

43. Recommended product category for the trafficked surface:  
 Primary: Polymers            Go to 44  
 see references 17, 20  
 Secondary: Petrol            Go to 44  
 see reference 20
44. The economic evaluation for prolonged and repeated use of this product at 60- to 90-day intervals is:
  - a. Economical            Go to 45
  - b. Not economical        Go to 46
45. A trial application of the product category has proven:
  - a. Effective            Go to 47
  - b. Not effective        Go to 46
46. Consider paving or use of an alternate dust palliative.
47. Implement large-scale use of product category and a monitoring program.

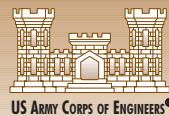
Once you determine the best chemical palliatives for conditions on your installation, consult the product manufacturers for application rates and concentrations. For more information on cost-effective dust control, check these publications:

- ◆ USACERL Technical Report 97/69. Gebhart and Hale. 1997.
- ◆ USAEC/USACERL Technical Report SFIM-AEC-ET-CR-96196. Gebhart and Hale. 1996.
- ◆ *Dustproofing Unsurfaced Areas: Facilities Technology Application Test Demonstrations, FY 84.* CEWES Technical Report GL-85-11. Styron III, et. al. 1985.
- ◆ *Dustproofing Unsurfaced Areas: Facilities Technology Application Test (FTAT) Demonstration, FY 85.* CEWES Technical Report GL-86-20. Robert A. Haas. 1986.
- ◆ *Dustproofing Unsurfaced Areas: Facilities Technology Application Test (FTAT) Demonstration, FY 86.* CEWES Miscellaneous Paper GL-87-19. Jeffrey P. Armstrong. 1987.
- ◆ *Consumers Guide to Dust Control Technologies.* J.P. Zaniewski and A.K. Bennett. 1989.

This key is designed to help military installations evaluate solutions for dust control problems. It recommends categories of chemical dust palliatives according to traffic volume, climatic factors, and soil types and textures. The recommended palliatives recorded the best results in both empirical studies and literature surveys, though products may be about 50% to 75% less effective in areas where tracked-vehicle traffic predominates.

Work through the questions in this key to find the most effective chemical dust palliative for your installation. For best results, you'll need the following data:

- ◆ predominant traffic type of the area supports
- ◆ estimated traffic volume during times of heaviest use
- ◆ characteristics of the trafficked surface, such as materials used to construct it, surface geometry, drainage patterns and maintenance schedules (all available from the Roads and Grounds division of the Directorate of Public Works)
- ◆ average annual precipitation
- ◆ predominant soil texture of the trafficked surface.



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# DUST CONTROL SELECTION KEY

**\* FIELD \***  
 G U I D E



# DUST PALLIATIVE KEY

1. Has the area been identified as having a dust control problem?
  - a. Yes Go to 2
  - b. No Palliative may not be necessary
2. Does the area support military vehicle traffic?
  - a. Yes Go to 3
  - b. No Palliative may not be necessary
3. Does the area support aircraft traffic?
  - a. Yes Go to 4
  - b. No Go to 6
4. Is the type of aircraft fixed-wing?
  - a. Yes Go to 10
  - b. No Go to 5
5. Are the aircraft helicopters?
  - a. Yes Go to 43
  - b. No Go to 3
6. Does the area support land vehicles?
  - a. Yes Go to 7
  - b. No Go to 14
7. Are the vehicles tracked or wheeled?
  - a. Tracked Go to 9
  - b. Wheeled Go to 8
8. Estimated number of wheeled vehicle passes per day during periods of heaviest use:
  - a. More than 250 Go to 11
  - b. Less than 250 Go to 13
9. Estimated number of tracked vehicle passes per day during periods of heaviest use:
  - a. More than 100 Go to 11
  - b. Less than 100 Go to 13
10. Estimated number of aircraft landings per day during periods of heaviest use:
  - a. More than 50 Go to 14
  - b. Less than 50 Go to 13
11. Are permanent surface treatments, such as paving, economically feasible? Paving costs are about \$6 to \$10 per square yard, but can be significantly higher if predominantly tracked-vehicle traffic is expected because thicker pavement is required for satisfactory performance.
  - a. Yes Go to 12
  - b. No Go to 14
12. Apply permanent stabilization practices. Paving the surface will be more cost-effective than periodic unsurfaced road maintenance and regular application of dust suppressants.
13. Use of chemical dust suppressants may not be economically justified based on low traffic volumes. Good construction and maintenance practices are recommended instead. However, when safety or air quality concerns are a high priority, low traffic volumes should not preclude the use of chemical dust suppressants.  
Go to 14
14. Has the surface been evaluated for geometry, materials, drainage, and maintenance practices?
  - a. Yes Go to 20
  - b. No Go to 15
15. Does the geometry of the surface appear to have a crown that facilitates drainage?
  - a. Yes Go to 16
  - b. No Go to 19
16. Do surface and subsurface materials appear to be stable and without significant potholing, washboarding, or other forms of erosion?
  - a. Yes Go to 17
  - b. No Go to 19
17. Does the surface have adequate drainage for local conditions?
  - a. Yes Go to 18
  - b. No Go to 19
18. Is surface maintenance performed on a regular basis?
  - a. Yes Go to 20
  - b. No Go to 19
19. Upgrades to drainage, surface and subsurface materials, grading, and/or maintenance practices may solve the dust control problem. Chemical dust suppressants should be considered if mechanical stabilization is not cost-effective and/or dust problems persist. Mechanical stabilization, which may include the addition, grading, mixing, and compaction of fresh aggregate materials, costs about \$2 to \$3 per square yard. Most installation Directorates of Public Works and state transportation departments can provide detailed information about mechanical stabilization practices and specifications.  
Go to 20
20. Determine dominant climate influences, trafficked-surface soil textures, and suitable dust control product categories.  
Go to 21
21. The climate of the installation is classified as:
  - a. Arid (*less than 12" of precipitation per year*)  
Go to 22
  - b. Temperate (*12"-36" of precipitation per year*)  
Go to 23
  - c. Humid (*more than 36" of precipitation per year*)  
Go to 30
22. Soil texture of the trafficked surface is best classified as:
  - a. Sand/gravel Go to 24
  - b. Loam Go to 25
  - c. Clay Go to 26
  - d. Limestone Go to 27
23. The temperate climate is classified as:
  - a. Semi-arid (*12"-24" of precipitation per year*)  
Go to 28
  - b. Sub-humid (*24"-36" of precipitation per year*)  
Go to 29
24. Recommended product category for the trafficked surface:  
Primary: *Organic, Non-Bituminous*  
Go to 43  
*see references 1, 20, 37*  
Secondary: *Salts or Petrol*  
Go to 43  
*see references 1, 4, 20, 31, 37*
25. Recommended product category for the trafficked surface:  
All product categories are suitable  
Go to 43  
*see references 10, 20, 31, 35*
26. Recommended product category for the trafficked surface:  
Primary: *Organic, Non-Bituminous*  
Go to 43  
*see references 20, 37*  
Secondary: *Salts or Electro-Chemical Stabilizers*  
Go to 43  
*see references 31, 35*
27. Recommended product category for the trafficked surface:  
Primary: *Salts*  
Go to 43  
*see references 31, 37*  
Secondary: *Organic, Non-Bituminous*  
Go to 43  
*see references 20, 37*
28. Soil texture of the trafficked surface is best classified as:
  - a. Sand/gravel Go to 31
  - b. Loam Go to 32
  - c. Clay Go to 33
  - d. Limestone Go to 34
29. Soil texture of the trafficked surface is best classified as:
  - a. Sand/gravel Go to 35
  - b. Loam Go to 36
  - c. Clay Go to 37
  - d. Limestone Go to 38
30. Soil texture of the trafficked surface is best classified as:
  - a. Sand/gravel Go to 39
  - b. Loam Go to 40
  - c. Clay Go to 41
  - d. Limestone Go to 42
31. Recommended product category for the trafficked surface:  
Primary: *Petrol*  
Go to 44  
*see references 10, 35*  
Secondary: *Organic, Non-Bituminous*  
Go to 44  
*see reference 20*
32. Recommended product category for the trafficked surface:  
Primary: *Salts*  
Go to 44  
*see references 1, 2, 10, 25, 27, 28, 32, 36*  
Secondary: *Organic, Non-Bituminous*  
Go to 44  
*see references 1, 2, 6, 10, 20, 25, 32, 36*
33. Recommended product category for the trafficked surface:  
Primary: *Organic, Non-Bituminous*  
Go to 44  
*see references 6, 20, 30*  
Secondary: *Petrol*  
Go to 44  
*see reference 20*
34. Recommended product category for the trafficked surface:  
Primary: *Salts*  
Go to 44  
*see references 18, 28*  
Secondary: *Organic, Non-Bituminous*  
Go to 44  
*see references 18, 30*
35. Recommended product category for the trafficked surface:  
Primary: *Organic, Non-Bituminous*  
Go to 44  
*see references 3, 11, 12, 13, 33*  
Secondary: *Salts*  
Go to 44  
*see references 18, 21*
36. Recommended product category for the trafficked surface:  
Primary: *Organic, Non-Bituminous*  
Go to 44  
*see references 3, 11, 12, 13, 16, 20, 23, 24, 33, 36*  
Secondary: *Salts*  
Go to 44  
*see references 3, 11, 12, 13, 16, 21, 24, 29, 36*
37. Recommended product category for the trafficked surface:  
Primary: *Organic, Non-Bituminous*  
Go to 44  
*see references 11, 12, 13, 20, 23, 24*  
Secondary: *Electro-Chemical Stabilizers*  
Go to 44  
*see reference 7*
38. Recommended product category for the trafficked surface:  
Primary: *Salts*  
Go to 44  
*see references 8, 15, 18, 21*  
Secondary: *Organic, Non-Bituminous*  
Go to 44  
*see references 15, 23*
39. Recommended product category for the trafficked surface:  
Primary: *Petrol*  
Go to 44  
*see references 20, 29*  
Secondary: *Organic, Non-Bituminous*  
Go to 44  
*see references 14, 18*
40. Recommended product category for the trafficked surface:  
Primary: *Salts*  
Go to 44  
*see references 16, 31*  
Secondary: *Electro-Chemical Stabilizers*  
Go to 44  
*see reference 29*
41. Recommended product category for the trafficked surface:  
Primary: *Salts*  
Go to 44  
*see references 4, 14, 20, 29*  
Secondary: *Organic, Non-Bituminous*  
Go to 44  
*see references 14, 20*
42. Recommended product category for the trafficked surface:  
Primary: *Salts*  
Go to 44  
*see references 4, 16, 17, 18*  
Secondary: *Organic, Non-Bituminous*  
Go to 44  
*see references 16, 17, 18*