SAFETY DATA SHEET

Date of issue: *09/18/2015*
Date of previous issue: *New SDS*

Section 1. Identification

Product name XV-3389

Product type Polyester Resin Solution

Chemical family Aromatic.

MSDS no. XNA-1509:454 (Version: 1.0)

Relevant identified uses of the substance or mixture and uses advised against

Identified uses Used in the manufacture of thermoset plastic parts.

Uses advised against No additional information.

Supplier's details

AOC, LLC
955 Highway 57 East
Collierville, TN 38017
Website: www.aoc-resins.com
Phone Number: (901) 854-2800
Hours: 8AM-5pm (Central Time) Mon-Friday

Emergency telephone number (with hours of operation)

CHEMTREC (US): 24 hours/7 days (800) 424-9300
CANUTEC (Canada): 24 hours/7 days (613) 996-6666

Section 2. Hazards identification

OSHA/HCS status

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture

FLAMMABLE LIQUIDS – Category 3 – H226
ACUTE TOXICITY (INHALATION) – Category 4 – H332
SKIN CORROSION/IRRITATION – Category 2 – H315
SERIOUS EYE DAMAGE/ EYE IRRITATION – Category 2 – H319
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) – Category 3 – H335
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) – Category 1 – H372

GHS label elements

Hazard pictograms



Signal word

Danger

Hazard statements

H226: Flammable liquid and vapor.
H332: Harmful if inhaled.
H319: Causes serious eye irritation.
H315: Causes skin irritation.
H335: May cause respiratory irritation.
H372: Causes damage to organs through prolonged or repeated exposure if inhaled.

Precautionary statements

General

P101: If medical advice is needed, have product container or label at hand.
P102: Keep out of reach of children.

Section 2. Hazards identification

Prevention

P210: Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P233: Keep container tightly closed.
P240: Ground/bond container and receiving equipment.
P241: Use explosion-proof electrical/ventilating/lighting/material-handling equipment.
P242: Use only non-sparking tools.
P243: Take precautionary measures against static discharge.
P264: Wash hands thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.
P271: Use only outdoors or in a well-ventilated area.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P260: Do not breathe vapor or mist.

Response

P370+P378: In case of fire: Use DRY chemicals, CO2, water spray or foam.
P309+P311: IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician if exposed or you feel unwell.
P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P312: Call a POISON CENTER or physician if you feel unwell.
P303+P361+P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P332+P313: If skin irritation occurs: Get medical attention/advice.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313: If eye irritation persists: Get medical attention/advice.
P391: Collect spillage.

Storage

P403 + P235: Store in a well-ventilated place. Keep cool.
P233: Keep container tightly closed.
P405: Store locked up.

Disposal

P501: Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified

None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture.

Ingredient name	CAS number	%
Styrene	100-42-5	38.5

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact

Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Use of buffered baby shampoo will aid in removal. If irritation persists, get medical attention.

Inhalation

Move the victim to a safe area as soon as possible. Allow the victim to rest in a well-ventilated area. If breathing is difficult, give oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

Skin contact

In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. If irritation persists, seek medical attention. Wash contaminated clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion

Section 4. First aid measures

Wash out mouth with water. Remove dentures if any. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Seek immediate medical attention.

Most important symptoms/effects, acute and delayed

Eye contact

Causes serious eye irritation.

Inhalation

Harmful if inhaled. May cause respiratory irritation.

Skin contact

Causes skin irritation.

Ingestion

Irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact

Adverse symptoms may include the following: pain or irritation, watering, redness.

Inhalation

Adverse symptoms may include the following: respiratory tract irritation, coughing.

Skin contact

Adverse symptoms may include the following: irritation, redness.

Ingestion

Adverse symptoms may include the following: Irritating to mouth, throat and stomach..

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician

Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media

Do not use water jet.

Specific hazards arising from the chemical

Flammable liquid and vapor. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products

Decomposition products may include the following materials: carbon dioxide, carbon monoxide, sulfur oxides halogenated compounds, metal oxide/oxides

Special protective actions for fire-fighters

Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Special protective equipment for fire-fighters

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation.

For emergency responders

If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment. See also the information in "For non-emergency personnel".

Environmental precautions

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

Methods and materials for containment and cleaning up

Small spill

Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.

Large spill

Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures

Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. Do not breathe vapor or mist. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities

Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Eliminate all ignition sources. Segregate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. Refer to the product label and/or technical data sheet for further information.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Section 8. Exposure controls/personal protection

Ingredient name	Exposure limits
Styrene	**ACGIH TLV (United States, 3/2015). Absorbed through skin.** TWA: 20 ppm 8 hours. TWA: 85 mg/m³ 8 hours. STEL: 40 ppm 15 minutes. STEL: 170 mg/m³ 15 minutes. **OSHA PEL Z2 (United States, 2/2013).** TWA: 100 ppm 8 hours. AMP: 600 ppm 5 minutes. CEIL: 200 ppm **NIOSH REL (United States, 10/2013).** TWA: 50 ppm 10 hours. Form: TWA: 215 mg/m³ 10 hours. STEL: 100 ppm 15 minutes. STEL: 425 mg/m³ 15 minutes.

Appropriate engineering controls

Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Individual protection measures

Hygiene measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection

Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

Hand protection

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Body protection

Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection

Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.



Section 9. Physical and chemical properties

Appearance

Physical state	Liquid.
Color	Amber.
Odor	Aromatic.
Odor threshold	0.01 - 0.1 ppm (*Styrene*)
pH	*Not applicable.*
Melting point	-23.8°F / -30.6°C (*Styrene*)
Boiling point	293°F / 145°C (*Styrene*)
Flash point	88°F / 31°C (*Styrene*)
Evaporation rate	< 1 (Butyl acetate = 1)
Flammability (solid, gas)	*Not applicable.*
Lower and upper explosive (flammable) limits	**Lower:** 1.1% **Upper:** 6.1% (*Styrene*)
Vapor pressure	5.0 mm Hg@ 68°F / 20°C (*Styrene*)
Vapor density	3.6 (Air = 1) (*Styrene*)
Relative density	1.1 (Water = 1)
Solubility	Slight.

Section 9. Physical and chemical properties

Partition coefficient: n-octanol/water	Not available.
Auto-ignition temperature	914°F / 490°C (*Styrene*)
Decomposition temperature	Not available.
Viscosity	Not available.
Molecular weight	10,000 to 15,000

Section 10. Stability and reactivity

Reactivity

No specific test data related to reactivity available for this product or its ingredients.

Chemical stability

The product is stable. Stable under recommended storage and handling conditions (see Section 7).

Possibility of hazardous reactions

Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid

Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

Incompatible materials

Reactive or incompatible with the following materials: oxidizing materials

Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Styrene	LC50 Inhalation Gas. LC50 Inhalation Vapor LD50 Oral	Rat Rat Rat	2770 ppm 11800 mg/m³ 2650 mg/kg	4 hours 4 hours -

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Styrene	Eyes - Mild irritant	Human	-	50 parts per million	-
	Eyes - Moderate irritant	Rabbit	-	24 hours 100 milligrams	-
	Eyes - Severe irritant	Rabbit	-	100 milligrams	-
	Skin - Mild irritant	Rabbit	-	500 milligrams	-
	Skin - Moderate irritant	Rabbit	-	100 Percent	-

Sensitization

May cause sensitization by skin contact.

Carcinogenicity

Classification

Product/ingredient name	ACGIH	IARC	NTP
Styrene	-	2B	Reasonably anticipated to be a human carcinogen.

1) Negative Study A published study concluded that the mechanism for producing cancer in mice exposed to styrene is not applicable in human metabolism. (June 2013 Pharmacology & Toxicology 66 (2013))
2) Negative Study A recent update to an extensive study of reinforced plastic workers from 1948-1977 concluded that there was no coherent evidence that styrene exposure increased risk of cancer (March 2013 Epidemiology Vol. 24 Issue 2)
3) Positive Study Styrene induced pulmonary toxicity and carcinogenicity in mice was shown to be caused by a metabolite of styrene, probably styrene oxide. (Dec.2001 Toxicology Vol.169 Issue 2)

Mutagenicity

No mutagenic effect.

Reproductive toxicity

Section 11. Toxicological information

Not considered to be toxic to the reproductive system.

Teratogenicity

No known effect according to our database..

Specific target organ toxicity (single exposure)

No known effect according to our database.

Specific target organ toxicity (repeated exposure)

A study of long term effects of workers exposed to styrene levels in the range of 25-35 ppm, 8 hour TWA, indicated a possible mild hearing loss.

Aspiration hazard

No known effect according to our database.

Potential acute health effects

Eye contact

Causes serious eye irritation.

Inhalation

Harmful if inhaled. May cause respiratory irritation.

Skin contact

Causes skin irritation.

Ingestion

Irritating to mouth, throat and stomach.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact

Adverse symptoms may include the following: pain or irritation, watering, redness.

Inhalation

Adverse symptoms may include the following: respiratory tract irritation, coughing.

Skin contact

Adverse symptoms may include the following: irritation, redness.

Ingestion

Adverse symptoms may include the following: Irritating to mouth, throat and stomach..

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Styrene	Acute EC50 4.7 mg/l Fresh water Acute LC50 4.02 mg/l Fresh water	Daphnia - Daphnia magna Fish - Pimephales promelas	48 hours 96 hours

Persistence and degradability

Product/ingredient name	Test	Result	Dose	Inoculum
Styrene	EU	100 % - Readily - 1 days	-	-

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Styrene	-	-	Readily

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Styrene	2.95	13.49	low

Mobility in soil

Soil/water partition coefficient (K_{OC})

Not available.

Other adverse effects

No known effect according to our database.

Section 13. Disposal considerations

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

Disposal methods

The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid disposal. Attempt to use product completely in accordance with intended use. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

Special precautions

This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

DOT / TDG/ IMDG/IMO / ICAO/IATA and National regulations.

UN number	UN1866
Proper shipping name	Resin Solution
Transport hazard class(es)	3 
Packing group	III
Additional information	US regulations require the reporting of spills when the amount exceeds the Reportable Quantity (RQ) for specific components of this material. See CERCLA in Section 15, Regulatory Information, for the Reportable Quantities. **IMDG** Emergency schedules (EmS) 3-05 **IATA** No additional information.
Environmental hazards	Marine pollutant: No.
Special precautions for user	**Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Section 15. Regulatory information

Inventories (National and International)

United States inventory (TSCA 8b)	: All components are listed or exempted.
Australia	: All components are listed or exempted.
Canada	: All components are listed or exempted.
China	: All components are listed or exempted.
Europe	: Not determined.
New Zealand	: Not determined.
Philippines	: Not determined.
Japan	: Not determined.
Malaysia	: Not determined.
Republic of Korea	: All components are listed or exempted.
Taiwan	: All components are listed or exempted.

SARA 311/312

Composition/information on ingredients

Section 15. Regulatory information

Name	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
Styrene	Yes.	No.	No.	No.	Yes.

SARA 313

	Product name	CAS number
Form R - Reporting requirements	Styrene	100-42-5

CERCLA RQ - Styrene - 1000 lbs. (453.6 kg)

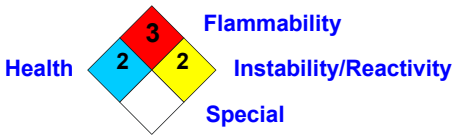
State regulations

California Prop. 65

WARNING: This product contains a chemical known to the State of California to cause cancer.

Section 16. Other information

National Fire Protection Association (U.S.A.)



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History

Date of issue : 09/18/2015

Date of previous issue : Not applicable.

Version : 1.0

AOC Corporate Regulatory Affairs

Key to abbreviations :
ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

Indicates information that has changed from previously issued version.

Notice to reader

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