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Introduction to IHM

(Inventory of Hazardous Materials)



Understanding the Requirements of IHM

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Purpose of the Inventory of Hazardous Materials (IHM)

The IHM is an inventory of materials present in a ship's structure, systems and equipment that may be hazardous to health or the environment.

A structured system to control hazardous materials onboard ships and achieve compliance with the Hong Kong Convention for the **Safe and Environmentally Sound Recycling of Ships**, which has been partly overtaken by EU regulations as the HK convention has not been ratified.

At the end of it's life the document can then be used to help an authorised recycling facility formulate a safer and more environmentally sound plan for recycling the ship.



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Inventory of Hazardous Materials (IHM) Requirements

The Hong Kong International Convention for the safe and environmentally sound recycling of ships is a multilateral convention adopted in 2009, which has not yet entered into force.

The EU Regulations took over from the Hong Kong Convention in 2013

- The EU Regulations state that all ships under member state flag or visiting an EU Port must have an approved IHM by December 2020

Extract from EU Regulation:

“Pursuant to Article 32 of Regulation (EU) No 1257/2013, the obligation to have on board an inventory of hazardous materials is to apply to existing ships from 31 December 2020, to new ships not later than 31 December 2018 and to ships going for recycling from the date of publication of the European List published in accordance with Regulation (EU) No 1257/2013, which was 16 December 2016.”



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Guidance and Regulatory Documentation

Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships :-

- IHM Guideline MEPC.269(68)
- Ship Recycling plan (SRP) Guidelines MEPC.196(62), 15 July 2011
- Ship Recycling Facility (SRF) Guidelines MEPC.210(63), 2 March 2012
- Authorization Guidelines MEPC.211(63), 2 March 2012
- Survey and Certification Guidelines MEPC . 222(64), 5 October 2012
- Ship Inspection Guidelines MEPC.223(64) 5 October 2012



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Guidance and Regulatory Documentation

EU Regulation on Ship Recycling (SRR)

- Regulation (EU) No 1257/2013 of the European Parliament and the Council on ship and amending Regulation (EU) No. 1013/2006 and Directive 2009/16/EC
- European Maritime Safety Agency (EMSA) Guidance on the Inventory of Hazardous Materials



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How is an IHM Part I prepared?



Collection of Necessary Information

Shipowner provides useful documentation including ship's general arrangement, anti-fouling cert, anti-pollution cert, battery list, asbestos-free cert (if available) & material declarations etc.

Assessment of Collected Information

Desktop review of documentation covering all materials listed in Table A, Table B & EU SRR materials as far as reasonably practicable. The results of the assessment should be reflected in the visual sampling check plan (VSCP)

Preparation of Visual/Sampling Check Plan

A guiding document to follow during the on-board sampling exercise based on the collected information

On-board Sampling Exercise

Conducting the sampling of hazardous materials while on-board following pre-prepared VSCP

Preparation of Part I of the IHM & Related Documentation

Finalisation of Part I of IHM & preparing any specific classification standard formats (e.g. LR/ABS)

Inventory of Hazardous Materials (IHM)

The Inventory consists of:

- Part I: Materials contained in ship structure or equipment
 - Part II: Operationally generated wastes
 - Part III: Stores.
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- Table A - materials listed in appendix 1 of the Convention
 - Table B - materials listed in appendix 2 of the Convention
 - Table C (Potentially hazardous items) - items which are potentially hazardous to the environment and human health at ship recycling facilities
 - Table D (Regular consumable goods potentially containing hazardous materials) - goods which are not integral to a ship and are unlikely to be dismantled or treated at a ship recycling facility.

Tables A and B correspond to part I of the Inventory. Table C corresponds to parts II and III and table D corresponds to part III.



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Table A & Table B + EU SRR Materials (IHM Part I)

Table A – Materials listed in appendix 1 of the Annex to the Convention					Table B – Materials listed in appendix 2 of the Annex to the Convention						
No.	Materials	Inventory			Threshold value	No.	Materials	Inventory			Threshold value
		Part I	Part II	Part III				Part I	Part II	Part III	
A-1	Asbestos	x			0.1% ⁴	B-1	Cadmium and cadmium compounds	x			100 mg/kg ⁸
A-2	Polychlorinated biphenyls (PCBs)	x			50 mg/kg ⁵	B-2	Hexavalent chromium and hexavalent chromium compounds	x			1,000 mg/kg ⁸
A-3	Ozone depleting substances	CFCs	x		no threshold value ⁶	B-3	Lead and lead compounds	x			1,000 mg/kg ⁸
		Halons	x			B-4	Mercury and mercury compounds	x			1,000 mg/kg ⁸
		Other fully halogenated CFCs	x			B-5	Polybrominated biphenyl (PBBs)	x			50 mg/kg ⁹
		Carbon tetrachloride	x			B-6	Polybrominated diphenyl ethers (PBDEs)	x			1,000 mg/kg ⁸
		1,1,1-Trichloroethane (Methyl chloroform)	x			B-7	Polychlorinated naphthalenes (more than 3 chlorine atoms)	x			50mg/kg ¹⁰
		Hydrochlorofluorocarbons	x			B-8	Radioactive substances	x			no threshold value ¹¹
		Hydrobromofluorocarbons	x			B-9	Certain shortchain chlorinated paraffins (Alkanes, C10-C13, chloro)	x			1% ¹²
A-4	Anti-fouling systems containing organotin compounds as a biocide	x			2,500 mg total tin/kg ⁷						

Table	Material name	Threshold value
ANNEX I	Perfluorooctane sulfonic acid (PFOS)	10 mg/kg (0.001% by weight*)
ANNEX II	Brominated Flame Retardant (HBCDD)	100 mg/kg (0.01% by weight)



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IHM Part I - Sections

IHM Part I is split up into 3 sections:

- **I.1 Paints and coating systems containing materials listed in table A and table B of Appendix 1 of the guidelines.**
- **I.2 Equipment and machinery containing materials listed in table A and table B of Appendix 1 of the guidelines.**
- **I.3 Structure and hull containing materials listed in table A and table B of Appendix 1 of the guidelines.**



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IHM Part I Example:

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Part 1: Hazardous Materials Contained in the Ships Structure and Equipment

Part 1: Hazardous Materials Contained in the Ships Structure and Equipment

1.1 Paints and coating systems containing materials listed in table A and table B of Appendix 1 of the guidelines:

No.	Name of Paint	Materials	Location	Hazardous Material Position	Approx. Quantity	Remarks / References
31859	Light green coating to bulkheads	Lead and lead compounds - APP2 - B-3	Deck B 1 012/Switch room	Paint	26.8 Kg	Found to exceed threshold for lead (Pb).

1.2 Equipment and machinery containing materials listed in table A and table B of Appendix 1 of the guidelines:

No.	Name of equipment and machinery	Location	Materials	Hazardous materials position	Approx. Quantity	Remarks / References
31871	UPS 1 MPE	Deck A 2 004/Pod 1 converter room	Lead and lead compounds - APP2 - B-3	Battery	28 Kg	Power Control B500R
31873	UPS MPE	Deck A 2 006/Pod 2 converter room	Lead and lead compounds - APP2 - B-3	Battery	28 Kg	Power Control B500R
31913	UPS to ECR PC	Deck 1 3 004/ECR	Lead and lead compounds - APP2 - B-3	Battery	10 Kg	Power Control B200
31923	UPS 1,2,3,4	Deck B 1 009/Switch room	Lead and lead compounds - APP2 - B-3	Battery	96 Kg	H150
31924	UPS 1,2,3,4 12V	Deck B 1 009/Switch room	Lead and lead compounds - APP2 - B-3	Battery	420 Kg	
31925	RB1	Deck B 1 009/Switch room	Lead and lead compounds - APP2 - B-3	Battery	86 Kg	Powersafe 12V 170 FS
31926	CCTV UPS	Deck B 1 009/Switch room	Lead and lead compounds - APP2 - B-3	Battery	36 Kg	EATON EX EXB
31927	UPS machinery call system	Deck B 1 009/Switch room	Lead and lead compounds - APP2 - B-3	Battery	252 Kg	LEOCH 13V DJW 12-9.0
31928	UPS 3	Deck A 2 001/Pod 3 room	Lead and lead compounds - APP2 - B-3	Battery	420 Kg	HZS12-6HR
31929	UPS MPE 4	Deck A 2 012/PoD 4 Converter room	Lead and lead compounds - APP2 - B-3	Battery	420 Kg	HZS-12/6HR

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Part 1: Hazardous Materials Contained in the Ships Structure and Equipment

No.	Name of equipment and machinery	Location	Materials	Hazardous materials position	Approx. Quantity	Remarks / References
31975	1RB122	Deck 12 16 004/Electrical technical room Port side	Lead and lead compounds - APP2 - B-3	Battery	46 Kg	Powersafe 12v 62F
31976	IAS UPS	Deck 12 16 004/Electrical technical room Port side	Lead and lead compounds - APP2 - B-3	Battery	22 Kg	HX35
31979	UPS balcony fire detection	Deck 12 16 004/Electrical technical room Port side	Lead and lead compounds - APP2 - B-3	Battery	20 Kg	HX150
31981	CCS UPS 3,4,7	Deck 12 16 005/Safety Centre	Lead and lead compounds - APP2 - B-3	Battery	60 Kg	HX35
31982	Smoke detector	Deck 5 8 004/AC room 405	Radioactive substances - APP2 - B-8	Fire safety equipment	8 g	NS-AIS ionisation smoke sensor. Radioactive material: Am241.
31984	HVAC UPS 404	Deck 4 7 004/Substation 4	Lead and lead compounds - APP2 - B-3	Battery	60 Kg	HX35
31986	HVAC UPS 504A 504B	Deck 4 7 005/Substation 5	Lead and lead compounds - APP2 - B-3	Battery	567 Kg	HX35. 9 number batteries located in 7 substation rooms
31987	Lifeboat	Deck 8 12 999/externals	Lead and lead compounds - APP2 - B-3	Battery	644 Kg	2 batteries per life boat. 14 no. boats in total
31988	Tender boat	Deck 8 12 999/externals	Lead and lead compounds - APP2 - B-3	Batteries	690 Kg	5 batteries per tender. 6 boats on total.
31989	Tender boat with scissor lift	Deck 8 12 999/externals	Lead and lead compounds - APP2 - B-3	Batteries	322 Kg	7 batteries per tender. 2 no. boats in total

1.3 Structure and hull containing materials listed in table A and table B of Appendix 1 of the guidelines:

No.	Name of structural element	Location	Materials	Hazardous materials position	Approx. Quantity	Remarks / References
No records.						



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Maintenance & Managing the IHM

The requirement to maintain Part I of the IHM is established for the purpose of meeting Regulation 5.3 of the HK Convention and Par. 5.2.2 of the MEPC. Guidelines by means of properly maintaining, during the ship's operational stage & life cycle.

Policy of Management to Maintain the Inventory

- Ship owner designates a person as responsible for maintaining and updating the Inventory for the ship, and entrust the duty to him on shore.

Establishment of Management System to Maintain the Inventory

- The designated person (DP) establishes and supervises a system in order to ensure that the Inventory on board is properly maintained & updated by the IHM Expert.



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When does the IHM require updating ?

- Replacement, addition, or removal of machinery, equipment or their components. Important during major repairs, conversions.
- Renewal of hull coating's
- New installations

When does the IHM not require updating?

- Identical replacement of spare parts
- Identical replacement of coatings
- No change in the status of hazardous materials



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Management System to Maintain the IHM

Request of Hazardous Material Information

- A person who places an order of structure material, machinery and/or equipment to be installed on board the ship **MUST** request a Material Declaration (MD)/Suppliers Declaration of Conformity (SDoC) showing information of hazardous material (HM) which are contained in the objects.
- MD & SDoC from suppliers should be requested & received for **ALL** structure material, machinery and equipment which are fixed (i.e., securely fitted with the ship, such as by welding or with bolts, riveted or cemented, and used at their position, including electric cables, gaskets), and applied coating.



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Material Declaration

- The MD contains information about the presence of hazardous materials in a product.
- The MD template states all hazardous material which has to be considered.
- Suppliers should identify and declare the presence of a HM included in the MD if it exceeds the threshold value specified in the guidance.
- Location on board and approximate quantity of HM needs to be shown in the Inventory, and, therefore, in case where a product consists of plural components located in different places, its MD should be divided correspondingly to the locations of components containing HM.



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MATERIAL DECLARATION

<Date of Declaration>
Date: 2016-10-05

<MD ID Number>
MD-ID-No.: MITEC-COHD-1604-01

<Supplier (Respondent) Information>

Company Name	M.I.Tec. Co., Ltd.
Division Name	Design Dept.
Address	471, Samnangdong Buk-Gil, Yongsu-gu, Gyeongsangnam-do, KOREA
Contact Person	H.J. KWON / Director
Telephone Number	(+82)55-346-6020
FAX Number	(+82)55-346-6022
E-mail Address	mbatt12@hamail.net
SDoC ID No.	MITEC-COHD-1604

<Other Information>

Remark 1	
Remark 2	
Remark 3	

<Product Information>

Product Name	Product Number	Mass per product		Product Information
		Amount	Unit	
Insulation for Cold Prov' Chamber	MITEC-COHD-1604-02	455	kg	Rigid Polyurethane Insulation

<Material Information>

This material information shows the amount of hazardous materials contained in (unit: piece, kg, m3, litre etc.) of the product.

Table	Material Name	Threshold level	Present above threshold level		If yes, material mass		If yes, information on where it is used
			Yes / No	Mass	Unit		
Table A (Materials Listed in appendix 1 of the Convention)	Asbestos	0.1%	NO				
	Polychlorinated Biphenyls (PCBs)	Single/d	NO				
	Ozone Depleting Substance	Chlorofluorocarbons (CFCs)	no threshold level	NO			
		Hydrochlorofluorocarbons (HCFCs)		NO			
		Hydrofluorocarbons (HFCs)		NO			
		Perfluorocarbons (PFCs)		NO			
		Other fully halogenated C-Cl-C		NO			
	Carbon Tetrachloride	NO					
	1,1,1-Trichloroethane	NO					
	Hydrobromofluorocarbons	Yes	0.066	kg	Blowing agent of PU/F Insulation		
Hydrobromofluorocarbons	NO						
Methyl bromide	NO						
Bromochloromethane	NO						
Air-filling systems containing organotin compounds as a biocide	2,500 mg total tin/kg	NO					
Table B (Materials Listed in Appendix 2 of the Convention)	Cadmium and Cadmium Compounds	100 mg/kg	NO				
	Hexavalent Chromium and Hexavalent Chromium Compounds	1,000 mg/kg	NO				
	Lead and Lead Compounds	1,000 mg/kg	NO				
	Mercury and Mercury Compounds	1,000 mg/kg	NO				
	Polybrominated Biphenyl (PBBs)	50 mg/kg	NO				
	Polybrominated Diphenyl ethers (PBDEs)	1,000 mg/kg	NO				
	Polychlorinated biphenyls (PCB >= 3)	50 mg/kg	NO				
	Radioactive Substances	no threshold level	NO				
	Certain Short-chain Chlorinated Paraffins	1%	NO				
	EU Reg. Requirements (materials listed in annex II of the EU Regulation)	Perfluorooctane sulfonic acid (PFOS)	no threshold level	NO			
Flame Retardant (HBCDD)	no threshold level	NO					

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Supplier's Declaration of Conformity (SDoC)

- The purpose of the Supplier's Declaration of Conformity (SDoC) is to provide assurance that the related Material Declaration conforms to the correct information provided, and to identify the responsible entity.
- The Supplier's Declaration of Conformity remains valid as long as the products are present on board.



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Supplier's Declaration of Conformity for Material Declaration Management

1) Identification number : SD-MITEC-CCHD-1604

2) Issuer's name : M.I.Tec. Co., Ltd.
Issuer's address : #77, Sanmakgongdan Buk9-Gil, Yangsan-si, Gyeongsangnam KOREA

3) Object(s) of the declaration : Insulation for Cold Prov' Chamber


4) The object(s) of the declaration described above is in conformity with the following documents

Document No :  Title: HYUNDAI Edition / date of issue

5) MEPC.269(68) Guidelines for the development of the IHM Annex / May 15, 2015
F-051-01 POLY-URETHANE FOAMING MANUAL Sep. 16, 1987
ISO 9001 Quality Management Systems Nov. 24, 2015

6) Additional information : Refer to attached Material Declaration
CAS Number : 1717-00-6 (HCFC-141b)

Signed for and on behalf of:
M.I.Tec. Co., Ltd.
YANGSAN KOREA / 2016.10.05
(Place and date of issue)

7) H.J. KWON / Director 
(Name, function) (Signature)

Items Not Requiring MD/SDoC for IHM Part 1

- Non Fixed items (Fire extinguishers, Distress flares Lifebuoys, etc)
- Consumer batteries, batteries in stores
- Table C items as listed in MEPC.269(68) (Cargo residues, Cleaning solutions etc)
- Table D items listed in MEPC.269(68) (Consumable items, furniture, display equipment etc)
- Table B items that are inherent in solid metals or metal alloys (steels, alloys, brasses, bronzes, solder's - provided they are used in general construction
- Amount of materials in printed wiring boards (printed circuit boards)
- Part I spare parts are not required for the inventory however an MD/SDoC should be obtained in advance of them being placed in use



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Receipt of MD/SDoC

- Submission of collected MD/SDoC by DP to IHM Expert (Lucion)
- IHM Expert conducts review of all MD/SDoC for specific vessel by checking of materials listed in Table A , Table B, Annex 1 & Annex 2
- Carry out amendments to live IHM document, adding/changing/removing items in-line with received documentation on NexGen
- Submission of updated IHM to classification society in order to prove a management system is being implemented & to receive Statement of Compliance



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Conclusion & Key Points

- As of 31 December 2020 Requirements for IHM are now in force under EU SSR for vessels >500GT flying the flag of a EU member state or visiting a EU member port
- IHM requires updating each time machinery, equipment and coatings are replaced or added.
- Management of the IHM should be allocated to a Designated Persons
- A person who places an order of structure material, machinery and/or equipment to be installed on board the ship should request a Material Declaration (MD)/Suppliers Declaration of Conformity (SDoC) showing information of hazardous material (HM) which are contained in the objects.
- MD & SDoC from suppliers should be requested & received for **ALL** structure material, machinery and equipment which are fixed (i.e., securely fitted with the ship, such as by welding or with bolts, riveted or cemented, and used at their position, including electric cables, gaskets), and applied coating.



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