Date of Issue:
01 October 2018

SAFETY DATA SHEET PACKET

Product Identifier

SRM Number: 2860
SRM Name: Phthalates in Polyvinyl Chloride

SRM Description:

This Standard Reference Material (SRM) is intended primarily for use in validating methods for determining six phthalate esters in polyvinyl chloride (PVC). The phthalates esters are di-n-butyl phthalate, benzyl butyl phthalate, bis(2-ethylhexyl) phthalate, di-n-octyl phthalate, diisononyl phthalate, and diisodecyl phthalate. A unit of SRM 2860 consists of shredded material as follows, of one jar containing approximately 2 g of BLANK (PVC) with no phthalates added; and two jars each containing approximately 2 g of Level I (Nominal Concentration 0.1 % Phthalates in PVC) and Level II (Nominal Concentration 2 % Phthalates in PVC) respectively, for a total of three jars.

SRM 2860 Parts:

BLANK (PVC)
Level I (Nominal Concentration 0.1 % Phthalates in PVC)
Level II (Nominal Concentration 2 % Phthalates in PVC)

Company Information

National Institute of Standards and Technology
Standard Reference Materials Program
100 Bureau Drive, Stop 2300
Gaithersburg, Maryland 20899-2300

Telephone: 301-975-2200
FAX: 301-948-3730
E-mail: SRMMSDS@nist.gov
Website: https://www.nist.gov/srm

Emergency Telephone ChemTrec:
1-800-424-9300 (North America)
+1-703-527-3887 (International)

Date of Issue:
01 October 2018

SAFETY DATA SHEET

1. SUBSTANCE AND SOURCE IDENTIFICATION

Product Identifier

SRM Number: 2860
SRM Name: Phthalates in Polyvinyl Chloride
SRM Part: BLANK (PVC)
Other Means of Identification: Not applicable.

Recommended Use of This Material and Restrictions of Use

This Standard Reference Material (SRM) is intended primarily for use in validating methods for determining six phthalate esters in polyvinyl chloride (PVC). The phthalates esters are di-n-butyl phthalate, benzyl butyl phthalate, bis(2-ethylhexyl) phthalate, di-n-octyl phthalate, diisononyl phthalate, and diisodecyl phthalate. A unit of SRM 2860 consists of shredded material as follows, one jar containing approximately 2 g of BLANK (PVC) with no phthalates added; and two jars each containing approximately 2 g of Level I (Nominal Concentration 0.1 % Phthalates in PVC) and Level II (Nominal Concentration 2 % Phthalates in PVC) respectively, for a total of three jars.

Company Information

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Standard Reference Materials Program
100 Bureau Drive, Stop 2300
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Telephone: 301-975-2200
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Emergency Telephone ChemTrec:
1-800-424-9300 (North America)
+1-703-527-3887 (International)

2. HAZARDS IDENTIFICATION

Note: This SDS is for PVC blank with no added phthalate esters; see additional SDSs for the other components.

Classification

Physical Hazard: Not classified.
Health Hazard: Not classified.

Label Elements

Symbol: No symbol/No pictogram

Signal Word: No signal word

Hazard Statement(s): Not applicable.

Precautionary Statement(s): Not applicable.

Hazards Not Otherwise Classified: Not applicable.

Ingredients(s) with Unknown Acute Toxicity: Not applicable.

3. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

Substance: Polyvinyl chloride.

Other Designations: PVC

Components are listed in compliance with OSHA's 29 CFR 1910.1200; for the actual values see the NIST Certificate of Analysis.

Non-Hazardous Component(s)	CAS Number	EC Number (EINECS)	Nominal Mass Concentration (%)
PVC	9002-86-2		100

4. First Aid Measures

Description of First Aid Measures:

Inhalation: If adverse effects occur, remove to uncontaminated area. If not breathing, give artificial respiration or oxygen by qualified personnel. Seek immediate medical attention.

Skin Contact: Wash skin with soap and water for at least 15 minutes. Thoroughly clean and dry contaminated clothing before reuse.

Eye Contact: Flush eyes with water for at least 15 minutes. If necessary, seek medical attention.

Ingestion: If a large amount is swallowed, get medical attention.

Most Important Symptoms/Effects, Acute and Delayed: None reported.

Indication of any immediate medical attention and special treatment needed, if necessary: If any of the above symptoms are present, seek medical attention if needed.

5. Fire Fighting Measures

Fire and Explosion Hazards: Negligible fire hazard. See Section 9, "Physical and Chemical Properties" for flammability properties.

Extinguishing Media:
Suitable: Regular dry chemical, carbon dioxide, water, regular foam.
Unsuitable: None listed.

Specific Hazards Arising from the Chemical: None listed.

Special Protective Equipment and Precautions for Fire-Fighters: Avoid inhalation of material or combustion byproducts. Wear full protective clothing and NIOSH approved self-contained breathing apparatus (SCBA).

NFPA Ratings (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)
Health = 0 Fire = 0 Reactivity = 0

6. Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures: Use suitable protective equipment; see Section 8, "Exposure Controls and Personal Protection".

Methods and Materials for Containment and Clean up: Collect spilled material in appropriate container for disposal.

7. Handling and Storage

Safe Handling Precautions: See Section 8, "Exposure Controls and Personal Protection".

Storage: Until required for use, SRM 2860 should be stored in the dark at room temperature but not above 30 °C. Keep separated from incompatible substances (See Section 10, "Stability and Reactivity").

8. Exposure Controls and Personal Protection

Exposure Limits: Exposure limits for PVC not established.

Engineering Controls: Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

Personal Protection: In accordance with OSHA 29 CFR 1910.132, subpart I, wear appropriate Personal Protective Equipment (PPE) to minimize exposure to this material.

Respiratory Protection: If workplace conditions warrant a respirator, a respiratory protection program that meets OSHA 29CFR 1910.134 must be followed. Refer to NIOSH 42 CFR 84 for applicable certified respirators.

Eye/Face Protection: Wear safety goggles. An eye wash station should be readily available near areas of use.

Skin and 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. Chemical-resistant gloves should be worn at all times when handling chemicals (i.e. nitrile).

9. PHYSICAL AND CHEMICAL PROPERTIES

Descriptive Properties:

Appearance (physical state, color, etc.):	white fibers
Molecular Formula:	$(C_2\text{-}H_3\text{-}Cl)_X$
Molar Mass (g/mol):	62000-133000
Odor:	odorless
Odor threshold:	not available
pH (solution):	not available
Evaporation rate:	not applicable
Melting point/freezing point (ºC):	not available
Relative Density (g/mL):	1.41
Vapor Pressure (mmHg):	not applicable
Vapor Density (air = 1):	not applicable
Viscosity (cP):	not applicable
Solubility(ies):	very poor solubility in water
Partition coefficient (n-octanol/water):	not available
Particle Size:	not available

Thermal Stability Properties:

Autoignition Temperature (ºC):	not applicable
Thermal Decomposition (ºC):	not available
Initial boiling point and boiling range (ºC):	not applicable
Explosive Limits, LEL (Volume %):	not applicable
Explosive Limits, UEL (Volume %):	not applicable
Flash Point (ºC):	not applicable
Flammability (solid, gas):	not available

10. STABILITY AND REACTIVITY

Reactivity: Stable at normal temperatures and pressure.

Stability: X Stable _____ Unstable

Possible Hazardous Reactions: None listed.

Conditions to Avoid: Avoid direct flames and heat.

Incompatible Materials: Oxidizing materials.

Fire/Explosion Information: See Section 5, "Fire Fighting Measures".

Hazardous Decomposition: Thermal decomposition can produce hydrogen chloride, ethylene, benzene, naphthalene, toluene, and 1,3,5-Trichlorobenzene.

Hazardous Polymerization: _____ Will Occur X Will Not Occur

11. TOXICOLOGICAL INFORMATION

Route of Exposure: X Inhalation ____ Skin X Ingestion

Symptoms Related to the Physical, Chemical and Toxicological Characteristics: Exposure may cause irritation.

Potential Health Effects (Acute, Chronic and Delayed):

Inhalation: No data available.

Skin Contact: No data available.

Eye Contact: No data available.

Ingestion: No data available.

Numerical Measures of Toxicity:

Acute Toxicity: Not classified.

Skin Corrosion/Irritation: Not classified.

Serious Eye damage/Eye irritation: Not classified.
Respiratory Sensitization: Not classified.

Skin Sensitization: Not classified.

Germ Cell Mutagenicity: Not classified.

Carcinogenicity: Not classified.

Listed as a Carcinogen/Potential Carcinogen ____ Yes X No
PVC listed by IARC as Group 3 *Not classifiable as to its carcinogenicity to humans.*

Reproductive Toxicity: Not classified.

Specific Target Organ Toxicity, Single Exposure: Not classified.

Specific Target Organ Toxicity, Repeated Exposure: Not classified.

Aspiration Hazard: Not classified.

12. ECOLOGICAL INFORMATION

Ecotoxicity Data: No data available.
Persistence and Degradability: No data available.
Bioaccumulative Potential: No data available.
Mobility in Soil: No data available.
Other Adverse effects: No data available.

13. DISPOSAL CONSIDERATIONS

Waste Disposal: Dispose of waste in accordance with all applicable federal, state, and local regulations.

14. TRANSPORTATION INFORMATION

U.S. DOT and IATA: Not regulated by DOT or IATA.

15. REGULATORY INFORMATION

U.S. Regulations:

CERCLA Sections 102a/103 (40 CFR 302.4): Not regulated.
SARA Title III Section 302 (40 CFR 355.30): Not regulated.
SARA Title III Section 304 (40 CFR 355.40): Not regulated.
SARA Title III Section 313 (40 CFR 372.65): Not regulated.
OSHA Process Safety (29 CFR 1910.119): Not regulated.

SARA Title III Sections 311/312 Hazardous Categories (40 CFR 370.21):

ACUTE HEALTH:	No.
CHRONIC HEALTH:	No.
FIRE:	No.
REACTIVE:	No.
PRESSURE:	No.

State Regulations:

California Proposition 65: Not listed.

U.S. TSCA Inventory: Listed.

TSCA 12(b), Export Notification: Not listed.

Canadian Regulations:

WHMIS Information: Not provided for this material.

16. OTHER INFORMATION

Issue Date: 01 October 2018

Sources: U.S. National Library of Medicine, *Hazardous Substances Data Base (HSDB), CAS No. 9002-86-2*; available at https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm (accessed Oct 2018).

CDC NIOSH, *International Safety Cards (Chemical Names)*; *CAS No. 9002-86-2*; available at https://www.cdc.gov/niosh/ipcsneng/nengname.html (accessed Oct 2018).

U.S. Environmental Protection Agency, *Substance Registry Services, CAS No. 9002-86-2; a*vailable at https://iaspub.epa.gov/sor_internet/registry/substreg/LandingPage.do (accessed Oct 2018).

Key of Acronyms:

ACGIH	American Conference of Governmental Industrial Hygienists	NIOSH	National Institute for Occupational Safety and Health
ALI	Annual Limit on Intake	NIST	National Institute of Standards and Technology
CAS	Chemical Abstracts Service	NRC	Nuclear Regulatory Commission
CEN	European Committee for Standardization	NTP	National Toxicology Program
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	OSHA	Occupational Safety and Health Administration
CFR	Code of Federal Regulations	PEL	Permissible Exposure Limit
CPSU	Coal Mine Dust Personal Sample Unit	RCRA	Resource Conservation and Recovery Act
DOT	Department of Transportation	REL	Recommended Exposure Limit
EC50	Effective Concentration, 50 %	RM	Reference Material
EINECS	European Inventory of Existing Commercial Chemical Substances	RQ	Reportable Quantity
EPCRA	Emergency Planning and Community Right-to-Know Act	RTECS	Registry of Toxic Effects of Chemical Substances
IARC	International Agency for Research on Cancer	SARA	Superfund Amendments and Reauthorization Act
IATA	International Air Transport Association	SCBA	Self-Contained Breathing Apparatus
IDLH	Immediately Dangerous to Life and Health	SRM	Standard Reference Material
ISO	International Organization for Standardization	STEL	Short Term Exposure Limit
LC50	Lethal Concentration, 50 %	TDLo	Toxic Dose Low
LD50	Lethal Dose, 50 %	TLV	Threshold Limit Value
LEL	Lower Explosive Limit	TPQ	Threshold Planning Quantity
MSDS	Material Safety Data Sheet	TSCA	Toxic Substances Control Act
NFPA	National Fire Protection Association	TWA	Time Weighted Average
MSHA	Mine Safety and Health Administration	UEL	Upper Explosive Limit
		WHMIS	Workplace Hazardous Materials Information System

Disclaimer: Physical and chemical data contained in this SDS are provided only for use in assessing the hazardous nature of the material. The SDS was prepared carefully, using current references; however, NIST does not certify the data in the SDS. The certified values for this material are given in the NIST Certificate of Analysis.

Users of this SRM should ensure that the SDS in their possession is current. This can be accomplished by contacting the SRM Program: telephone (301) 975-2200; fax (301) 948-3730; e-mail srmmsds@nist.gov; or via the Internet at https://www.nist.gov/srm.

Date of Issue:
01 October 2018

SAFETY DATA SHEET

1. SUBSTANCE AND SOURCE IDENTIFICATION

Product Identifier

SRM Number: 2860
SRM Name: Phthalates in Polyvinyl Chloride
SRM Part: Level I (Nominal Concentration 0.1 % Phthalates in PVC)
Other Means of Identification: Not applicable.

Recommended Use of This Material and Restrictions of Use

This Standard Reference Material (SRM) is intended primarily for use in validating methods for determining six phthalate esters in polyvinyl chloride (PVC). The phthalates esters are di-n-butyl phthalate, benzyl butyl phthalate, bis(2-ethylhexyl) phthalate, di-n-octyl phthalate, diisononyl phthalate, and diisodecyl phthalate. A unit of SRM 2860 consists of shredded material as follows, one jar containing approximately 2 g of BLANK (PVC) with no phthalates added; and two jars each containing approximately 2 g of Level I (Nominal Concentration 0.1 % Phthalates in PVC) and Level II (Nominal Concentration 2 % Phthalates in PVC) respectively, for a total of three jars.

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Website: https://www.nist.gov/srm

Emergency Telephone ChemTrec:
1-800-424-9300 (North America)
+1-703-527-3887 (International)

2. HAZARDS IDENTIFICATION

Note: This SDS is for Level I (Nominal Concentration 0.1 % Phthalates in PVC); see additional SDSs for the other components.

Classification

Physical Hazard: Not classified.
Health Hazard: Carcinogen — Category 2
Reproductive toxicity — Category 1B

Label Elements
Symbol

Signal Word
DANGER

Hazard Statement(s):

Suspected of causing cancer.
May damage fertility of the unborn child.

Precautionary Statement(s):

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P280	Wear protective gloves, protective clothing, and eye protection.
P308 + P313	If exposed or concerned: Get medical attention.

P405 Store locked up.

P501 Dispose of contents and container in accordance with local regulations.

Hazards Not Otherwise Classified: Not applicable.

Ingredients(s) with Unknown Acute Toxicity: Not applicable.

3. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

Substance: Di-n-butyl phthalate, benzyl butyl phthalate, bis(2-ethylhexyl) phthalate, di-n-octyl phthalate, diisononyl phthalate, and diisodecyl phthalate in polyvinyl chloride.

Other Designations: Phthalates in PVC.

Components are listed in compliance with OSHA's 29 CFR 1910.1200; for the actual values see the NIST Certificate of Analysis.

Hazardous Component(s)	CAS Number	EC Number (EINECS)	Nominal Mass Concentration (%)
Di-n-butyl phthalate	84-74-2	607-318-00-4	0.1
Benzyl butyl phthalate	85-68-7	607-430-00-3	0.1
Bis(2-ethylhexyl) phthalate	117-81-7	607-317-00-9	0.1
Di-n-octyl phthalate	117-84-0	not available	0.1
Diisononyl phthalate	28553-12-0	not available	0.1
Diisodecyl phthalate	26761-40-0	not available	0.1
Non-Hazardous Component(s)	**CAS Number**	**EC Number (EINECS)**	**Nominal Mass Concentration (%)**
PVC	9002-86-2	238-878-4	>99

4. FIRST AID MEASURES

Description of First Aid Measures:

Inhalation: If adverse effects occur, remove to uncontaminated area. If not breathing, give artificial respiration or oxygen by qualified personnel. Seek immediate medical attention.

Skin Contact: Wash skin with soap and water for at least 15 minutes. Thoroughly clean and dry contaminated clothing before reuse.

Eye Contact: Flush eyes with water for at least 15 minutes. If necessary, seek medical attention.

Ingestion: If a large amount is swallowed, get medical attention.

Most Important Symptoms/Effects, Acute and Delayed: None reported.

Indication of any immediate medical attention and special treatment needed, if necessary: If any of the above symptoms are present, seek medical attention if needed.

5. FIRE FIGHTING MEASURES

Fire and Explosion Hazards: Negligible fire hazard. See Section 9, "Physical and Chemical Properties" for flammability properties.

Extinguishing Media:
Suitable: Regular dry chemical, carbon dioxide, water, regular foam.
Unsuitable: None listed.

Specific Hazards Arising from the Chemical: None listed.

Special Protective Equipment and Precautions for Fire-Fighters: Avoid inhalation of material or combustion byproducts. Wear full protective clothing and NIOSH approved self-contained breathing apparatus (SCBA).

NFPA Ratings (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

Health = 2 Fire = 0 Reactivity = 0

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures: Use suitable protective equipment; see Section 8, "Exposure Controls and Personal Protection".

Methods and Materials for Containment and Clean up: Collect spilled material in appropriate container for disposal.

7. HANDLING AND STORAGE

Safe Handling Precautions: See Section 8, "Exposure Controls and Personal Protection".

Storage: Until required for use, SRM 2860 should be stored in the dark at room temperature but not above 30 °C. Keep separated from incompatible substances (See Section 10, "Stability and Reactivity").

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits:

PVC:
Exposure limits not established.

Di-n-butyl phthalate:

ACGIH (TLV):	5mg/m^3 (TWA)
OSHA (PEL):	5 mg/m^3 (TWA)
NIOSH (REL):	5 mg/m^3 (TWA)
	4000 mg/m^3 (IDLH)

Benzyl butyl phthalate:
Exposure limits not established.

Bis(2-ethylhexyl) phthalate:

ACGIH (TLV):	5mg/m^3
OSHA (PEL):	5 mg/m^3 (TWA)
NIOSH (REL):	5 mg/m^3 (TWA)
	5000 mg/m^3 (IDLH)

Di-n-octyl phthalate:
Exposure limits not established.

Diisononyl phthalate:
Exposure limits not established.

Diisodecyl phthalate:
Exposure limits not established.

Engineering Controls: Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

Personal Protection: In accordance with OSHA 29 CFR 1910.132, subpart I, wear appropriate Personal Protective Equipment (PPE) to minimize exposure to this material.

Respiratory Protection: If workplace conditions warrant a respirator, a respiratory protection program that meets OSHA 29CFR 1910.134 must be followed. Refer to NIOSH 42 CFR 84 for applicable certified respirators.

Eye/Face Protection: Wear safety goggles. An eye wash station should be readily available near areas of use.

Skin and 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. Chemical-resistant gloves should be worn at all times when handling chemicals (i.e. nitrile).

9. PHYSICAL AND CHEMICAL PROPERTIES

Descriptive Properties:	PVC
Appearance (physical state, color, etc.):	white fibers
Molecular Formula:	$(C_2\text{-}H_3\text{-}Cl)_X$
Molar Mass (g/mol):	62000-133000
Odor:	odorless
Odor threshold:	not available
pH (solution):	not available
Evaporation rate:	not applicable
Melting point/freezing point (°C):	not available
Relative Density (g/mL):	1.41
Vapor Pressure (mmHg):	not applicable
Vapor Density (air = 1):	not applicable
Viscosity (cP):	not applicable
Solubility(ies):	very poor solubility in water
Partition coefficient (n-octanol/water):	not available
Particle Size:	not available
Thermal Stability Properties:	
Autoignition Temperature (°C):	not applicable
Thermal Decomposition (°C):	not available
Initial boiling point and boiling range (°C):	not applicable
Explosive Limits, LEL (Volume %):	not applicable
Explosive Limits, UEL (Volume %):	not applicable
Flash Point (°C):	not applicable
Flammability (solid, gas):	not available

10. STABILITY AND REACTIVITY

Reactivity: Stable at normal temperatures and pressure.

Stability: X Stable _____ Unstable

Possible Hazardous Reactions: None listed.

Conditions to Avoid: Avoid direct flames and heat.

Incompatible Materials: Oxidizing materials.

Fire/Explosion Information: See Section 5, "Fire Fighting Measures".

Hazardous Decomposition: Thermal decomposition can produce hydrogen chloride, ethylene, benzene, naphthalene, toluene, and 1,3,5-Trichlorobenzene.

Hazardous Polymerization: _____ Will Occur X Will Not Occur

11. TOXICOLOGICAL INFORMATION

Route of Exposure: X Inhalation _____ Skin X Ingestion

Symptoms Related to the Physical, Chemical and Toxicological Characteristics: Exposure may cause irritation.

Potential Health Effects (Acute, Chronic and Delayed):

Inhalation: No data available.

Skin Contact: No data available.

Eye Contact: No data available.

Ingestion: No data available.

Numerical Measures of Toxicity:

Acute Toxicity: Not classified.

Skin Corrosion/Irritation: Not classified.

Serious Eye damage/Eye irritation: Not classified.
Respiratory Sensitization: Not classified.

Skin Sensitization: Not classified.

Germ Cell Mutagenicity: Not classified.

Carcinogenicity: Category 2.

Listed as a Carcinogen/Potential Carcinogen X Yes ____ No

PVC listed by IARC as Group 3 *Not classifiable as to its carcinogenicity to humans.*
Butyl benzyl phthalate is listed by IARC, Group 3, *Not classifiable as to its carcinogenicity to humans.*
Di(2-ethylhexyl)phthalate is listed by IARC as Group 2B, *Possibly carcinogenic to humans*
Bis(2-Ethylhexyl) phthalate is listed by NTP as *Reasonably Anticipated To Be Human Carcinogens.*

Reproductive Toxicity: Category 1B.

Specific Target Organ Toxicity, Single Exposure: Not classified.

Specific Target Organ Toxicity, Repeated Exposure: Not classified.

Aspiration Hazard: Not classified.

12. ECOLOGICAL INFORMATION

Ecotoxicity Data: No data available.

Persistence and Degradability: No data available.

Bioaccumulative Potential: No data available.

Mobility in Soil: No data available.

Other Adverse effects: No data available.

13. DISPOSAL CONSIDERATIONS

Waste Disposal: Dispose of waste in accordance with all applicable federal, state, and local regulations.

14. TRANSPORTATION INFORMATION

U.S. DOT and IATA: Not regulated by DOT or IATA.

15. REGULATORY INFORMATION

U.S. Regulations:

CERCLA Sections 102a/103 (40 CFR 302.4): Not regulated.

SARA Title III Section 302 (40 CFR 355.30): Not regulated.

SARA Title III Section 304 (40 CFR 355.40): Not regulated.

SARA Title III Section 313 (40 CFR 372.65): Di-n-butyl phthalate De minimis 1 % limit and, bis(2-Ethylhexyl) phthalate De minimis 0.1 % limit.

OSHA Process Safety (29 CFR 1910.119): Not regulated.

SARA Title III Sections 311/312 Hazardous Categories (40 CFR 370.21):

ACUTE HEALTH:	No.
CHRONIC HEALTH:	Yes.
FIRE:	No.
REACTIVE:	No.
PRESSURE:	No.

State Regulations:
California Proposition 65: WARNING! This product contains chemicals known to the state of California to cause cancer and/or have developmental effects. Butyl benzyl phthalate (developmental effects); Di(2-ethylhexyl)phthalate (cancer and developmental effects); Di-n-butyl phthalate (DBP) (developmental effects); Di-isodecyl phthalate (DIDP) (Developmental effects); Diisononyl phthalate (DINP) (cancer).

U.S. TSCA Inventory: PVC, Di-n-butyl phthalate, Benzyl butyl phthalate, Bis(2-ethylhexyl) phthalate, Di-n-octyl phthalate, Diisononyl phthalate, and Diisodecyl phthalate are listed.

TSCA 12(b), Export Notification: Not listed.

Canadian Regulations:
WHMIS Information: Not provided for this material.

16. OTHER INFORMATION

Issue Date: 01 October 2018

Sources: U.S. National Library of Medicine, *Hazardous Substances Data Base (HSDB), CAS No. 84-74-2, 85-68-7, 117-81-7, 117-84-0, 28553-12-0, and 26761-40-0*; available at https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm (accessed Oct 2018).

CDC NIOSH, *International Safety Cards (Chemical Names)*; *CAS No. 84-74-2, 85 68-7, 117-81-7, 117-84-0, 28553-12-0, and 26761-40-0*; available at https://www.cdc.gov/niosh/ipcsneng/nengname.html (accessed Oct 2018).

U.S. Environmental Protection Agency, *Substance Registry Services, CAS No. 84-74-2, 85 68-7, 117-81-7, 117-84-0, 28553-12-0, and 26761-40-0;* available at https://iaspub.epa.gov/sor_internet/registry/substreg/LandingPage.do (accessed Oct 2018).

Key of Acronyms:

ACGIH	American Conference of Governmental Industrial Hygienists	NIOSH	National Institute for Occupational Safety and Health
ALI	Annual Limit on Intake	NIST	National Institute of Standards and Technology
CAS	Chemical Abstracts Service	NRC	Nuclear Regulatory Commission
CEN	European Committee for Standardization	NTP	National Toxicology Program
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	OSHA	Occupational Safety and Health Administration
CFR	Code of Federal Regulations	PEL	Permissible Exposure Limit
CPSU	Coal Mine Dust Personal Sample Unit	RCRA	Resource Conservation and Recovery Act
DOT	Department of Transportation	REL	Recommended Exposure Limit
EC50	Effective Concentration, 50 %	RM	Reference Material
EINECS	European Inventory of Existing Commercial Chemical Substances	RQ	Reportable Quantity
EPCRA	Emergency Planning and Community Right-to-Know Act	RTECS	Registry of Toxic Effects of Chemical Substances
IARC	International Agency for Research on Cancer	SARA	Superfund Amendments and Reauthorization Act
IATA	International Air Transport Association	SCBA	Self-Contained Breathing Apparatus
IDLH	Immediately Dangerous to Life and Health	SRM	Standard Reference Material
ISO	International Organization for Standardization	STEL	Short Term Exposure Limit
LC50	Lethal Concentration, 50 %	TDLo	Toxic Dose Low
LD50	Lethal Dose, 50 %	TLV	Threshold Limit Value
LEL	Lower Explosive Limit	TPQ	Threshold Planning Quantity
MSDS	Material Safety Data Sheet	TSCA	Toxic Substances Control Act
NFPA	National Fire Protection Association	TWA	Time Weighted Average
MSHA	Mine Safety and Health Administration	UEL	Upper Explosive Limit
		WHMIS	Workplace Hazardous Materials Information System

Disclaimer: Physical and chemical data contained in this SDS are provided only for use in assessing the hazardous nature of the material. The SDS was prepared carefully, using current references; however, NIST does not certify the data in the SDS. The certified values for this material are given in the NIST Certificate of Analysis.

Users of this SRM should ensure that the SDS in their possession is current. This can be accomplished by contacting the SRM Program: telephone (301) 975-2200; fax (301) 948-3730; e-mail srmmsds@nist.gov; or via the Internet at https://www.nist.gov/srm..

Date of Issue:
01 October 2018

SAFETY DATA SHEET SAFETY

1. SUBSTANCE AND SOURCE IDENTIFICATION

Product Identifier

SRM Number: 2860
SRM Name: Phthalates in Polyvinyl Chloride
SRM Part: Level II (Nominal Concentration 2 % Phthalates in PVC)
Other Means of Identification: Not applicable.

Recommended Use of This Material and Restrictions of Use

This Standard Reference Material (SRM) is intended primarily for use in validating methods for determining six phthalate esters in polyvinyl chloride (PVC). The phthalates esters are di-n-butyl phthalate, benzyl butyl phthalate, bis(2-ethylhexyl) phthalate, di-n-octyl phthalate, diisononyl phthalate, and diisodecyl phthalate. A unit of SRM 2860 consists of shredded material as follows, one jar containing approximately 2 g of BLANK (PVC) with no phthalates added; and two jars each containing approximately 2 g of Level I (Nominal Concentration 0.1 % Phthalates in PVC) and Level II (Nominal Concentration 2 % Phthalates in PVC) respectively, for a total of three jars.

Company Information

National Institute of Standards and Technology
Standard Reference Materials Program
100 Bureau Drive, Stop 2300
Gaithersburg, Maryland 20899-2300

Telephone: 301-975-2200
FAX: 301-948-3730
E-mail: SRMMSDS@nist.gov
Website: http://www.nist.gov/srm

Emergency Telephone ChemTrec:
1-800-424-9300 (North America)
+1-703-527-3887 (International)

2. HAZARDS IDENTIFICATION

Note: This SDS is for Level II (Nominal Concentration 2 % Phthalates in PVC); see additional SDSs for the other components.

Classification

Physical Hazard: Not classified.
Health Hazard: Carcinogen Category 2
Reproductive toxicity Category 1B

Label Elements
Symbol

Signal Word
DANGER

Hazard Statement(s):

Suspected of causing cancer.
May damage fertility of the unborn child.

Precautionary Statement(s):

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P280	Wear protective gloves, protective clothing, and eye protection.
P308 + P313	If exposed or concerned: Get medical attention.

P405 Store locked up.

P501 Dispose of contents and container in accordance with local regulations.

Hazards Not Otherwise Classified: Not applicable.

Ingredients(s) with Unknown Acute Toxicity: Not applicable.

3. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

Substance: Di-n-butyl phthalate, benzyl butyl phthalate, bis(2-ethylhexyl) phthalate, di-n-octyl phthalate, diisononyl phthalate, and diisodecyl phthalate in polyvinyl chloride.

Other Designations: Phthalates in PVC.

Components are listed in compliance with OSHA's 29 CFR 1910.1200; for the actual values see the NIST Certificate of Analysis.

Hazardous Component(s)	CAS Number	EC Number (EINECS)	Nominal Mass Concentration (%)
Di-n-butyl phthalate	84-74-2	607-318-00-4	2
Benzyl butyl phthalate	85-68-7	607-430-00-3	2
Bis(2-ethylhexyl) phthalate	117-81-7	607-317-00-9	2
Di-n-octyl phthalate	117-84-0	not available	2
Diisononyl phthalate	28553-12-0	not available	2
Diisodecyl phthalate	26761-40-0	not available	2
Non-Hazardous Component(s)	**CAS Number**	**EC Number (EINECS)**	**Nominal Mass Concentration (%)**
PVC	9002-86-2	238-878-4	balance

4. FIRST AID MEASURES

Description of First Aid Measures:

Inhalation: If adverse effects occur, remove to uncontaminated area. If not breathing, give artificial respiration or oxygen by qualified personnel. Seek immediate medical attention.

Skin Contact: Wash skin with soap and water for at least 15 minutes. Thoroughly clean and dry contaminated clothing before reuse.

Eye Contact: Flush eyes with water for at least 15 minutes. If necessary, seek medical attention.

Ingestion: If a large amount is swallowed, get medical attention.

Most Important Symptoms/Effects, Acute and Delayed: None reported.

Indication of any immediate medical attention and special treatment needed, if necessary: If any of the above symptoms are present, seek medical attention if needed.

5. FIRE FIGHTING MEASURES

Fire and Explosion Hazards: Negligible fire hazard. See Section 9, "Physical and Chemical Properties" for flammability properties.

Extinguishing Media:
Suitable: Regular dry chemical, carbon dioxide, water, regular foam.
Unsuitable: None listed.

Specific Hazards Arising from the Chemical: None listed.

Special Protective Equipment and Precautions for Fire-Fighters: Avoid inhalation of material or combustion byproducts. Wear full protective clothing and NIOSH approved self-contained breathing apparatus (SCBA).

NFPA Ratings (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

Health = 2 Fire = 0 Reactivity = 0

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures: Use suitable protective equipment; see Section 8, "Exposure Controls and Personal Protection".

Methods and Materials for Containment and Clean up: Collect spilled material in appropriate container for disposal.

7. HANDLING AND STORAGE

Safe Handling Precautions: See Section 8, "Exposure Controls and Personal Protection".

Storage: Until required for use, SRM 2860 should be stored in the dark at room temperature but not above 30 °C.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits:

PVC

Exposure limits not established.

Di-n-butyl phthalate

ACGIH (TLV): 5mg/m^3 (TWA)
OSHA (PEL): 5 mg/m^3 (TWA)
NIOSH (REL): 5 mg/m^3 (TWA)
4000 mg/m^3 (IDLH)

Benzyl butyl phthalate

Exposure limits not established.

Bis(2-ethylhexyl) phthalate

ACGIH (TLV): 5mg/m^3
OSHA (PEL): 5 mg/m^3 (TWA)
NIOSH (REL): 5 mg/m^3 (TWA)
5000 mg/m^3 (IDLH)

Di-n-octyl phthalate

Exposure limits not established.

Diisononyl phthalate

Exposure limits not established.

Diisodecyl phthalate

Exposure limits not established.

Engineering Controls: Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

Personal Protection: In accordance with OSHA 29 CFR 1910.132, subpart I, wear appropriate Personal Protective Equipment (PPE) to minimize exposure to this material.

Respiratory Protection: If workplace conditions warrant a respirator, a respiratory protection program that meets OSHA 29CFR 1910.134 must be followed. Refer to NIOSH 42 CFR 84 for applicable certified respirators.

Eye/Face Protection: Wear safety goggles. An eye wash station should be readily available near areas of use.

Skin and 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. Chemical-resistant gloves should be worn at all times when handling chemicals (i.e. nitrile).

9. PHYSICAL AND CHEMICAL PROPERTIES

Descriptive Properties:	PVC
Appearance (physical state, color, etc.):	white fibers
Molecular Formula:	$(C_2\text{-}H_3\text{-}Cl)_X$
Molar Mass (g/mol):	62000-133000
Odor:	odorless
Odor threshold:	not available
pH (solution):	not available
Evaporation rate:	not applicable
Melting point/freezing point (°C):	not available
Relative Density (g/mL):	1.41
Vapor Pressure (mmHg):	not applicable
Vapor Density (air = 1):	not applicable
Viscosity (cP):	not applicable
Solubility(ies):	very poor solubility in water
Partition coefficient (n-octanol/water):	not available
Particle Size:	not available
Thermal Stability Properties:	
Autoignition Temperature (°C):	not applicable
Thermal Decomposition (°C):	not available
Initial boiling point and boiling range (°C):	not applicable
Explosive Limits, LEL (Volume %):	not applicable
Explosive Limits, UEL (Volume %):	not applicable
Flash Point (°C):	not applicable
Flammability (solid, gas):	not available

10. STABILITY AND REACTIVITY

Reactivity: Stable at normal temperatures and pressure.

Stability: X Stable _____ Unstable

Possible Hazardous Reactions: None listed.

Conditions to Avoid: Avoid direct flames and heat.

Incompatible Materials: Oxidizing materials.

Fire/Explosion Information: See Section 5, "Fire Fighting Measures".

Hazardous Decomposition: Thermal decomposition can produce hydrogen chloride, ethylene, benzene, naphthalene, toluene, and 1,3,5-Trichlorobenzene.

Hazardous Polymerization: _____ Will Occur X Will Not Occur

11. TOXICOLOGICAL INFORMATION

Route of Exposure: X Inhalation _____ Skin X Ingestion

Symptoms Related to the Physical, Chemical and Toxicological Characteristics: Exposure may cause irritation.

Potential Health Effects (Acute, Chronic and Delayed):

Inhalation: No data available.

Skin Contact: No data available.

Eye Contact: No data available.

Ingestion: No data available.

Numerical Measures of Toxicity:

Acute Toxicity: Not classified.

Skin Corrosion/Irritation: Not classified.

Serious Eye damage/Eye irritation: Not classified.
Respiratory Sensitization: Not classified.

Skin Sensitization: Not classified.

Germ Cell Mutagenicity: Not classified.

Carcinogenicity: Category 2.

Listed as a Carcinogen/Potential Carcinogen X Yes ____ No

PVC listed by IARC as Group 3 *Not classifiable as to its carcinogenicity to humans.*
Butyl benzyl phthalate is listed by IARC, Group 3, *Not classifiable as to its carcinogenicity to humans.*
Di(2-ethylhexyl)phthalate is listed by IARC as Group 2B, *Possibly carcinogenic to humans*
Bis(2-Ethylhexyl) phthalate is listed by NTP as *Reasonably Anticipated To Be Human Carcinogens.*

Reproductive Toxicity: Category 1B.

Specific Target Organ Toxicity, Single Exposure: Not classified.

Specific Target Organ Toxicity, Repeated Exposure: Not classified.

Aspiration Hazard: Not classified.

12. ECOLOGICAL INFORMATION

Ecotoxicity Data: No data available.

Persistence and Degradability: No data available.

Bioaccumulative Potential: No data available.

Mobility in Soil: No data available.

Other Adverse effects: No data available.

13. DISPOSAL CONSIDERATIONS

Waste Disposal: Dispose of waste in accordance with all applicable federal, state, and local regulations.

14. TRANSPORTATION INFORMATION

U.S. DOT and IATA: Not regulated by DOT or IATA.

15. REGULATORY INFORMATION

U.S. Regulations:

CERCLA Sections 102a/103 (40 CFR 302.4): Not regulated.

SARA Title III Section 302 (40 CFR 355.30): Not regulated.

SARA Title III Section 304 (40 CFR 355.40): Not regulated.

SARA Title III Section 313 (40 CFR 372.65): Di-n-butyl phthalate de minimis 1 % limit and, bis(2-Ethylhexyl) phthalate de minimis 0.1 % limit.

OSHA Process Safety (29 CFR 1910.119): Not regulated.

SARA Title III Sections 311/312 Hazardous Categories (40 CFR 370.21):

ACUTE HEALTH:	No.
CHRONIC HEALTH:	Yes.
FIRE:	No.
REACTIVE:	No.
PRESSURE:	No.

State Regulations:
California Proposition 65: WARNING! This product contains chemicals known to the state of California to cause cancer and/or have developmental effects. Butyl benzyl phthalate (developmental effects); Di(2-ethylhexyl)phthalate (cancer and developmental effects); Di-n-butyl phthalate (DBP) (developmental effects); Di-isodecyl phthalate (DIDP) (Developmental effects); Diisononyl phthalate (DINP) (cancer).

U.S. TSCA Inventory: PVC, Di-n-butyl phthalate, Benzyl butyl phthalate, Bis(2-ethylhexyl) phthalate, Di-n-octyl phthalate, Diisononyl phthalate, and Diisodecyl phthalate are listed.

TSCA 12(b), Export Notification: Not listed.

Canadian Regulations:
WHMIS Information: Not provided for this material.

16. OTHER INFORMATION

Issue Date: 01 October 2018

Sources: U.S. National Library of Medicine, *Hazardous Substances Data Base (HSDB), CAS No. 84-74-2, 85-68-7, 117-81-7, 117-84-0, 28553-12-0, and 26761-40-0*; available at https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm (accessed Oct 2018).

CDC NIOSH, *International Safety Cards (Chemical Names)*; *CAS No. 84-74-2, 85 68-7, 117-81-7, 117-84-0, 28553-12-0, and 26761-40-0*; available at https://www.cdc.gov/niosh/ipcsneng/nengname.html (accessed Oct 2018).

U.S. Environmental Protection Agency, *Substance Registry Services, CAS No. 84-74-2, 85 68-7, 117-81-7, 117-84-0, 28553-12-0, and 26761-40-0; a*vailable at https://iaspub.epa.gov/sor_internet/registry/substreg/LandingPage.do (accessed Oct 2018).

Key of Acronyms:

ACGIH	American Conference of Governmental Industrial Hygienists	NIOSH	National Institute for Occupational Safety and Health
ALI	Annual Limit on Intake	NIST	National Institute of Standards and Technology
CAS	Chemical Abstracts Service	NRC	Nuclear Regulatory Commission
CEN	European Committee for Standardization	NTP	National Toxicology Program
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	OSHA	Occupational Safety and Health Administration
CFR	Code of Federal Regulations	PEL	Permissible Exposure Limit
CPSU	Coal Mine Dust Personal Sample Unit	RCRA	Resource Conservation and Recovery Act
DOT	Department of Transportation	REL	Recommended Exposure Limit
EC50	Effective Concentration, 50 %	RM	Reference Material
EINECS	European Inventory of Existing Commercial Chemical Substances	RQ	Reportable Quantity
EPCRA	Emergency Planning and Community Right-to-Know Act	RTECS	Registry of Toxic Effects of Chemical Substances
IARC	International Agency for Research on Cancer	SARA	Superfund Amendments and Reauthorization Act
IATA	International Air Transport Association	SCBA	Self-Contained Breathing Apparatus
IDLH	Immediately Dangerous to Life and Health	SRM	Standard Reference Material
ISO	International Organization for Standardization	STEL	Short Term Exposure Limit
LC50	Lethal Concentration, 50 %	TDLo	Toxic Dose Low
LD50	Lethal Dose, 50 %	TLV	Threshold Limit Value
LEL	Lower Explosive Limit	TPQ	Threshold Planning Quantity
MSDS	Material Safety Data Sheet	TSCA	Toxic Substances Control Act
NFPA	National Fire Protection Association	TWA	Time Weighted Average
MSHA	Mine Safety and Health Administration	UEL	Upper Explosive Limit
		WHMIS	Workplace Hazardous Materials Information System

Disclaimer: Physical and chemical data contained in this SDS are provided only for use in assessing the hazardous nature of the material. The SDS was prepared carefully, using current references; however, NIST does not certify the data in the SDS. The certified values for this material are given in the NIST Certificate of Analysis.

Users of this SRM should ensure that the SDS in their possession is current. This can be accomplished by contacting the SRM Program: telephone (301) 975-2200; fax (301) 948-3730; e-mail srmmsds@nist.gov; or via the Internet at https://www.nist.gov/srm.