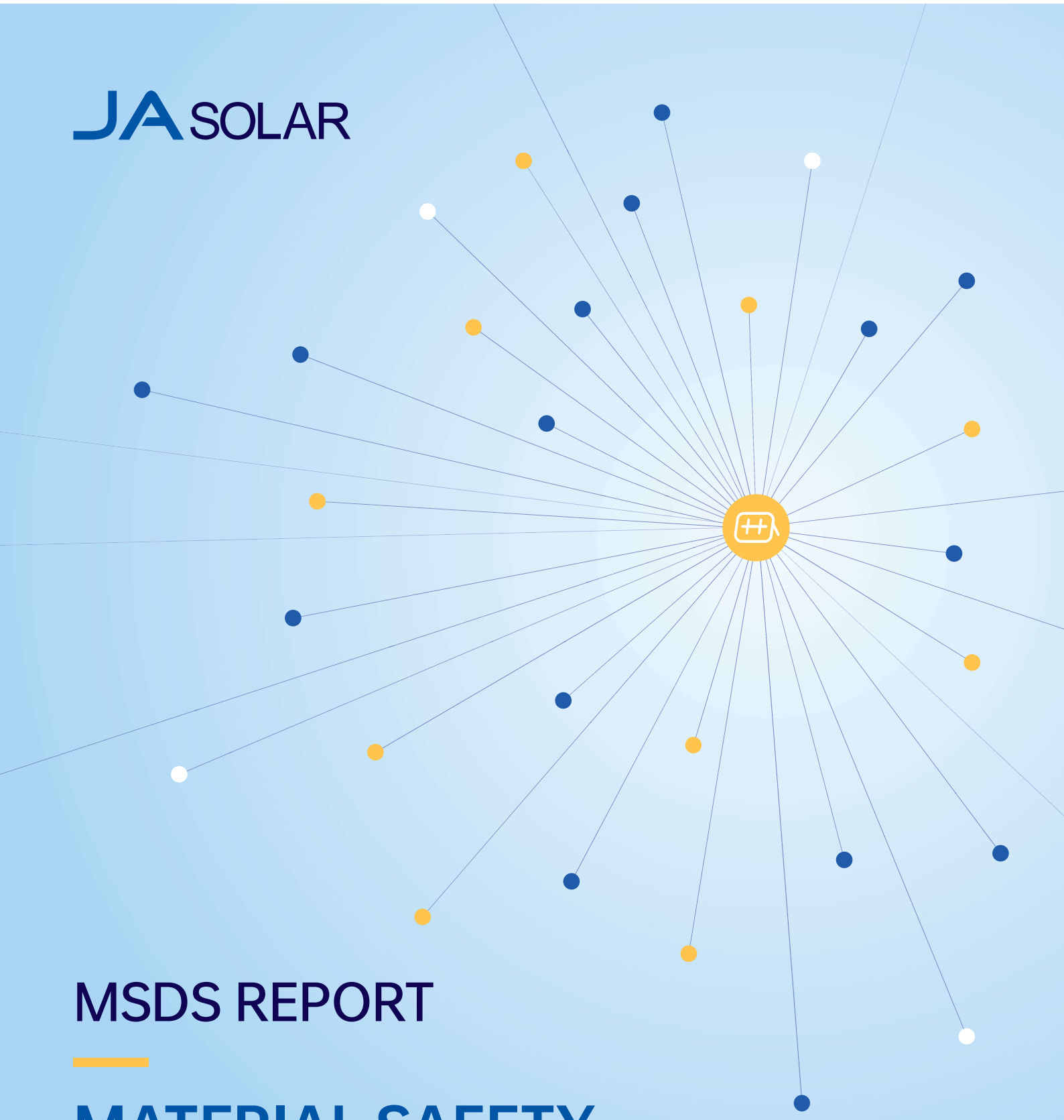
JA SOLAR



MSDS REPORT

MATERIAL SAFETY DATA SHEET

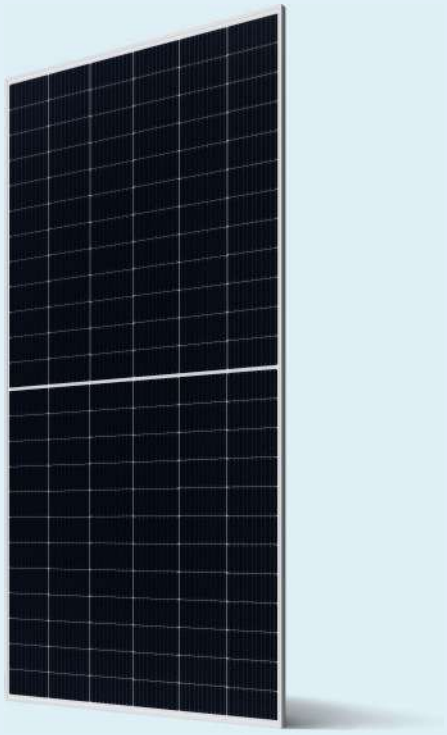
www.jasolar.com

CONTENTS

01 PRODUCT

Solar Electric Crystal Silicon Module

SINGLE GLASS MODULE



Mono-crystalline single glass module

JAMXXS1X-XXX/XX JAMXXS2X-XXX/XX
JAMXXS3X-XXX/XX JAMXXS4X-XXX/XX

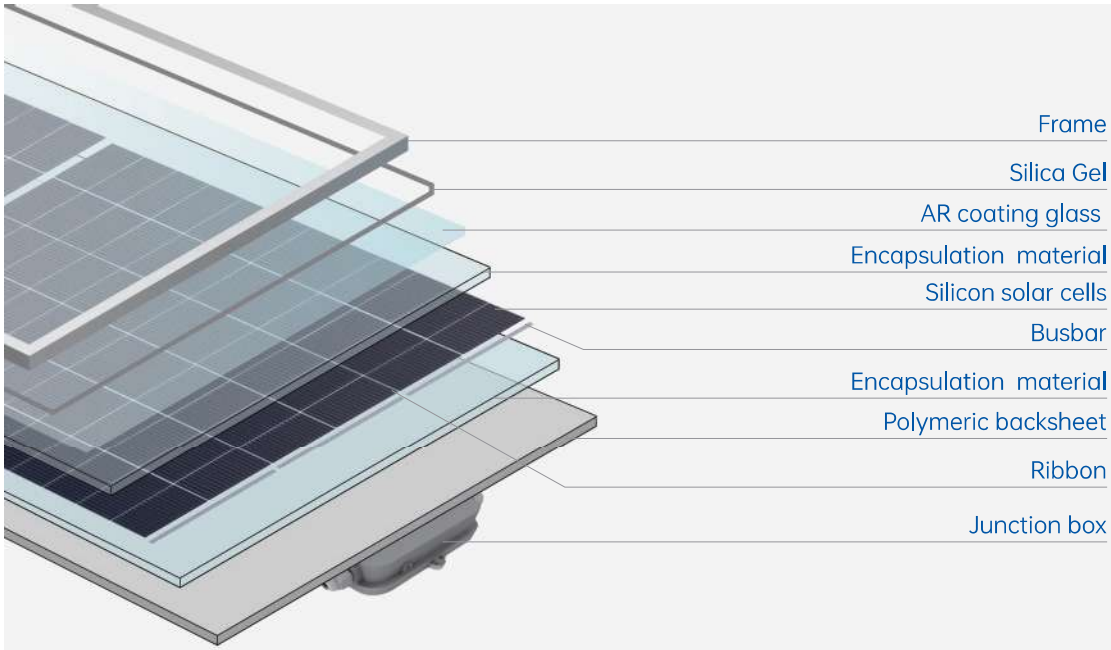
DOUBLE GLASS MODULE

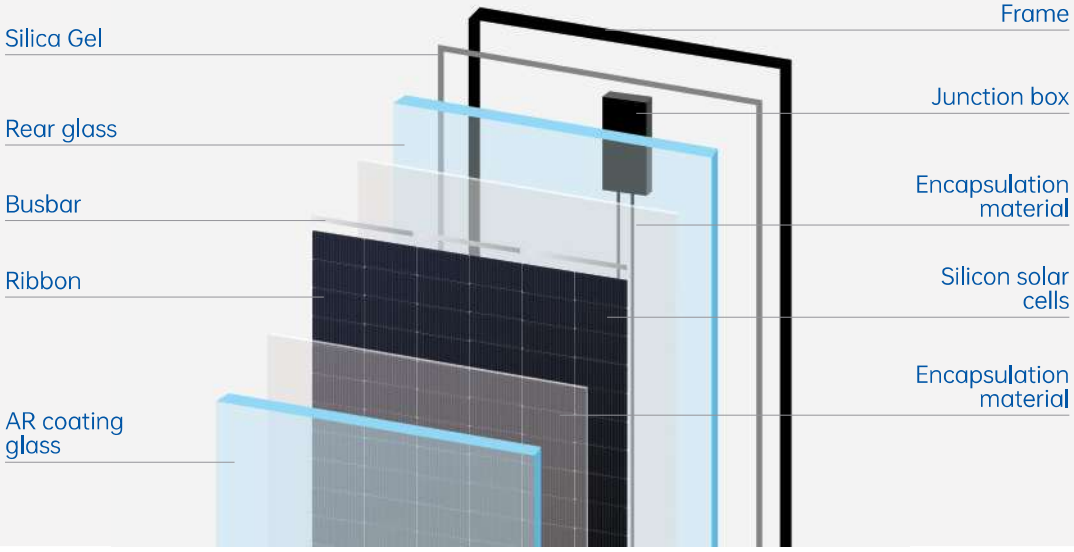
Mono-crystalline double glass module

JAMXXD1X-XXX/XX JAMXXD2X-XXX/XX
JAMXXD3X-XXX/XX JAMXXD4X-XXX/XX

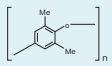
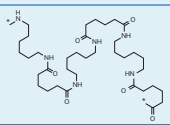
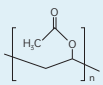
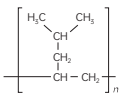
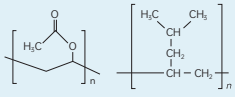
Note:"X"represents different types of product and different power class.

02 COMPOSITION, INFORMATION ON INGREDIENTS

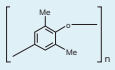
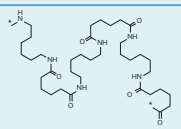
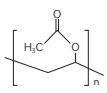
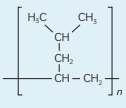
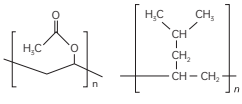




SINGLE GLASS MODULE

MATERIAL ITEM	CHEMICAL NAME OF COMPOSITION		FORMULA & MODEL
Frame	Aluminum frame		Al、Mn、Si、Fe、Cu、Mg、Cr、Zn、Ti、O
	Steel frame		Fe、Si、Mn、P、S、Al、Mg、Zn、O
	Composite frame		C、H、O、N、Si、Al、Ga、Mg、Na、B
Silicon solar cells	Silicon		Si
	Phosphorus		P
	Boron		B
	Silicon nitride		Si_3N_x
	Silver		Ag
	Aluminum		AL
Junction -Box	Box	Polyphenylene oxide (PPO)	
	Pad	Copper	Cu
		Tin Lead	Sn、 Pb
	Cable	Polyethylene(PE)	
		Copper	Cu
	Connector	Poly(oxy(2,6-dimethyl-1, 4-phenylene))	
		NYLON 6/6	
	Silicone Potting glue	Silicone rubber,methyl RTV 107	HO { (CH3) 2SiO} nH
		Aluminium hydroxide	AlH3O3
		Dimethicone	C6H18OSi2
		Tetraethyl orthosilicate	C8H20O4Si
AR coating Glass	Patterned tempered glass		SiO_2、Al_2O_3、K_2O、Na_2O、CaO、MgO、Fe_2O_3
	Float tempered glass		SiO_2、Al_2O_3、K_2O、Na_2O、CaO、MgO、Fe_2O_3、Sn
Silica Gel	Polydimethylsiloxane		
	Calcium carbonate		CaCO3
Busbar、 Ribbon	Copper (99%)		Cu
	Tin (<1%)		Sn
	Lead (<1%)		Pb
Polymeric backsheet	Polyvinylidene Fluoride(PVDF)		
	Polyethylene terephthalate(PET)		$[-OCH_2-CH_2OCOC_6H_4CO-]_n$
	Fluorinated olefin vinyl ether copolymer (FEVE)		$C_{21}H_{10}F_{12}O_3$
Encapsulation material	EVA Poly(vinyl acetate)		
	PO Polyolefin		
	EPE		

DOUBLE GLASS MODULE

MATERIAL ITEM	CHEMICAL NAME OF COMPOSITION		FORMULA & MODEL
Frame	Aluminum frame		Al、Mn、Si、Fe、Cu、Mg、Cr、Zn、Ti、O
	Steel frame		Fe、Si、Mn、P、S、Al、Mg、Zn、O
	Composite frame		C、H、O、N、Si、Al、Ga、Mg、Na、B
Silicon solar cells	Silicon		Si
	Phosphorus		P
	Boron		B
	Silicon nitride		Si_3N_x
	Silver		Ag
	Aluminum		AL
Junction -Box	Box	Polyphenylene oxide (PPO)	
	Pad	Copper	Cu
		Tin Lead	Sn、Pb
	Cable	Polyethylene(PE)	
		Copper	Cu
	Connector	Poly(oxy(2,6-dimethyl-1, 4-phenylene))	
		NYLON 6/6	
	Silicone Potting glue	Silicone rubber,methyl RTV 107	HO { (CH3) 2SiO} nH
		Aluminium hydroxide	AlH3O3
		Dimethicone	C6H18OSi2
		Tetraethyl orthosilicate	C8H20O4Si
AR coating Glass	Patterned heat strengthened glass		SiO_2、Al_2O_3、K_2O、Na_2O、CaO、MgO、Fe_2O_3
	Float heat strengthened glass		SiO_2、Al_2O_3、K_2O、Na_2O、CaO、MgO、Fe_2O_3、Sn
Silica Gel	Polydimethylsiloxane		
	Calcium carbonate		CaCO3
Busbar、 Ribbon	Copper (99%)		Cu
	Tin (<1%)		Sn
	Lead (<1%)		Pb
Rear Glass	Patterned heat strengthened glass		SiO_2、Al_2O_3、K_2O、Na_2O、CaO、MgO、Fe_2O_3、TiO_2
	Float heat strengthened glass		SiO_2、Al_2O_3、K_2O、Na_2O、CaO、MgO、Fe_2O_3、Sn、TiO_2
Encapsulation material	EVA Poly(vinyl acetate)		
	PO Polyolefin		
	EPE		

03 HAZARDS IDENTIFICATION

Emergency Overview

Warning, non-demolition, not exposed to flame or fire. There is the risk of explosion and burn under fire conditions. Do not short-circuit, squeezing, burning, or removing the module.

Potential Health Hazards

None	None	1/10000	None	None
Risk Categories	Invasive Ways	Explosion Hazard (Tempered glass has a 1/10000 explosion risk.)	Environmental Hazards	Health Hazards

The inverter device does not meet the provision, the flaws on system design, the quality problem of the junction box, the hot spot effect will be the reason of spontaneous combustion of this product.

04 FIRST AID MEASURES

Eye Contact

No damage found on eye contact, no special provisions.

Ingestion

No damage found, no special provisions.

Skin Contact

No skin contact injury found. It is proposed to wash hands before and after touch back sheet. If molten polymer contacts skin, immediately cool it with cold water, and do not directly peel them from the skin, go to hospital for treatment by burns drugs.

Inhalation

No damage found, no special provisions. If you have overheating or fire hazard, be away from heat. Go to hospital if any discomfort.

05 FIRE FIGHTING MEASURES

In General

During normal operation, this product is not prone to burning.

Hazardous Combustion Products

CO, HF,

Extinguishing Media

The hydrogen produced under the using of water may be mixed with air to form an explosive mixture if the module is burning. For small fires, carbon dioxide, dry powder or foam extinguishing agent are preferred medium. But they may not work to the burning module until the combustion module will be completely burned out. LITH-X (powdered graphite) or copper powder extinguisher, sand, dried, pulverized dolomite or soda ash can also be used, and these materials can be used as a smothering agent.

Extinguishing Note

Transfer people to a safe area in the upwind air, wear respirators, protective gloves and fire fighting clothing. If large amounts are inhaled, give emergency medical treatment.

06 ACCIDENTAL RELEASE MEASURES

Emergency Treatment

Solid normally, NA.

07 HANDLING AND STORAGE

Handling Precautions Outline

1. In strict accordance with the requirements of the specification to install modules, and are not free to install, maintain.
2. Do not strongly illuminate module artificially(artificial sunlight is unavailable).
3. The system DC voltage exceeds 30V, operation must be done by specialized electrician.
4. It is potentially dangerous to contact a voltage of 30V or above.
5. Junction boxes, cables, brackets, etc. should be matched with modules during installation of electrical systems.
6. Installation of all accessories must follow safe working practices (other accessories must also comply with the security provisions of operation).
7. The installation should be in accordance with local, national laws/regulations/codes/directives.
8. Module installation should be operated by professionals.

Safe Handling

1. Properly packed before installation of modules.
2. Do not directly holding the junction box to handle the modules.
3. Not drop modules or obstacles fall on it.
4. Handle it gently, especially angular point.
5. Do not disassemble the modules and move any part of the modules or label after installation.
6. Do not spray paint or stick other items on the back of the modules.
7. Do not drill on the glass and module border.
8. Do not place the module without bracket or not an unsafe place.
9. The module cannot be used after glass is broken.
10. To operate with dry tool in the clean environment.

Install Security

1. Do not allow the children to close during installation.
2. Module cannot be installed in high winds.
3. Appropriate Installation methods and safety equipment should be used in the installation site to prevent the falling of modules.
4. Do not touch the wire or connection port when the installation of the modules or the modules are exposed to the sunlight.
5. Do not wear metal jewelry during the installation.
6. Do not disconnect the line or unplug the connection plug when circuit is working.

Fire Safety

1. Roof structures and installations that may affect the fire safety of the entire building, unreasonable installation will aggravate to the severity of the fire.
2. The modules should be installed on the fire isolation layer, in order to improve security.
3. Module installation on the rooftop and ground should be the same, with insurance device and circuit fuse.
4. Do not install the modules near the storage equipment and place of flammable gas.

Electrical Installation

1. Avoid the risk of electric shock during installation, wiring, module operating.
2. The module of different specifications cannot used in the same array.
3. The open circuit voltage of PV string is less than the maximum voltage of standard system.
4. The cable is to be placed where the children and animals cannot touch.
5. Cables and junction boxes may overheat at high current.
6. Make sure junction box and wire can go through the short-circuit current.
7. Make sure the positive and negative polarity of the cable and terminal during connection.
8. Comply with local electrical laws or regulations.

Mechanical Installation

1. Fix the modules with the installation tools and special bracket to support modules.
2. Make sure the module can still work carrying a certain load, which is not affected by the impact of the snow load or thermal expansion and contraction.
3. Make sure that the modules can still work in the ambient temperature within the variable range of -40 to +85°C / -40 to 185 °F.
4. Off-grid power generation system installed in large areas of snow, require module position lower and bracket narrower.
5. Providing install mounting holes for frame modules which can withstand a certain degree of mechanical strength.
6. Use not less than 4 clamps or 4 holes to secure the installation.
7. Be well-ventilated behind the module. (10 cm).
8. Be away from the other items behind the modules.

Storage:

Use wooden boxes (carton) packaging and store it in a cool, well-ventilated place, be away from heat and fire sources.

08 EXPOSURE CONTROLS/PERSONAL PROTECTION EQUIPMENT

NA
Engineering Controls

NA
Eye protection

NA
Respirator
(NA under normal conditions)

NA
Skin contact
(NA under normal conditions, if the module is damaged, please wear appropriate protective gloves.)

NA
Clothing
(NA under normal conditions, if the module is on fire and burst, please wear appropriate protective clothing.)

09 PHYSICAL AND CHEMICAL PROPERTIES

Solid
Physical State

None
Odor

19.5 kg ~ 30.5kg
(Single glass module)
19.5 kg ~ 34.6kg
(Double glass module)
Weight

Different specifications, different voltage
Voltage

Insoluble in water
Solubility in water

10 STABILITY AND REACTIVITY

Stability
Stable under normal storage and operating conditions.

Conditions To Avoid
Fire, high temperature, high humidity, salt spray.

Substances To Be Avoided
Strong oxidizing agents.

Hazardous Polymerization
No information available.

Hazardous Decomposition Products
Fire conditions may produce hazardous decomposition products.

11 TOXICOLOGICAL INFORMATION

Under normal conditions, the product will not cause any abnormal emergency injury
Acute poisoning

None
Irritation

12 ECOLOGICAL INFORMATION

Ecological Toxicity:

The proper use and disposal of the module will not cause harm to the environment. Disposal of waste modules, be away from the water, rain and snow.Meeting the waste disposal requirements of the installed local,national laws/regulations/ directives.

13 DISPOSAL

Disposal:

Should refer to national and local laws and regulations before disposal.

14 TRANSPORT INFORMATION

No information Dangerous Goods Code	**Information** UN Number	**No information** Packing mark	**Z01** Packaging category	**No informatio available** Packing method

Transportation Note

Package should be complete before transportation, and loading should be safe. To ensure that the container does not leak, not fall, not damaged during transportation. Do not be together with oxidizing agents, alkalis, food chemicals. Goods should be anti-exposure, rain, anti-high temperature during transportation.

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Regulatory Information: Refer to local, domestic, EU / international regulations
MSDS Preparation date: October 2023