



# Material Safety Data Sheet

MSDS ID NO.: 0143MAR019  
Revision date: 03/19/2009

## 1. CHEMICAL PRODUCT AND COMPANY INFORMATION

**Product name:** Marathon Polymer Modified Asphalt Cement  
**Synonym:** MAC; PAC-30; PAC-40 HG; PMA Concentrate; PMAC; PMAC-1C; PMAC-1D; PMAC-20; PMAC-20 Light; PMAC-20; PMAC-5; Polymer Modified Asphalt Cement; SBS 20  
**Chemical Family:** Asphalt  
**Formula:** Mixture

**Manufacturer:**  
Marathon Petroleum Company LLC  
539 South Main Street  
Findlay OH 45840

**Other information:** 419-421-3070  
**Emergency telephone number:** 877-627-5463

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

Polymer Modified Asphalt Cement is an asphalt mixed with varying concentrations of vacuum residuum and SBS copolymer additive. Composition varies depending on source of crude and specifications of final product. May contain minor amounts of sulfur, nitrogen and oxygen containing compounds. Polycyclic aromatic hydrocarbons (3-7 ring), such as benzo(a)pyrene, are present in trace concentrations (<0.1%). Different asphalt grades may also contain an anti-strip additive.

### Product information:

Name	CAS Number	Weight %	ACGIH Exposure Limits:	OSHA - Vacated PELs - Time Weighted Ave	Other:
Marathon Polymer Modified Asphalt Cement	Mixture	100	=0.5 mg/m <sup>3</sup> TWA		

### Component Information:

Name	CAS Number	Weight %	ACGIH Exposure Limits:	OSHA - Vacated PELs - Time Weighted Ave	Other:
Asphalt	8052-42-4	89-98	=0.5 mg/m <sup>3</sup> TWA (inhalable fraction, as benzene-soluble aerosol)		
SBS Copolymer Additive	Mixture	2-9			
Sulfur Compounds	Mixture	0-5			
Anti-Stripping Additive	Mixture	0-1.5			
Hydrogen Sulfide	7783-06-4	0-0.5	= 10 ppm TWA = 15 ppm STEL	= 10 ppm TWA = 14 mg/m <sup>3</sup> TWA = 15 ppm STEL = 21 mg/m <sup>3</sup> STEL	

**Notes:** The manufacturer has voluntarily elected to reflect exposure limits contained in OSHA's 1989 air contaminants standard in its MSDS's, even though certain of those exposure limits were vacated in 1992.

### 3. HAZARDS IDENTIFICATION

#### EMERGENCY OVERVIEW

ASPHALT PRODUCTS ARE DARK BROWN TO BLACK, SOLID OR SEMI-SOLID MATERIALS. ASPHALT IS MOLTEN ABOVE 200 DEGREES F AND SKIN CONTACT WILL CAUSE THERMAL BURNS. WHEN HEATED THIS MATERIAL MAY VENT TOXIC LEVELS OF HYDROGEN SULFIDE (H<sub>2</sub>S) VAPORS THAT ACCUMULATE IN THE VAPOR SPACES OF STORAGE AND TRANSPORT COMPARTMENTS. H<sub>2</sub>S VAPORS CAN CAUSE EYE, SKIN, AND RESPIRATORY TRACT IRRITATION AND ASPHYXIATION. THIS PRODUCT IS NOT A COMBUSTIBLE LIQUID PER THE OSHA HAZARD COMMUNICATION STANDARD, BUT WILL IGNITE AND BURN AT TEMPERATURES EXCEEDING THE FLASH POINT.

#### OSHA WARNING LABEL:

**WARNING.  
HOT ASPHALT  
MAY PRODUCE SEVERE BURNS.  
MAY VENT HARMFUL CONCENTRATIONS OF HYDROGEN SULFIDE (H<sub>2</sub>S) GAS WHICH CAN CAUSE  
RESPIRATORY IRRITATION AND ASPHYXIATION.**

#### CONSUMER WARNING LABEL:

**A CONSUMER WARNING LABEL IS NOT APPLICABLE FOR THIS PRODUCT.**

**Inhalation:** Vapors and fumes can cause respiratory and nasal irritation. Significant concentrations of hydrogen sulfide gas can be present in the vapor space of storage tanks and bulk transport compartments (See Sections 7, 8 & 11).

**Ingestion:** Product would be expected to have a low order of acute toxicity.

**Skin contact:** Hot product causes severe burns. Frequent or prolonged contact with cold material may cause irritation.

**Eye contact:** Hot product causes severe burns.

#### Carcinogenic Evaluation:

##### Product information:

Name	IARC Carcinogens:	NTP Carcinogens:	ACGIH - Carcinogens:	OSHA - Select Carcinogens:
Marathon Polymer Modified Asphalt Cement Mixture	NE			

**Notes:** The International Agency for Research on Cancer (IARC) has determined that there is sufficient evidence for the carcinogenicity of extracts of steam-refined bitumens (asphalts), air-refined bitumens and pooled mixtures of steam- and air-refined bitumens in experimental animals. IARC has determined that there is inadequate evidence that bitumens alone are carcinogenic to humans.

#### Component Information:

Name	IARC Carcinogens:	NTP Carcinogens:	ACGIH - Carcinogens:	OSHA - Select Carcinogens:
Asphalt 8052-42-4	Supplement 7 [1987], Monograph 35 [1985] (extracts of steam-refined and air-refined)	Reasonably Anticipated To Be A Human Carcinogen	A4 - Not Classifiable as a Human Carcinogen (fume, coal tar-free)	Present

## 4. FIRST AID MEASURES

<b>Inhalation:</b>	If affected, move person to fresh air. If breathing is difficult, administer oxygen. If not breathing or if no heartbeat, give artificial respiration or cardiopulmonary resuscitation (CPR). Immediately call a physician. If symptoms or irritation occur with any exposure, call a physician.
<b>Skin contact:</b>	For contact with hot molten material, immerse or flush skin with cold water for at least 15 minutes. Call a physician. Do not attempt to remove solidified material since removal may cause further tissue injury. Cold material over a burn should not be removed except by a physician. Remove cold material (not associated with a burn) with waterless handcleaner and then wash with soap and water. If symptoms or irritation occur, call a physician.
<b>Ingestion:</b>	Ingestion not likely. If large amounts are swallowed, immediately call a physician.
<b>Eye contact:</b>	For contact with hot molten material, flush with large amounts of tepid water for at least 15 minutes. Immediately call a physician.  For contact with vapors or dust, flush with large amounts of tepid water for at least 15 minutes. If symptoms or irritation occur, call a physician.
<b>Notes to physician:</b>	Recommended practice is to not attempt to remove hot material associated with a burn. Allow the solidified material to remain in place until cooled so it can naturally fall off. Natural separation will occur in 48-72 hours. If removal is attempted, mineral oil may be used to remove asphalt once it is cooled. For best results, work it into the skin around the material and allow the material to "float" off.
<b>Medical conditions aggravated by exposure:</b>	Preexisting skin, eye and respiratory disorders may be aggravated by exposure to components of this product.

## 5. FIRE FIGHTING MEASURES

<b>Suitable extinguishing media:</b>	For small fires, Class B fire extinguishing media such as CO <sub>2</sub> , dry chemical, foam (AFFF/ATC) or water spray can be used. For large fires, water spray, fog or foam (AFFF/ATC) can be used. Fire fighting should be attempted only by those who are adequately trained and equipped with proper protective equipment.
<b>Specific hazards:</b>	This product is not a combustible liquid per the OSHA Hazard Communication Standard, but will ignite and burn at temperatures exceeding the flash point.
<b>Special protective equipment for firefighters:</b>	Avoid using straight water streams. Water spray and foam (AFFF/ATC) must be applied carefully to avoid frothing and from as far a distance as possible. Avoid excessive water spray application. Keep run-off water out of sewers and water sources.
<b>Flash point:</b>	450-660 F
<b>Autoignition temperature:</b>	No data available.
<b>Flammable limits in air - lower (%):</b>	1.0
<b>Flammable limits in air - upper (%):</b>	6.0

**NFPA rating:**

Health: 1  
Flammability: 1  
Instability: 1  
Other: -

## 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions:** Keep public away. Isolate and evacuate area. Shut off source if safe to do so. Advise authorities and National Response Center (800-424-8802) if the product has entered a water course or sewer. Notify local health and pollution control agencies, if appropriate. Contain liquid with sand or soil. Recover and return product to source.

## 7. HANDLING AND STORAGE

**Handling:**

Comply with all applicable EPA, OSHA, NFPA and consistent state and local requirements. Use appropriate grounding and bonding practices. Store in properly closed containers that are appropriately labeled and in a cool well-ventilated area. Do not expose to heat, open flames, strong oxidizers or other sources of ignition. Do not cut, drill, grind or weld on empty containers since they may contain explosive residues.

Significant concentrations of hydrogen sulfide (H<sub>2</sub>S) gas can be generated and accumulate in storage tanks and bulk transport compartments which may require additional precautions and procedures during loading/unloading. When opening covers and outlet caps on storage tanks, use face shield and gloves to avoid possible injury from pressurized product. Stay upwind and vent open hatches before unloading. Keep heating coils and flues in storage tanks, trucks and kettles covered with product (8"). Do not overheat.

Avoid skin contact. Exercise good personal hygiene including removal of soiled clothing and prompt washing with soap and water.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### PERSONAL PROTECTIVE EQUIPMENT

**Engineering measures:** Local or general exhaust required in an enclosed area or when there is inadequate ventilation.

**Respiratory protection:** Not required under normal conditions and adequate ventilation. When H<sub>2</sub>S vapors exceed permissible limits, i.e., in confined spaces or bulk transport loading/unloading, a positive-pressure atmosphere supplying respirator is recommended. Self-contained breathing apparatus should be used for fire fighting.

**Skin and body protection:** Insulated gloves when handling hot material.

**Eye protection:** Goggles and faceshield when handling hot material.

**Hygiene measures:** Rubberized suits or coats may be needed for some maintenance operations with hot material.

## 9. PHYSICAL AND CHEMICAL PROPERTIES:

**Appearance:** Black-brown Solid Or Semi-solid  
**Physical state (Solid/Liquid/Gas):** Liquid  
**Substance type (Pure/Mixture):** Mixture  
**Color:** Black-Brown

## 9. PHYSICAL AND CHEMICAL PROPERTIES:

Odor:	Tar
Molecular weight:	Not determined.
pH:	Neutral
Boiling point/range (5-95%):	>700 F
Melting point/range:	>120 F
Decomposition temperature:	Not applicable.
Specific gravity:	0.95-1.05
Density:	7.9-8.7 lbs/gal
Bulk density:	No data available.
Vapor density:	No data available.
Vapor pressure:	Negligible @ 77 F
Evaporation rate:	No data available.
Solubility:	Negligible
Solubility in other solvents:	No data available.
Partition coefficient (n-octanol/water):	No data available.
VOC content(%):	No data available.
Viscosity:	No data available.

## 10. STABILITY AND REACTIVITY

Stability:	The material is stable at 70 F, 760 mm pressure.
Polymerization:	Will not occur.
Hazardous decomposition products:	Combustion produces toxic oxides of sulfur, carbon monoxide, sulfur dioxide, hydrogen sulfide and hydrocarbons.
Materials to avoid:	Strong oxidizers such as nitrates, chlorates, peroxides.
Conditions to avoid:	Excessive heat, sources of ignition, open flame.

## 11. TOXICOLOGICAL INFORMATION

### Acute toxicity:

### Product information:

Name	CAS Number	Inhalation:	Dermal:	Oral:
Marathon Polymer Modified Asphalt Cement	Mixture	No data available	No data available	No data available

Some epidemiologic studies conducted on workers exposed to asphalt fume have shown no increased incidence of cancer while other studies have reported a slightly increased incidence of lung, other respiratory tract or gastrointestinal cancers. In those studies in which elevated cancer incidences were reported, concurrent or previous exposure to coal-tar products have been documented. therefore, it cannot be concluded that cancer incidence is related to exposure to asphalt fume.

Although early studies have some technical shortcomings, long term inhalation exposures to asphalt aerosols or fumes did not produce evidence of carcinogenicity even though chronic inflammatory changes similar to those produced by nonspecific respiratory irritants were observed. Inhalation of 150 mg/m<sup>3</sup> asphalt fume (particulate + vapor) 6 hours/day, 5 days/week for 13 weeks, did not produce toxicity except for reduced body weight and irritation in nasal passages in exposed rats.

Laboratory animals administered subcutaneous or intramuscular injections of asphalt preparations or repeated skin applications of hot (212 F) undiluted asphalt have occasionally produced a low incidence of skin tumors at the site of application. These findings are of questionable validity since repeated tissue trauma (and/or burns) at the application site can induce tumors. Solvent dilutions of different types of asphalts have been tested in chronic skin painting studies. Some of the studies have reported a low incidence of skin tumors. The use of diluents may enhance bioavailability or metabolic activation of chemicals in the mixture in a fashion not representative of occupational exposure. Skin painting studies in mice have been conducted using condensates from fumes generated at temperatures >450 F diluted in solvent. Asphalt fume condensate preparations have produced skin tumors. Experimental conditions (temperature and dose) were grossly exaggerated over that likely to occur in humans.

Extracts of whole asphalts tested in a modified Ames assay gave negative or slightly positive findings (mutagenicity index <1.5). Fume condensates derived from heating asphalts to high temperatures (>450 F) were moderately active (MI 4-9). Fumes generated from coal tar pitch were >1000 times more active. Asphalt fume samples collected under actual field conditions did not show any significant mutagenic activity.

Summary of health effect data on asphalt components:

This product can contain a toxicologically significant concentration of hydrogen sulfide (H<sub>2</sub>S). Hydrogen sulfide gas (H<sub>2</sub>S) is toxic by inhalation. Prolonged breathing of 50-100 ppm H<sub>2</sub>S vapors can produce eye and respiratory tract irritation. Higher concentrations (250-600 ppm) for 15-30 minutes can produce headache, dizziness, nervousness, nausea and pulmonary edema or bronchial pneumonia. Concentrations of >1000 ppm will cause immediate unconsciousness and death through respiratory paralysis. Rats and mice exposed to 80 ppm H<sub>2</sub>S, 6 hrs/day, 5 days/week for 10 weeks, did not produce any toxicity except for irritation of nasal passages. H<sub>2</sub>S did not affect reproduction and development (birth defects or neurotoxicity) in rats exposed to concentrations of 75-80 ppm or 150 ppm H<sub>2</sub>S, respectively. Over the years a number of acute cases of H<sub>2</sub>S poisonings have been reported. Complete and rapid recovery is the general rule. However, if the exposure was sufficiently intense and sustained causing cerebral hypoxia (lack of oxygen to the brain), neurologic effects such as amnesia, intention tremors or brain damage are possible.

## 12. ECOLOGICAL INFORMATION

### Ecotoxicity effects:

If spilled, hot product and/or the coating action of the oil components could harm plant life. This product does not concentrate or accumulate in the food chain. This product is not expected to cause any acute or chronic toxicity to aquatic organisms due to its extremely low water solubility.

## 13. DISPOSAL CONSIDERATIONS

### Cleanup Considerations:

This material as supplied and by itself, when discarded or disposed of, is not an EPA RCRA hazardous waste according to federal regulations. This material could become a hazardous waste if mixed or contaminated with a hazardous waste or other substance(s). It is the responsibility of the user to determine if disposal material is hazardous according to federal, state and local regulations.

## 14. TRANSPORT INFORMATION

49 CFR 172.101:

**DOT:**

**Transport Information:** This material when transported via US commerce would be regulated by DOT Regulations.

Comments: (Hot Petroleum Asphalt) This material must not be transported when heated at or above its flash point.

**Proper shipping name:** Elevated Temperature Liquid, N.O.S.  
**UN/Identification No:** UN 3257  
**Hazard Class:** 9  
**Packing group:** III  
**DOT reportable quantity (lbs):** Not applicable.

**TDG (Canada):**

**Proper shipping name:** Elevated Temperature Liquid, N.O.S.  
**UN/Identification No:** UN 3257  
**Hazard Class:** 9  
**Packing group:** III  
**Regulated substances:** Not applicable.

## 15. REGULATORY INFORMATION

**US Federal Regulatory Information:**

US TSCA Chemical Inventory Section 8(b): This product and/or its components are listed on the TSCA Chemical Inventory.

OSHA Hazard Communication Standard: This product has been evaluated and determined to be hazardous as defined in OSHA's Hazard Communication Standard.

**EPA Superfund Amendment & Reauthorization Act (SARA):**

**SARA Section 302:** This product contains the following component(s) that have been listed on EPA's Extremely Hazardous Substance (EHS) List:

Name	CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs
Asphalt	NA
SBS Copolymer Additive	NA
Sulfur Compounds	NA
Anti-Stripping Additive	NA
Hydrogen Sulfide	= 500 lb TPQ

**SARA Section 304:** This product contains the following component(s) identified either as an EHS or a CERCLA Hazardous substance which in case of a spill or release may be subject to SARA reporting requirements:

Name	CERCLA/SARA - Hazardous Substances and their Reportable Quantities
Asphalt	NA
SBS Copolymer Additive	NA
Sulfur Compounds	NA
Anti-Stripping Additive	NA

Name	CERCLA/SARA - Hazardous Substances and their Reportable Quantities
Hydrogen Sulfide	= 100 lb final RQ = 45.4 kg final RQ

The following EPA hazard categories apply to this product:

Acute Health Hazard

**SARA Section 313:**

This product contains the following component(s) that may be subject to reporting on the Toxic Release Inventory (TRI) From R:

Name	CERCLA/SARA 313 Emission reporting:
Asphalt	None
SBS Copolymer Additive	None
Sulfur Compounds	None
Anti-Stripping Additive	None
Hydrogen Sulfide	None

**State and Community Right-To-Know Regulations:**

The following component(s) of this material are identified on the regulatory lists below:

Asphalt

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	sn 0170
Pennsylvania Right-To-Know:	Present
Massachusetts Right-To Know:	Present
Florida substance List:	Not Listed.
Rhode Island Right-To-Know:	Toxic; Flammable
Michigan critical materials register list:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	flammable - third degree
New Jersey - Environmental Hazardous Substances List:	Not Listed
Illinois - Toxic Air Contaminants	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed

SBS Copolymer Additive

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	Not Listed.
Pennsylvania Right-To-Know:	Not Listed.
Massachusetts Right-To Know:	Not Listed.
Florida substance List:	Not Listed.
Rhode Island Right-To-Know:	Not Listed
Michigan critical materials register list:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Not Listed



## Asphalt

New Jersey - Environmental Hazardous Substances List:	Not Listed
Illinois - Toxic Air Contaminants	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed

## Sulfur Compounds

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	Not Listed.
Pennsylvania Right-To-Know:	Not Listed.
Massachusetts Right-To Know:	Not Listed.
Florida substance List:	Not Listed.
Rhode Island Right-To-Know:	Not Listed
Michigan critical materials register list:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Not Listed
New Jersey - Environmental Hazardous Substances List:	Not Listed
Illinois - Toxic Air Contaminants	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed

## Anti-Stripping Additive

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	Not Listed.
Pennsylvania Right-To-Know:	Not Listed.
Massachusetts Right-To Know:	Not Listed.
Florida substance List:	Not Listed.
Rhode Island Right-To-Know:	Not Listed
Michigan critical materials register list:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Not Listed
New Jersey - Environmental Hazardous Substances List:	Not Listed
Illinois - Toxic Air Contaminants	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed

## Hydrogen Sulfide

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	sn 1017
Pennsylvania Right-To-Know:	Environmental hazard
Massachusetts Right-To Know:	Extraordinarily hazardous
Florida substance List:	Not Listed.
Rhode Island Right-To-Know:	Toxic; Flammable

Asphalt

Michigan critical materials register list:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	extraordinarily hazardous
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	flammable - fourth degree
New Jersey - Environmental Hazardous Substances List:	SN 1017 TPQ 500 lb
Illinois - Toxic Air Contaminants	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	= 100 lb RQ air = 100 lb RQ land/water

**Canadian Regulatory Information:**

Canada DSL/NDSL Inventory: This product and/or its components are listed either on the Domestic Substances List (DSL) or are exempt.

Name	Canada - WHMIS: Classifications of Substances:	Canada - WHMIS: Ingredient Disclosure:
Hydrogen Sulfide	A, B1, D1A, D2B	1 %

**16. OTHER INFORMATION**

**Additional Information:** The pronounced and easily-recognized rotten egg odor of hydrogen sulfide gas (H2S) can be detected at concentrations as low as 0.003-0.13 ppm. Since higher H2S concentrations (100-200 ppm) cause olfactory fatigue and other hydrocarbon odors can "mask" H2S, the sense of smell cannot be used as a reliable indicator of H2S exposure.

**Prepared by:** Craig M. Parker Manager, Toxicology and Product Safety

The information and recommendations contained herein are based upon tests believed to be reliable. However, Marathon Petroleum Company LLC (MPC) does not guarantee their accuracy or completeness nor shall any of this information constitute a warranty, whether expressed or implied, as to the safety of the goods, the merchantability of the goods, or the fitness of the goods for a particular purpose. Adjustment to conform to actual conditions of usage maybe required. MPC assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied.

**End of Safety Data Sheet**