Asphalt Storage Tanks
ASPHALT CEMENT

AC

325° – 400°

Multiple Grades
CUT BACKS

AC

FUEL
- DIESEL
- BENZENE
- NAPTHA

70° - 210°

SC, MC, RC
EMULSIONS

AC

WATER

SOAP

Mill

120° - 160°

ANIONIC

CATIONIC
Successful Tack Coat

The Ultimate Goal:
Uniform, complete, and adequate coverage
Construction Issues

Uniformity of the Tack Coat Application

Non-uniform Application  Proper Application
Successful Tack Coat

The Ultimate Goal:
Uniform, complete, and adequate coverage
Successful Tack Coat

The Ultimate Goal:
Uniform, complete, and adequate coverage
Example of Emulsion Break

Unbroken Emulsion After Breaking
Basic Functions

1. Fill the tank.
2. Heat material in tank.
3. Circulate material in tank.
4. Circulate material in spray bar.
5. Spray a metered amount of material.
6. Handspray.
7. Suck-back material from spray bar.
8. Wash out.
Metering System

Four important features need to be considered:

1) Desired Application Rate - Gallon/Yard
2) Forward Ground Speed - Feet Per Minute
3) Asphalt Pump Output - Gallons Per Minute
4) Width of Spray - Feet
Asphalt Pump

Top Inlet

Flow Meter

Bottom Discharge
GPM

SPRAY WIDTH

GAL/YD²

FPM
Calculated Eye
SPRAY BAR
Nozzle Slot 30° from Spray Bar

Spray Bar (bottom view)
## Spray Bar Nozzles

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3352205  Etnyre Multi-Material V Slot Nozzle  
(Emulsion Products)  
App Rate .20 - .55

Drive Distributor to achieve GPM between Min and Max for Application accuracy

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Pump Meter – Volume

Spray – Pressure
Construction Issues

Uniformity of the Tack Coat Application
Tack application with blocked nozzles AND no overlap of nozzle spray fan
Nozzles may be too large
1 NOZZLE PER FOOT
Stick the Tank

Volume
Before checking your volume by sticking the tank, make sure Distributor is level.
BT1 CONTROLS REAR PANEL
Longitudinal Rate Test — Weight
Calibration

• Distributor
WHAT ARE WAYS TO CHECK YOUR DISTRIBUTOR CALIBRATION?
Magnetic Pump Speed Sensing

- Speed sensor pick-up counts the revolutions of the asphalt pump.
- Speed sensor is internal to the hydraulic motor.
- Pump output is displayed on an analog gage or sent directly to computer.
- Pump output is measured with Gallons Per Minute (GPM)

Radar Ground Speed Sensing

- Radar Speed sensing is **standard equipment**.
- Vehicle speed displayed on analog gauge or sent to computer.
- Precise measurement of ground speed and distance.
- No moving parts to wear out, less maintenance, and less chance of damage.
- Ground speed is measured in Feet Per Minute (FPM)
RADAR ADJUSTMENT

Angle Adjustment

18" to 36"  GROUND

Radar Head
Circulating System continued

**Tank Suction Valve**

- Located at bottom of tank.
- Air control open, spring close.
- No sump to trap liquid asphalt in the tank.
- Disc valve closes at tank flange. Always in contact with hot asphalt.
- No external line between valve and tank to freeze up with cold asphalt.

**Strainer**

- Strainers, one tray type between tank and asphalt pump and between fill line and asphalt pump.
- All liquid asphalt goes through a strainer before it gets to the asphalt pump.

**Circulating In Tank**

- Shortest possible distance
Safe Operation Results From Knowledge of Materials and Equipment
Success Is Insured With Teamwork!

Teamwork Is the Difference Between Success and Failure
NOT MY JOB!
Welcome to E.D. Etnyre & Co.

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- Shooter Asphalt Distributors
- Maintenance Unit Asphalt Distributors
- Chip Spreaders
- Transports
- Falcon Live Bottoms
- Trailers
- Flushers / Sprinklers
- Asphalt Storage Tanks
- Used Equipment

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Ask for our Free Tack Video!

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email: sales@etnyre.com
www.etnyre.com
SEE YA- ALL LATER
Distributor

• What Happened Here?
| Width of Road-ft | 30 | 25 | 20 | 15 | 12 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 |
|------------------|----|----|----|----|----|----|---|---|---|---|---|---|---|---|
| Loose Depth in   |    |    |    |    |    |    |   |   |   |   |   |   |   |   |
| Cubic Yards      | 200| 250| 300| 350| 400| 500| 600| 700| 800| 1000|    |    |    |    |
| Required         |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Length of Road-ft| 300| 350| 400| 500| 600| 700| 800| 1000|    |    |    |    |    |    |    |
| Spray Bar Length-ft| 30 | 25 | 20 | 15 | 12 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 |    |
| Application Rate-gal/yd² | .7 | .8 | .9 | 1.0 | 1.5 | 2.0 | 2.5 | 3.0 |    |    |    |    |    |    |    |
| Gallons Required | 700| 800| 1000| 1500| 2000| 2500| 3000|    |    |    |    |    |    |    |    |
| Length of Spray-ft | 300| 350| 400| 500| 600| 700| 800| 1000|    |    |    |    |    |    |    |    |
Bonded Demonstration

- Up to 5 sheets (layers)
- 48” x 4” x 11/32”
- 60, 100, or 160 pound loadings
- Various Bonding Configurations
Residual Asphalt Binder in Emulsion

- Slow set emulsion = typically ~2/3 asphalt + 1/3 water
- For tack coat - 67% asphalt + 33% water
- Generally, use this ratio for the majority of asphalt emulsions used as tack coat to result in a calculation of residual asphalt tack coat that is "close enough"
- Residual asphalt is critical: It is the amount of actual tack coat that remains on the pavement after water or solvents have evaporated
Calculation of Application Rate for Emulsion

- Based on a ratio of 2/3 asphalt and 1/3 water, the required application amount of asphalt binder in an asphalt emulsion will be 1.5 times greater than the residual amount.
- Application Rate = 1.5 x Desire Residual Asphalt
Application Rate for Diluted Emulsion

• Based on a ratio of 1 part asphalt emulsion and 1 part additional water, a diluted asphalt emulsion will have a residual binder content of only 1/3 of the weight of the emulsion

• So, you must apply three times (3x) more diluted emulsion than the desired residual tack coat rate
EMULSION

33% Water Soap

67% Asphalt

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<th>SHOT RATE</th>
<th>RESIDUAL</th>
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.300 GAL/YD²
300 FPM  120 GPM
Nozzle Slot $30^\circ$ from Spray Bar

Spray Bar (bottom view)
Nozzle Range GPM

Min X Ft. Bar = Minimum GPM

Max X Ft Bar = Maximum GPM
LETS CHEAT
Sizing Your Nozzle

What do we Know?

A. Bar Length  Example: 12 Ft
B. Application Rate  Example: .300 gal/yd²

Use Slide Rule Computator

1. Place Application Rate desired under Bar Length
2. Pick a Speed (FPM) -
3. GPM will be directly below speed (FPM)
4. Divide GPM by Bar Length
5. Answer = gal/Ft Bar

Example: .300 gal/yd² @ 12 Ft @ 400 FPM = 160 GPM

\[
\frac{160}{12} = 13.33 \text{ gal/Ft}
\]
Flat Fan

[Diagram of Flat Fan]
Drive Distributor to achieve GPM between Min and Max for Application accuracy

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App Rate: .05 - .20
Nozzle Height

Spray Bar (end view)

Nozzle 100° to 105° from road surface

12"

Road Surface

90°

100° to 105°
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50 GPM
Asphalt Pump

3/16"
1/8"
1/16"

Nozzle Size
CALIBRATING YOUR DISTRIBUTOR TRUCK

• What do we mean when we say calibrating your distributor?
• Why should you check your distributors calibration?
• How do you check your distributor calibration?
• What component are involved in calibrating your distributor truck?
Types of Tack Coat Failures

Delamination of overlay from underlying pavement
Slippage Failure