

## 4-ADPA

Version	Revision Date:	SDS Number:	Date of last issue: 11/18/2020
1.3	05/24/2022	150000115182	Date of first issue: 09/25/2019
PRD		SDSUS / Z8 / 0530	

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## SECTION 1. IDENTIFICATION

Product name : 4-ADPA

Product code : 34086-00, P3408602, E3408601, P3408604, P3408605

**Manufacturer or supplier's details**

Company name of supplier : Flexsys America L.P.

Address : 260 Springside Drive  
Akron OH 44333-2433

Emergency telephone : CHEMTREC: +1 703-741-5970

**Recommended use of the chemical and restrictions on use**

Recommended use : Chemical intermediate  
Monomer

Restrictions on use : None known.

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## SECTION 2. HAZARDS IDENTIFICATION


**GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)**

Acute toxicity (Oral) : Category 4

Eye irritation : Category 2B

Skin sensitization : Category 1

**GHS label elements**

Hazard pictograms : 

Signal Word : Warning

Hazard Statements : H302 Harmful if swallowed.  
H317 May cause an allergic skin reaction.  
H320 Causes eye irritation.

Precautionary Statements : **Prevention:**  
P261 Avoid breathing mist or vapors.  
P264 Wash skin thoroughly after handling.  
P270 Do not eat, drink or smoke when using this product.

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P272 Contaminated work clothing must not be allowed out of the workplace.

P280 Wear protective gloves.

**Response:**

P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell. Rinse mouth.

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.

P337 + P313 If eye irritation persists: Get medical advice/ attention.

P363 Wash contaminated clothing before reuse.

**Disposal:**

P501 Dispose of contents/ container to an approved waste disposal plant.

**Other hazards**

None known.

**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

Substance / Mixture : Pure substance

**Components**

Chemical name	CAS-No.	Concentration (% w/w)
N-(4-aminophenyl)aniline	101-54-2	>= 90 - <= 100

Actual concentration is withheld as a trade secret

Flexsys is committed to the safety, health and environment of our employees, our customers, and the communities we operate within. As part of this commitment, Flexsys' Safety Data Sheets (SDS) are prepared in accordance with all applicable national and local regulations. The compositions of our documents reflect these requirements which include, but are not limited to, requirements under the Globally Harmonized System of Classification and Labeling (GHS). These compositions commonly involve the use of ranges versus specific analytical values. If you require a composition that is more specific, please refer to the Certificate of Analysis, sales specification, or contact your Customer Service Representative.

**SECTION 4. FIRST AID MEASURES**

If inhaled : Move to fresh air.  
Treat symptomatically.  
If symptoms persist, call a physician.

In case of skin contact : Wash off with soap and water.  
Wash contaminated clothing before re-use.

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Get medical attention if symptoms occur.  
Thoroughly clean shoes before reuse.

In case of eye contact : Remove contact lenses, if present and easy to do. Continue rinsing.  
If eye irritation persists: Get medical advice/ attention.

If swallowed : Seek medical advice.

Most important symptoms and effects, both acute and delayed : Harmful if swallowed.  
May cause an allergic skin reaction.  
Causes eye irritation.

Notes to physician : Treat symptomatically.

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**SECTION 5. FIRE-FIGHTING MEASURES**

Suitable extinguishing media : Carbon dioxide (CO2)  
Dry chemical  
Water spray

Unsuitable extinguishing media : Do not use a solid water stream as it may scatter and spread fire.  
Do NOT use water jet.

Hazardous combustion products : No hazardous combustion products are known

Further information : None known.

Special protective equipment for fire-fighters : Wear an approved positive pressure self-contained breathing apparatus in addition to standard fire fighting gear.

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**SECTION 6. ACCIDENTAL RELEASE MEASURES**

Personal precautions, protective equipment and emergency procedures : Wear appropriate personal protective equipment.  
Local authorities should be advised if significant spillages cannot be contained.

Environmental precautions : Avoid release to the environment.

Methods and materials for containment and cleaning up : Sweep up or vacuum up spillage and collect in suitable container for disposal.  
Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).

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**SECTION 7. HANDLING AND STORAGE**

Advice on protection against fire and explosion : None known.

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Advice on safe handling : Avoid inhalation of vapor or mist.  
Do not get in eyes.  
Avoid contact with skin, eyes and clothing.  
Do not swallow.  
Ensure adequate ventilation.  
Wash thoroughly after handling.

Conditions for safe storage : Keep tightly closed.

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**SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION****Ingredients with workplace control parameters**

Contains no substances with occupational exposure limit values.

**Engineering measures** : Good general ventilation (typically 10 air changes per hour) should be sufficient to control airborne levels.  
Ensure adequate ventilation.

**Personal protective equipment**

Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines.

Hand protection

Remarks : Wear suitable gloves.

Eye protection : Wear safety glasses with side shields (or goggles).  
Face-shield  
Always wear eye protection when the potential for inadvertent eye contact with the product cannot be excluded.

Protective measures : Remove respiratory and skin/eye protection only after vapors have been cleared from the area.  
Ensure that eye flushing systems and safety showers are located close to the working place.  
Use personal protective equipment as required.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice.

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**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

Appearance : molten

Color : dark blue

Odor : aromatic

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Odor Threshold	:	not determined
pH	:	8.9
Melting point/freezing point	:	158 - 169 °F / 70 - 76 °C
Boiling point/boiling range	:	669 °F / 354 °C (1,013 hPa)
Flash point	:	379 °F / 193 °C  Method: Tag closed cup
Evaporation rate	:	not determined
Flammability (solid, gas)	:	The product is not flammable.
Upper explosion limit / Upper flammability limit	:	not determined
Lower explosion limit / Lower flammability limit	:	not determined
Vapor pressure	:	0.0000017 hPa (77 °F / 25 °C)
Relative vapor density	:	not determined
Relative density	:	1.1 (59 °F / 15 °C)
Density	:	1.09 g/cm <sup>3</sup> (68 °F / 20 °C)
Solubility(ies) Water solubility	:	503.8 g/l (68 °F / 20 °C)
Partition coefficient: n-octanol/water	:	log Pow: 1.82 Method: QSAR model
Autoignition temperature	:	not determined
Decomposition temperature	:	not determined
Viscosity Viscosity, dynamic	:	not determined
Viscosity, kinematic	:	not determined
Explosive properties	:	Not classified
Oxidizing properties	:	Not classified

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**SECTION 10. STABILITY AND REACTIVITY**

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Reactivity	:	None reasonably foreseeable.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	Stable None known.
Conditions to avoid	:	None known.
Incompatible materials	:	Strong oxidizing agents
Hazardous decomposition products	:	Carbon dioxide (CO <sub>2</sub> ) Carbon monoxide

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**SECTION 11. TOXICOLOGICAL INFORMATION****Acute toxicity**

Harmful if swallowed.

**Product:**

Acute oral toxicity	:	LD50 Oral (Rat): 336 mg/kg Method: Directive 67/548/EEC, Annex V, B.1. Assessment: Harmful if swallowed.
Acute inhalation toxicity	:	Remarks: No data available
Acute dermal toxicity	:	LD50 Dermal (Rabbit): > 5,000 mg/kg Method: OECD Test Guideline 402 Assessment: Based on available data, the classification criteria are not met.

**Skin corrosion/irritation**

Not classified based on available information.

**Product:**

Species	:	Rabbit
Exposure time	:	4 h
Assessment	:	Based on available data, the classification criteria are not met.
Method	:	OECD Test Guideline 404
Result	:	Mild skin irritation

**Serious eye damage/eye irritation**

Causes eye irritation.

**Product:**

Species	:	Rabbit
Exposure time	:	24 - 72 h
Assessment	:	Causes eye irritation.

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**Respiratory or skin sensitization****Skin sensitization**

May cause an allergic skin reaction.

**Respiratory sensitization**

Not classified based on available information.

**Product:**

Test Type	:	Skin sensitization
Routes of exposure	:	Skin contact
Species	:	Mouse
Assessment	:	May cause an allergic skin reaction.
Method	:	OECD Test Guideline 429
Result	:	Causes sensitization.

**Germ cell mutagenicity**

Not classified based on available information.

**Product:**

Genotoxicity in vitro	:	Test Type: Ames test Metabolic activation: with and without metabolic activation Method: Bacterial Reverse Mutation Assay Result: negative
		Test Type: In vitro mammalian cell gene mutation test Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 476 Result: negative
		Test Type: Chromosome aberration test in vitro Metabolic activation: with and without metabolic activation Result: negative
		Test Type: unscheduled DNA synthesis assay Method: OECD Test Guideline 482 Result: negative
Genotoxicity in vivo	:	Test Type: unscheduled DNA synthesis assay Species: Rat Application Route: Oral Result: Based on available data, the classification criteria are not met.

**Carcinogenicity**

Not classified based on available information.

**Product:**

Remarks	:	This product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.
Species	:	Rat, male and female

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Application Route : Ingestion  
NOAEL : 60 mg/kg bw/day  
Result : Based on available data, the classification criteria are not met.

**IARC** No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

**OSHA** No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

**NTP** No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

**Reproductive toxicity**

Not classified based on available information.

**Product:**

Effects on fertility : Remarks: No data available

**STOT-single exposure**

Not classified based on available information.

**Product:**

Assessment : Based on available data, the classification criteria are not met.

**STOT-repeated exposure**

Not classified based on available information.

**Product:**

Routes of exposure : Oral  
Assessment : Based on available data, the classification criteria are not met.

**Repeated dose toxicity****Product:**

Species : Rat  
NOAEL : 100 mg/kg  
Application Route : oral (feed)  
Exposure time : 90 days  
Assessment : Based on available data, the classification criteria are not met.

**Aspiration toxicity**

Not classified based on available information.

**Product:**

No aspiration toxicity classification

**Experience with human exposure****Product:**

Inhalation : Remarks: None known.



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Skin contact : Remarks: May cause an allergic skin reaction.

Eye contact : Remarks: Causes eye irritation.

Ingestion : Remarks: Harmful if swallowed.

**Further information****Product:**

Remarks : None known.

**SECTION 12. ECOLOGICAL INFORMATION****Ecotoxicity****Product:**

Toxicity to fish : LC50 (Danio rerio (zebra fish)): 1.17 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 0.29 mg/l  
Exposure time: 48 h

Toxicity to algae/aquatic plants : ErC50 (Scenedesmus subspicatus): 3.75 mg/l  
Exposure time: 72 h

ErC10 (Scenedesmus subspicatus): 1.41 mg/l  
Exposure time: 72 h

M-Factor (Acute aquatic toxicity) : 1

Toxicity to fish (Chronic toxicity) : NOEC:  
Remarks: No data available

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.04 mg/l  
Exposure time: 21 d

M-Factor (Chronic aquatic toxicity) : 1

**Components:****N-(4-aminophenyl)aniline:**

M-Factor (Acute aquatic toxicity) : 1

M-Factor (Chronic aquatic toxicity) : 1

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### Persistence and degradability

#### Product:

Biodegradability : Remarks: Inherently biodegradable

Biochemical Oxygen Demand (BOD) : Remarks: No data available

Chemical Oxygen Demand (COD) : Remarks: No data available

### Bioaccumulative potential

#### Product:

Bioaccumulation : Bioconcentration factor (BCF): 7  
Method: calculated  
Remarks: Does not accumulate in organisms.

### Mobility in soil

#### Product:

Distribution among environmental compartments : log Koc: 2.72  
Method: Estimation of the Adsorption Coefficient (Koc) on Soil and on Sewage Sludge using High Performance Liquid Chromatography (HPLC)

### Other adverse effects

No data available

## SECTION 13. DISPOSAL CONSIDERATIONS

### Disposal methods

Waste from residues : Dispose of in accordance with local regulations.

## SECTION 14. TRANSPORT INFORMATION

### International Regulations

#### IATA-DGR

UN/ID No. : UN 3077  
Proper shipping name : Environmentally hazardous substance, solid, n.o.s., Environmentally hazardous substance, solid, n.o.s. (4-Aminodiphenylamine)  
Class : 9  
Packing group : III  
Labels : Miscellaneous  
Packing instruction (cargo aircraft) : 956  
Packing instruction (passenger aircraft) : 956

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Remarks : Shipping in package sizes of less than 5 L (liquids) or 5 KG (solids) may lead to a non-regulated classification.

**IMDG-Code**

UN number : UN 3077  
 Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.  
 (4-Aminodiphenylamine)  
 Class : 9  
 Packing group : III  
 Labels : 9  
 EmS Code : F-A, S-F  
 Marine pollutant : yes  
 Remarks : Shipping in package sizes of less than 5 L (liquids) or 5 KG (solids) may lead to a non-regulated classification.

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

Not applicable for product as supplied.

**Domestic regulation****49 CFR**

Not regulated as a dangerous good

Remarks : Shipping in package sizes of less than 5 L (liquids) or 5 KG (solids) may lead to a non-regulated classification.

**Special precautions for user**

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

**SECTION 15. REGULATORY INFORMATION****CERCLA Reportable Quantity**

This material does not contain any components with a CERCLA RQ.

**SARA 304 Extremely Hazardous Substances Reportable Quantity**

This material does not contain any components with a section 304 EHS RQ.

**SARA 302 Extremely Hazardous Substances Threshold Planning Quantity**

This material does not contain any components with a section 302 EHS TPQ.

**SARA 311/312 Hazards** : Acute toxicity (any route of exposure)  
 Respiratory or skin sensitization  
 Serious eye damage or eye irritation

**SARA 313** : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

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**California Prop. 65**

This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

**The ingredients of this product are reported in the following inventories:**

TCSI	:	On the inventory, or in compliance with the inventory
TSCA	:	All substances listed as active on the TSCA inventory
AIRC	:	On the inventory, or in compliance with the inventory
DSL	:	All components of this product are on the Canadian DSL
ENCS	:	On the inventory, or in compliance with the inventory
ISHL	:	On the inventory, or in compliance with the inventory
KECI	:	On the inventory, or in compliance with the inventory
PICCS	:	On the inventory, or in compliance with the inventory
IECSC	:	On the inventory, or in compliance with the inventory
NZIoC	:	On the inventory, or in compliance with the inventory
TECI	:	On the inventory, or in compliance with the inventory

**TSCA list**

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

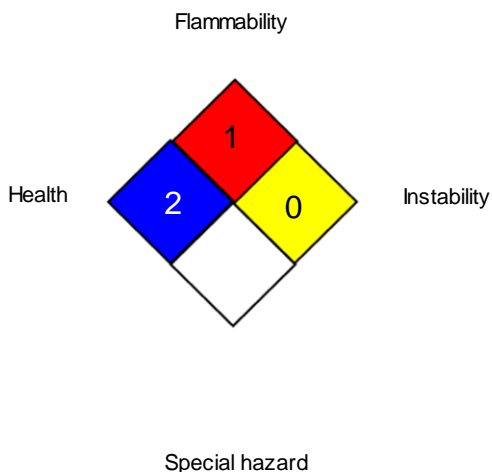
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**SECTION 16. OTHER INFORMATION****Further information**

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## NFPA 704:



## HMIS® IV:

HEALTH	/	2
FLAMMABILITY		1
PHYSICAL HAZARD		0

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "\*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

## Full text of other abbreviations

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECl - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act

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(United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

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The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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