

1. Identification

Product identifier Code 160

Other means of identification
SDS number 4284

Recommended use Electrode joint chemical locking system.

Recommended restrictions Workers (and your customers or users in the case of resale) should be informed of the potential presence of respirable dust and respirable crystalline silica as well as their potential hazards. Appropriate training in the proper use and handling of this material should be provided as required under applicable regulations.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer/Supplier GrafTech International Holdings Inc. or affiliate
 982 Keynote Circle
 Brooklyn Heights, Ohio 44131
 +1 216-676-2000

Contact person Product Responsibility Manager +1-216-676-2304

E-mail sds@graftech.com

Emergency telephone number For Chemical Emergency ONLY, call:
 1-866-519-4752, +1-760-476-3962
 Access Code: 334799

2. Hazard(s) identification

Physical hazards Not classified.

Health hazards

Serious eye damage/eye irritation	Category 1
Sensitization, skin	Category 1
Germ cell mutagenicity	Category 1B
Carcinogenicity	Category 1A
Reproductive toxicity	Category 1B

OSHA defined hazards Not classified.

Label elements



Signal word Danger

Hazard statement May cause an allergic skin reaction. Causes serious eye damage. May cause genetic defects. May cause cancer. May damage fertility or the unborn child.

Precautionary statement

Prevention	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid breathing dust. Contaminated work clothing must not be allowed out of the workplace. Wear protective gloves/protective clothing/eye protection/face protection.
Response	If on skin: Wash with plenty of water. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse.
Storage	Store locked up.
Disposal	Dispose of waste and residues in accordance with local authority requirements.

Hazard(s) not otherwise classified (HNOC) None known.

Supplemental information None.

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
Coal tar pitch, high temperature	65996-93-2	66
Coke, Coal (Metallurgical Coke)	65996-77-2	26
Oxalic acid	144-62-7	8
Benzo(a)pyrene (Constituent of coal tar pitch)	50-32-8	0.81 - 0.94
Quartz	14808-60-7	< 1.05
Dibenz(a,h)anthracene (Constituent of coal tar pitch)	53-70-3	0.16 - 0.18

Composition comments All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

Inhalation Move to fresh air. Call a physician if symptoms develop or persist.

Skin contact Remove contaminated clothing immediately and wash skin with soap and water. In case of eczema or other skin disorders: Seek medical attention and take along these instructions.

Eye contact Do not rub eyes. Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

Ingestion Rinse mouth. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Dusts may irritate the respiratory tract, skin and eyes. May cause an allergic skin reaction. Dermatitis. Rash.

Indication of immediate medical attention and special treatment needed Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.

General information IF exposed or concerned: Get medical advice/attention. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before reuse.

5. Fire-fighting measures

Suitable extinguishing media Foam. Dry powder. Carbon dioxide (CO₂).

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire fighting equipment/instructions Move containers from fire area if you can do so without risk.

Specific methods Use standard firefighting procedures and consider the hazards of other involved materials.

General fire hazards No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Avoid inhalation of dust. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up

Minimize dust generation and accumulation. Avoid the generation of dusts during clean-up. Collect dust using a vacuum cleaner equipped with HEPA filter. The product is immiscible with water and will spread on the water surface. Stop the flow of material, if this is without risk.

Large Spills: Wet down with water and dike for later disposal. Absorb in vermiculite, dry sand or earth and place into containers. Shovel the material into waste container. Following product recovery, flush area with water.

Small Spills: Sweep up or vacuum up spillage and collect in suitable container for disposal. Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. Put material in suitable, covered, labeled containers. For waste disposal, see section 13 of the SDS.

Environmental precautions

Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage**Precautions for safe handling**

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Minimize dust generation and accumulation. Provide appropriate exhaust ventilation at places where dust is formed. Do not breathe dust. Do not get this material in contact with eyes. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Pregnant or breastfeeding women must not handle this product. Should be handled in closed systems, if possible. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Store locked up. Store in original tightly closed container. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection**Occupational exposure limits****US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)**

Components	Type	Value
Quartz (CAS 14808-60-7)	TWA	0.05 mg/m ³

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Coal tar pitch, high temperature (CAS 65996-93-2)	PEL	0.2 mg/m ³
Oxalic acid (CAS 144-62-7)	PEL	1 mg/m ³

US. OSHA Table Z-3 (29 CFR 1910.1000)

Components	Type	Value	Form
Quartz (CAS 14808-60-7)	TWA	0.1 mg/m ³ 2.4 mppcf	Respirable. Respirable.

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Coal tar pitch, high temperature (CAS 65996-93-2)	TWA	0.2 mg/m ³	Aerosol.
Oxalic acid (CAS 144-62-7)	STEL	2 mg/m ³	
	TWA	1 mg/m ³	
Quartz (CAS 14808-60-7)	TWA	0.025 mg/m ³	Respirable fraction.

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
Coal tar pitch, high temperature (CAS 65996-93-2)	TWA	0.1 mg/m ³	Cyclohexane-extractable fraction.
Oxalic acid (CAS 144-62-7)	STEL	2 mg/m ³	
	TWA	1 mg/m ³	
Quartz (CAS 14808-60-7)	TWA	0.05 mg/m ³	Respirable dust.

Biological limit values

ACGIH Biological Exposure Indices

Components	Value	Determinant	Specimen	Sampling Time
Benzo(a)pyrene (Constituent of coal tar pitch) (CAS 50-32-8)	2.5 µg/l	1-Hydroxypyrene, with hydrolysis (1-HP)	Urine	*
Dibenz(a,h)anthracene (Constituent of coal tar pitch) (CAS 53-70-3)	2.5 µg/l	1-Hydroxypyrene, with hydrolysis (1-HP)	Urine	*

* - For sampling details, please see the source document.

Exposure guidelines

Occupational exposure to nuisance dust (total and respirable) and respirable crystalline silica should be monitored and controlled.

Appropriate engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. If engineering measures are not sufficient to maintain concentrations of dust particulates below the Occupational Exposure Limit (OEL), suitable respiratory protection must be worn. If material is ground, cut, or used in any operation which may generate dusts, use appropriate local exhaust ventilation to keep exposures below the recommended exposure limits. Provide eyewash station.

Individual protection measures, such as personal protective equipment

Eye/face protection

Chemical respirator with organic vapor cartridge, full facepiece, dust and mist filter.

Skin protection

Hand protection

Wear appropriate chemical resistant gloves.

Skin protection

Other

Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.

Respiratory protection

Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits. Chemical respirator with organic vapor cartridge, full facepiece, dust and mist filter.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

Observe any medical surveillance requirements. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Contaminated work clothing should not be allowed out of the workplace.

9. Physical and chemical properties

Appearance

Black solid.

Physical state

Solid.

Form

Powder.

Color

Black.

Odor

Odorless.

Odor threshold

Not applicable.

pH

Not applicable.

Melting point/freezing point

Not applicable.

Initial boiling point and boiling range

Not applicable.

Flash point

Not applicable.

Evaporation rate

Not applicable.

Flammability (solid, gas)

Not available.

Upper/lower flammability or explosive limits

Flammability limit - lower (%)

Not applicable.

Flammability limit - upper (%)

Not applicable.

Vapor pressure	Not applicable.
Vapor density	Not applicable.
Relative density	Not applicable.
Solubility(ies)	
Solubility (water)	Insoluble in water.
Partition coefficient (n-octanol/water)	Not applicable.
Auto-ignition temperature	Not applicable.
Decomposition temperature	Not available.
Viscosity	Not applicable.
Other information	
Density	Not applicable.
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
Percent volatile	Not applicable.

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Contact with incompatible materials.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Dust may irritate respiratory system. Prolonged inhalation may be harmful.
Skin contact	Dust or powder may irritate the skin. May cause an allergic skin reaction.
Eye contact	Causes serious eye damage.
Ingestion	Expected to be a low ingestion hazard.

Symptoms related to the physical, chemical and toxicological characteristics	Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Dusts may irritate the respiratory tract, skin and eyes. May cause an allergic skin reaction. Dermatitis. Rash.
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Information on toxicological effects

Acute toxicity

Components	Species	Test Results
Coal tar pitch, high temperature (CAS 65996-93-2)		
<u>Acute</u>		
Dermal		
LD50	Rat	> 5000 mg/kg
Skin corrosion/irritation	Prolonged skin contact may cause temporary irritation.	
Serious eye damage/eye irritation	Causes serious eye damage.	
Respiratory or skin sensitization		
Respiratory sensitization	Not a respiratory sensitizer.	
Skin sensitization	May cause an allergic skin reaction.	
Germ cell mutagenicity	May cause genetic defects.	

Carcinogenicity

In 1997, IARC (the International Agency for Research on Cancer) concluded that crystalline silica inhaled from occupational sources can cause lung cancer in humans. However in making the overall evaluation, IARC noted that "carcinogenicity was not detected in all industrial circumstances studied. Carcinogenicity may be dependent on inherent characteristics of the crystalline silica or on external factors affecting its biological activity or distribution of its polymorphs." (IARC Monographs on the evaluation of the carcinogenic risks of chemicals to humans, Silica, silicates dust and organic fibres, 1997, Vol. 68, IARC, Lyon, France.) In June 2003, SCOEL (the EU Scientific Committee on Occupational Exposure Limits) concluded that the main effect in humans of the inhalation of respirable crystalline silica dust is silicosis. "There is sufficient information to conclude that the relative risk of lung cancer is increased in persons with silicosis (and, apparently, not in employees without silicosis exposed to silica dust in quarries and in the ceramic industry). Therefore, preventing the onset of silicosis will also reduce the cancer risk..." (SCOEL SUM Doc 94-final, June 2003) According to the current state of the art, worker protection against silicosis can be consistently assured by respecting the existing regulatory occupational exposure limits. May cause cancer. Occupational exposure to respirable dust and respirable crystalline silica should be monitored and controlled.

IARC Monographs. Overall Evaluation of Carcinogenicity

Benzo(a)pyrene (Constituent of coal tar pitch) (CAS 50-32-8)	1 Carcinogenic to humans.
Coal tar pitch, high temperature (CAS 65996-93-2)	1 Carcinogenic to humans.
Dibenz(a,h)anthracene (Constituent of coal tar pitch) (CAS 53-70-3)	2A Probably carcinogenic to humans.
Quartz (CAS 14808-60-7)	1 Carcinogenic to humans.

NTP Report on Carcinogens

Benzo(a)pyrene (Constituent of coal tar pitch) (CAS 50-32-8)	Reasonably Anticipated to be a Human Carcinogen.
Coal tar pitch, high temperature (CAS 65996-93-2)	Known To Be Human Carcinogen.
Dibenz(a,h)anthracene (Constituent of coal tar pitch) (CAS 53-70-3)	Reasonably Anticipated to be a Human Carcinogen.
Quartz (CAS 14808-60-7)	Known To Be Human Carcinogen.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Quartz (CAS 14808-60-7)	Cancer
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Reproductive toxicity	Possible reproductive hazard. May damage fertility or the unborn child.
Specific target organ toxicity - single exposure	Not classified.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not an aspiration hazard.
Chronic effects	Prolonged inhalation may be harmful. Prolonged exposure may cause chronic effects.

12. Ecological information

Ecotoxicity Expected to be very toxic to aquatic organisms. May cause long-term adverse effects in the environment.

Persistence and degradability No data is available on the degradability of any ingredients in the mixture.

Bioaccumulative potential

Partition coefficient n-octanol / water (log Kow)

Benzo(a)pyrene (Constituent of coal tar pitch) (CAS 50-32-8)	5.97
Dibenz(a,h)anthracene (Constituent of coal tar pitch) (CAS 53-70-3)	6.5

Mobility in soil The product is insoluble in water.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

UN number UN3077
UN proper shipping name Environmentally hazardous substances, solid, n.o.s. (Benzo(a)pyrene (Constituent of coal tar pitch) RQ = 1 LBS, Dibenz(a,h)anthracene (Constituent of coal tar pitch) RQ = 1 LBS)
Transport hazard class(es)
Class 9
Subsidiary risk -
Label(s) 9
Packing group III
Environmental hazards
Marine pollutant Environmental hazard only
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.
Special provisions 8, 146, 335, A112, B54, IB8, IP3, N20, T1, TP33
Packaging exceptions 155
Packaging non bulk 213
Packaging bulk 240

IATA

UN number UN3077
UN proper shipping name Environmentally hazardous substance, solid, n.o.s. (Benzo(a)pyrene (Constituent of coal tar pitch), Dibenz(a,h)anthracene (Constituent of coal tar pitch))
Transport hazard class(es)
Class 9
Subsidiary risk -
Packing group III
Environmental hazards Yes
ERG Code 9L
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number UN3077
UN proper shipping name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Benzo(a)pyrene (Constituent of coal tar pitch), Dibenz(a,h)anthracene (Constituent of coal tar pitch))
Transport hazard class(es)
Class 9
Subsidiary risk -
Packing group III
Environmental hazards
Marine pollutant Environmental hazard only
EmS F-A, S-F
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Oxalic acid (CAS 144-62-7) 1.0 % One-Time Export Notification only.

CERCLA Hazardous Substance List (40 CFR 302.4)

Benzo(a)pyrene (Constituent of coal tar pitch) (CAS 50-32-8) Listed.

Dibenz(a,h)anthracene (Constituent of coal tar pitch) (CAS 53-70-3) Listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Quartz (CAS 14808-60-7)

Cancer
lung effects
immune system effects
kidney effects**Superfund Amendments and Reauthorization Act of 1986 (SARA)****SARA 302 Extremely hazardous substance**

Not listed.

SARA 311/312 Hazardous chemical Yes**Classified hazard categories** Serious eye damage or eye irritation
Respiratory or skin sensitization
Germ cell mutagenicity
Carcinogenicity
Reproductive toxicity**SARA 313 (TRI reporting)**

Chemical name	CAS number	% by wt.
Benzo(a)pyrene (Constituent of coal tar pitch)	50-32-8	0.81 - 0.94
Dibenz(a,h)anthracene (Constituent of coal tar pitch)	53-70-3	0.16 - 0.18

Other federal regulations**Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List**Benzo(a)pyrene (Constituent of coal tar pitch) (CAS 50-32-8)
Dibenz(a,h)anthracene (Constituent of coal tar pitch) (CAS 53-70-3)**Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)**

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.**US state regulations****US. Massachusetts RTK - Substance List**Benzo(a)pyrene (Constituent of coal tar pitch) (CAS 50-32-8)
Coal tar pitch, high temperature (CAS 65996-93-2)
Dibenz(a,h)anthracene (Constituent of coal tar pitch) (CAS 53-70-3)
Oxalic acid (CAS 144-62-7)
Quartz (CAS 14808-60-7)**US. New Jersey Worker and Community Right-to-Know Act**Benzo(a)pyrene (Constituent of coal tar pitch) (CAS 50-32-8)
Coal tar pitch, high temperature (CAS 65996-93-2)
Dibenz(a,h)anthracene (Constituent of coal tar pitch) (CAS 53-70-3)
Oxalic acid (CAS 144-62-7)
Quartz (CAS 14808-60-7)**US. Pennsylvania Worker and Community Right-to-Know Law**Benzo(a)pyrene (Constituent of coal tar pitch) (CAS 50-32-8)
Coal tar pitch, high temperature (CAS 65996-93-2)
Dibenz(a,h)anthracene (Constituent of coal tar pitch) (CAS 53-70-3)
Oxalic acid (CAS 144-62-7)
Quartz (CAS 14808-60-7)**US. Rhode Island RTK**Benzo(a)pyrene (Constituent of coal tar pitch) (CAS 50-32-8)
Dibenz(a,h)anthracene (Constituent of coal tar pitch) (CAS 53-70-3)
Oxalic acid (CAS 144-62-7)
Quartz (CAS 14808-60-7)**California Proposition 65****WARNING:** This product can expose you to chemicals including Dibenz(a,h)anthracene (Constituent of coal tar pitch), which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.**California Proposition 65 - CRT: Listed date/Carcinogenic substance**

Benzo(a)pyrene (Constituent of coal tar pitch) (CAS 50-32-8) Listed: July 1, 1987

Dibenz(a,h)anthracene (Constituent of coal tar pitch) Listed: January 1, 1988
(CAS 53-70-3)

Quartz (CAS 14808-60-7) Listed: October 1, 1988

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

Benzo(a)pyrene (Constituent of coal tar pitch) (CAS 50-32-8)

Coal tar pitch, high temperature (CAS 65996-93-2)

Dibenz(a,h)anthracene (Constituent of coal tar pitch) (CAS 53-70-3)

Quartz (CAS 14808-60-7)

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	No
Canada	Domestic Substances List (DSL)	No
Canada	Non-Domestic Substances List (NDSL)	Yes
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	No
New Zealand	New Zealand Inventory	No
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	No
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 18-December-2017

Revision date -

Version # 01

NFPA ratings



Disclaimer

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This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.