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SAFETY DATA SHEET

Date Printed:
Version: 1.0/EN
Revision date: 14 June, 2013
Regulation: In accordance with Regulation (EU) 453/2010 (REACH), 286/2011(CLP)

1. IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY

1.1 Product identifier
Name of substance : ABS AF 360S

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

1.2.1. Identified Uses: Manufacture of plastics products

1.2.2. Advised against: Used only recommended uses.

1.3 Details of the supplier of the safety data sheet

Company name : LG Chem, Ltd.
Address : 70-1, Hwachi-dong, Yeosu-city, Jeollanam-do, 550-280, Korea
Prepared by :
Contact Telephone : +82-2-3773-3172
Fax : +82-2-3773-7933
Email Address : webmaster@lgchem.com

1.4. Emergency telephone number

Emergency Telephone: +82-2-3773-3172

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
Classification :

Physical / Chemical Hazards :
Annex I of Directive 1999/45/EEC:
Not classified

EU CLP 2008 :
Not classified

Health Hazards :
Annex I of Directive 1999/45/EEC:
Carc. Cat. 3;R40

EU CLP 2008 :
Carc. 2

Environmental Hazards :
Annex I of Directive 1999/45/EEC:
Not classified

EU CLP 2008 :
Not classified

2.2 Label elements

Labelling:

Signal word : Warning

Hazard statement :

H351 : Suspected of causing cancer.

Additional precautionary statements :

P201 : Obtain special instructions before use.
P202 : Do not handle until all safety precautions have been read and understood.
P281 : Use personal protective equipment as required.
P308+P313 : If exposed or concerned: Get medical advice/ attention.
P405 : Store locked up.
P501 : Dispose the contents/container in accordance with local/regional/national/international regulations.

2.3 Other Hazards

No other hazards identified.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS No.	EC No.	Conc. / %	Classification	(Pre)registration No.
ABS Resin	9003-56-9		70~80%	Not classified	01-2119471988-16, 01-2119457861-32, 01-2119474195-34
S1	Confident	Confident	2~12%	Not classified	Confident
diantimony trioxide	1309-64-4	215-175-0	1~5%	Carc. 2	
Other additives	Not available	Not available	0~1%	Not classified	
*** Under EU REACH regulation, monomers in ABS Resin are (pre)registered.**					

4. FIRST AID MEASURES

4.1 Description of first aid measures

After eye contact :
- Call emergency medical service.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.

After skin contact :
- Call emergency medical service.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.

- For minor skin contact, avoid spreading material on unaffected skin.

After inhalation :
- If exposed or concerned: Get medical advice/ attention.
- Move victim to fresh air.
- Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- Keep victim warm and quiet.

After ingestion :
- If exposed or concerned: Get medical advice/ attention.
- Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

4.2 Most important symptoms and effects

Acute effects

None known

Delayed effects

Suspected of causing cancer.
May cause an allergic skin reaction.

4.3 Indication of immediate medical attention and notes for physician

- Exposures require specialized first aid with contact and medical follow-up.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media

- Use alcohol foam, carbon dioxide, or water spray when fighting fires involving this material.
- Use dry sand or earth to smother fire.

5.2 Special hazards arising from the substance or mixture

- May decompose at high temperatures into forming toxic gases.
- Containers may explode when heated.
- Some of these materials may burn, but none ignite readily.
- Non-combustible, substance itself does not burn but may decompose upon heating, then produce corrosive and/or toxic fumes.

5.3 Advice for firefighters

- Rescuers should put on appropriate protective gear.
- Evacuate area and fight fire from a safe distance.
- Substance may be transported in a molten form.
- Dike fire-control water for later disposal; do not scatter the material.
- Move containers from fire area if you can do it without risk.
- Fire involving Tanks; Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Fire involving Tanks; Cool containers with flooding quantities of water until well after fire is out.
- Fire involving Tanks; Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- Fire involving Tanks; Always stay away from tanks engulfed in fire.
- Fire involving Tanks; For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

- Clean up spills immediately, observing precautions in Protective Equipment section.
- Eliminate all ignition sources.
- Stop leak if you can do it without risk.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Cover with plastic sheet to prevent spreading.
- Please note that there are materials and conditions to avoid.

6.2 Environmental precautions

- Prevent entry into waterways, sewers, basements or confined areas.

6.3 Methods and material for containment and cleaning up

- Absorb spills with inert material (e.g., dry sand or earth), then place in a chemical waste container.
- Absorb the liquid and scrub the area with detergent and water.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

- Do not handle until all safety precautions have been read and understood.
- Follow all MSDS/label precautions even after container is emptied because they may retain product residues.
- Use carefully in handling/storage.
- Loosen closure cautiously before opening.
- Avoid breathing vapors from heated material.
- Do not enter storage area unless adequately ventilated.
- Please note that there are materials and conditions to avoid.

7.2 Conditions for safe storage, including any incompatibilities

- Store locked up.
- Empty drums should be completely drained, properly bunged, and promptly returned to a drum reconditioner, or properly disposed of.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Occupational Exposure limits

o Korea regulation :

- diantimony trioxide : TWA = 0.5 mg/m³

o ACGIH regulation :

- diantimony trioxide : TWA = 0.5 mg/m³ (as Sb)

o Biological exposure index : Not applicable

o OSHA regulation :

- diantimony trioxide : PEL=0.5 mg/m³ (as Sb)

o NIOSH regulation :

- diantimony trioxide : REL = 0.5 mg/m³(Antimony and Compounds (as Sb))

o Others :

- diantimony trioxide

Canada : TWA = 0.5 mg/m³

Austrailia : TWA = 0.5 mg/m³

Austaria TWA = 0.5 mg/m³

Occupational exposure controls :

Diantimony trioxide :

Exposure route of relevance	DNELs, DMELs, PNECs											
	Industrial				Professional				Consumer			
	Long term, local effects	Long term, systemic effects	Short term, local effects	Short term, systemic effect	Long term, local effects	Long term, systemic effects	Short term, local effects	Short term, systemic effects	Long term, local effects	Long term, systemic effects	Short term, local effects	Short term, systemic effects
Human: oral	-	-	-	-	-	-	-	-	-	DNEL =168.6 mg/kg bw/day	-	-
Human: inhalation	DNEL =0.5 mg/m³	-	-	-	-	-	-	-	DNEL= 0.1 mg/m³	-	-	-
Human: dermal	-	DNEL = 281 mg/kg bw/day	-	-	-	-	-	-	-	DNEL =168.6 mg/kg bw/day	-	-
Environment: water	PNEC aqua (freshwater)=0.113 mg/L;PNEC aqua (marine water)=0.0113 mg/L											
Environment: air	-											
Environment: soil	PNEC soil=37 mg/kg soil dw											
Environment: sediment	PNEC sediment (freshwater)=11.2 mg/kg sediment dw;PNEC sediment (marine water)=2.24 mg/kg sediment dw											
Environment: STP	PNEC STP=2.55 mg/L											
Environment: oral	-											

8.2 Exposure controls

Appropriate engineering controls :

- Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

Individual protection measures, such as personal protective equipment :

Respiratory protection :

- Wear NIOSH or European Standard EN 149 approved full or half face piece (with goggles) respiratory protective equipment when necessary.
- In case of being exposured to particulate material, the respiratory protective equipment as follow are recommended. ;facepiece filtering respirator or air-purifying respirator, high-efficiency particulate air(HEPA) filter media or respirator equipped with powered fan, filter media of use(dust, mist, fume)
- In lack of oxygen(< 19.5%), wear the supplied-air respirator or self-contained breathing apparatus oxygen.

Eye protection :

- Wear breathable safety goggles to protect from particulate material causing eye irritation or other disorder.

- An eye wash unit and safety shower station should be available nearby work place.

Hand protection :

- Wear appropriate protective gloves by considering physical and chemical properties of chemicals.

Body protection :

- Wear appropriate protective clothing by considering physical and chemical properties of chemicals.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	
Description :	Solid(Pellets)
Color :	Not available
Odor :	Not available
Odor threshold :	Not available
pH :	Not available
Melting point/freezing point :	180 ~ 200 °C
Initial boiling point and boiling range :	Not available
Flash point :	Not available
Evaporation rate :	Not available
Flammability (solid, gas) :	1/8'': V-0, 5VA(UL 94), 1/16'' V-0(U-94)
Upper/lower flammability or explosive limits :	Not available
Vapor pressure :	Not applicable
Water Solubility (ies) :	Insoluble
Solubility in organic solvents	Soluble in acetone
Vapor density :	Not available
Specific gravity :	1.19 at 23°C(ASTM D792)
Partition coefficient: n-octanol/water :	Not available
Auto ignition temperature :	Not available
Decomposition temperature :	Not available
Viscosity :	Not available
Molecular weight :	50,0000~250,000

10. STABILITY AND REACTIVITY

10.1 Reactivity/Chemical stability/Possibility of hazardous reactions

- May decompose at high temperatures into forming toxic gases.
- Containers may explode when heated.
- Some of these materials may burn, but none ignite readily.
- Non-combustible, substance itself does not burn but may decompose upon heating, then produce corrosive and/or toxic fumes.

10.2 Conditions to avoid

- Ignition sources (heat, sparks or flames)

10.3 Incompatible materials

- Combustibles, reducing agents

10.4 Hazardous decomposition products

- Corrosive and/or toxic fume
- Irritating, corrosive and/or toxic gases

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

(a) Acute toxicity;	
Oral	**S1:** Rat, LD50 > 5,000 mg/kg (OECD TG 420,GLP) **diantimony trioxide :** Rat, LD50 > 7,500 mg/kg
Dermal	**S1:** Rabbit, LD50 > 2,000 mg/kg (OECD TG 434,GLP) **diantimony trioxide :** Rabbit, LD50 > 8,300 mg/kg
Inhalation	**diantimony trioxide :** Rat, LC50 > 5.2 mg/L 4 hr (OECD TG 403, GLP)
(b) Skin Corrosion/ Irritation;	**S1:** In skin irritation study with rabbits, irritations were not observed(OECD TG 404,GLP). **diantimony trioxide :** In skin irritation test with rabbits, irritations were not observed.
(c) Serious Eye Damage/ Irritation;	**S1:** In eyes irritation study with rabbits, irritations were not observed(OECD TG 405,GLP). **diantimony trioxide :** In eyes irritation test with rabbits, irritations were not observed(OECD TG 405, GLP).
(d) Respiratory sensitization;	Not available
(e) Skin Sensitization;	**S1:** In Guinea pig maximization test, sensitizations were not observed (EPA OPPTS 870.2600, GLP). **diantimony trioxide :** In Guinea pig maximization test, skin sensitizations were not observed(OECD TG 406, GLP).
(f) Carcinogenecity;	**Diantimony trioxide :** - IARC : Group 2B, ACGIH : A2, - Korea-Directive of Ministry of Employment and Labor: 1B, - Korea-Enforcement rule of the Occupational Safety and Health Act: Carcinogen(antimony and its compound)(Carcinogenicity for only diantimony trioxide), - EU Regulation 1272/2008: Carc. 2
(g) Mutagenicity;	**S1:** Negative reactions were observed in vitro (bacterial reverse mutation assay(GLP),mammalian chromosome aberration test(OECD TG 473, GLP))test. **diantimony trioxide :** Positive reaction was observed in vitro (mammalian chromosome aberration test (OECD TG 473)), but negative reactions were observed in vivo(micronucleus assay with mouse(OECD TG 474)).
(h) Reproductive toxicity;	**S1:** In developmental toxicity study with rabbits, test article-related adverse effects were not observed (OECD TG 414, GLP). **diantimony trioxide :** In reproductive/developmental toxicity study, statistically significant adverse effects were not observed (OECD TG 414, GLP).
(i) Specific target organ toxicity (single exposure);	**S1:** In acute oral toxicity test with rats, no clinical signs of test article-related toxicity were observed. No gross lesions were observed at necropsy(OECD TG 420,GLP). **diantimony trioxide :** There were no signs of respiratory irritation,

	based on an absence of test item-related clinical signs and histopathological effects in the nose, larynx and trachea 24 hours and 14 days after exposure(OECD TG 403, GLP).
(j) Specific target organ toxicity (repeat exposure);	**S1:** In subchronic oral toxicity study with rats, adverse effects were not observed(OECD TG 407/408, GLP). **diantimony trioxide :** In subchronic oral toxicity test(90d) with rats, statistically significant adverse effects were not observed.
(k) Aspiration Hazard;	Not available

12. ECOLOGICAL INFORMATION

12.1 Toxicity	
Acute toxicity	Fish : **diantimony trioxide :** 96 hr-LC50 (*Brachydanio rerio*) > 1000 mg/L (OECD TG 203, GLP) Invertebrates : **diantimony trioxide :** 48 hr-EC50 (*Daphnia magna*) > 1000 mg/L (OECD TG 202, GLP) Algae : **diantimony trioxide :** 72 hr-EC50 (*Selenastrum capricornutum*) = 67 mg/L (OECD TG 201, GLP)
Chronic toxicity	Not available
12.2 Persistence and Degradability	Persistence : **S1** Low persistency (log Kow is less than 4 estimated.) (Log Kow = 3.55) (25°C)(EPA OPPTS 830.7560,GLP) **diantimony trioxide** The octanol-water partition coefficient (log KOW) is not relevant for this type of substance. Degradability : Not available
12.3 Bioaccumulative potential	Bioaccumulation : **S1 :** Bioaccumulation is expected to be low according to the BCF < 500 (BCF < 2.5) (GLP) **diantimony trioxide :** ? Measured data from different aquatic organisms have been used to calculate tentative BCF but, it should be noted that there is a considerable uncertainty in these BCF values. Biodegradation : **S1 :** As not well-biodegraded, it is expected to have high accumulation potential in living organisms (0% biodegradation was observed after 28

	day) (OECD TG 301C, GLP)
12.4 Mobility in soil	**S1 :** High potency of mobility to soil. (Koc = 688300000000) (esimated)
12.5 Results of PBT and vPvB assessment	This mixture is not carried out to assess PBT and vPvB according to EU REACH 1907/2006. There is no any ingredient classified as PBT and vPvB.
12.6 Other adverse effects	Not available

13. DISPOSAL CONSIDERATIONS

Waste from residues

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Container

Consider the required attentions in accordance with waste treatment management regulation.

14. TRANSPORT INFORMATION

14.1 UN No.

This product is not classified as dangerous goods.

14.2 UN Proper shipping name

Not applicable

14.3 Transport Hazard class

ADR: Not classified
IMDG: Not classified
ICAO/IATA: Not classified
RID: Not classified

14.4 Packing group :

Not applicable

14.5 Environmental hazards: Not applicable

14.6 Special precautions for user

in case of fire : Not applicable
in case of leakage : Not applicable

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulation/legislation specific for the substance or mixture

EU Regulatory Information

EU classification :

Annex I of Directive 1999/45/EEC:

Classification :

S1 : Not classified
diantimony trioxide : Carc.Cat 3

Risk phrases :

S1 : Not regulated
diantimony trioxide : R40

Safety phrases :

S1 : Not regulated
diantimony trioxide : S2 S22 S36/37

EU CLP 2008 :

Classification : **diantimony trioxide :** Carc. 2

Hazard statement codes : diantimony trioxide : H351

Precautionary statement codes : diantimony trioxide : P201 P202 P280 P308+P313 P405 P501

EU SVHC list : Not regulated
EU Authorisation List : Not regulated
EU Restriction list : **diantimony trioxide** : Regulated

Note : 'Packaging — Tactile warnings'

Foreign Regulatory Information

External information :

U.S.A management information (OSHA Regulation) : Not regulated
U.S.A management information (CERCLA Regulation) : **diantimony trioxide** : 453.599 kg 1000 lb
U.S.A management information (EPCRA 302 Regulation) : Not regulated
U.S.A management information (EPCRA 304 Regulation) : Not regulated
U.S.A management information (EPCRA 313 Regulation) : **diantimony trioxide** : Regulated
Substance of Roterdame Protocol : Not regulated
Substance of Stockholme Protocol : Not regulated
Substance of Montreal Protocol : Not regulated
Substance of Montreal Protocol : Not regulated
Foreign Inventory Status
• ABS Resin
- Korea management information : Existing Chemical Substance (KE-29398)
- U.S.A management information : Section 8(b) Inventory (TSCA): T[XU]
- Japan management information : Existing and New Chemical Substances (ENCS): 6)-126; (6)-134; (6)-176; (6)-454; (6)-720
- China management information : Inventory of Existing Chemical Substances (IECSC): Present
- Canada management information : Domestic Substances List (DSL): Present
- Australia management information : Inventory of Chemical Substances (AICS): Present
- New Zealand management : Inventory of Chemicals (NZIoC): May be used as a single component chemical under an appropriate group standard.
- Philippines management information : Inventory of Chemicals and Chemical Substances (PICCS): Present

• diantimony trioxide
- Korea management information : Existing Chemicals Inventory (KECI/KECL): Existing Chemical Substance (KE-09846) , Toxic Chemicals (97-1-176)
- U.S.A management information : Section 8(b) Inventory (TSCA): Present
- Japan management information : Existing and New Chemical Substances (ENCS): (1)-543
- China management information : Inventory of Existing Chemical Substances (IECSC): Present
- Canada management information : Domestic Substances List (DSL): Present
- Australia management information : Inventory of Chemical Substances (AICS): Present
- New Zealand management information : Inventory of Chemicals (NZIoC): HSNO Approval: HSR002901
- Philippines management information : Inventory of Chemicals and Chemical Substances (PICCS): Present

• **S1**
- Korea management information : Existing Chemical Substance excluded from Toxic Chemicals etc. Present
- U.S.A management information : Section 8(b) Inventory (TSCA): Present
- Japan management information : Existing and New Chemical Substances (ENCS): Present
- China management information : Inventory of Existing Chemical Substances (IECSC): Present
- New Zealand management : Inventory of Chemicals (NZIoC): May be used as a component in a product covered by a group standard but it is not approved for use as a chemical in its own right- Philippines management information : Inventory of Chemicals and Chemical Substances (PICCS): Present

15.2 Chemical safety assessment : A chemical safety assessment has not been carried out for the mixture.

16. OTHER INFORMATION

Product safety data sheet for prepared in accordance with Regulation (EU) 453/2010 (REACH), 286/2011(CLP)

16.1 Indication of changes:

Version : Not available
Revision date : Not available

16.2 Key literature reference and sources for data:

TOMES-LOLI®; http://www.rightanswerknowledge.com/loginRA.asp
REACH information on registered substances; http://apps.echa.europa.eu/registered/registered-sub.aspx
OECD SIDS; http://webnet.oecd.org/hpv/ui/Search.aspx
International Uniform Chemical Information Database(IUCLID); http://esis.jrc.ec.europa.eu/
U.S. National library of Medicine(NLM) ChemIDplus; http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?CHEM
Korea Occupational Safety and Health Agency; http://www.kosha.net
National Emergency Management Agency-Korea dangerous material inventory management system; http://www.nema.go.kr/hazmat/main/main.jsp
Waste Control Act enforcement regulation attached [1]
National Chemicals Information System; http://ncis.nier.go.kr/ncis/
REACH information on registered substances : http://apps.echa.europa.eu/registered/registered-sub.aspx#search
EU CLP Regulation 1272/2008 and 286/2011
International Uniform Chemical Information Database (IUCLID) (http://ecb.jrc.it/esis)
Pubchem : http://pubchem.ncbi.nlm.nih.gov/
EPISUITE v4.1; http://www.epa.gov/opt/exposure/pubs/episuitedl.htm
Directive of Ministry of Employment and Labor
Enforcement rule of the Occupational Safety and Health Act

16.3 Classification and procedure used to derive the classification for mixtures according to Regulation(EC) 1272/2008(CLP):

Classification according to Regulation (EC) 1272/2008	Classification procedure
Carc. 2	Limit concentration

16.4 Abbreviations

EC50: median effective concentration
LC50: median lethal concentration
LD50: median lethal dose
OEL: Occupational exposure limit

PBT: Persistent, bioaccumulative, toxic chemical
STEL: short-term exposure limit
TWA: time weighted average
vPvB: very persistent, very bioaccumulative chemical
DNEL : Derived No Effect Level
PNEC: Predicted No Effect Concentration

16.5 Other

- Product should be handled, stored, and used in accordance with the generally accepted industrial hygiene practices and in conformity with all the applicable legal regulations.
- The information provided herein is based on the knowledge possessed at this present time from the view point of safety requirements.
- It should, therefore, not be construed as guaranteeing specific properties.