REFINED TAR

Safety Data Sheet

According To Federal Register / Vol. 89, No. 98 / Monday, March 20, 2024 / Rules and Regulations and the OSHA Hazard Communication Standard 29 CFR 1910.1200

Date of Issue: 05/18/2026 **Version:** 5.0

SECTION 1: IDENTIFICATION

1.1. Product Identifier

Product Form: Substance

Product Name: Refined Tar

Chemical Name: Coal Tar

CAS-No.: 8007-45-2

Synonyms: Modified RT-12, RT-9, RT-12, RT-240

1.2. Intended Use of the Product

Use of the Substance/Mixture: Driveways, roadways, roofing, manufacturing

1.3. Name, Address, and Telephone of the Responsible Party

Company

Lone Star Specialty Products, LLC
6412 U.S. Highway 259 South
Lone Star, TX 75668 USA
Phone #: 903-656-2536
Fax #: 903-656-2151
www.lonestarspecialties.net

1.4. Emergency Telephone Number

Emergency Number: 800-424-9300 (CHEMTREC)

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the Substance or Mixture

Skin Sens. 1B	H317
Muta. 1B	H340
Carc. 1A	H350
Repr. 1B	H360
STOT RE 1	H372
Aquatic Acute 1	H400
Aquatic Chronic 1	H410

Full text of hazard classes and H-statements: see section 16

2.2. Label Elements GHS-US Labeling

Signal Word (GHS-US): Danger

Hazard Pictograms (GHS-US):

GHS07 GHS08 GHS09

Hazard Statements (GHS-US)

H317 - May cause an allergic skin reaction.
H340 - May cause genetic defects.
H350 - May cause cancer.
H360 - May damage fertility or the unborn child.
H372 - Causes damage to organs through prolonged or repeated exposure.
H400 - Very toxic to aquatic life.
H410 - Very toxic to aquatic life with long lasting effects.

Precautionary Statements (GHS-US):

P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
P260 - Do not breathe vapors, mist, or spray.
P264 - Wash hands, forearms, and other exposed areas thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.
P272 - Contaminated work clothing must not be allowed out of the workplace.
P273 - Avoid release to the environment.
P280 - Wear protective gloves, protective clothing, and eye protection.
P302+P352 - If on skin: Wash with plenty of water.
P308+P313 - If exposed or concerned: Get medical advice/attention.
P321 - Specific treatment (see section 4 on this SDS).
P333+P313 - If skin irritation or rash occurs: Get medical advice/attention
P314 - Get medical advice/attention if you feel unwell.
P363 - Wash contaminated clothing before reuse.
P391 - Collect spillage.
P405 - Store locked up.
P501 - Dispose of contents/container in accordance with local, regional, national, and international regulations.

2.3. Other Hazards

Exposure may aggravate pre-existing eye, skin, or respiratory conditions.

2.4. Unknown Acute Toxicity (GHS-US)

No data available

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substance

Name: Coal Tar

CAS-No.: 8007-45-2

Name	Synonyms	Product Identifier	%	GHS US classification
Coal Tar	Coal tar creosote / Coal Tar extracts / Oils, coal tar light / Tar/ Tar, coal / Creosote	(CAS-No.) 8007-45-2	100	Skin Sens. 1B, H317 Muta. 1B, H340 Carc. 1A, H350 Repr. 1B, H360 STOT RE 1, H372 Aquatic Acute 1, H400 Aquatic Chronic 1, H410

Coal tar petroleum is a UVCB substance and may contain the following substances in appreciable amounts.

Name	Synonyms	Product Identifier	%	GHS US classification
Naphthalene	Naphthalene, molten / Naphthalene, crude / Naphthalene / Moth balls	(CAS-No.) 91-20-3	< 20	Flam. Sol. 2, H228 Acute Tox. 4 (Oral), H302 Carc. 2, H351 Aquatic Acute 1, H400 Aquatic Chronic 1, H410 Comb. Dust
Anthracene	Paranaphthalene / Green oil	(CAS-No.) 120-12-7	< 2.5	Acute Tox. 4 (Dermal), H312 Skin Irrit. 2, H315 Eye Irrit. 2A, H319 STOT SE 3, H335 Aquatic Acute 1, H400 Aquatic Chronic 1, H410 Comb. Dust

Benzene	Cyclohexatriene / Benzol	(CAS-No.) 71-43-2	< 2	Flam. Liq. 2, H225 Acute Tox. 4 (Oral), H302 Skin Irrit. 2, H315 Eye Irrit. 2A, H319 Muta. 1B, H340 Carc. 1A, H350 STOT SE 3, H336 STOT SE 3, H335 STOT RE 1, H372 Asp. Tox. 1, H304 Aquatic Acute 2, H401 Aquatic Chronic 3, H412
Benzo(a)pyrene	Benzo[a]pyrene / 3,4-Benz(a)pyrene / Benz(a)pyrene / Benzo[def]chrysene / 3,4-Benzopyrene / 6,7-Benzopyrene / Benzopyrene / BaP / Benz[a]pyrene / 3,4-Benzo(a)pyrene / 3,4-Benzpyrene	(CAS-No.) 50-32-8	< 2	Skin Sens. 1B, H317 Muta. 1B, H340 Carc. 1B, H350 Repr. 2, H361 Asp. Tox. 1, H304 Aquatic Acute 3, H402 Aquatic Chronic 3, H412

Full text of H-phrases: see section 16

3.2. Mixture

Not applicable

SECTION 4: FIRST AID MEASURES

4.1. Description of First-aid Measures

First-aid Measures General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

First-aid Measures After Inhalation: When symptoms occur: go into open air and ventilate suspected area. Obtain medical attention if breathing difficulty persists.

First-aid Measures After Skin Contact: Remove contaminated clothing. Drench affected area with water for at least 15 minutes. If exposed or concerned: Get medical advice/attention. Obtain medical attention if irritation/rash develops or persists.

First-aid Measures After Eye Contact: Remove contact lenses, if present and easy to do. Continue rinsing. Rinse cautiously with water for at least 15 minutes. Obtain medical attention.

First-aid Measures After Ingestion: Rinse mouth. Do NOT induce vomiting. Obtain medical attention.

4.2. Most Important Symptoms and Effects Both Acute and Delayed

Symptoms/Injuries: May cause cancer. Causes damage to organs through prolonged or repeated exposure. Skin sensitization. May cause genetic defects. May damage fertility. May damage the unborn child. Contact with hot liquid may cause thermal burns.

Symptoms/Injuries After Inhalation: Prolonged exposure may cause irritation.

Symptoms/Injuries After Skin Contact: May cause an allergic skin reaction.

Symptoms/Injuries After Eye Contact: May cause slight irritation to eyes.

Symptoms/Injuries After Ingestion: Ingestion may cause adverse effects.

Chronic Symptoms: May cause cancer. May cause genetic defects. May damage fertility or the unborn child. Causes damage to organs (blood, thyroid gland, liver) through prolonged or repeated exposure.

4.3. Indication of Any Immediate Medical Attention and Special Treatment Needed

If exposed or concerned, get medical advice and attention. If medical advice is needed, have product container or label at hand.

SECTION 5: FIRE-FIGHTING MEASURES

5.1. Extinguishing Media

Suitable Extinguishing Media: Water spray, fog, carbon dioxide (CO_2), alcohol-resistant foam, or dry chemical.
Unsuitable Extinguishing Media: Do not use a heavy water stream. Use of heavy streams of water may spread fire.

5.2. Special Hazards Arising From the Substance or Mixture

Fire Hazard: NOT CLASSIFIED AS FLAMMABLE LIQUID under GHS. Flash point 218°C (424°F) is well above the 93°C threshold for flammable liquid classification. However, this material WILL BURN when heated to temperatures approaching or exceeding flash point, or when exposed to fire conditions.

IMPORTANT CLASSIFICATION NOTE: While not classified as "flammable liquid" under GHS due to high flash point (>93°C), this coal tar material presents fire hazards under certain conditions:

1. **At Elevated Temperatures:** When heated above flash point (218°C/424°F) during processing, storage, or fire conditions, vapors can ignite if exposed to ignition sources.

2. **Volatile Component Hazard:** Contains volatile aromatic components including: - Naphthalene (<20%): Flam. Sol. 2 when pure, volatile at elevated temperatures - Benzene (<2%): Flam. Liq. 2 when pure, highly volatile and flammable - Other light aromatics that vaporize when heated.

These components may release flammable vapors when product is heated, particularly in confined spaces or during hot application (driveways, roadways, roofing).

3. **Processing Conditions:** When applied hot for paving/roofing applications (typically 150-200°C), product approaches flash point and may release flammable vapors. Adequate ventilation and ignition source control are essential during hot application.

Fire Behavior: Material will readily burn in fire conditions. When heated above flash point, vapors form flammable mixtures with air. Containers may rupture violently when heated, releasing burning material.

Explosion Hazard: Not classified as explosive. However, vapors from volatile components (especially benzene) can form explosive mixtures with air in confined spaces when product is heated. Containers may explode when heated in fire.

Reactivity: Hazardous reactions will not occur under normal conditions.

5.3. Advice for Firefighters

Precautionary Measures Fire: Exercise caution when fighting any chemical fire. Move containers from fire area if safe to do so. Keep containers cool with water spray.

Firefighting Instructions: Use water spray or fog for cooling exposed containers. Approach fire from upwind. Dike run-off water to prevent environmental contamination.

Protection During Firefighting: Do not enter fire area without proper protective equipment, including self-contained breathing apparatus (SCBA) and full protective clothing.

Hazardous Combustion Products:

- Carbon monoxide (CO) and carbon dioxide (CO_2)
- Nitrogen oxides (NO_x)
- Sulfur dioxide (SO_2)
- Dense black smoke
- Polycyclic-aromatic hydrocarbons (PAHs) including CARCINOGENIC compounds:

  - Benzo(a)pyrene (IARC Group 1 - Known Human Carcinogen)
  - Naphthalene (IARC Group 2B - Possibly Carcinogenic to Humans)
  - Multiple other PAH carcinogens
- Benzene vapors (IARC Group 1 - Known Human Carcinogen)
- Irritating and toxic aromatic vapors

CRITICAL HEALTH WARNING: Combustion products include KNOWN HUMAN CARCINOGENS. Minimize exposure duration. Decontaminate thoroughly after fire. Monitor for symptoms of exposure to carcinogenic compounds.

Other Information: Do not allow run-off from firefighting to enter drains or water courses. Contaminated fire water must be contained and disposed of properly. Contains multiple IARC-listed carcinogens - exposure to combustion products is extremely hazardous.

EMERGENCY RESPONDER NOTE: While not GHS-classified as "flammable liquid" due to high flash point (218°C), this material:
- WILL burn readily when heated or in fire conditions
- Releases flammable vapors (especially benzene) when heated during hot application
- Generates HIGHLY TOXIC and CARCINOGENIC combustion products
- May be shipped/handled at elevated temperatures approaching flash point
- Treat as combustible coal tar with significant vapor hazard when heated

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Do not breathe vapor, mist or spray. Do not get in eyes, on skin, or on clothing. Do not handle until all safety precautions have been read and understood.

6.1.1. For Non-Emergency Personnel

Protective Equipment: Use appropriate personal protective equipment (PPE).
Emergency Procedures: Evacuate unnecessary personnel.

6.1.2. For Emergency Personnel

Protective Equipment: Equip cleanup crew with proper protection.
Emergency Procedures: Upon arrival at the scene, a first responder is expected to recognize the presence of dangerous goods, protect oneself and the public, secure the area, and call for the assistance of trained personnel as soon as conditions permit. Ventilate area.

6.2. Environmental Precautions

Prevent entry to sewers and public waters. Avoid release to the environment. Collect spillage.

6.3. Methods and Materials for Containment and Cleaning Up

For Containment: Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.
Methods for Cleaning Up: Clean up spills immediately and dispose of waste safely. Transfer spilled material to a suitable container for disposal. Contact competent authorities after a spill.

6.4. Reference to Other Sections

See Section 8 for exposure controls and personal protection and Section 13 for disposal considerations.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for Safe Handling

Additional Hazards When Processed: HOT APPLICATION HAZARD: This product is typically applied HOT for driveways, roadways, and roofing applications, often at temperatures of 150-200°C (300-390°F). At these elevated temperatures:
- Product approaches flash point (218°C/424°F)
- Releases flammable vapors including benzene (Flam. Liq. 2, Carc. 1A)
- Releases naphthalene vapors (Flam. Sol. 2, Carc. 2)
- Creates significant inhalation hazard from carcinogenic PAH vapors
- Risk of ignition if vapors contact ignition sources
- Thermal burn hazard from hot material

CRITICAL HOT APPLICATION PRECAUTIONS:
- Eliminate all ignition sources in application area (no smoking, no open flames)
- Ensure EXCELLENT ventilation during hot application
- Use explosion-proof equipment
- Monitor for flammable vapor buildup in confined spaces
- Wear appropriate thermal protective clothing
- Use respiratory protection approved for organic vapors and PAHs
- Keep product temperature BELOW flash point (218°C)
- Never heat in closed containers (pressure buildup risk)
- Ground and bond equipment when transferring heated material

Flammable vapors can accumulate in head space of closed systems and in confined application areas.

Precautions for Safe Handling: Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe vapors, mist, or spray. Do not get in eyes, on skin, or on clothing. Avoid contact with skin, eyes and clothing.

Hygiene Measures: CARCINOGEN - CRITICAL HYGIENE: This material contains multiple IARC-listed carcinogens including benzo(a)pyrene (IARC 1), benzene (IARC 1), and naphthalene (IARC 2B).
- Avoid ALL skin contact - use impervious gloves
- Wash hands and exposed areas thoroughly after handling
- Remove contaminated clothing immediately
- Shower after work shift
- Do not eat, drink, or smoke in work areas
- Launder contaminated clothing separately
- Never take contaminated clothing home

Handle in accordance with good industrial hygiene and safety procedures.

7.2. Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures: Comply with applicable regulations. When storing at elevated temperatures for hot application:
- Keep well below flash point (218°C/424°F)
- Provide adequate ventilation to prevent vapor accumulation
- Use temperature monitoring and controls
- Store away from ignition sources
- Use explosion-proof electrical equipment if vapors may be present

Storage Conditions: Keep container closed when not in use. Store in a dry, cool place away from heat and ignition sources. Keep/store away from direct sunlight, extremely high or low temperatures and incompatible materials. Store locked up in a secure area.

CAUTION FOR HOT STORAGE: If stored at elevated temperatures for application:
- Monitor temperature continuously
- Keep temperature at least 10-20°C below flash point
- Ensure ventilation prevents vapor buildup
- Post "NO SMOKING" and "HOT MATERIAL" warnings
- Train personnel on hot material hazards

Incompatible Materials: Strong oxidizers.

Storage Temperature: Store below 150°C (300°F) when practical. If heated for application, keep below 200°C (390°F) - well below flash point of 218°C (424°F).

7.3. Specific End Use(s)
Driveways, roadways, roofing, manufacturing

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control Parameters
For substances listed in section 3 that are not listed here, there are no established exposure limits from the manufacturer, supplier, importer, or the appropriate advisory agency including: ACGIH (TLV), AIHA (WEEL), NIOSH (REL), or OSHA (PEL).

Naphthalene (91-20-3)		
USA ACGIH	ACGIH TWA (ppm)	10 ppm
USA ACGIH	ACGIH chemical category	Skin - potential significant contribution to overall exposure by the cutaneous route, Confirmed Animal Carcinogen with Unknown Relevance to Humans
USA ACGIH	Biological Exposure Indices (BEI)	Parameter: 1-Naphthol with hydrolysis plus 2-Naphthol with hydrolysis - Sampling time: end of shift (nonquantitative, nonspecific)
USA NIOSH	NIOSH REL (TWA) (mg/m³)	50 mg/m³
USA NIOSH	NIOSH REL (TWA) (ppm)	10 ppm
USA NIOSH	NIOSH REL (STEL) (mg/m³)	75 mg/m³
USA NIOSH	NIOSH REL (STEL) (ppm)	15 ppm
USA IDLH	US IDLH (ppm)	250 ppm
USA OSHA	OSHA PEL (TWA) (mg/m³)	50 mg/m³
USA OSHA	OSHA PEL (TWA) (ppm)	10 ppm

Anthracene (120-12-7)		
USA OSHA	OSHA PEL (TWA) (mg/m³)	0.2 mg/m³ (Coal tar pitch volatiles)
USA NIOSH	NIOSH (TWA)	0.1 mg/m³ (Coal tar pitch volatiles)

Benzo(a)pyrene (50-32-8)		
USA ACGIH	ACGIH chemical category	Suspected Human Carcinogen

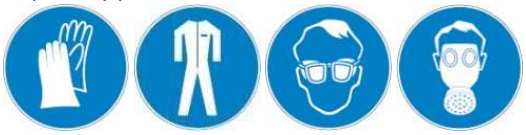
USA ACGIH	Biological Exposure Indices (BEI)	2.5 µg/l Parameter: 1-Hydroxypyrene with hydrolysis - Medium: urine - Sampling time: end of shift at end of workweek (background) Parameter: 3-Hydroxybenzo(a)pyrene with hydrolysis - Medium: urine - Sampling time: end of shift at end of workweek (nonquantitative)
USA OSHA	OSHA PEL (TWA) (mg/m³)	0.2 mg/m³ (Coal tar pitch volatiles)
USA NIOSH	NIOSH REL (TWA) (mg/m³)	0.1 mg/m³ (Coal tar pitch volatiles)

Benzene (71-43-2)		
USA ACGIH	ACGIH TWA (ppm)	0.02 ppm
USA ACGIH	ACGIH STEL (ppm)	STEL eliminated as of January 2024
USA ACGIH	ACGIH chemical category	Skin - potential significant contribution to overall exposure by the cutaneous route,Confirmed Human Carcinogen
USA ACGIH	Biological Exposure Indices (BEI)	25 µg/g Kreatinin Parameter: S-Phenylmercapturic acid - Medium: urine - Sampling time: end of shift (background) 500 µg/g Kreatinin Parameter: t,t-Muconic acid - Medium: urine - Sampling time: end of shift (background)
USA NIOSH	NIOSH REL (TWA) (ppm)	0.1 ppm
USA NIOSH	NIOSH REL (STEL) (ppm)	1 ppm
USA IDLH	US IDLH (ppm)	500 ppm
USA OSHA	OSHA PEL (TWA) (ppm)	10 ppm 1 ppm
USA OSHA	OSHA PEL (STEL) (ppm)	5 ppm (see 29 CFR 1910.1028)
USA OSHA	OSHA PEL (Ceiling) (ppm)	25 ppm
USA OSHA	Acceptable Maximum Peak Above The Acceptable Ceiling Concentration For An 8Hr Shift	50 ppm Peak (10 minutes)

8.2. Exposure Controls

Appropriate Engineering Controls: Suitable eye/body wash equipment should be available in the vicinity of any potential exposure. Ensure adequate ventilation, especially in confined areas. Ensure all national/local regulations are observed. Gas detectors should be used when flammable gases or vapors may be released.

Personal Protective Equipment: Gloves. Protective clothing. Protective goggles. Insufficient ventilation: wear respiratory protection.



Materials for Protective Clothing: Chemically resistant materials and fabrics.

Hand Protection: Wear protective gloves.

Eye and Face Protection: Chemical safety goggles.

Skin and Body Protection:	Wear suitable protective clothing.
Respiratory Protection:	If exposure limits are exceeded or irritation is experienced, approved respiratory protection should be worn. In case of inadequate ventilation, oxygen deficient atmosphere, or where exposure levels are not known wear approved respiratory protection.
Thermal Hazard Protection:	When working with hot material, use suitable thermally protective clothing.
Other Information:	When using, do not eat, drink or smoke.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on Basic Physical and Chemical Properties

Physical State:	Liquid (may be semi-solid at ambient temp, liquid when heated)
Appearance:	Dark brown to black; 2.5Y2/2 to 2.5Y4/2 on the Munsell color scheme
Odor:	Sharp, aromatic, coal tar-like odor
Odor Threshold:	No data available
pH:	7 - 8
Melting Point/Freezing Point:	No data available
Initial Boiling Point and Boiling Range:	310°C - 460°C
Flash Point:	218 °C (424 °F) (open cup)
Evaporation Rate:	<1
Flammability (solid, gas):	Not applicable
Upper/Lower Explosive Limits:	No data available
Vapor Pressure:	0.158 psi @ 20°C (68°F)
Vapor Density:	>1
Relative Density @ 20°C:	1.1 – 1.3 g/cm^3 (ASTM D4052)
Density:	1.15 g/cm^3 @ 20°C
Solubility(ies):	Water: 313 µg/mL; Organic Solvents: Solube
Partition Coefficient: N-Octanol/Water:	3.247 (Log Kow, overall mixture)
Auto-ignition Temperature:	> 560 °C (1040 °F)

Decomposition Temperature:	No data available
Viscosity:	133 mm²/s @ 20 °C (68 °F) (DIN 53019)
Explosive Properties:	Not explosive
Oxidizing Properties:	Not oxidizing
Chemical Formula:	Complex UVCB mixture of polycyclic aromatic hydrocarbons (PAHs), heterocyclic compounds, and aromatic hydrocarbons from coal carbonization
Particle Characteristics:	Not applicable
Molecular Weight:	≈ 292

9.2. Other Information

VOC Content: Contains volatile organic compounds (VOCs) including naphthalene (<20%), benzene (<2%), and other light aromatic compounds. VOC emissions increase dramatically when material is heated for application (typically 150-200°C for hot application). Adequate ventilation is CRITICAL during heated application.

Application Temperature: Typically applied HOT at 150-200°C (300-390°F) for driveways, roadways, and roofing applications. At these temperatures:
- Product approaches flash point (218°C/424°F)
- Viscosity decreases significantly (easier to apply)
- VOC emissions increase substantially
- Releases flammable vapors (benzene, naphthalene)
- Releases carcinogenic PAH vapors
- Thermal burn hazard increases

UVCB Substance: Coal tar is a UVCB (Unknown or Variable composition, Complex reaction products, or Biological materials) substance. Composition varies depending on:
- Source coal type (bituminous, anthracite, etc.)
- Carbonization temperature and conditions
- Refining/distillation processes applied
- "Refined Tar" (RT-9, RT-12, RT-240 grades) may have undergone additional processing

This variability means properties can vary between batches and manufacturers while still meeting product specifications.

Flash Point Significance: Flash point of 218°C (424°F) means this material is NOT classified as "Flammable Liquid" under GHS (threshold is 93°C). However:
- Material WILL burn when heated above flash point or in fire conditions
- Hot application at 150-200°C is below flash point but releases flammable vapors
- Volatile components (benzene, naphthalene) create vapor hazard when heated
- Emergency responders should treat as combustible coal tar material

Comparison to Related Products:
- **Coal tar pitch:** Higher molecular weight, higher softening point, less volatile
- **Coal tar creosote:** Lower molecular weight, more volatile, lower flash point

- **Refined tar:** Intermediate properties, processed to specific application requirements

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity: Hazardous reactions will not occur under normal conditions.

10.2. Chemical Stability: Stable under recommended handling and storage conditions (see section 7).

10.3. Possibility of Hazardous Reactions: Hazardous polymerization will not occur.

10.4. Conditions to Avoid: Direct sunlight, extremely high or low temperatures, and incompatible materials.

10.5. Incompatible Materials: Strong oxidizers.

10.6. Hazardous Decomposition Products: None expected under normal conditions of use.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on Toxicological Effects

Acute Toxicity (Oral): Not classified

Acute Toxicity (Dermal): Not classified

Acute Toxicity (Inhalation): Not classified

Naphthalene (91-20-3)	
LD50 Oral Rat	490 mg/kg
LC50 Inhalation Rat	> 340 mg/m³ (Exposure time: 1 h)
LD50 Dermal Rat	>2500 mg/kg

Anthracene (120-12-7)	
LD50 Oral Rat	> 17 g/kg
LD50 Dermal Rat	> 1320 mg/kg
ATE (Dermal)	1,100.00 mg/kg body weight

Benzene (71-43-2)	
LD50 Oral Rat	930 mg/kg
LD50 Dermal Rabbit	> 8200 mg/kg
LC50 Inhalation Rat	10,000 ppm/7h

Skin Corrosion/Irritation: Not classified

pH: 7 - 8

Serious Eye Damage/Irritation: Not classified

Respiratory or Skin Sensitization: May cause an allergic skin reaction.

Germ Cell Mutagenicity: May cause genetic defects.

Carcinogenicity: May cause cancer.

Naphthalene (91-20-3)	
IARC group	2B
National Toxicology Program (NTP) Status	Reasonably anticipated to be Human Carcinogen.
OSHA Hazard Communication Carcinogen List	In OSHA Hazard Communication Carcinogen list.

Anthracene (120-12-7)	
IARC group	3

Benzo(a)pyrene (50-32-8)	
IARC group	1
National Toxicology Program (NTP) Status	Reasonably anticipated to be Human Carcinogen.
OSHA Hazard Communication Carcinogen List	In OSHA Hazard Communication Carcinogen list.

Benzene (71-43-2)	
IARC group	1
National Toxicology Program (NTP) Status	Evidence of Carcinogenicity, Known Human Carcinogens.
OSHA Hazard Communication Carcinogen List	In OSHA Hazard Communication Carcinogen list.
OSHA Specifically Regulated Carcinogen List	In OSHA Specifically Regulated Carcinogen list.

Reproductive Toxicity: May damage fertility or the unborn child.
Specific Target Organ Toxicity (Single Exposure): Not classified
Specific Target Organ Toxicity (Repeated Exposure): Causes damage to organs through prolonged or repeated exposure.
Aspiration Hazard: Not classified
Symptoms/Injuries After Inhalation: Prolonged exposure may cause irritation.
Symptoms/Injuries After Skin Contact: May cause an allergic skin reaction.
Symptoms/Injuries After Eye Contact: May cause slight irritation to eyes.
Symptoms/Injuries After Ingestion: Ingestion may cause adverse effects.
Chronic Symptoms: May cause cancer. May cause genetic defects. May damage fertility or the unborn child. Causes damage to organs (blood, thyroid gland, liver) through prolonged or repeated exposure.
Interactive Effects: Refined Tar (Coal Tar) is a complex UVCB substance containing multiple polycyclic aromatic hydrocarbons (PAHs), heterocyclic compounds, and aromatic hydrocarbons that exhibit significant interactive toxicity:

1. Multiple Carcinogenic Pathways (CRITICAL):** This substance contains MULTIPLE KNOWN AND PROBABLE HUMAN CARCINOGENS acting through different mechanisms:

- **IARC Group 1 (Known Human Carcinogens):**
  - Benzo(a)pyrene (<2%): Potent carcinogen, biomarker for PAH exposure
  - Benzene (<2%): Causes leukemia and lymphomas

- **IARC Group 2A (Probably Carcinogenic to Humans):**
  - Coal tar itself: Comprehensive evidence for human carcinogenicity
  - Multiple other PAHs in coal tar

- **IARC Group 2B (Possibly Carcinogenic to Humans):**
  - Naphthalene (<20%): Suspected carcinogen

Synergistic Carcinogenicity: Multiple PAH carcinogens present together show ADDITIVE or SYNERGISTIC carcinogenic effects. The carcinogenic potency of the mixture exceeds what would be predicted from individual components. Combined exposure to multiple PAHs, plus benzene, creates heightened cancer risk through:
- Multiple DNA-damaging pathways
- Overwhelmed detoxification systems
- Enhanced metabolic activation
- Combined effects on tumor suppressor genes

Classification Rationale: Classified as Carc. 1A (H350 - May cause cancer) based on extensive epidemiological evidence of cancer in coal tar-exposed workers, including:
- Skin cancer (squamous cell carcinoma)
- Lung cancer
- Bladder cancer
- Other cancers

2. Enhanced Phototoxicity and Photocarcinogenicity:

Multiple PAHs in coal tar are:
- **Phototoxic:** Cause severe burns and blistering with UV/sunlight exposure
- **Photocarcinogenic:** UV exposure DRAMATICALLY increases skin cancer risk

CRITICAL for Driveway/Roadway/Roofing Applications: Workers applying this material outdoors are at SEVERE risk of:
- Acute phototoxic burns (immediate)
- Long-term photocarcinogenic effects (skin cancer)
- Synergistic effects of PAH skin contact + UV exposure

Skin contamination followed by sun exposure creates conditions for severe skin damage and cancer development. This is well-documented in coal tar workers, roofers, and paving crews.

3. Germ Cell Mutagenicity (Muta. 1B, H340):

Multiple components cause genetic mutations:
- Benzene: Causes chromosomal aberrations, proven mutagen
- Benzo(a)pyrene: DNA-damaging mutagen
- Other mutagenic PAHs

Combined mutagenic effects increase risk of:
- Heritable genetic damage
- Cancer development (mutation is first step in carcinogenesis)

- Reproductive effects

4. **Reproductive Toxicity (Repr. 1B, H360):**

Classified as Repr. 1B based on evidence that coal tar and its components may:
- Damage fertility (both male and female)
- Damage the unborn child (developmental toxicity)

Multiple mechanisms:
- **Benzene:** Known reproductive toxicant
- **PAHs:** Evidence of reproductive/developmental effects
- Combined endocrine disruption
- Developmental toxicity through multiple pathways

5. **Organ Toxicity (STOT RE 1, H372):**

Causes damage (not "may cause" - this is Category 1, definitive) to organs through prolonged or repeated exposure:

Target Organs:
- **Blood (hematopoietic system):** Benzene causes aplastic anemia, leukemia
- **Liver:** PAH hepatotoxicity, benzene liver effects
- **Kidneys:** PAH nephrotoxicity
- **Thyroid gland:** PAH-induced thyroid effects

Multiple toxic components act on the same organs through different mechanisms, creating ADDITIVE organ damage:
- **Benzene:** Primary hematotoxin
- **PAHs:** Hepatotoxins, nephrotoxins, thyroid disruptors
- Combined metabolic burden overwhelms detoxification capacity
- Chronic low-level exposure accumulates organ damage

6. **Skin Sensitization (Skin Sens. 1, H317):**

Multiple sensitizing components:
- Various PAHs are known sensitizers
- Phenolic compounds (if present) are sensitizers
- Heterocyclic compounds contribute to sensitization

Progressive allergic contact dermatitis develops with repeated exposure. Concurrent skin irritation from other components enhances sensitization by:
- Damaging skin barrier
- Increasing allergen penetration
- Promoting immune activation

7. **Volatile Component Hazards During Hot Application:** When heated for hot application (driveways, roadways, roofing), increased volatilization creates enhanced hazards:

- **Benzene (Flam. Liq. 2, Carc. 1A):**
    - Highly volatile
    - Forms flammable vapor-air mixtures
    - Known human carcinogen
    - Inhalation hazard during hot application

- **Naphthalene (Flam. Sol. 2, Carc. 2):**
  - Volatile at elevated temperatures
  - Suspected carcinogen
  - Respiratory irritant
  - Forms combustible dust when solid

Combined volatile emissions during hot application create:
- Fire/explosion hazard (especially in confined spaces)
- Acute inhalation toxicity
- Chronic carcinogenic exposure
- CNS effects (drowsiness, dizziness from benzene)

8. **Concurrent Exposure Interactions:**

Coal tar toxicity enhanced by:
- **UV/Sunlight exposure:** SEVERE phototoxicity and photocarcinogenicity (CRITICAL for outdoor application)
- **Alcohol consumption:** Increased hematotoxicity, hepatotoxicity, carcinogenicity
- **Smoking:** Additive carcinogenic effects (especially lung cancer)
- **Other PAH exposures:** Additive/synergistic carcinogenicity
- **Heat:** Increases volatile component release, inhalation exposure
- **Dermal absorption enhancers:** Solvents, detergents increase skin penetration

Application-Specific Hazards:
- **Hot application (driveways, roadways, roofing):**
  - Heated material (150-200°C) increases vapor release
  - Outdoor work = phototoxicity risk
  - Often in confined areas (rooftops) = vapor accumulation
  - Physical exertion increases inhalation rate
  - Hot material contact = severe burns + enhanced absorption

CRITICAL WARNINGS:
1. **CARCINOGEN - IARC GROUP 1A:** Minimize ALL exposures. No safe level established.
2. **OUTDOOR APPLICATION:** Extreme phototoxicity/photocarcinogenicity risk. Decontaminate skin IMMEDIATELY and COMPLETELY before sun exposure.
3. **HOT APPLICATION:** Releases flammable, toxic, and carcinogenic vapors. Use respiratory protection, eliminate ignition sources.
4. **CHRONIC EXPOSURE:** Cumulative organ damage and cancer risk with repeated low- level exposure.

No protective (antagonistic) interactions are known. All interactions appear additive or synergistic in terms of toxicity and carcinogenicity.

Alternative Information Sources: Refined Tar (identified as either Coal Tar CAS 8007-45-2 or Pitch, coal tar- petroleum CAS 68187-57-5 - see Section 1/3 clarification needed) is a complex UVCB substance. Toxicological assessment combines multiple data sources:

Primary Data Sources:

1. **Coal Tar Substance-Level Data:**

- **IARC Monograph Vol. 92 (2010):** "Coal Tars and Coal-Tar Pitches"

- Comprehensive evaluation of coal tar carcinogenicity
- IARC Group 1 for coal tar pitch (occupational exposure)
- Extensive epidemiological studies of coal tar workers
- Evidence for skin, lung, bladder, and other cancers

- **ATSDR Toxicological Profile:** Coal Tar Creosote (similar substance)
- **EPA IRIS Assessment:** Available for coal tar and components
- Direct toxicity testing of coal tar (CAS 8007-45-2)
- Historical use data from road paving, roofing, and manufacturing industries

2. **Component-Specific Data:****

Naphthalene (<20%):
- IARC Group 2B (Possibly Carcinogenic to Humans)
- NTP: Reasonably Anticipated to be Human Carcinogen
- Extensive toxicity database (oral, dermal, inhalation)
- Biomarker data (1-naphthol, 2-naphthol)
- Occupational exposure limits established (ACGIH, NIOSH, OSHA)

Benzene (<2%):
- IARC Group 1 (Confirmed Human Carcinogen)
- NTP: Known Human Carcinogen
- Comprehensive human epidemiology (leukemia, lymphoma)
- Extensive mechanistic data
- Subject to OSHA benzene standard (29 CFR 1910.1028)
- Well-characterized dose-response relationships

Benzo(a)pyrene (<2%):
- IARC Group 1 (Carcinogenic to Humans)
- NTP: Reasonably Anticipated to be Human Carcinogen
- Marker compound for PAH mixture carcinogenicity
- Extensive animal carcinogenicity data
- Used as indicator for PAH exposure assessment

Anthracene (<2.5%):
- IARC Group 3 (Not Classifiable)
- Primarily evaluated for phototoxicity
- Skin irritation and phototoxic effects well-documented

3. **Occupational Epidemiology Studies:**

Coal tar has been extensively studied in occupational settings:
- **Road paving workers:** Exposure to hot coal tar, PAH inhalation, UV exposure
- **Roofers:** Application of coal tar pitch, outdoor UV exposure
- **Gas works/coke oven workers:** Historical coal tar exposures
- **Wood treatment workers:** Coal tar creosote exposures (similar PAH profile) Key findings:
- Increased skin cancer (especially with sun exposure)
- Increased lung cancer
- Increased bladder cancer
- Phototoxic skin reactions
- Respiratory effects

4. Mixture Classification Methods Applied:

Carcinogenicity - Carc. 1A (H350):
- Based on IARC Group 1 evaluation for coal tar pitch
- Substance-level epidemiological evidence in exposed workers
- Multiple carcinogenic components (benzene, benzo(a)pyrene, other PAHs)
- Components act through multiple carcinogenic mechanisms
- Mixture carcinogenicity demonstrated, not just predicted from components

Germ Cell Mutagenicity - Muta. 1B (H340):
- Benzene (<2%): Proven mutagen, Muta. 1B
- Benzo(a)pyrene (<2%): Proven mutagen, Muta. 1B
- Concentration limits: ≥0.1% of Muta. 1B → classify substance as Muta. 1B
- Multiple mutagenic PAHs present
- Substance exhibits mutagenic activity in various test systems

Reproductive Toxicity - Repr. 1B (H360):
- Based on evidence for coal tar and components
- Benzene: Known reproductive toxicant
- PAHs: Evidence of reproductive/developmental effects
- Limited evidence in humans, sufficient evidence in animals
- Classified as Category 1B (presumed human reproductive toxicant)

STOT RE 1 (H372):
- **Category 1** indicates definitive evidence of organ damage
- Target organs: blood, liver, kidneys, thyroid gland
- Based on:
  - Benzene: Well-established hematotoxicity (Category 1)
  - Coal tar worker studies: Organ damage documented
  - Animal studies: Multiple organ toxicity
  - Occupational exposure data

Skin Sensitization - Skin Sens. 1 (H317):
- Well-documented in coal tar workers
- Multiple sensitizing PAH and heterocyclic components
- Allergic contact dermatitis reported extensively
- Positive patch test results

Aquatic Toxicity - Aquatic Acute 1 (H400), Aquatic Chronic 1 (H410):
- Based on high toxicity of PAH components to aquatic organisms
- Naphthalene, anthracene, other PAHs: Very toxic to aquatic life
- Highly persistent (PAHs degrade slowly)
- Bioaccumulative (high Log Kow values for many PAHs)
- Environmental fate data for coal tar and components

5. Physical-Chemical Property Data:
- **Flash point:** 218°C (424°F) - measured by ASTM D92 or similar (open cup method)
- **Boiling range:** 310-460°C (distillation range for complex mixture)
- **Auto-ignition:** >560°C
- **Density, viscosity:** Measured per standard methods (ASTM)
- **Vapor pressure:** 0.158 psi @ 20°C (composite of volatile fractions)

6. **Read-Across and Category Approaches:**
   - **Coal tar products category:** Coal tar, coal tar pitch, coal tar creosote are related UVCB substances from coal carbonization
   - **Similar PAH profiles:** Different coal tar products have similar PAH distributions
   - **Analogous toxicity:** Toxicity read across from well-studied coal tar products
   - **Processing similarities:** Similar production processes (high-temperature coal carbonization, distillation, refining)

7. **Key Regulatory and Scientific References:**
   - IARC Monograph Vol. 92: Coal Tars and Coal-Tar Pitches (2010)
   - ATSDR Toxicological Profiles (coal tar, PAHs, benzene, naphthalene)
   - EPA IRIS database - OSHA 29 CFR 1910.1028 (Benzene Standard)
   - NIOSH Pocket Guide to Chemical Hazards
   - ACGIH TLV Documentation
   - NTP Report on Carcinogens
   - EU REACH registration dossiers (if applicable)

8. **Application-Specific Considerations:**

   Driveways, Roadways, Roofing Applications: This product's intended use creates specific exposure scenarios:
   - **Hot application:** Heated to 150-200°C, approaching flash point
   - **Outdoor use:** UV/sunlight exposure creates phototoxicity risk
   - **Worker populations:** Road crews, roofers have documented health effects
   - **Environmental releases:** Storm water runoff, groundwater contamination
   - **Bystander exposures:** Public may be exposed to PAH vapors during application

   Quality of Evidence:
   - **Human data:** Extensive occupational epidemiology (high quality)
   - **Animal data:** Comprehensive carcinogenicity and toxicity studies
   - **Mechanistic data:** Well-understood mechanisms for key toxicities
   - **Exposure data:** Biomonitoring, environmental sampling available
   - **Regulatory scrutiny:** Highly regulated due to known hazards

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Ecology – General: Very toxic to aquatic life with long lasting effects.

Naphthalene (91-20-3)	
LC50 Fish 1	5.74 - 6.44 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])
EC50 Daphnia 1	2.16 mg/l (Exposure time: 48 h - Species: Daphnia magna)
LC50 Fish 2	1.6 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [flow-through])
EC50 Daphnia 2	1.96 mg/l (Exposure time: 48 h - Species: Daphnia magna [Flow through])

Anthracene (120-12-7)	
LC50 Fish 1	0 - 0.00318 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [flow-through])
EC50 Daphnia 1	0.081 - 0.112 mg/l (Exposure time: 48 h - Species: Daphnia magna)
LC50 Fish 2	0.00278 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [static])

Benzo(a)pyrene (50-32-8)	
EC50 Daphnia 1	0.005 mg/l
ErC50 (Algae)	0.005 mg/l
NOEC Chronic Fish	0.0024 mg/l

Benzene (71-43-2)	
LC50 Fish 1	10.7 - 14.7 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])
EC50 Daphnia 1	8.76 - 15.6 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
LC50 Fish 2	5.3 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [flow-through])
EC50 Daphnia 2	10 mg/l (Exposure time: 48 h - Species: Daphnia magna)
ErC50 (Algae)	29 mg/l
NOEC Chronic Fish	0.8 mg/l

12.2. Persistence and Degradability

Refined Tar (8007-45-2)	
Persistence and Degradability	May cause long-term adverse effects in the environment.

12.3. Bioaccumulative Potential

Refined Tar (8007-45-2)	
Bioaccumulative Potential	Not established.

Naphthalene (91-20-3)	
BCF Fish 1	30 - 430
Log Pow	3.6

Anthracene (120-12-7)	
BCF Fish 1	903 - 2820
Log Pow	4.54

Benzo(a)pyrene (50-32-8)	
Log Pow	6.06

Benzene (71-43-2)	
BCF Fish 1	3.5 - 4.4
Log Pow	2.1

12.4. Mobility in Soil: No additional information available

12.5. Other Adverse Effects

Other Information:

Avoid release to the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste Treatment Methods

Waste Disposal Recommendations: Dispose of contents/container in accordance with local, regional, national, and international regulations.

Additional Information: Container may remain hazardous when empty. Continue to observe all precautions.

Ecology - Waste Materials: Avoid release to the environment. This material is hazardous to the aquatic environment. Keep out of sewers and waterways.

SECTION 14: TRANSPORT INFORMATION

The shipping description(s) stated herein were prepared in accordance with certain assumptions at the time the SDS was authored, and can vary based on a number of variables that may or may not have been known at the time the SDS was issued.
When shipped < 212 °F (100 °C):

14.1. In Accordance with DOT

Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S. (COAL TAR PETROLEUM)
Hazard Class: 9
Identification Number: UN3082
Label Codes: 9

Packing Group III

Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (COAL TAR PETROLEUM)
Hazard Class: 9
Identification Number: UN3082
Packing Group: III
Marine Pollutant: Yes

ERG Number: 171

14.2. In Accordance with IMDG

Label Codes: 9
EmS-No. (Fire): F-A
EmS-No. (Spillage): S-F

Marine Pollutant: **Yes**

Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (COAL TAR PETROLEUM)
Packing Group: III

14.3. In Accordance with IATA

Identification Number: UN3082
Hazard Class: 9
Label Codes 9
ERG Code (IATA) 9L

WHEN SHIPPED > 212°F (100°C), BUT < FLASH POINT:

14.1. In Accordance with DOT

Proper Shipping Name: ELEVATED TEMPERATURE LIQUID, N.O.S. (COAL TAR PETROLEUM)
Hazard Class: 9
Identification Number: UN3257
Label Codes: 9

Packing Group: III

Marine Pollutant: Yes

ERG Number: 128

14.2. In Accordance with IMDG

Proper Shipping Name: ELEVATED TEMPERATURE LIQUID, N.O.S. (COAL TAR PETROLEUM)

Hazard Class: 9

Identification Number: UN3257

Packing Group: III

Label Codes: 9
EmS-No. (Fire): F-A
EmS-No. (Spillage): S-F

Marine Pollutant: Yes

14.3. In Accordance with IATA

FORBIDDEN – Elevated temperature liquids > 212°F are prohibited in air transport per IATA Dangerous Goods Regulations

WHEN SHIPPED > THAN FLASH POINT:

14.1. In Accordance with DOT

Proper Shipping Name: ELEVATED TEMPERATURE LIQUID, FLAMMABLE, N.O.S. (COAL TAR PETROLEUM)
Hazard Class: 3
Identification Number: UN3256
Label Codes: 3

Packing Group: III
Marine Pollutant: Yes
ERG Number: 128

14.2. In Accordance with IMDG

Proper Shipping Name: ELEVATED TEMPERATURE LIQUID, FLAMMABLE, N.O.S. (COAL TAR PETROLEUM)
Hazard Class: 3
Identification Number: UN3256
Packing Group: III
Label Codes: 3
EmS-No. (Fire): F-E
EmS-No. (Spillage): S-E
Marine Pollutant: Yes

14.3. In Accordance with IATA

FORBIDDEN – Elevated temperature liquids at elevated temperatures above flash point are prohibited in air transport per IATA Dangerous Goods Regulations

SECTION 15: REGULATORY INFORMATION

15.1. US Federal Regulations

Coal Tar (8007-45-2)	
SARA Section 311/312 Hazard Classes	Health hazard - Carcinogenicity Health hazard - Specific target organ toxicity (repeated exposure) Health hazard - Respiratory or skin sensitization Health hazard - Germ cell mutagenicity Health hazard - Reproductive toxicity

Coal Tar (8007-45-2)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory. Subject to reporting requirements of Untied States SARA Section 313	
CERCLA RQ	1 lb
SARA Section 313 – Emission Reporting	0.1%

Naphthalene (91-20-3)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory. Subject to reporting requirements of United States SARA Section 313	
CERCLA RQ	100 lb
SARA Section 313 - Emission Reporting	0.1 %

Anthracene (120-12-7)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory. Subject to reporting requirements of United States SARA Section 313	
CERCLA RQ	5000 lb
SARA Section 313 - Emission Reporting	1 %

Benzo(a)pyrene (50-32-8)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory. Subject to reporting requirements of United States SARA Section 313	
CERCLA RQ	1 lb
SARA Section 313 - Emission Reporting	0.1 %

Benzene (71-43-2)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory. Subject to reporting requirements of United States SARA Section 313	
CERCLA RQ	10 lb
SARA Section 313 - Emission Reporting	0.1 %

15.2. US State Regulations

Coal Tar (8007-45-2)
U.S. – Massachusetts – Right to Know List
U.S. – New Jersey – Right to Know Hazardous Substance List
U.S. – Pennsylvania – RTK (Right to Know) – Environmental Hazard List
U.S. – Pennsylvania – RTK (Right to Know) – Special Hazardous Substances
U.S. – Pennsylvania – RTK (Right to Know) List

Naphthalene (91-20-3)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List U.S. - Pennsylvania - RTK (Right to Know) List

Anthracene (120-12-7)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List U.S. - Pennsylvania - RTK (Right to Know) List

Benzo(a)pyrene (50-32-8)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances U.S. - Pennsylvania - RTK (Right to Know) List

Benzene (71-43-2)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances
U.S. - Pennsylvania - RTK (Right to Know) List

California Proposition 65

WARNING: This product can expose you to Benzene, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Chemical Name (CAS No.)	Carcinogenicity	Developmental Toxicity	Female Reproductive Toxicity	Male Reproductive Toxicity
Coal Tar (8007-45-2)	X			
Naphthalene (91-20-3)	X			
Benzo(a)pyrene (50-32-8)	X			
Benzene (71-43-2)	X	X		X

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Date of Preparation or Latest Revision: 05/18/2026

Previous Revision Date: 01/14/2026 (Version 4.0)

Version: 5.0

Revision Summary: Updated to comply with OSHA Hazard Communication Standard 29 CFR 1910.1200 as amended May 20, 2024 (GHS Revision 7). Updated header compliance citation from Federal Register Vol. 77, No. 58 (March 26, 2012) to Federal Register Vol. 89, No. 98 (May 20, 2024). Updated Skin Sens. 1 to Skin Sens. 1B throughout. Updated Repr. 1 to Repr. 1B for benzo(a)pyrene. Added particle characteristics to Section 9. Added interactive effects and alternative information paragraphs to Section 11. Corrected document structure to ensure Sections 9 and 10 appear as standalone section headers.

Other Information: This document has been prepared in accordance with the OSHA Hazard Communication Standard 29 CFR 1910.1200, as amended by final rule published May 20, 2024 (effective July 19, 2024), aligning with the United Nations Globally Harmonized System of Classification and Labelling of Chemicals (GHS), Revision 7.

Product Information: Refined Tar is a coal tar product used for driveways, roadways, roofing, and manufacturing applications. Available in multiple grades (Modified RT-12, RT-9, RT-12, RT-240) with different properties. This is a complex UVCB (Unknown or Variable composition, Complex reaction products, or Biological materials) substance derived from high-temperature coal carbonization and refining processes.

Flash Point and Fire Hazard: Flash point 218°C (424°F) means this material is NOT classified as "Flammable Liquid" under GHS (threshold is 93°C). However, material is typically applied HOT (150-200°C) which releases flammable vapors (benzene, naphthalene) and approaches flash point. Will burn readily in fire conditions.

GHS Full Text Phrases:

Acute Tox. 4 (Dermal)	Acute toxicity (dermal) Category 4
Acute Tox. 4 (Oral)	Acute toxicity (oral) Category 4
Aquatic Acute 1	Hazardous to the aquatic environment - Acute Hazard Category 1
Aquatic Acute 2	Hazardous to the aquatic environment - Acute Hazard Category 2
Aquatic Chronic 1	Hazardous to the aquatic environment - Chronic Hazard Category 1
Aquatic Chronic 3	Hazardous to the aquatic environment - Chronic Hazard Category 3
Asp. Tox. 1	Aspiration hazard Category 1
Carc. 1A	Carcinogenicity Category 1A
Carc. 1B	Carcinogenicity Category 1B
Carc. 2	Carcinogenicity Category 2
Comb. Dust	Combustible Dust
Eye Irrit. 2A	Serious eye damage/eye irritation Category 2A
Flam. Liq. 2	Flammable liquids Category 2
Flam. Sol. 2	Flammable solids Category 2
Muta. 1B	Germ cell mutagenicity Category 1B
Repr. 1B	Reproductive toxicity Category 1B
Skin Irrit. 2	Skin corrosion/irritation Category 2
Skin Sens. 1B	Skin sensitization, Category 1B
STOT RE 1	Specific target organ toxicity (repeated exposure) Category 1
STOT SE 3	Specific target organ toxicity (single exposure) Category 3
STOT SE 3	Specific target organ toxicity (single exposure) Category 3
H225	Highly flammable liquid and vapor
H228	Flammable solid
H302	Harmful if swallowed
H304	May be fatal if swallowed and enters airways
H312	Harmful in contact with skin
H315	Causes skin irritation
H317	May cause an allergic skin reaction
H319	Causes serious eye irritation
H335	May cause respiratory irritation
H336	May cause drowsiness or dizziness
H340	May cause genetic defects
H350	May cause cancer
H351	Suspected of causing cancer
H360	May damage fertility or the unborn child
H361d	Suspected of damaging the unborn child
H372	Causes damage to organs through prolonged or repeated exposure
H400	Very toxic to aquatic life
H401	Toxic to aquatic life

H402	Harmful to aquatic life
H410	Very toxic to aquatic life with long lasting effects
H412	Harmful to aquatic life with long lasting effects

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.

NFPA 704 Diamond Rating System:

NFPA Health Hazard: **3** - Materials that, on very short exposure, could cause death or major residual injury.
Justification: Serious hazard. Confirmed carcinogen (Carc. 1A, H350) — coal tar is IARC Group 1 for occupational exposures; benzene (<2%) and benzo(a)pyrene (<2%) are independently IARC Group 1 human carcinogens. Causes organ damage to blood, liver, kidneys, and thyroid through prolonged exposure (STOT RE 1, H372). May cause genetic defects (Muta. 1B, H340). May damage fertility and the unborn child (Repr. 1B, H360). Severe phototoxicity with UV/sunlight exposure. Rating 4 not warranted: acute oral LD50 ~1700 mg/kg (Acute Tox. 4); substance-level acute toxicity not classified in Section 2.1; serious hazard is primarily chronic (carcinogenicity, organ toxicity) rather than from a single brief exposure.

NFPA Fire Hazard: **1** - Materials that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur.
Justification: Flash point 218°C (424°F) open cup. Well above the NFPA Fire Rating 1/2 boundary of 93.3°C (200°F). Material must be substantially preheated before ignition can occur. Not ignitable at ambient temperatures. Will burn when heated above flash point or in fire conditions. Consistent with Coal Tar Pitch Liquid (FP >260°C) and Petroleum Pavement Sealer Base (FP 205°C) — both Fire = 1.

NFPA Reactivity Hazard: **0** - Materials that in themselves are normally stable, even under fire conditions.
Justification: Stable under normal conditions. No hazardous polymerization. Compatible with most materials except strong oxidizers.

NFPA Special Hazard: None

NFPA 704 Diamond:

CRITICAL WARNINGS FOR EMERGENCY RESPONDERS: MULTIPLE KNOWN HUMAN CARCINOGENS (IARC GROUP 1): Contains benzo(a)pyrene and benzene - both CONFIRMED HUMAN CARCINOGENS. Also contains naphthalene (IARC 2B). Coal tar itself causes cancer in exposed workers (extensive epidemiological evidence). Minimize exposure duration. Use SCBA. Decontaminate thoroughly. This is NOT a suspected or possible carcinogen - this is a KNOWN carcinogenic mixture.

FIRE/COMBUSTION HAZARD: While flash point is high (218°C/424°F = NOT GHS flammable), this material: - Is typically USED HOT at 150-200°C (hot paving, roofing applications)
- Releases FLAMMABLE VAPORS when heated (benzene, naphthalene)

- WILL burn readily in fire conditions
- Generates EXTREMELY TOXIC combustion products including multiple carcinogenic PAHs
- May be encountered at elevated temperatures in emergencies
- Treat as combustible material with significant vapor hazard when heated

ORGAN DAMAGE (STOT RE 1 - Category 1): CAUSES (not "may cause") damage to:
- Blood/hematopoietic system (benzene causes aplastic anemia, leukemia)
- Liver (hepatotoxicity from PAHs and benzene)
- Kidneys (nephrotoxicity from PAHs)
- Thyroid gland (endocrine disruption) Category 1 indicates DEFINITIVE evidence of organ damage at occupational exposure levels.

PHOTOTOXICITY/PHOTOCARCINOGENICITY: PAHs cause SEVERE phototoxic reactions with UV/sunlight exposure. Skin contact followed by sun exposure causes:
- Severe burns and blistering (acute)
- Dramatically increased skin cancer risk (chronic)
- CRITICAL for outdoor applications (driveways, roadways, roofing)
Keep contaminated persons out of sunlight for 24-48 hours minimum. Decontaminate thoroughly.

MUTAGENICITY (Muta. 1B): May cause genetic defects. Contains known mutagens (benzene, benzo(a)pyrene). Genetic damage is first step in cancer development.

REPRODUCTIVE TOXICITY (Repr. 1B): May damage fertility or the unborn child. Benzene is known reproductive toxicant. Limit exposure for workers of childbearing potential.

SKIN SENSITIZER: Causes severe allergic skin reactions with repeated exposure. Progressive worsening of contact dermatitis.

ENVIRONMENTAL HAZARD: Very toxic to aquatic life with long-lasting effects (H410). Extremely persistent in environment. Contaminated runoff from paving operations is major environmental concern.

TYPICAL USE SCENARIOS:
- **Hot application:** Heated to 150-200°C for driveways, roadways, roofing
- **Outdoor use:** UV exposure creates severe phototoxicity risk
- **Worker populations:** Road crews, roofers, maintenance workers
- **Public exposure:** Bystanders exposed to vapors during application
- **Environmental releases:** Storm water runoff carries PAHs to waterways

BENZENE CONTENT (<2%): Contains KNOWN HUMAN CARCINOGEN benzene (IARC Group 1). Subject to OSHA benzene standard (29 CFR 1910.1028). Vapor hazard increases dramatically when material is heated. Use air monitoring in enclosed spaces.

HISTORICAL CONTEXT: Coal tar has been used for over a century in road paving and roofing. EXTENSIVE epidemiological evidence documents increased cancer rates (especially skin, lung, bladder) in coal tar workers. This is one of the most well- studied occupational carcinogens. Modern "refined" grades may have reduced PAH content but still contain multiple carcinogens.

INCIDENT CONSIDERATIONS:
- Treat all exposures seriously
- known carcinogenic material
- Respiratory protection is CRITICAL (SCBA in fire conditions)
- Decontaminate skin immediately and completely
- Document exposures for long-term health monitoring
- Contaminated runoff requires containment and proper disposal
- May be shipped/stored at elevated temperatures
- Hot application operations are common emergency scenarios