMATION ON PRODUCT

P/N	Mixture name	Mixture classification According to 67/548/EEC and 1999/45/EEC Directives	Mixture classification According to 1272/2008/EC Regulation	Kit configuration
0020008723	FACTOR V REAGENT PLASMA	Not classified	Not classified	5 x 4 ml

Disclaimer

This document is intended only as a guide to appropriate precautionary handling of this product by a trained person, or supervised by a person trained in chemical handling. The product shall not be used for purposes different from those indicated in section 1, unless having received suitable written instructions on how to handle the material. Use the product in accordance with the Good Laboratory Practice. This document cannot describe all potential dangers of use or interaction with other chemicals or materials. It is the user's responsibility for the product's safe use, the product's suitability for the intended use and the product's safe disposal. No representation or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or of any other nature are made hereunder with respect to the information set forth herein or to the product to which the information refers. The contained information in this MSDS are in accordance with Annex II of Regulation no.1907/2006 (REACH) and in accordance with ANSI "Standard for Hazardous Industrial Chemicals - Material Safety Data Sheets - Preparation" (ANSI Z400.1-2004) as recommended by US OSHA.

Prepared by: Chemsafe Srl

1. IDENTIFICATION OF THE MIXTURE AND OF THE COMPANY

1.1 Identification of the mixture

Product Name: **FACTOR V REAGENT PLASMA**
Product Number: **0020008723**

1.2 Use of the mixture: For in vitro diagnostic use.

1.3 Company identification:

<p><u>MANUFACTURER:</u> Instrumentation Laboratory Co. 180 Hartwell Road, Bedford, MA 01730-2443 (USA) Tel. +1 800 678 0710 Fax +1 781 863 9928</p>	<p><u>DISTRIBUTOR EU:</u> Via Roma, 103 20040 Cavenago Brianza (Italy)</p> <p><u>DISTRIBUTOR US/CANADA:</u> Instrumentation Laboratory Co. 526 Route 303 Orangeburg, New York 10962 (US)</p>
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2. HAZARDS IDENTIFICATION

2.1 Mixture classification *(see also ch. 15)*
Classified: not dangerous according to 67/548/EEC and 1999/45/EEC Directives
Classified: not hazardous according to 1272/2008/EC Regulation

2.2 Potential health and environmental effects

Ingestion: May be harmful if swallowed.
Inhalation exposure: May cause irritation.
Contact with skin: May cause irritation.
Contact with eyes: May cause irritation.
Sensitization: Might cause sensitization by inhalation or skin contact.
Environmental exposure: Might cause adverse effects for the environment.

Warning: This product contains human source material that tested non-reactive for HIV antibody, Hepatitis B Surface Antigen and Anti-HCV at the donor stage. This product, as with all human based specimens, should be handled with proper laboratory safety procedures to minimize the risk of transmission of infectious disease.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Composition: solid containing organic and inorganic components, human plasma.

3.1 Hazardous components:

Name	EINECS/ ELINCS n°	CAS n°	Conc. % w/w	Classification 67/548/EEC	Classification 1272/2008/EC
Calcium chloride dihydrate (*)	233-140-8 (as Calcium chloride anhydrous)	10035-04-8 (10043-52-4 as Calcium chloride anhydr)	< 0.01%	Xi, R36	Eye irrit. 2 , H319
Zinc chloride (*)	231-592-0	7646-85-7	< 0.001%	C, R34 Xn, R22 N, R50/53 <u>Specific Conc. Limits:</u> C, R34: c ≥ 10% Xi, R36/37/38: 5 % ≤ c < 10 %	Acute tox. 4(*), H302 Skin Corr. 1B, H314 Aquatic Acute 1, H400 Aquatic Chronic 1, H410 <u>Specific Conc. Limits:</u> STOT SE 3, H335: c ≥ 5%

Name	EINECS/ ELINCS n°	CAS n°	Conc. % w/w	Classification 67/548/EEC	Classification 1272/2008/EC
Cupric chloride dihydrate	231-210-2 (Cupric chloride anhydrous)	10125-13-0 (7447-39-4 as Cupric chloride anhydrous)	< 0.001%	Xn, R22 Xi, R36/38 N, R50/53	Acute Tox 4, H302 Skin Irrit. 2, H315 Eye Irrit 2, H319 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
<i>For exposure limits see ch. 8, for phrases R and hazard statements text see ch. 16</i>					

4. FIRST AID MEASURES

Ingestion:	If swallowed rinse mouth with plenty of water provided person is conscious. Get medical advice if adverse symptoms appear.
Inhalation exposure:	If inhaled, move person to fresh air. Get medical advice if adverse symptoms appear.
Contact with skin:	Remove contaminated clothes and shoes. Wash affected area with soap or mild detergent and plenty of water. Get medical advice if adverse symptoms appear.
Contact with eyes:	Wash immediately with plenty of water or normal saline. Keep eyelid open with the finger. Get medical advice if adverse symptoms appear.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing means:	Water spray or regular foam, CO ₂ , dry powder.
Mean of extinguishing NOT to be used:	Not known.
Known hazards caused by combustion:	Thermal decomposition or combustion may generate toxic and hazardous fumes (CO _x , NO _x , HCl).
Equipment for self-protection: (fire fighters):	Self-contained breathing apparatus, flame and chemical resistant clothing, boots and gloves.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions:	Suitable protective clothing, rubber or polythene gloves, rubber shoes, safety glasses.
Environmental precautions:	Do not let the product enter drainage system, surface and ground-water or soil. Contact local authorities in case of environmental release. Do not empty into drains.
Cleaning procedure to recover spilled material:	Soak up with inert absorbent material, and clean with plenty of water. Send to the storage waiting for disposal procedures.

7. HANDLING AND STORAGE

7.1 Handling

Handling procedures:	Wear suitable protective clothing, gloves, eye protection. When use do not eat, drink or smoke. Provide sufficient ventilation in all work areas.
Work/Hygienic practices:	Wash hands with soap and water after use.

7.2 Storage

Room ventilation:	Well ventilated workplace.
Special precautions: (see also Section 8)	Avoid environmental release.
Recommended temperature:	Store at 2 – 8°C.
Humidity, light and other environmental factors:	Avoid light exposure and keep away from heat sources and non compatible materials.
Containers:	Keep containers tightly closed and labelled with the name of the product.
Other storage precautions:	Keep away from food and drinks.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Exposure limit values

TLV (ACGIH): 1 mg/m³ TWA; 2 mg/m³ STEL (fume), 2007 related to Zinc Chloride ⁽¹⁾

LV EU: not available

OSHA Permissible Exposure Limit (PEL) for General Industry: 8 hour TWA = 1 mg/m³, fume, 1994, related to Zinc Chloride ⁽¹⁾

OEL Belgium: time-weighted average 1 mg/m³, short term exposure limit 2 mg/m³ (fume), Mar 2002, related to Zinc Chloride ⁽¹⁾

NIOSH Recommended Exposure Limit (REL): 1 mg/m³ 3 TWA; 2 mg/m³ 3 STEL, related to Zinc Chloride ⁽²⁾

OEL France: VME 1 mg/m³ (fume), Feb 2006, related to Zinc Chloride ⁽¹⁾

NIOSH Immediately Dangerous To Life or Health Concentration (IDLH): 50 mg/m³, related to Zinc Chloride ⁽²⁾

OEL UK: time-weighted average 1 mg/m³; short term exposure limit 2 mg/m³ (fume), 2005, related to Zinc Chloride ⁽¹⁾

OSHA PEL: 1 mg/m³ TWA for Copper dusts and mists as Cu ⁽⁸⁾

OES (UK): 10 mg/m³ related to Calcium chloride ⁽⁶⁾

TLV (ACGIH): 1 mg/m³ TWA for Copper dusts and mists as Cu ⁽⁸⁾

8.2 Exposure Controls

Respiratory protection:	Respiratory protection is not required. Where risk assessment shows air-purifying respirators are appropriate, use masks with approved filter.
Skin protection:	Protective clothing, rubber or polythene gloves.
Eye protection:	Safety glasses.
Hand protection:	Rubber or polythene gloves.
Other protective systems:	Personal protective equipment (PPE) useful for reducing individual exposure.
Environmental protection:	Avoid any release into the environment.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 General information

Appearance:	Lyophilized, Solid
Odor:	not available
Color:	White to yellow

9.2 Important health, safety and environmental information

	Value	Related to
pH:	not available	
Flammability:	not available	
Explosive properties:	not available	
Oxidizing properties:	not available	
Density:	not available	
Solubility:	not available	
Water Solubility:	miscible	Mixture

9.3 Other information

Melting point/range:	not available
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10. STABILITY AND REACTIVITY

Stability: The product is stable until the expiration date shown on the box and on the labels when stored at 2 – 8°C.

10.1 Conditions to avoid:	Keep away from heat, water, humidity and light.
10.2 Materials to avoid:	Strong oxidizing agents.
10.3 Hazardous decomposition products:	Thermal decomposition or combustion may include toxic and hazardous fumes of CO _x , NO _x , HCl.

11. TOXICOLOGICAL INFORMATION

11.1 Toxicokinetic effects (ADME)

Absorption: In humans subjected to low doses of (65)Zinc chloride it was estimated that absorption ranged from 58% to 77% in 5 controls. Approximately 20 to 30% of dietary zinc is absorbed, primarily from the duodenum and ileum. The amount absorbed is dependent on the bioavailability from food. (3)
 Copper is mainly absorbed through the gastrointestinal tract. From 20 to 60% of the dietary copper is absorbed, with the rest being excreted through the feces. (9)

Distribution: Zinc is distributed to all tissues and tissue fluids and it is a cofactor in over 200 enzyme systems. (4) In humans, zinc absorbed is distributed in skeletal muscle (60%), bone (30%) and the remainder in the liver, prostate, gastrointestinal tract, kidney, skin, lung, brain, heart and pancreas.

Metabolism: Zinc is found in diffusible and no diffusible forms in the blood and about 66% of the diffusible form of zinc in the plasma is freely exchangeable and loosely bound to albumin. Zinc is incorporated into and dissociated from α2-macroglobulin only in the liver. (4) Zinc is not metabolized, but enters into the structure of many metalloenzymes. (5)
 The liver is the critical organ for copper homeostasis. (9)

Excretion: Zinc is primarily excreted via feces, but can also be excreted via urine, saliva, hair loss, sweat and mothermilk. (4)
 The primary route of Copper excretion is through the bile. (9)

11.2 Acute toxicity

	Value	m.u.	Effects	Related to
<u>Oral:</u>	LD50 (rat) = 1,000 - 4,179	mg/Kg		(6) Calcium chloride
	LD50 (rat) = 1,100	mg/Kg		(4) Zinc chloride
	LD50 (rat) = 584	mg/Kg	Somnolence (general depressed activity), convulsions or effect on seizure threshold	(10) Cupric chloride anhydrous
<u>Dermal:</u>	LD50 (rat) = 2,630	mg/Kg		(6) Calcium chloride
<u>Inhalation:</u>	LC50 (rat) (10 min) ≤ 1,975	mg/m ³		(4) Zinc chloride
<u>Other data:</u>	LD50 (intraperitoneal rat) = 58			(4) Zinc chloride

11.3 Irritation

Skin: Calcium chloride is not irritating for the skin. (6)
 0.5 ml ZnCl₂ (1% solution in deionised water) was applied on the dorsal skin for 5 consecutive days in open patch tests with mice, rabbits and guinea pigs and in an occlusive test with rabbits. In the open patch test 4/4 rabbits and 6/6 mice had severe irritancy and 3/8 guinea pigs had moderate irritancy. In the occlusive patch test 4/4 rabbits had severe irritancy. Zinc chloride has been classified as corrosive to the skin. (4)
 Cupric chloride anhydrous is irritating to skin. (9)

Eye: Calcium chloride is irritating for the eyes. (6)
 Corneal oedema developed when concentrated zinc chloride was accidentally splashed into three eyes of two patients. Some permanent corneal scarring resulted. Recovery required 6 to 28 weeks. Zinc chloride can be considered as corrosive to the eyes. (4)
 Contact with Cupric chloride solutions irritates eyes; contact with solid causes eye surface injury. Copper chloride applied in 0.08 0.16 molar solutions to corneas of rabbits after removal of epithelium, or injected into stroma, causes severe reaction with permanent opacification. (9)

Inhalation: In single exposure studies with Zinc Chloride in rats signs of respiratory distress and oedema were reported. (4)

11.4 Sensitization:

Skin sensitization: No data are available regarding the sensitising effects of zinc chloride in humans as well as in animals. Based on the fact that zinc sulphate is not a skin sensitiser, it is consequently concluded that zinc chloride is not likely to have skin sensitising potential. (4)

Sensitization by inhalation: not available

11.5 Prolonged exposure toxicity: Limited data were provided on the repeated dose toxicity of zinc chloride. It is concluded from studies in which humans were supplemented with zinc (as zinc gluconate), that women are more sensitive to the effects of high zinc intake and that a dose of 50 mg Zn²⁺/day (0.83 mg/kg bw/day) is a human oral NOAEL. At the LOAEL of 150 mg Zn²⁺/day, clinical signs and indications for disturbance of copper homeostasis have been observed. ⁽⁴⁾

Long-term exposure with Cupric chloride anhydrous in rats and mice showed no overt signs of toxicity other than a dose-related reduction in growth after ingestion. ⁽⁹⁾

11.6 CMR effects

			Related to
Mutagenicity:	Ames test:	Negative	⁽⁶⁾ Calcium chloride
		Negative in 4 strains of <i>S. typhimurium</i>	⁽⁴⁾ Zinc chloride
	Mouse lymphoma:	not available	
	Chromosomal aberration:	Zinc chloride induced chromosomal aberrations in mouse bone marrow in case of an extreme calcium deficient diet.	⁽⁴⁾ Zinc chloride
		Rats exposed to Zinc Chloride in drinking water showed chromosome aberrations and sister chromatid exchanges in bone marrow.	⁽⁵⁾ Zinc chloride
	Micronucleus test:	not available	
Teratogenesis:	There are no indications that Zn ²⁺ is of concern for developmental effects based on the results of developmental toxicity studies in different species (mice, rats, hamsters and rabbits) and several studies in which pregnant women were exposed to soluble zinc compounds. ⁽⁴⁾		
Carcinogenesis:	There is no clear experimental or epidemiological evidence for a direct carcinogenic action of zinc or its compounds. ⁽⁴⁾		
	Animal carcinogenicity studies of copper compounds have generally been negative, but many and may be inadequate in some cases. Copper was equivocally tumorigenic when implanted in rats. ⁽⁹⁾		

12. ECOLOGICAL INFORMATION

12.1 Ecotoxicology	Value	m.u.	Related to
Acute toxicity with fish:	LC50 <i>Gambusia affinis</i> = 10,000	mg/l/96 hours	⁽⁶⁾ Calcium chloride
	LC50 fish = 0.43	mg/l/96 hours, as Zinc	⁽⁵⁾ Zinc chloride
	LC50 <i>Oncorhynchus mykiss</i> = 0.004	mg/l/96 hours	⁽¹¹⁾ Cupric chloride anhydrous
Acute toxicity with <i>Daphnia magna</i> :	EC50 <i>Daphnia magna</i> = 144	mg/l/48 hours	⁽⁶⁾ Calcium chloride
	EC50 <i>Daphnia magna</i> = 0.158	mg/l/48 hours	⁽⁷⁾ Zinc chloride
Acute toxicity with algae:	ErC50 = not available	mg/l/72 hours	
12.2 Mobility:	not available		
12.3 Persistence and degradability:	Zinc chloride endures hydrolysis and forms insoluble basic salts. In water it reacts forming zinc oxychloride. ⁽⁵⁾		
12.4 Bioaccumulation potential:	Zinc chloride presents low or no bioconcentration potential. ⁽⁵⁾		
12.5 Evaluation PBT result:	not available		
12.6 Other toxic effects:	Zinc chloride long-term effects: LC50 fish /14 days = 0,67 mg/l. ⁽⁵⁾		

13. DISPOSAL CONSIDERATION

National laws on disposal must be considered, local and UE requirements for wastes recycling must be respected. Used waste product, surplus product or spillage products shall be disposed of in accordance with national, state and local laws.

14. TRANSPORT INFORMATION

Not classified as dangerous for transport in accordance with ADR/RID, IMDG, IATA and DOT regulations.

15. REGULATORY INFORMATION

Regulatory information on labeling according to 67/548/EEC, to 1999/45/EEC Directive and to 1272/2008 Regulation (EC)(European reinforcement of GHS), and according to their following amendments/atp.

	According to 67/548/EEC and 1999/45/EEC Directives	According to 1272/2008/EC Regulation
Classification:	Not classified as dangerous	Not classified as hazardous
Labeling symbols: (signal word)	none	none
Labeling risk phrases: (hazard statements)	none	none
Labeling safety phrases: (precautionary statements)	none	none

Other labeling details: ≈ 98.5% of this mixture consist of ingredient(s) of unknown toxicity for human health and aquatic environment.

Safety precautions: Wear suitable protective clothing, gloves and eye/face protection.

Authorization: no

Restriction: no

16. OTHER INFORMATION

Phrases R: R36: Irritating to eyes.
R34: Causes burns.
R22: Harmful if swallowed.
R50/53: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R36/37/38: Irritating to eyes, respiratory system and skin.
R36/38: Irritating to eye and skin.

Hazard Statements: H319: Causes serious eye irritation.
H302: Harmful if swallowed.
H314: Causes severe skin burns and eye damage.
H400: Very toxic to aquatic life.
H410: Very toxic to aquatic life with long lasting effects.
H335: May cause respiratory irritation.
H315: Causes skin irritation.

The contained information in this MSDS are in accordance with Annex II of Regulation no.1907/2006 (REACH) and in accordance with ANSI "Standard for Hazardous Industrial Chemicals - Material Safety Data Sheets – Preparation" (ANSI Z400.1-2004) as recommended by US OSHA.

Bibliographic references:

- (1) NIOSH, RTECS: ZH1400000 The Registry of Toxic Effects of Chemical Substances, Zinc chloride, RTECS #: ZH1400000
 - (2) Occupational Safety & Health Administration (OSHA), Chemical Sampling Information: Zinc Chloride Fume
 - (3) Hazardous Substances Data Bank (HSDB), Records containing Zinc chloride, HSN: 1050
 - (4) EU RISK ASSESSMENT REPORT – Zinc Chloride, Final report, May 2008
 - (5) <http://www.salute.gov.it/sicurezzaChimica>, Material Safety Data Sheet for Zinc chloride, Code RE0499, Revision date 21/06/2010
 - (6) IUCLID data set for Calcium Chloride, 18-feb-2000
 - (7) IUCLID data set for Zinc Chloride, 19-feb-2000
 - (8) Malinckrodt Chemicals, Material Safety Data Sheet for Cupric chloride, MSDS no. C5863
 - (9) Hazardous Substances Data Bank (HSDB), Records containing Copper (II) chloride, HSN: 259
 - (10) ChemIDplus Lite, Cupric chloride anhydrous, Full record
 - (11) Merk KgaA, MSDS for Copper (II) chloride, Revision date 06.05.2010
- (*) Classification in Annex I of Dir 67/548/EEC and in Annex VI of the 1272/2008/EC Regulation