SECTION 1. Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product Identifier

Product Name: : **SBC-2**

SDS Number: : 21594

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

Product use : Catalyst / Catalyst Precursor

1.3 Details of the supplier of the safety data sheet

Manufacturer/Supplier : CRI/Criterion Catalyst Company Ltd.
Shell Centre, York Road
London, SE1 7NA, United Kingdom
+44 (0)20 7934 1234

Email contact for SDS Product.Steward@CRI-Criterion.com

Emergency Telephone Number

: CHEMTREC (US): +1-800-424-9300

CANUTEC (Canada): +613-996-6666

CHEMTREC (International): +1-703-527-3887 (Call Collect)

SECTION 2. Hazards Identification

2.1 Classification of the substance or mixture

Classification Regulation (EC) No 1272/2008 (CLP)

Not classified as hazardous under EU CLP criteria (EC 1272/2008).

2.2 Label Elements

Labeling according to Regulation (EC) No 1272/2008

Hazard pictograms : No Hazard Symbol required

Signal Word: : **No signal word**

Hazard statements : **Physical hazards**
Not classified as hazardous under EU CLP criteria (EC 1272/2008).
Health Hazards
Not classified as hazardous under EU CLP criteria (EC 1272/2008).
Environmental Hazards:
Not classified as hazardous under EU CLP criteria (EC 1272/2008).

Precautionary Statements : **Prevention**
None

Response
None

Storage
None

Disposal
None

2.3 Other Hazards

PBT/vPvB : The substance/ mixture does not fulfill all screening criteria for persistence, bioaccumulation and toxicity and hence is not considered to be PBT or vPvB

Dust : Dusts from material may scratch eye causing mild irritation.

Environmental Hazards : Avoid release to the environment.

SECTION 3. Composition/Information on Ingredients

3.2 Mixtures

Hazardous Components			
Chemical Name	**Classification**	**Hazard Statement**	**Concentration**
Aluminum oxide ^^ Synonyms: Al2O3 CAS: 1344-28-1 EC: 215-691-6 REACH: 01-2119529248-35	Not classified as hazardous under EU CLP criteria (EC 1272/2008).		Balance

Potassium Carbonate Synonyms: K2CO3 CAS: 584-08-7 EC: 209-529-3	Skin Irrit. 2 Eye Irrit. 2 STOT SE 3	H315 H319 H335	1 - 10 %

^^ Substances for which there are Community workplace exposure limits.

For explanation of abbreviations see section 16.

SECTION 4. First Aid Measures

4.1 Description of first aid measures

Inhalation: : DO NOT DELAY. Move individual to fresh air and provide oxygen if breathing is difficult. Give artificial respiration if not breathing. Get medical attention.

Skin Contact: : DO NOT DELAY! Wash skin with plenty of water for 15 minutes. Use soap if readily available and follow by thoroughly washing with soap and water. Remove contaminated clothing. If persistent skin irritation or rash occurs, get medical attention immediately.

Eye Contact: : DO NOT DELAY. Remove contact lenses, if present and easy to do. Immediately flush eyes with plenty of water for 15 minutes while holding eyelids open. Get medical attention immediately.

Ingestion: : DO NOT DELAY. Do not induce vomiting. Do not give liquids if individual is unconscious or drowsy. Otherwise, rinse mouth with water and give large quantity of water (0.5L at least). If vomiting occurs, keep head below hips, repeat liquid administration. Get medical attention immediately.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms : See also section 2 and section 11 for the most important symptoms and effects

4.3 Indication of any immediate medical attention and special treatment needed

Advice to Physician : Treat symptomatically.

SECTION 5. Fire Fighting Measures

5.1 Extinguishing Media

Suitable Extinguishing Media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment (e.g. water spray, foam, carbon dioxide).

Unsuitable extinguishing media	:	There are no limitations of extinguishing media for this substance/ mixture.

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting	:	No specific hazards. Will not burn or support combustion. Ambient fire may liberate hazardous vapours.

5.3 Advice for fire-fighters

: Wear full protective clothing. Use an authority approved self-contained breathing apparatus for fire fighting, if necessary. Prevent extinguishing media from entering drains, surface water or ground water systems.

SECTION 6. Accidental Release Measures

6.1 Personal Precautions, Protective Equipment and Emergency Procedures

6.1.1 For Non-emergency Personnel	:	Avoid dust generation. Do not inhale dust. Wear gloves, goggles, protective clothing and respiratory protection to avoid exposure. For guidance on selection of personal protective equipment see Chapter 8. Observe emergency procedures. Evacuate not-required personnel to safe areas. If necessary, consult an expert.
6.1.2 For Emergency Responders	:	For guidance on selection of personal protective equipment see Chapter 8.

6.2 Environmental Precautions

: Contain spillage, and then collect with an electrically protected vacuum cleaner. Prevent contamination of soil and water. Do not wash spills into sewers or other public water systems. Prevent further leakage or spillage and prevent from entering drains.

6.3 Methods and Material for Containment and Cleaning up

: Contain spillage, and then collect with an electrically protected vacuum cleaner or Shovel up and place in a labeled, sealable container for subsequent safe disposal (see section 13). Observe possible material restrictions (see section 10).

6.4 Reference to other sections

For guidance on selection of personal protective equipment see Chapter 8 of this Safety Data Sheet. For guidance on disposal of spilled material see Chapter 13 of this Safety Data Sheet.

SECTION 7. Handling and Storage

7.1 Precautions for Safe Handling

Handling Recommendations:	:	For guidance on selection of personal protective equipment see Chapter 8 of this Safety Data Sheet. Avoid contact with skin and eyes. Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols. Avoid raising a dust cloud. In case of insufficient ventilation, wear suitable respiratory equipment. Transfer the material only in equipment with an exhaust device. Normal measures for preventive fire protection. In order to avoid a release to the environment make use of industrial best practice measures. Do not eat, smoke or drink in areas where catalyst is present. Wash hands thoroughly after handling. Take precautionary measures against static discharge. Ground all equipment. For comprehensive advice on handling, product transfer, storage and tank cleaning refer to the product supplier. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers	:	Dry. Tightly closed. Keep in well-ventilated place. Do not store together with combustible or fire supporting materials. Consume opened container immediately. Use only non-flammable containers that can be tightly sealed. Store in an area only accessible to authorized or qualified persons.
Incompatibilities	:	For guidance of incompatible substance or mixture see section 10.
Storage Temperature:	:	< 50°C

7.3 Specific end use(s)

Apart from the uses mentioned in section 1 no other specific end uses are stipulated.

SECTION 8. Exposure Controls/Personal Protection

8.1 Control Parameters

Occupational Exposure Limits

Component	CAS No.	Value type (Form of exposure)	Permissible concentration	Authority
Aluminum oxide	1344-28-1	TWA	10 mg/m³	EH40
Aluminum oxide	1344-28-1	TWA	4 mg/m³	EH40

Monitoring Methods : Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate. Validated exposure measurement methods should be applied by a competent person and samples analysed by an accredited laboratory. Examples of sources of recommended exposure measurement methods are given below or contact the supplier. Further national methods may be available. National Institute of Occupational Safety and Health (NIOSH), USA: Manual of Analytical Methods http://www.cdc.gov/niosh/ Occupational Safety and Health Administration (OSHA), USA: Sampling and Analytical Methods http://www.osha.gov/ Health and Safety Executive (HSE), UK: Methods for the Determination of Hazardous Substances http://www.hse.gov.uk/ Institut für Arbeitsschutz Deutschen Gesetzlichen Unfallversicherung (IFA) , Germany http://www.dguv.de/inhalt/index.jsp L'Institut National de Recherche et de Securité, (INRS), France http://www.inrs.fr/accueil

8.2 Exposure Controls

Engineering Controls: : Technical measures and appropriate working operations should be given priority over the use of personal protective equipment! Use sealed systems as far as possible. Local exhaust ventilation is recommended. Eye washes and showers for emergency use have to be present. Always observe good personal hygiene measures, such as washing hands after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping. Define procedures for safe handling and maintenance of controls. Educate and train workers in the hazards and control measures relevant to normal activities associated with this product. Ensure appropriate selection, testing and maintenance of equipment used to control exposure, e.g. personal protective equipment, local exhaust ventilation. Drain down system prior to equipment break-in or maintenance. Retain drain downs in sealed storage pending disposal or subsequent recycle.

Personal Protective Equipment

Respiratory protection: : In case of insufficient ventilation, use either an atmosphere-supplying respirator or an air-purifying respirator for particulates (acc. to EN136/140 or comparable standards). Use a filter type P3 (acc. to EN143 or comparable standard).

Eye protection: : Dust-tight safety goggles according to EN166 or NIOSH(US)-standard.

Hand protection: : Nitrile rubber gloves (Glove thickness : min. 0.11 mm, Break through time: >480 min.) For example: ANSELL TNT (TM) BLUE 92-670 Nitrile gloves, The protective gloves must be comply with the specifications mentioned in EC Directive 89/686/EEC and the related standard EN 374. Provide employee skin care programmes.

Skin and Body Protection : Protective clothing which cover the skin and approved to EU Standard EN14605 or other comparable Standards. Provide employee skin care programmes.

Thermal Hazards : Not applicable

Protective Measures	:	The provided information is made in consideration of the PPE directive (89/686/EEC) and the European Committee for Standardisation (CEN) standards. Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.

Environmental exposure controls

Minimise release to the environment. An environmental assessment must be made to ensure compliance with local environmental legislation. Information on accidental release measures are to be found in section 6. Take appropriate measures to fulfill the requirements of relevant environmental protection legislation. Avoid contamination of the environment by following advice given in Chapter 6. If necessary, prevent undissolved material from being discharged to waste water. Waste water should be treated in a municipal or industrial waste water treatment plant before discharge to surface water.

SECTION 9. Physical and Chemical Properties

9.1 Information on basic physical and chemical properties

Appearance	:	Solid, white
Odour	:	Odourless
Odour threshold	:	Not applicable
pH:	:	Not applicable
Melting point:	:	No information available.
Initial Boiling Point and Boiling Range	:	No information available.
Flash Point	:	Not applicable
Evaporation Rate:	:	Not applicable - (solid with no measurable vapour pressure)
Flammability	:	Not flammable
Upper / lower Flammability or Explosion limits	:	Not applicable
Vapour Pressure:	:	No measurable vapour pressure
Vapour Density:	:	Not applicable
Relative density	:	No information available.
Solubility(ies)	:	@ 20º C Insoluble in water
Partition coefficient (n-octanol/water)	:	Not applicable
Auto-ignition temperature	:	No auto-ignition
Decomposition temperature	:	No information available.
Viscosity	:	Not applicable
Explosive Properties	:	No information available.
Oxidizing Properties	:	No information available.

9.2 Other Information

Bulk density (for solids):	:	0.53 g/cm³

SECTION 10. Stability/Reactivity

10.1 Reactivity

: Further dangerous reactions in addition to those mentioned in the below sub-sections are not expected while handling the product in accordance to its intended use.

10.2 Chemical Stability

: Stable under normal ambient temperature and pressure (-50°C to +50°C; 1013hPa) during storage in original containment. Hygroscopic!

10.3 Possibility of hazardous reactions

: Risk of formation of dangerous gases or strong exothermic reactions with: strong acids, strong bases. All self-reactive substances, if the decomposition reaction of these substances is accelerated/ promoted by a high surface area.

10.4 Conditions to Avoid

: Avoid excessive temperatures (>50°C), excessive exposure to air, sparks, open flames or other ignition sources. Humidity.

10.5 Materials to Avoid

: Strong acids, strong bases. All self-reactive substances, if the decomposition reaction of these substances is accelerated/ promoted by a high surface area.

10.6 Hazardous Decomposition Products

: Does not decompose when used for intended uses. Also see section 5.

SECTION 11. Toxicological Information

11.1 Information on Toxicological effects

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

Information on likely routes of exposure
Exposure may occur via inhalation, ingestion, skin absorption, skin or eye contact, and accidental ingestion.

Acute Toxicity

Route	Material Tested	LD/LC50	Species / Duration
Oral	Aluminum oxide	LD50: >2000 mg/kg	Rat
Oral	Potassium Carbonate	LD50: 1870 mg/kg	Rat
Dermal	Aluminum oxide	LD50: >2000 mg/kg	Rat

Eye/Skin corrosion/irritation

Route	Material Tested	Description	Species
Eye	Aluminum oxide	Mildly irritating	Rabbit
Eye	Potassium Carbonate	Irritating	Human
Dermal	Aluminum oxide	Not irritating	Rabbit
Dermal	Potassium Carbonate	Irritating	Human
Respiratory Irritation	Aluminum oxide	Mildly irritating	Rabbit
Respiratory Irritation	Potassium Carbonate	Respiratory tract irritant	Human

Respiratory or skin sensitization

Route	Material Tested	Description	Species
Dermal	Aluminum oxide	Not a sensitiser	Guinea pig

Germ cell mutagenicity
Not expected to be mutagenic.

Carcinogenicity:
Not expected to be carcinogenic.

Reproductive Toxicity

Product
Not expected to be a reproductive toxicant. Not expected to impair fertility.

STOT - single exposure

Product
No information available.

STOT - repeated exposure

Product
No information available.

Aspiration hazard
No information available.

11.2 Further information

Further information

Product

Aluminum and aluminum compounds are not considered to be carcinogenic or mutagenic to humans or carcinogenic to animals. Aluminum and aluminum compounds have low acute toxicity potential and may cause CNS, liver, kidney and cardiovascular effects in animals. Developmental toxicity was seen in animals following intraperitoneal injection. Mutagenicity studies in animals gave mixed results.

SECTION 12. Ecological Information

Basis for Assessment	:	Ecotoxicological data have not been determined specifically for this material. The information given below is based on a knowledge of the components and the ecotoxicology of similar products.

12.1 Toxicity

Product

Toxicity to fish	:	No information available.

12.2 Persistence and degradability

Product

Methods for the determination of biodegradability are not applicable to inorganic substances/ mixtures.

12.3 Bioaccumulative Potential

Product

Ko/w: not applicable to inorganic substances/mixtures

12.4 Mobility in soil

Product

Mobility:	:	Sinks in water. If product enters soil, one or more constituents will be mobile and may contaminate groundwater.

12.5 Result of the PBT and vPvB assessment

Product

Assessment	:	In accordance to Annex XIII of regulation (EC) 1907/2006 a PBT/vPvB assessment shall not be conducted for inorganic substances.

12.6 Other Adverse Effects

Product

Additional ecological information	:	Discharge into the environment must be avoided due to the potential dangerousness for drinking water supplies.

SECTION 13. Disposal Considerations

13.1 Waste Treatment Methods

Product disposal:	Recover or recycle, if possible. Otherwise: Send to an approved contractor for regeneration or metal recovery or dispose with a licensed disposal contractor.
Waste disposal:	It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. Do not dispose into the environment, in drains or in water courses Waste product should not be allowed to contaminate soil or water.
Container disposal:	Empty containers may contain residues. Ensure container is properly cleaned. Remove all packaging for recovery or waste disposal. DO NOT USE CONTAINER FOR OTHER PURPOSES.
Regulatory Controls:	Comply with applicable regional, national, and local laws and regulations about the handling and disposal of wastes.

Regulatory Information - Product

Authority	2001/118/EC: Commission Decision of 16 January 2001 amending Decision 2000/532/EC as regards the list of wastes
Product Waste Description:	06 03 wastes from MFSU of salts and their solutions and metallic oxides 06 03 16 Metallic oxides other than those mentioned in 06 03 15

Regulatory Information - Used Material

Authority	2001/118/EC: Commission Decision of 16 January 2001 amending Decision 2000/532/EC as regards the list of wastes
Product Waste Description:	16 08 spent catalysts

14. TRANSPORT INFORMATION

ADR/RID

14.1	UN Number	Not regulated as a dangerous good
14.2	Proper Shipping Name	Not regulated as a dangerous good
	Hazard symbol	Not regulated as a dangerous good
	Kemler Number	Not regulated as a dangerous good
14.3	Transport Hazard Class	Not regulated as a dangerous good
14.4	Packing Group	Not regulated as a dangerous good
	Tunnel Restriction Code	Not regulated as a dangerous good
14.5	Environmental Hazards	None
14.6	Special Precautions for Users	Refer to Section 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.

IMDG

14.1	UN Number	Not regulated as a dangerous good
14.2	Proper Shipping Name	Not regulated as a dangerous good
	Hazard symbol	Not regulated as a dangerous good
14.3	Transport Hazard Class	Not regulated as a dangerous good
14.4	Packing Group	Not regulated as a dangerous good
14.5	Environmental Hazards	None
14.6	Special Precautions for Users	Refer to Section 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.
14.7	Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable

ICAO/IATA

14.1	UN Number	Not regulated as a dangerous good
14.2	Proper Shipping Name	Not regulated as a dangerous good
	Hazard symbol	Not regulated as a dangerous good
14.3	Transport Hazard Class	Not regulated as a dangerous good
14.4	Packing Group	Not regulated as a dangerous good
14.5	Environmental Hazards	None
14.6	Special Precautions for Users	Refer to Section 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.

SECTION 15. Regulatory Information

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

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

National Inventories

National Authority	Country	Status
EINECS/ELINCS	EC	Listed
TSCA	USA	Listed
MITI	Japan	Listed
DSL/NDSL	Canada	Listed
TCCL	Korea	Listed
AICS	Australia	Listed
PICCS	Philippines	Listed

15.2 Chemical Safety Assessment

No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

SEVESO

Product is not subject to SEVESO III

Occupational restrictions

Pay attention to 94/33 EC (Protection of young people at work) and 92/85/EEC (Safety and health at work of pregnant workers)

SECTION 16. Other Information

Indication of changes
Amendments from the previous version of the MSDS are indicated by two vertical bars in the left margin and the section is highlighted.

Abbreviations and Acronyms

ACGIH = American Conference of Governmental Industrial Hygienists
ADR = European Agreement concerning the International Carriage of Dangerous Goods by Road
AICS = Australian Inventory of Chemical Substances
BEL = Biological exposure limits
CAS = Chemical Abstracts Service
CEFIC = European Chemical Industry Council
CLP = Classification Packaging and Labelling
DMEL = Derived Minimal Effect Level
DNEL = Derived No Effect Level
DSL = Canada Domestic Substance List
EC = European Commission
EC50 = Effective Concentration fifty
ECETOC = European Center on Ecotoxicology and Toxicology Of

Chemicals
ECHA = European Chemicals Agency
EINECS = The European Inventory of Existing Commercial Chemical Substances
EL50 = Effective Loading fifty
ENCS = Japanese Existing and New Chemical Substances Inventory
EWC = European Waste Code
GHS = Globally Harmonised System of Classification and Labelling of Chemicals
IARC = International Agency for Research on Cancer
IATA = International Air Transport Association
IC50 = Inhibitory Concentration fifty
IL50 = Inhibitory Level fifty
IMDG = International Maritime Dangerous Goods
INV = Chinese Chemicals Inventory
KECI = Korea Existing Chemicals Inventory
LC50 = Lethal Concentration fifty
LD50 = Lethal Dose fifty per cent.
LL/EL/IL = Lethal Loading/Effective Loading/Inhibitory loading
LL50 = Lethal Loading fifty
MARPOL = International Convention for the Prevention of Pollution From Ships
NOEC/NOEL = No Observed Effect Concentration / No Observed Effect Level
OE_HPV = Occupational Exposure - High Production Volume
PBT = Persistent, Bioaccumulative and Toxic
PICCS = Philippine Inventory of Chemicals and Chemical Substances
PNEC = Predicted No Effect Concentration
REACH = Registration Evaluation And Authorisation Of Chemicals
RID = Regulations Relating to International Carriage of Dangerous Goods by Rail
SKIN_DES = Skin Designation
STEL = Short term exposure limit
TRA = Targeted Risk Assessment
TSCA = US Toxic Substances Control Act
TWA = Time-Weighted Average
vPvB = very Persistent and very Bioaccumulative
MFSU = Manufacture, Formulation, Supply & Use
Kow = Partition coefficient (n-octanol/water)

Key literature references and sources for data

The quoted data are from, but not limited to, one or more sources of information (e.g. toxicological data from Shell Health Services, material suppliers' data, UN Purple book, Ariel, EU IUCLID date base, EC 1272 regulation, etc)

Regulation (EC) No 1272/2008 (CLP)
Not classified as hazardous under EU CLP criteria (EC 1272/2008)., ,

Full text of H-Statements

Full text of other abbreviations

Skin Irrit.	Skin corrosion/irritation

Revision Date 09/28/2015

Country/Language Great Britain - British English

Training advice
The information in this document should be made available to all who may handle the product. Provide adequate information, instruction and training for operators.

Disclaimer:
This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not, therefore, be construed as guaranteeing any specific property of the product.