



COASTAL ENERGY

CORPORATION

*"Hot Oil On Time"*

**PROPER HANDLING OF ASPHALT  
MATERIALS**

# Basic Asphalt Terms

- **Asphalt Cements: PG 64-22, PG 70-22, AC-10, AC-20, AC-7.5 300 F+**
- **Cutback Asphalts: MC-30, 70, 250, 800, 3000: 140-280F diluted with fuel**
- **Emulsion Asphalts: CRS-2, CRS-2P, EA-300, SS-1: 100-185F diluted with Water**

# Basic Asphalt Terms

**Emulsions:** Are asphalt products, which have had water, bonded to the asphalt cement, through the milling process. Since water is added, they are also known as wet products. (CMS, CRS, EA, SS, CSS, MS, AEP)

**Cationic:** Identifies that the product has an electro positive charge. A C indicates that a product is cationic. CMS (Cationic MS), CRS (Cationic RS)

**Anionic:** Identifies that the product has an electro negative charge. Anionic asphalts will not have an identifier. EA-300 Emulsified Asphalt-300 grade Viscosity

# Basic Asphalt Terms

- **Rapid Set:** Indicates that the product will cure at a fast rate. Rapid Set products are indicated with RS. CRS-1 (Cationic Rapid Set- 1)
- **Medium Set:** Indicates that the product will cure at a medium rate. Medium Set products are indicated with MS. CMS-1 (Cationic Medium Set-1)
- **Slow Set:** Indicates that the product will cure at a slow rate. Slow Set products are indicated with SS. SS-1 (Slow Set-1)

# Basic Asphalt Terms

- **-1, -2:** Indicate the viscosity of the product. A 1 indicates a thinner product, a 2 a thicker product. CRS-1 (Cationic Rapid Set- Thinner), CRS-2 (Cationic Rapid Set- Thicker)
- **Polymers:** Are rubber or rubber like products that can be added in the emulsion process. Polymer added products are identified with a P, S, or L. CRS-2P (Cationic Rapid Set-2 With a Polymer), CRS-2L (Cationic Rapid Set-2 with a Polymer), EA-90P (Emulsified Anionic-90 Polymer)

# Basic Asphalt Terms

- **Penetration:** Indicates the hardness of the product at 77F.. A product that has a harder penetration is indicated with an h. CRS-1 (Cationic Rapid Set-Thinner), CRS-1h (Cationic Rapid Set- Thinner with a harder Penetration)

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# Basic Asphalt Terms

- CHFRS-2P
- Cationic
- High Float
- Rapid Set
- 2 Viscosity
- Polymer Modified

# Basic Asphalt Terms

- **Cutbacks:** Are asphalt products, that have been diluted using fuels. No water added, therefore they are also known as dry products.
- (MC-3000, MC-800, MC-250, MC-30). The number behind the MC indicates the viscosity grade or the thickness or thinness of the material.

## Safety Precautions

Safety precautions are mandatory at all times when handling asphalt materials. These safety precautions include, but are not limited to:

- Gloves shall be worn and sleeves shall be rolled down and fastened over the gloves at the wrist while sampling and while sealing containers.
- Face shields should be worn while sampling.
- There shall be no smoking while sampling asphalts.
- Avoid prolonged breathing of fumes, vapors and mists.
- During sealing and wiping, the container shall be placed on a firm level surface to prevent splashing, dropping or spilling the material.

### 3.1 Storing Asphalt Emulsions

Asphalt emulsion, a dispersion of fine droplets of asphalt cement in water, has both the advantages and disadvantages of the carrier medium, water. When storing emulsified asphalts:

<b>DO</b>	Store as you would fluid water – between 10°C (50°F) and 85°C (185°F), depending on the intended use and specific product.
<b>DO</b>	Store at the temperature specified for the particular grade and application. Table 3.1-1 shows the normal storage temperature ranges.
<b>DO NOT</b>	Permit the asphalt emulsion to be heated above 85°C (185°F). Elevated temperatures evaporate the water, changing the characteristics of the asphalt emulsion.
<b>DO NOT</b>	Permit the asphalt emulsion to be heated above 85°C (185°F). Elevated temperatures evaporate the water, changing the characteristics of the asphalt emulsion.
<b>DO NOT</b>	Let the emulsion freeze. This breaks the emulsion, separating the asphalt from the water. The result will be two layers in the tank, neither of which will be suited for the intended use, and the tank will be difficult to empty.
<b>DO NOT</b>	Allow the temperature of the heating surface to exceed 100°C (212°F). This will cause premature breakdown of the emulsion on the heating surface.
<b>DO NOT</b>	Use forced air to agitate the emulsion. It may cause the emulsion to break.

**Table 3.2 Handling Emulsified Asphalts**

DO	When heating asphalt emulsion, agitate it gently to eliminate or reduce skin formation.
DO	Protect pumps, valves, and lines from freezing in winter. Drain pumps and service according to the manufacturer's recommendations.
DO	Blow out lines and leave drain plugs open when they are not in service.
DO	Use pumps with proper clearances for handling emulsified asphalt. Tightly fitting pumps can bind and seize.
DO	Warm the pump to about 65°C (150°F) to facilitate start-up.
DO	When diluting asphalt emulsion, check the compatibility of the water with the emulsion by testing a small quantity.
DO	If possible, use warm water for diluting, and always add the water slowly to the emulsion (not the emulsion to the water).
DO	Avoid repeated pumping and recirculating, as the viscosity may drop and air may become entrained, causing the emulsion to be unstable.
DO	Place inlet pipes and return lines at the bottom of tanks to prevent foaming.
DO	Pump from the bottom of the tank to minimize contamination from skinning that may have formed.
DO	Remember that emulsions with the same grade designation can be very different chemically and in performance.
DO	Haul emulsion in truck transports with baffle plates to prevent sloshing.
DO	Agitate emulsions that have been in prolonged storage. This may be done by recirculation.

<b>DO NOT</b>	Mix different classes, types, and grades of emulsified asphalt in storage tanks, transports, and distributors. See Table 3.2-1 for recommendations.
<b>DO NOT</b>	apply severe heat to pump packing glands or pump casings. The pump may be damaged.
<b>DO NOT</b>	dilute rapid-setting grades of asphalt emulsion with water. Medium and slow setting grades may be diluted, but always add water slowly to the asphalt emulsion. Never add the asphalt emulsion to a tank of water when diluting.
<b>DO NOT</b>	load asphalt emulsion into storage tanks, tank cars, tank transports, or distributors containing remains of incompatible materials. See Tables 3.2-1, 3.2-2a and 3.2-2b.
<b>DO NOT</b>	subject emulsified asphalt or air above it to an open flame, heat, or strong oxidants. Adequate ventilation is required.
<b>DO</b>	avoid breathing fumes, vapors, and mist.
<b>DO</b>	obtain a copy of the supplier's material safety data sheet (MSDS). Read the MSDS carefully and follow it.



Coastal Energy Corporation  
 1 Coastal Drive, PO Box 218  
 Willow Springs, MO 65793  
 Ph: (417) 469-2777 F: (417) 469-2599

**FOR CHEMICAL EMERGENCY:**  
 Spill, leak, fire, exposure, or accident  
 call CHEMTREC - Day or Night  
 1-800-424-9300

BoL No: **A38784**

DELIVERY DATE: 3/11/2015		CONTRACT #:			
P.O. #: 121740					
CONF #:					
SHIP PER ORIGIN	COASTAL ENERGY CORP. HWY 96 EAST 14280 MILLER, MO 65707	CONSIGNEE DESTINATION	JOURNAGAN CONSTRUCTION SPRINGFIELD, MO GREENE COUNTY (417) 869-7222, (417) 849-0512, (417) 839-5406		
	GROSS: 79,820		PRELOAD:		
TARE: 30,360		TRACTOR #: 5705			
NET: 49,460 (24.73T)		TRAILER #: 781			
STOPS IN TRANSIT:		CARRIER: FMC TRANSPORT, INC.			
MATERIAL	NET GALS.	WT./GAL.	TEMP.	GRAV.	
SS-1	5,988	8.26	180	0.9916	
MATERIAL DESCRIPTION: ASPHALT EMULSION (NON-REGULATED)					
BATCH # 03-15	TANK #: 28	TRIP #: 159182			
TIME DUE: 7:00	START UNLOAD:	DEMURRAGE:			
TIME ARRIVED:	FINISH UNLOAD:	PUMP NEEDED? YES			
THIS CERTIFIES THAT THE ASPHALTIC MATERIAL IN THIS SHIPMENT COMPLIES WITH THE MODOT AND AASHTO SPECIFICATIONS FOR THE GRADE SPECIFIED AND THE WEIGHTS SHOWN HEREON WERE OBTAINED ON DEPARTMENT APPROVED SCALES AND ARE CORRECT WITHIN THE SPECIFIED SCALE REQUIREMENTS.					
This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to applicable Department of Transportation regulations.					

**COMMENTS/DIRECTIONS:**

DELIVER TO JOURNAGAN CONST. ON KEARNEY ST. IN SPRINGFIELD - TERRY - 417-839-6506 JOB # J8P0683

**NOTES:**

\_\_\_\_\_  
 Loading Agent Signature

\_\_\_\_\_  
 Driver Signature

**FMC TRANSPORT ONLY:**

**ATTENTION CUSTOMER:**

Buyer assumes all risk to the product once it is delivered and Seller is not responsible for any damage subsequent to delivery, including damage from Buyer adding a substance or thing to the product resulting in modifications to the product, other equipment, or any other damages resulting therefrom or after loading of the product from Seller to Buyer or delivery. The terms of the sales contract and terms and conditions are incorporated herein.

Due to the possibility of product contamination in your storage tank, at no fault of Seller's resulting in your dissatisfaction and the inconvenience of all parties involved, we require that you:

- 1) Check the bills of lading to make sure product being received is the product ordered.
- 2) Verify driver has unloading hose connected to correct receiving line for product to be unloaded.
- 3) Check to see that the storage tank will hold the quantity of product to be unloaded.
- 4) Check to see that all necessary valves are open to the storage tank for product being received.

I have checked the bill of lading, and the product being received is as ordered and the tank(s) will hold the product as is ordered. The driver, in my presence, was connected to the correct receiving line for the product being unloaded. I am an authorized person to inspect the product and make the affirmations herein, under full authority to bind the Buyer to the terms listed herein.

FOR DROPPED TRAILERS ONLY: Consignee/Buyer acknowledges receipt of trailer and its contents, and confirms proper trailer setup. Consignee/Buyer further agrees to assume all risk of damage or loss of any kind to trailer and/or its contents and reimburse Seller for said damages; and Consignee/Buyer agrees to assume risk of any damage to property caused by trailer or its contents, and to indemnify Seller for same.

\_\_\_\_\_  
 Consignee Signature

\_\_\_\_\_  
 Date/Time



Coastal Energy Corporation  
 1 Coastal Drive, PO Box 218  
 Willow Springs, MO 65793  
 Ph: (417) 469-2777 F: (417) 469-2599

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 call CHEMTREC - Day or Night  
 1-800-424-9300

BoL No: **A38944**

DELIVERY DATE: 4/14/2015		CONTRACT #:			
P.O. #: 7D33					
CONF #:					
SHIPPER ORIGIN	COASTAL ENERGY CORP. HWY 96 EAST 14280 MILLER, MO 65707		CONSIGNEE DESTINATION	MODOT CENTRAL DIST. LEBANON, MO LACLEDE COUNTY (417) 532-5511	
	GROSS: 79,920			PRELOAD:	
TARE: 28,380		TRACTOR #: 5905			
NET: 51,540 (25.77T)		TRAILER #: 818			
STOPS IN TRANSIT:		CARRIER: FMC TRANSPORT, INC.			
MATERIAL	NET GALS.	WT./GAL.	TEMP.	GRAV.	
MC-800	6,347	8.12	275	0.975	
MATERIAL DESCRIPTION: UN 1999, ELEVATED TEMPERATURE LIQUID, N.O.S., FLAMMABLE, (ASPHALT CUT-BACK), 3, PGIII, 1 CARGO TANK					
BATCH # TRUCK-BLENDER	TANK #: 37	TRIP #: 164859			
TIME DUE: 7:00	START UNLOAD:	DEMURRAGE:			
TIME ARRIVED:	FINISH UNLOAD:	PUMP NEEDED? YES			
THIS CERTIFIES THAT THE ASPHALTIC MATERIAL IN THIS SHIPMENT COMPLIES WITH THE MODOT AND AASHTO SPECIFICATIONS FOR THE GRADE SPECIFIED AND THE WEIGHTS SHOWN HEREON WERE OBTAINED ON DEPARTMENT APPROVED SCALES AND ARE CORRECT WITHIN THE SPECIFIED SCALE REQUIREMENTS.					
This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to applicable Department of Transportation regulations.					

COMMENTS/DIRECTIONS: LEBANON STORAGE -- IVEY LANE, 0.5 MI. W OF BL I-44 -- 417-532-5511
NOTES:
<p>_____</p> <p style="text-align: center;">Loading Agent Signature</p> <p>_____</p> <p style="text-align: center;">Driver Signature</p>
<b>FMC TRANSPORT ONLY:</b>
<b>ATTENTION CUSTOMER:</b>
Buyer assumes all risk to the product once it is delivered and Seller is not responsible for any damage subsequent to delivery, including damage from Buyer adding a substance or thing to the product resulting in modifications to the product, other equipment, or any other damages resulting therefrom or after loading of the product from Seller to Buyer or delivery. The terms of the sales contract and terms and conditions are incorporated herein.
Due to the possibility of product contamination in your storage tank, at no fault of Seller's resulting in your dissatisfaction and the inconvenience of all parties involved, we require that you:
<ol style="list-style-type: none"> <li>1) Check the bills of lading to make sure product being received is the product ordered.</li> <li>2) Verify driver has unloading hose connected to correct receiving line for product to be unloaded.</li> <li>3) Check to see that the storage tank will hold the quantity of product to be unloaded.</li> <li>4) Check to see that all necessary valves are open to the storage tank for product being received.</li> </ol>
I have checked the bill of lading, and the product being received is as ordered and the tank(s) will hold the product as is ordered. The driver, in my presence, was connected to the correct receiving line for the product being unloaded. I am an authorized person to inspect the product and make the affirmations herein, under full authority to bind the Buyer to the terms listed herein.
FOR DROPPED TRAILERS ONLY: Consignee/Buyer acknowledges receipt of trailer and its contents, and confirms proper trailer setup. Consignee/Buyer further agrees to assume all risk of damage or loss of any kind to trailer and/or its contents and reimburse Seller for said damages; and Consignee/Buyer agrees to assume risk of any damage to property caused by trailer or its contents, and to indemnify Seller for same.
<p>_____</p> <p style="text-align: center;">Consignee Signature</p> <p style="text-align: right;">_____</p> <p style="text-align: right;">Date/Time</p>



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 call CHEMTREC - Day or Night  
 1-800-424-9300

BoL No: **A38903**

DELIVERY DATE: 4/7/2015		CONTRACT #:			
P.O. #: 3336					
CONF #:					
SHIPPER ORIGIN	COASTAL ENERGY CORP. HWY 96 EAST 14280 MILLER, MO 65707		CONSIGNEE DESTINATION	DEWEY COUNTY DIST.# 3 VICI, OK DEWEY COUNTY (580) 995-3444, (580) 383-6871	
	GROSS: 53,560			PRELOAD:	
TARE: 28,920		TRACTOR #: 5105			
NET: 24,640 (12.32T)		TRAILER #: 768			
STOPS IN TRANSIT:		CARRIER: FMC TRANSPORT, INC.			
MATERIAL		NET GALS.	WT./GAL.	TEMP.	GRAV.
CRS-2		2,998	8.22	180	0.9868
MATERIAL DESCRIPTION: ASPHALT EMULSION (NON-REGULATED)					
BATCH # 02-15		TANK #: 4		TRIP #: 162464	
TIME DUE: 7:00		START UNLOAD:		DEMURRAGE:	
TIME ARRIVED:		FINISH UNLOAD:		PUMP NEEDED? YES	
<p>THIS CERTIFIES THAT THE ASPHALTIC MATERIAL IN THIS SHIPMENT COMPLIES WITH THE ODOT AND AASHTO SPECIFICATIONS FOR THE GRADE SPECIFIED AND THE WEIGHTS SHOWN HEREBON WERE OBTAINED ON DEPARTMENT APPROVED SCALES AND ARE CORRECT WITHIN THE SPECIFIED SCALE REQUIREMENTS.</p>					
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**COMMENTS/DIRECTIONS:**

VICI, OK — CALL FOR DIRECTIONS 580-995-3444 OR 580-383-6871

**NOTES:**

\_\_\_\_\_  
 Loading Agent Signature

\_\_\_\_\_  
 Driver Signature

**FMC TRANSPORT ONLY:**

**ATTENTION CUSTOMER:**

Buyer assumes all risk to the product once it is delivered and Seller is not responsible for any damage subsequent to delivery, including damage from Buyer adding a substance or thing to the product resulting in modifications to the product, other equipment, or any other damages resulting therefrom or after loading of the product from Seller to Buyer or delivery. The terms of the sales contract and terms and conditions are incorporated herein.

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FOR DROPPED TRAILERS ONLY: Consignee/Buyer acknowledges receipt of trailer and its contents, and confirms proper trailer setup. Consignee/Buyer further agrees to assume all risk of damage or loss of any kind to trailer and/or its contents and reimburse Seller for said damages; and Consignee/Buyer agrees to assume risk of any damage to property caused by trailer or its contents, and to indemnify Seller for same.

\_\_\_\_\_  
 Consignee Signature

\_\_\_\_\_  
 Date/Time





1. 2000-01-01 10:00:00



**Table 3.1-1 Storage Temperatures for Asphalt Emulsions**

Grade	Temperature, °C (°F)	
	Minimum	Maximum
RS-1	20° (70°)	60°(140°)
RS-2, CRS-1, CRS-2, HFRS-2	50°(125°)	85°(185°)
SS-1, SS-1h, CSS-1, CSS-1h, MS-1, HFMS-1	10°(50°)	60°(140°)
CMS-2, CMS-2h, MS-2, MS-2h, HFMS-2, HFMS-2h, HFMS-2s	50°(125°)	85°(185°)

**Table 6.2-2 Suggested Distributor Spraying Temperatures for Various Grades of Asphalt Emulsions**

Type and Grade of Asphalt Spraying Temperatures			Type and Grade of Asphalt Spraying Temperatures		
Asphalt Emulsion*	(°C)	(°F)	Asphalt Emulsion*	(°C)	(°F)
RS-1	20-60	70-140	HFMS-2s	20-70	70-160
RS-2	50-85	125-185	SS-1	20-70	70-160
HFRS-2	50-85	125-185	SS-1h	20-70	70-160
MS-1	20-70	70-160	CRS-1	50-85	125-185
MS-2	20-70	70-160	CRS-2	50-85	125-185
MS-2h	20-70	70-160	CMS-2	20-70	70-160
HFMS-1	20-70	70-160	CMS-2h	20-70	70-160
HFMS-2	20-70	70-160	CSS-1	20-70	70-160

# Source

- A Basic Asphalt Emulsion Manual
- Manual Series No. 19
- [www.asphaltinstitute.org](http://www.asphaltinstitute.org)
- [www.aema.org](http://www.aema.org)

