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**AstroFusion Pro 1K**

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<b>1</b>	<b>PRODUCT AND COMPANY IDENTIFICATION</b>
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**Product Identifier:** AstroFusion Pro 1K  
**Revision Date:** 6/12/2018

**Supplier Details:** Advanced Polymer Technology  
P.O. Box 160, 109 Conica Lane  
Harmony Harmony, PA 16037

**Vendor Details:** AstroTurf  
2680 Abutment Rd  
Dalton, GA 30721

**Contact:** Senior Chemist

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**Transportation emergency phone number:** ChemTel Inc. (800)255-3924, +1 (813)248-0585

**Classification of Substance****GHS Classification in Accordance with 29 CFR 1910 (OSHA HCS):**

Health, Respiratory or skin sensitization, 1 Respiratory  
Health, Skin corrosion/irritation, 2  
Health, Serious Eye Damage/Eye Irritation, 2 A  
Health, Respiratory or skin sensitization, 1 Skin  
Health, Specific target organ toxicity - Single exposure, 3

**GHS Label Elements, Including Precautionary Statements**

**GHS Signal Word: DANGER**

**GHS Hazard Pictograms:****GHS Hazard Statements:**

H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled  
H315 - Causes skin irritation  
H319 - Causes serious eye irritation  
H317 - May cause an allergic skin reaction  
H335 - May cause respiratory irritation

**GHS Precautionary Statements:**

P261 - Avoid breathing dust/fume/gas/mist/vapours/spray.  
P264 - Wash hands thoroughly after handling.  
P285 - In case of inadequate ventilation wear respiratory protection.  
P302+352 - IF ON SKIN: Wash with soap and water.  
P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P332 + P313 - If skin irritation occurs: Get medical advice/attention.  
P337 + P313 - If eye irritation persists: Get medical advice/attention.  
P342 + P311 - If experiencing respiratory symptoms: Call a POISON CENTER/doctor.  
P342+311 - Call a POISON CENTER or doctor/physician.  
P362 - Take off contaminated clothing.  
P403 + P233 - Store in a well-ventilated place. Keep container tightly closed.  
P405 - Store locked up.

**Hazards not Otherwise Classified (HNOC) or not Covered by GHS**

Contains isocyanates. May produce an allergic reaction.

Contains 4,4'-methylenediphenyl diisocyanate, o-(p-isocyanatobenzyl)phenyl isocyanate, polymethylene polyphenylene isocyanate, Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro-.omega.-hydroxy-, polymer with 1,1'-methylenebis isocyanatobenzene]. May produce an allergic reaction.

Chemical Ingredients		
CAS#	%	Chemical Name
39420-98-9	50-100%	Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro.-omega.-hydroxy-, polymer with 1,1'- methylenebis[isocyanatobenzene]
101-68-8	<10%	4,4'-Methylenediphenyl diisocyanate
5873-54-1	<10%	Benzene, 1-isocyanato-2-[(4- isocyanatophenyl)methyl]-
9016-87-9	<10%	Isocyanic acid, polymethylenepolyphenylene ester
1308-38-9	1-3%	Chromium (III) oxide
4083-64-1	<0.5%	Benzenesulfonyl isocyanate, 4- methyl-
67784-80-9	<3%	Soybean oil, Me ester
59719-67-4	<1%	Carbamic acid, 1,6-hexanediylbis-, bis[2-[2-(1-methylethyl)-3- oxazolidinyl]ethyl] ester
6425-39-4	<1%	Morpholine, 4,4'-(oxydi-2,1- ethanediyl)bis-
77-58-7	<0.3%	Stannane, dibutylbis[(1- oxododecyl)oxy]-

**General information:**

Immediately remove any clothing soiled by the product.  
Remove breathing equipment only after contaminated clothing have been completely removed.  
In case of irregular breathing or respiratory arrest provide artificial respiration.  
Take affected persons out into the fresh air.

**After inhalation:**

Supply fresh air.  
In case of irregular breathing or respiratory arrest provide artificial respiration.  
Seek immediate medical advice.

**After skin contact:**

Immediately wash with water and soap and rinse thoroughly.  
If skin irritation continues, consult a doctor.

**After eye contact:**

Immediately remove contact lenses if possible.  
Rinse opened eye for several minutes under running water. Then consult a doctor.

**After swallowing:**

Rinse out mouth and then drink plenty of water.  
Do not induce vomiting; call for medical help immediately.

**Most important symptoms and effects, both acute and delayed**

Asthma attacks  
Nausea  
Cramp  
Dizziness  
Headache  
Profuse sweating  
Disorientation  
Cyanosis  
Breathing difficulty  
Allergic reactions

**Hazards**

Danger of pneumonia.  
Danger of convulsion.  
Danger of disturbed cardiac rhythm.  
Danger of impaired breathing.

**Indication of any immediate medical attention and special treatment needed**

If swallowed, gastric irrigation with added, activated carbon.  
Contains isocyanates.  
In cases of irritation to the lungs, initial treatment with cortical steroid inhalants.  
If necessary oxygen respiration treatment.  
Later observation for pneumonia and pulmonary oedema.  
Medical supervision for at least 48 hours.  
If blue colouring appears (lips, ear-lobes, finger-nails), give oxygen treatment as quickly as possible.  
Severe allergic skin reaction, bronchial spasms and anaphylactic shock are possible.  
Treat skin and mucous membrane with antihistamine and corticoid preparations.

**Flash Point:** 388 °F / 198 °C

Suitable extinguishing agents:

Alcohol resistant foam  
Fire-extinguishing powder  
Carbon dioxide  
Gaseous extinguishing agents  
Water haze or fog

For safety reasons unsuitable extinguishing agents: Water with full jet

Special hazards arising from the substance or mixture  
During heating or in case of fire poisonous gases are produced.

Advice for firefighters

Protective equipment:

Wear self-contained respiratory protective device.

Wear fully protective suit.

Additional information

Eliminate all ignition sources if safe to do so.

Cool endangered receptacles with water fog or haze.

**Personal precautions, protective equipment and emergency procedures**

Use respiratory protective device against the effects of fumes/dust/aerosol.

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

Isolate area and prevent access.

Keep away from ignition sources.

**Environmental precautions:**

Inform respective authorities in case of seepage into water course or sewage system.

Do not allow to enter sewers/ surface or ground water.

**Methods and material for containment and cleaning up:**

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Additional Spill Procedures/Neutralization: Neutralization solutions:

(1) Colorimetric Laboratories Inc. (CLI) decontamination solution.

(2) A mixture of 75% water, 20% non-ionic surfactant (e.g. Plurafac SL-62, Tergitol TMN-10) and 5% npropanol.

(3) A mixture of 80% water, 20% non-ionic surfactant (e.g. Plurafac SL-62, Tergitol TMN-10).

(4) A mixture of 90% water, 3-8% ammonium hydroxide or concentrated ammonia, and 2% liquid detergent.

Dispose contaminated material as waste according to item 13.

Do not flush with water or aqueous cleansing agents

**Handling Precautions:**

Take note of emission threshold.  
Ensure good ventilation/exhaustion at the workplace.  
Prevent formation of aerosols.  
Open and handle receptacle with care.

Information about fire - and explosion protection:  
Keep respiratory protective device available.  
Protect from heat.  
Keep ignition sources away - Do not smoke.

**Storage Requirements:**

Requirements to be met by storerooms and receptacles:  
Provide ventilation for receptacles.  
Store in a cool location.  
Avoid storage near extreme heat, ignition sources or open flame.

Information about storage in one common storage facility:  
Store away from foodstuffs.  
Do not store together with acids.  
Store away from oxidizing agents.  
Do not store together with alkalis (caustic solutions).

Further information about storage conditions:  
Store in cool, dry conditions in well sealed receptacles.  
Store receptacle in a well ventil

**Engineering Controls:**

Educate and train employees in safe use of this product. Follow all label instruction. Local exhaust should be used to maintain levels below the TLV whenever this product is processed, heated or spray applied. For spray applications, an air-supplied respirator must be worn. All ventilation should be designed in accordance with OSHA standard (29 CFR 1910.94).

**Personal Protective Equipment:**

General protective and hygienic measures:

Personal protective equipment must be selected to prevent inhalation of vapors and contact with skin and eyes. At a bare minimum, safety glasses, gloves, apron, and combination particle/vapor respirator should be worn. In some cases, supplied air, full body suits and boots will be needed.

The usual precautionary measures are to be adhered to when handling chemicals.

Keep away from foodstuffs, beverages and feed.

Immediately remove all soiled and contaminated clothing.

Wash hands before breaks and at the end of work.

Do not inhale gases / fumes / aerosols.

Avoid contact with the eyes and skin.

Respiratory protection:

Combined Organic Vapor and Particulate Respirator is recommended for use during all processing activities.

Protection of hands:

Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation. Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

Material of gloves

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

Penetration time of glove material

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

For the permanent contact gloves made of the following materials are suitable:

Nitrile rubber, NBR

Butyl rubber, BR

Neoprene gloves

Eye protection:

Contact lenses should not be worn.

Safety glasses

Body protection:

Boots

Apron

Full head, face and neck protection

Impervious protective clothing

Limitation and supervision of exposure into the environment

No further relevant information available.

Risk management measures

See Section 7 for additional information.

No further relevant information available.

**Ingredients with limit values that require monitoring at the workplace:****101-68-8 4,4'-methylenediphenyl diisocyanate**

PEL (USA) Short-term value: C 0,2 mg/m<sup>3</sup>, C 0,02 ppm

REL (USA) Short-term value: C 0,2\* mg/m<sup>3</sup>, C 0,02\* ppm / Long-term value: 0,05 mg/m<sup>3</sup>, 0,005 ppm / \*10-min

TLV (USA) 0,051 mg/m<sup>3</sup>, 0,005 ppm

EL (Canada) Short-term value: C 0,01 ppm / Long-term value: 0,005 ppm / Skin; S

EV (Canada) 0,005 ppm

**4083-64-1 p-Toluenesulfonyl isocyanate**

PEL (USA) Short-term value: Not available

REL (USA) Short-term value: Not available

TLV (USA) Not available

**DNELs** No further relevant information available.

**PNECs** No further relevant information available.

**Additional information:** The lists valid during the making were used as basis.

<b>9</b>	<b>PHYSICAL AND CHEMICAL PROPERTIES</b>
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<b>Appearance:</b>	Pigmented Liquid	<b>Flash Point:</b>	388 °F / 198 °C
<b>Physical State:</b>	Liquid	<b>Volatile organic compound:</b>	< 10 g/L
<b>Specific Gravity or Density:</b>	1,08 g/cm <sup>3</sup>		

<b>10</b>	<b>STABILITY AND REACTIVITY</b>
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<b>Reactivity:</b>	Reacts with water.
<b>Chemical Stability:</b>	No decomposition if used and stored according to specifications.
<b>Conditions to Avoid identification:</b>	Keep ignition sources away - Do not smoke. Store away from oxidizing agents.
<b>Materials to Avoid identification:</b>	Reacts with alcohols, amines, aqueous acids and alkalis. Reacts with oxidizing agents.
<b>Hazardous Decomposition:</b>	Toxic fumes may be released if heated above the decomposition point. Poisonous gases/vapours Isocyanate Nitrogen oxides Carbon monoxide and carbon dioxide Hydrogen cyanide (prussic acid)
<b>Hazardous Polymerization:</b>	Reacts with water.



**Acute toxicity:****LD/LC50 values relevant for classification:****101-68-8 4,4'-methylenediphenyl diisocyanate**

Oral LD50 2200 mg/kg (mouse)

**4083-64-1 p-Toluenesulfonyl isocyanate**

LD50 Oral - Rat - 2,234 mg/kg

Remarks: Gastrointestinal:Other changes.

Dermal: No data available

LD50 Intraperitoneal - Rat - 775 mg/kg

Remarks: Behavioral:General anesthetic.

**Primary irritant effect:**

**on the skin:** Irritant to skin and mucous membranes.

**on the eye:** Irritating effect.

**Sensitization:**

Sensitization possible through inhalation.

Sensitization possible through skin contact.

**Subacute to chronic toxicity:**

Inhalation of concentrated vapours as well as oral intake will lead to anaesthesia-like conditions and headache, dizziness, etc.

**Additional toxicological information:**

Toxic and/or corrosive effects may be delayed up to 24 hours.

The product shows the following dangers according to the calculation method of the General EU Classification Guidelines for Preparations as issued in the latest version:

Harmful

Irritant

Danger through skin adsorption.

**Sensitisation:**

Sensitization possible by skin contact.

Sensitization possible by inhalation and/or dermal contact.

**Repeated dose toxicity:**

May cause damage to organs through prolonged or repeated exposure .

Repeated exposures may result in skin and/or respiratory sensitivity.

**Aquatic toxicity:** The product contains materials that are harmful to the environment.

**Persistence and degradability** Not easily biodegradable

**Bioaccumulative potential** May be accumulated in organism

**Mobility in soil** No further relevant information available.

**Ecotoxicological effects:**

**Remark:**

Due to mechanical actions of the product (e.g. agglutinations) damages may occur.

The product is oxygen-consuming. The declared action may be partly caused by lack of oxygen.

Harmful to fish

**Additional ecological information:**

**General notes:**

This statement was deduced from products with a similar structure or composition.

Due to available data on eliminability/decomposition and bioaccumulation potential prolonged term damage of the environment can not be excluded.

Water hazard class 2 (German Regulation) (Self-assessment): hazardous for water.

Do not allow product to reach ground water, water course or sewage system.

Danger to drinking water if even small quantities leak into the ground.

Harmful to aquatic organisms

**Results of PBT and vPvB assessment**

**PBT:** Not applicable.

**vPvB:** Not applicable.

**Other adverse effects** No further relevant information available.

**Recommendation**

Must not be disposed together with household garbage. Do not allow product to reach sewage system.

Can be burned with household garbage after consulting with the waste disposal facility operator and the pertinent authorities and adhering to the necessary technical regulations.

Can be disposed of with household garbage with prior chemical-physical or biological treatment following consultation with the waste disposal facility operator and the pertinent authorities and adhering to the necessary technical regulations.

**Uncleaned packaging:**

Recommendation: Disposal must be made according to official regulations.

Recommended cleansing agents: Solvent naphtha

<b>UN-Number DOT, ADR, ADN, IMDG, IATA</b>	N/A
<b>UN proper shipping name DOT, ADR, ADN, IMDG, IATA</b>	N/A
<b>Transport hazard class(es) DOT, ADR, ADN, IMDG, IATA Class</b>	N/A
<b>Packing group DOT, ADR, IMDG, IATA</b>	N/A
<b>Marine pollutant</b>	No
<b>Special precautions for user</b>	Not applicable.
<b>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</b>	Not applicable.
<b>UN "Model Regulation"</b>	---

<b>15</b>	<b>REGULATORY INFORMATION</b>
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Component (CAS#) [%] - CODES

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 Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro-.omega.-hydroxy-, polymer with 1,1'-methylenebis[isocyanatobenzene] (39420-98-9) [50-100%] TSCA

4,4'-Methylenediphenyl diisocyanate (101-68-8) [<10%] CERCLA, HAP, MASS, NJHS, OSHAWAC, PA, SARA313, TSCA, TXAIR

Benzene, 1-isocyanato-2-[(4-isocyanatophenyl)methyl]- (5873-54-1) [<10%] TSCA

Isocyanic acid, polymethylenepolyphenylene ester (9016-87-9) [<10%] SARA313, TSCA

Chromium (III) oxide (1308-38-9) [1-3%] MASS, TSCA

Benzenesulfonyl isocyanate, 4-methyl- (4083-64-1) [<0.5%] TSCA

Soybean oil, Me ester (67784-80-9) [<3%] TSCA

Carbamic acid, 1,6-hexanediylbis-, bis[2-[2-(1-methylethyl)-3-oxazolidinyl]ethyl] ester (59719-67-4) [<1%] TSCA

Morpholine, 4,4'-(oxydi-2,1-ethanediyl)bis- (6425-39-4) [<1%] TSCA

Stannane, dibutylbis[(1-oxododecyl)oxy]- (77-58-7) [<0.3%] GADSL, TSCA

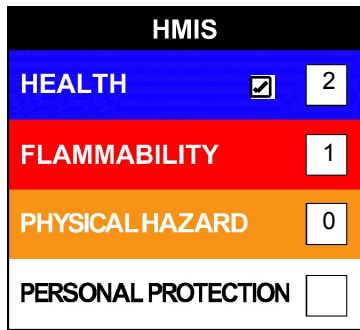
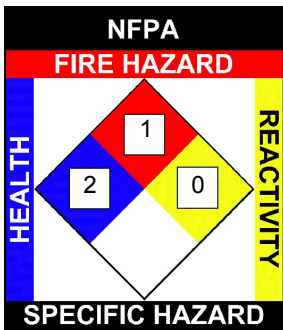
Regulatory CODE Descriptions

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 TSCA = Toxic Substances Control Act  
 CERCLA = Superfund Cleanup Substances  
 HAP = Hazardous Air Pollutants  
 MASS = MA Massachusetts Hazardous Substances List  
 NJHS = NJ Right-to-Know Hazardous Substances  
 OSHAWAC = OSHA Workplace Air Contaminants  
 PA = PA Right-To-Know List of Hazardous Substances  
 SARA313 = SARA 313 Title III Toxic Chemicals  
 TXAIR = TX Air Contaminants with Health Effects Screening Level  
 GADSL = Global Automotive Declarable Substance List (GADSL)

<b>16</b>	<b>OTHER INFORMATION</b>
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**NFPA:** Health = 2, Fire = 1, Reactivity = 0, Specific Hazard = n/a

**HMIS III:** Health = 2(Chronic), Fire = 1, Physical Hazard = 0



This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Revision Date: 6/12/2018