Date of Issue:
02 October 2014

SAFETY DATA SHEET

1. SUBSTANCE AND SOURCE IDENTIFICATION

Product Identifier

SRM Number: 2556
SRM Name: Used Auto Catalyst (Pellets)
Other Means of Identification: Not applicable.

Recommended Use of This Material and Restrictions of Use

This Standard Reference Material (SRM) is intended for use in evaluating chemical and instrumental methods for the analysis of platinum group metals and lead. A unit of SRM 2556 consists of a glass bottle containing 70 g of used auto catalyst as a fine powder [<74 µm (200 mesh)].

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

Classification

Physical Hazard: Not classified.
Health Hazard: Carcinogenicity Category 2

Label Elements
Symbol

Signal Word
WARNING

Hazard Statement(s):

H351	Suspected of causing cancer (inhalation).

Precautionary Statement(s):

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 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: Used auto catalyst

Other Designations: Recycled pellet auto catalyst

This material is a complex mixture that has not been tested as a whole. SRM 2556 contains trace amounts of compounds that do not require individual SDS information. The components listed below are 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 (%)
Used Auto Catalyst	not applicable	not applicable	100
Aluminum oxide	1344-28-1	215-691-6	76
Lead oxide	1317-36-8	215-267-0	0.7

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: Irritation, cancer inhalation hazard.

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: Use extinguishing agents appropriate for surrounding fire.
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 = 1 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. Avoid generating dust.

7. HANDLING AND STORAGE

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

Storage: Store and handle in accordance with all current regulations and standards. Keep separated from incompatible substances (See Section 10, "Stability and Reactivity").

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits:

Component: Lead oxide

ACGIH (TLV):	0.05 mg/m^3 TWA as Lead (related to lead inorganic compounds)
NIOSH (REL):	0.05 mg/m^3 TWA as Lead (related to lead compounds)
	100 mg/m^3 IDLH as Lead (related to lead compounds)
OSHA (PEL):	50 µg/m^3 TWA as Lead (related to lead inorganic compounds)

Component: Aluminum oxide

ACGIH (TLV):	1 mg/m^3 (TWA, respirable fraction, related to aluminum insoluble compounds)
NIOSH (REL):	No occupational exposure limits available.
OSHA (PEL):	15 mg/m^3 (TWA, total dust)
	5 mg/m^3 (TWA, respirable fraction)

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 splash resistant safety goggles with a face shield. 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.

9. PHYSICAL AND CHEMICAL PROPERTIES

Descriptive Properties	**Aluminum Oxide 76 %**	**Lead Oxide 0.7 %**
Appearance (physical state, color, etc.):	white to gray powder	yellow to red powder
Molecular Formula:	Al_2O_3	PbO
Molar Mass (g/mol):	101.96	223.22
Odor:	odorless	odorless
Odor threshold:	not applicable	not applicable
pH (solution):	not available	not available
Evaporation rate:	not applicable	not applicable
Melting point/freezing point (ºC):	2053 to 2072 (3727 ºF to 3762 ºF)	886 (1627ºF)
Density (g/cc):	3.965	not available
Relative density (water=1):	not available	10
Vapor Pressure:	1 mmHg at 2158 ºC	not available
Vapor Density (air = 1):	not applicable	not applicable
Viscosity (cP):	not applicable	not applicable
Solubility(ies):	soluble in mineral acids and strong alkali; insoluble in water	soluble in alkali, nitric acid, ammonium chloride solutions. insoluble in water
Partition coefficient (n-octanol/water):	not available	not available
Particle Size:	<74 µm	<74 µm

Thermal Stability Properties	Aluminum Oxide 76 %	Lead Oxide 0.7 %
Autoignition Temperature (ºC):	not available	not available
Thermal Decomposition (ºC):	not available	not available
Initial boiling point (ºC):	2980 (5396 ºF)	not available
Explosive Limits, LEL (Volume %):	not applicable	not applicable
Explosive Limits, UEL (Volume %):	not applicable	not applicable
Flash Point (ºC):	not applicable	not applicable
Flammability (solid, gas):	not available	not applicable

10. STABILITY AND REACTIVITY

Reactivity: Stable at normal temperatures and pressure.

Stability: X Stable _____ Unstable

Possible Hazardous Reactions: None listed.

Conditions to Avoid: Avoid generating dust.

Incompatible Materials: Halo carbons, halogens, combustible materials.

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

Hazardous Decomposition: Thermal decomposition will miscellaneous by products.

Hazardous Polymerization: _____ Will Occur X Will Not Occur

11. TOXICOLOGICAL INFORMATION

Route of Exposure: X Inhalation X Skin _____ Ingestion

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

Potential Health Effects (Acute, Chronic and Delayed):

Inhalation: Acute: Inhalation of high concentrations of aluminum oxide dust may cause coughing, shortness of breath, respiratory tract irritation due to mechanical action, unpleasant deposits in the nasal passages, and exacerbation of symptoms in persons with impaired pulmonary function. Chronic: same as acute, difficulty breathing, may cause cancer. Lead is a cumulative toxin and repeated exposure can cause high levels to build up in body tissues resulting in adverse effects on the blood, nervous system, heart, immune, kidney, reproductive systems, and is a possible carcinogen.

Skin Contact: Acute: Irritation dermatitis accompanied by pruritus; chronic: lead may result in sensitization dermatitis.

Eye Contact: Dust may cause mechanical irritation with redness and possibly swelling of the conjunctiva.

Ingestion: Ingestion of aluminum compounds may result in constipation. Chronic ingestion of lead or lead compounds may result in accumulation in body tissues resulting in adverse effects on the blood, nervous system, heart, immune, kidney, reproductive systems, and possibly cancer.

Numerical Measures of Toxicity:

Acute Toxicity: Not classified.
Aluminum oxide, Rat, Oral LD50: >5000 mg/kg
Lead oxide, Rat, Oral LD50: >10 000 mg/kg

Skin Corrosion/Irritation: Not classified.
Aluminum oxide: No data available.
Lead oxide, Rabbit: 100 mg (24 h), mild

Serious Eye damage/Eye irritation: Not classified; no data available.

Respiratory Sensitization: Not classified; no data available.

Skin Sensitization: Not classified; no data available.

Germ Cell Mutagenicity: Not classified.
Lead oxide, Hamster: 50 µmol/L

Carcinogenicity: Category 2.

Listed as a Carcinogen/Potential Carcinogen X Yes _____ No
Lead oxide is listed by IARC as Group 2A (*probably carcinogenic to humans*), and by NTP as "Reasonably anticipated to be a human carcinogen (related to lead compounds)".

Aluminum oxide is not listed by OSHA, IARC, or NTP as a carcinogen/potential carcinogen.
Tumorigenic: Rat, Implant. TDLo: 200 mg/kg

Reproductive Toxicity: Not classified.
Mouse, Oral TDLo: 1750 mg/kg (5 wk)

Specific Target Organ Toxicity, Single Exposure: Not classified; no data available.

Specific Target Organ Toxicity, Repeated Exposure: Not classified; no data available.

Aspiration Hazard: Not classified; no data available.

12. ECOLOGICAL INFORMATION

Ecotoxicity Data:
Lead oxide: Fish: Fathead minnow (*Pimephales promelas*): 0.298 mg/L (static)

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): Auto catalyst is not regulated. Lead oxide is regulated (as Pb).

SARA Title III Section 302 (40 CFR 355.30): Auto catalyst is not regulated. Lead oxide is regulated (as Pb).

SARA Title III Section 304 (40 CFR 355.40): Auto catalyst is not regulated. Lead oxide is regulated (as Pb).

SARA Title III Section 313 (40 CFR 372.65): Regulated: lead oxide, 0.1 % notification limit (related to lead inorganic compounds.); Aluminum oxide: 1 % de minimis concentration (fibrous forms)

OSHA Process Safety (29 CFR 1910.119): Auto catalyst is not regulated. Lead oxide is 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 a chemical (lead oxide) known to the state of California to cause cancer and reproductive/developmental effects.

U.S. TSCA Inventory: Aluminum oxide and lead oxide are listed.

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

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

16. OTHER INFORMATION

Issue Date: 02 October 2014

Sources: ChemADVISOR, Inc., SDS *Aluminum Oxide*, 19 June 2014.

ChemADVISOR, Inc., SDS *Lead Oxide*, 19 June 2014

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 Transportation Agency	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 http://www.nist.gov/srm.