

Removing stains from brick

How to remove about 150 stains from clay brick masonry

By Clayford T. Grimm

Do you need to remove a stain from a clay brick masonry wall but don't know what cleaner or cleaning method will work? The tables on the next few pages should help. They recommend more than 70 cleaners, 18 types of equipment, and 39 procedures for removing about 150 stains from clay brick masonry.

How to use the tables

Use Table 1 to find the type of stain you have. Types of stains are listed alphabetically in the first column. The second and third columns in Table 1 list the stain color and the type of brick the stain is on (rough, glazed, or unglazed).

The last three columns in Table 1 refer you to Tables 2, 3, and 4. These columns tell you what

cleaners can be used to remove the stain (Table 2), what equipment is needed (Table 3), and how to apply the cleaner (Table 4).

For example, if you need to remove asphalt from unglazed brick masonry, look down the first column in Table 1 to the word asphalt. Go across to the fourth column and you'll find two suggested cleaners: solvents or #146 in Table 2. In Table 2, Cleaner #146 is identified as trichloroethylene poultice in fuller's earth.

For the equipment you'll need, move over to the fifth column in Table 1. It refers you to #27 in Table 3, which lists vessel, trowel, and impervious cover for poultice paste.

The sixth column in Table 1 gives directions on how to apply the poultice, by referring you to #41 and #48 in Table 4. According to Direction #41 in Table 4, you mix and apply a ¼-inch thickness of poultice, cover, let dry 24 hours, and scrape or brush off filler. Direction #48 instructs you to repeat the procedure as needed. 

Editor's note

The tables are reprinted with permission from Grimm's 64-page booklet, *Cleaning Masonry—A Review of the Literature*, published November 1988. It is available for \$10.00 (plus \$2 shipping and handling) from the Construction Research Center, The University of Texas at Arlington, P.O. Box 19347, Arlington, Texas 78712.

The cleaning recommendations cited here and in the original booklet come from 108 published citations; the booklet gives the source of each recommendation. In five other tables in the booklet you'll find recommendations for removing stains from concrete masonry, marble, limestone, concrete, and miscellaneous masonry materials. It also lists manufacturers of each chemical cleaner recommended in the tables and provides their addresses and telephone numbers.

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TABLE 1 HOW TO REMOVE STAINS FROM CLAY BRICK

Stain Type	Stain Color	Surface	Agent (Table 2)	Equipment (Table 3)	Operations (Table 4)
Algae	Black	Any	129, 44, 89, or 134	6, 7, 14	35, 20, 2, 70, 20
Algae or Lichens	Black	Any	71 or 157 or 159	6, 7, 14	57, 38
Algae or Lichens	Brown or Gray	Unglazed	22 or 157	(6, 7, 14) or 11	57 or 38
Animal	Brown or Gray	Unglazed	80	6, 7, 14	57
Animal, Bark, Wood	Brown or Gray	Any	79	6, 7, 14	57
Animal, Bark, Wood	Brown or Gray	Unglazed	27 or 76	6, 7, 14	57, 48
Any	Any	Unglazed	Abrasion	22, 1	59
Asphalt	Black	Unglazed	146 or Solvents	27	41, 48
Bark, see Wood	Brown or Gray	Unglazed	80	6, 7, 14	57
Bitumen, Tar	Black	Unglazed	26 or 146 or 72 or 34	27	41
Bitumen, Tar	Black	Unglazed	146 or Other Solvent	27	41, 48
Bronze, see Copper					
Calcium Carbonate	White Scum	Unglazed	58	6, 7, 14	57, 22
Coal-tar Pitch	Black	Unglazed	146 or Solvents	27	41, 48
Copper or Bronze	Green or Brown	Unglazed	18	27	41, 48
Copper or Bronze	Green, Muddy Brown	Any	18	27	41, 48, 47

TABLE 1 HOW TO REMOVE STAINS FROM CLAY BRICK *Continued*

Stain Type	Stain Color	Surface	Agent (Table 2)	Equipment (Table 3)	Operations (Table 4)
Copper or Bronze	Greenish Blue	Unglazed	11 + 4 Parts Talc	27	41
Crayon, Wax	Any	Unglazed	Acetone	6, 7, 14	57
Dirt or Mud	Brown, Tan, Black	Any	47	6, 7, 14	57, 48
Dirt or Mud	Brown or Black	Rough	76	6, 7, 14	57, 48
Dirt or Mud	Brown or Black	Rough	Steam	4, 13, 1	15
Dirt or Soot	Black or Gray	Unglazed	Steam	4, 13	15
Dirt or Soot	Black or Gray	Unglazed	111, 112, or 150	5, 15, 1, 20	11
Dirt or Soot	Black or Gray	Unglazed	Detergent in Water	6, 7, 14	57
Dirt, Dust, Grime	Any	Any	99	6, 7, 14	57
Dirt, Smoke; Soot	Black	Unglazed	60	6, 7, 14	57, 48, 22
Dirt, Smoke, Soot	Black	Unglazed	Trichlorethylene	27	41, 48
Dirt, Smoke, Soot	Black	Any	Detergent in Warm Water	6, 7, 14	57
Dirt, Smoke, Soot	Black	Any 4	7 or 146	(6, 7, 14) or 27	57 or 41
Dirt, Smoke, Soot	Black	Any	99, 10, or 50	(6, 7, 14) or 11	57, 48, 38
Dirt, Smoke, Soot	Black	Any	146	27	41, 48
Dirt, Smoke, Soot	Black	Any	119	14, 20, 21	58
Dust, see Dirt					
Efflorescence	Green, Brown, Yellow	Unglazed	Oxalic Acid (1%)	6, 7, 14	57, 50, 48
Efflorescence	White	Unglazed	58 + 13	6, 7, 14	57, 48, 71, 22
Efflorescence	Green, Brown, Yellow	Unglazed	105	6, 7, 14	29, 57
Efflorescence	Green, Brown, Yellow	Unglazed 1	44	6, 7, 14, 27	41, 48, 72
Efflorescence	Green, Brown, Yellow	Unglazed	81 + 107	6, 7, 14	57, 71
Efflorescence	Green, Yellow, Brown	Unglazed	51	6, 7, 14	57
Efflorescence	White	Unglazed	49 + 59	6, 7, 14	57, 43
Efflorescence	Gray or White	Any	Water	6, 7, 14	72, 66
Efflorescence	Gray or White	Any	Water	5, 15, 20	11
Efflorescence	White	Unglazed	58	6, 7, 14	20, 57
Efflorescence	White	Unglazed	None	6	20
Efflorescence	White	Unglazed	Water	6, 7, 14, 2	0, 52
Efflorescence	Green	Unglazed	12 ounces	6, 7, 14	57, 70, 72
Efflorescence	White	Unglazed	NA(OH)/quart Water	6, 7, 14	52
Efflorescence	Green, Brown, Yellow	Unglazed	104, 108, 156, 96 or 136	6, 7, 14	57, 72
Efflorescence	Green	Unglazed			29, 22
Egg	Clear or Yellow	Any	74	6, 7, 14	57, 48
Excelsior	Brown or Gray	Any 79	6, 7, 14	57	
Excelsior	Brown or Gray	Unglazed	80	6, 7, 14	57
Excelsior	Brown or Gray	Any	27 or (75 + 16)	6, 7, 14	57, 48
Flowers	Gray or Brown	Unglazed	80	6, 7, 14	57
Fungi	Black	Any	129, 44, 89 or 134	6, 7, 14	35, 20, 2, 70, 20
Fungi	Black	Unglazed	45 or 52	6, 7, 14	20, 35, 2, 70, 20
Fungi	Black	Unglazed	131	6, 7, 14	20, 35, 2, 70, 20
Fungi	Black	Unglazed	139	6, 7, 14	20, 35, 2, 70, 20
Fungi, Ivy, Moss	Brown or Gray	Unglazed	22 or 157	(6, 7, 14) or 11	57, 48
Fungi, Ivy, Moss	Black	Any	71 or 157 or 159	6, 7, 14	57, 38
Grease or Oil	Brown or Yellow	Any	White Spirits (Alcohol)	25 or 27	18 or 41
Iron, see Rust	Red, Brown	Unglazed	56	14, 27	41, 48, 72
Iron, see Rust	Brown or Rust	Unglazed	83 + 109	6, 7, 14	71, 35, 71, 22
Ivy, see Fungi	Black	Any	129, 44, 89 or 134	6, 7, 14	35, 20, 2, 70, 20
Leaves, see Paper	Brown or Gray	Unglazed	80	6, 7, 14	57
Lichens	Black	Any	129, 44, 89 or 134	6, 7, 14	35, 20, 2, 70, 20
Lichens, see Algae					
Lichens, see Mould					
Manganese	Dark Brown	Unglazed	2	6, 7, 14	57
Manganese	Black, Brown, Gray, tan	Unglazed	2 or 75	6, 7, 14	22, 57, 62, 27

TABLE 1 HOW TO REMOVE STAINS FROM CLAY BRICK *Continued*

Stain Type	Stain Color	Surface	Agent (Table 2)	Equipment (Table 3)	Operations (Table 4)
Manganese	Brown	Unglazed	75	6, 7, 14	29, 57
Mortar	Any	Unglazed	58 or 60	6, 7, 14	49, 57, 7, 22
Mortar	Any	Unglazed	58	6, 7, 14	57, 48, 32, 22
Mortar	Any	Glazed	Detergent in Warm Water	6, 7, 14	57
Mortar	Any	Unglazed	58	24, 6, 7, 14	49, 57, 22
Mortar	Any	Unglazed	58	8, 6, 7, 14	57, 22, 31
Mortar	Any	Sanded	Water :	8, 6, 7 (14 or 15)	52
Mortar	Any	Unglazed	Scouring Cleaner	6, 7, 14	57
Mortar on Pavement	Any	Waxed	Steam	4, 13, 1	49, 46, 15
Mortar/Brown Brick	Gray	Unglazed	Soap and Water	(14 or 15) 6, 7	27 + (72, 26)
Mortar/Light Brick	Gray	Unglazed	Soap and Water	(14 or 15) 6, 7	29 + (52 or 72)
Mortar/Red Brick	Gray	Unglazed	58	6, 7, 14	57
Mortar/Red Brick	Gray	Sanded	Water	14 or 15	52 or 72
Moss or Lichens	Black	Unglazed	21, 159 or 71	6, 7, 14	57
Moss, see Fungi	Black	Any	129, 44, 89 or 134	6, 7, 14	35, 20, 2, 70, 20
Moulds or Lichens	Black	Unglazed	15g Copper Sulfate/ L H ₂ O	6, 7, 14	20, 2, 70, 20
Moulds or Lichens	Black	Unglazed	131	6, 7, 14	20, 2, 70, 20
Moulds or Lichens	Black	Unglazed	52	6, 7, 14	20, 2, 70, 20
Mud, see Dirt					
Oil, Castor	Any	Unglazed	142, 153 or 146	27	41
Oil, Linseed	Any	Unglazed	142, 153 or 146	27	41
Oil, Lubricating	Black	Unglazed	72 or 26 or 54 or 55	27	41
Oil, Peanut	Any	Unglazed	146, 142, 153	27	41
Oil, see Grease	Brown or Yellow	Unglazed	(152 or 106) + 158	27, 14	40, 41, 72
Oil, see Grease	Brown or Yellow	Unglazed	50 or (26, 72 or 146)	(6, 7, 14) or 27	(57, 48) or 41
Paint	Any	Any	86 or 149	24, 6, 7, 14	38, 2, 1, 51
Paint (Small Area)	Any	Unglazed	Commercial Paint Remover	11	38
Paint, New	Any	Any	86 or 148	6, 7, 14, 24	2, 49, 72
Paint New	Any	Unglazed	86 or 148	11, 24, 14	38, 1, 72
Paint, Old	Any	Unglazed	Sand Blast	22, 1	59
Paint, Old	Any	Unglazed	86	86	1138
Paint, Old	Any	Unglazed	Fire	Blow Torch	21, 49, 20
Paper or Leaves	Brown or Gray	Any	79	6, 7, 14	57
Paper or Leaves	Brown or Gray	Any	27 pr (75 + 16)	6, 7, 14	57, 48
Paper, see Straw	Brown or Gray	Unglazed	80	6, 7, 14	57
Pitch, see Cold-Tar					
Plant Growth	Any	Any	Ammonium Sulfate	6, 7, 14	57, 72
Plants, see Fungi					
Plants, see Vegetation					
Rust	Brown	Any	56 or 78	27 or 6, 7, 14	(42 or 57) + 47
Rust	Orange, Red, Rust	Any	75 + 16	6, 7, 14	57, 19, 47
Rust	Red, Rust, Brown	Any	56 or 124	27, 14	41, 72, 48, 47
Rust	Brown	Unglazed	76	6, 7, 14	57
Rust, Heavy	Brown	Unglazed	76, 114	6, 7, 14, 27	57, 48, 42
Rust, Iron, Steel	Brown or Red	Unglazed	Phosphoric Acid, 5%	6, 7, 14	57, 48, 47, 22
Rust, Iron, Steel	Brown or Red	Unglazed	82 + 107	6, 7, 14	57, 71, 47
Scum	Grayish White	Unglazed	88	Fiber Brush	2
Scum	White	Unglazed		22, 1	59
Smoke or Soot	Black	Any	Scouring Cleaner	6, 7, 14	57
Smoke or Soot	Black or Gray	Unglazed	Soap and Water	6, 7, 14	57
Smoke or Soot	Black or Gray	Unglazed	99	6, 7, 14	57
Smoke or Soot	Black or Gray	Unglazed	146	27	41
Smoke, see Dirt					
Straw	Brown or Gray	Unglazed	80	6, 7, 14	57
Straw or Paper	Brown or Gray	Unglazed	27	6, 7, 14	57
Tar	Black	Any	50 Mixed with Steam	6, 7, 14, 5	15

TABLE 1 HOW TO REMOVE STAINS FROM CLAY BRICK *Continued*

Stain Type	Stain Color	Surface	Agent (Table 2)	Equipment (Table 3)	Operations (Table 4)
Tar	Black	Any	None	16, 18, 6, 7, 14	39, 72
Tar, see Bitumen	Black	Any	Emulsifying Detergent, 87	6, 7, 14, 24, 27	49, 57, 41
Timber or Wood	Brown or Gray	Unglazed	20g Oxalic Acid/L Water	6, 7, 14	57, 22
Tobacco	Brown or Gray	Unglazed	80	6, 7, 14	57
Tobacco, Flowers	Brown or Gray	Any	79	6, 7, 14	57
Tobacco, Flowers	Brown or Gray	Any	27 or (75 + 16)	6, 7, 14	57, 48
Urine	Brown or Gray	Unglazed	80	6, 7, 14	57
Vanadium	Brown, Green, Yellow	Unglazed	(84 to 85) + 109	6, 7, 14	8, 13, 22
Vanadium	Brown, Green, Yellow	Unglazed	121 + 109	6, 7, 14	8, 13
Vanadium	Brown, Green, Yellow	Unglazed	110 or 105 or 138	6, 7, 14	57
Vegetation	Black	Any	71 or 157 or 159	6, 7, 14	57, 38
Vegetation	Black	Any	129, 44, 89, or 134	6, 7, 14	35, 20, 2, 70, 20
Vegetation	Brown or Gray	Any	22 or 157	(6, 7, 14) or 11	57, 48
Vines or Creepers		Unglazed	71, 159, 21	6, 7, 14	57
Wax, see Crayon					
Welding Splatter	Orange, Red, Rust	Unglazed	56 or 19	6, 7, 14, 27	41, 72, 48, 47
Welding Splatter	Brown, Red, Rust	Any	76	6, 7, 14, 1	9, 62, or 20
Welding Splatter	Brown	Any	56 or 78	27 or (6, 7, 14)	42 or 57
Wood	Brown	Unglazed	77	6, 7, 14	57
Wood, see Animal		Unglazed	76	6, 7, 14	57, 48
Wood, see Animal	Brown or Gray	Unglazed	80	6, 7, 14	57

TABLE 2 MASONRY CLEANING AGENTS

2. Acetic acid (80% or stronger), 1 part, and 1 part hydrogen peroxide (30% to 35%) in 6 parts water.
10. Alkaline solution, mild (Soapless. No grease or lye. Use washing soda, i.e. sodium carbonate).
11. Aluminum chloride.
13. Ammonia, 5%.
16. Ammonium bifluoride, ½ pound.
18. Ammonium chloride, 1 part in 4 parts whiting or powdered talc, attapulgite clay, or sepiolite clay poultice.
19. Ammonium citrate, 1 part + 6 parts warm water + 7 parts limefree glycerine.
21. Ammonium sulfamate.
22. Ammonium sulfate.
26. Benzene poultice in fuller's earth.
27. Bleach, household, = sodium hypochlorite = Chlorox® = Javelle water.
34. Carbon tetrachloride in fuller's earth poultice.
44. Copper sulfate, 2 ounces in 1 gallon water.
45. Copper sulfate, 15 grams/liter of water.
47. Detergent, laundry, in warm water.
49. Efflorescence may occur
50. Emulsifying agent in water.
51. Ethylene diamine tetraacetic acid, 1 part in 10 parts water.
52. Formaldehyde (40% solution in water), 125 milliliters/liter of water.
54. Gasoline, white (unleaded).
55. Gasoline, white (unleaded), poultice in fuller's earth.
56. Glycerine, lime-free, 7 parts + 1 part sodium citrate in 6 parts warm water in poultice.
58. Hydrochloric acid, 1 part in 9 parts water.
59. Hydrochloric acid, 1 part in 12 parts water
60. Hydrochloric acid, 1 part in 20 parts water.
71. Magnesium silicofluoride, 1 part in 40 parts water by weight.
72. Naptha poultice.
74. Oxalic acid, saturated in aqueous solution.
75. Oxalic acid crystals, 1 pound in 1 gallon water.
76. Oxalic acid crystals, 1 pound, in 1 gallon water with ½ pound ammonium bifluoride.
77. Oxalic acid crystals, 2 teaspoonsful in 1 pint warm water.
78. Oxalic acid, 1 part in 10 parts water.
79. Oxalic acid, 1 part in 40 parts hot water.

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| 80. Oxalic acid, 3 ounces in 1 gallon water. | 114. Sodium citrate, 1 part in 6 parts warm water + 7 parts limefree glycerine in attapulgate clay or whiting poultice. |
| 81. Oxalic acid, 3 to 6 ounces in 1 gallon warm water. | 119. Sodium hexametaphosphate, 5%, + 3% citric acid + 0.1% sodium laurylethersulfate tp ph = 3. |
| 82. Oxalic acid, 8 ounces + 3 ounces sodium fluoride + 15 grams citric acid in 1 gallon water | 121. Sodium hypochlorite (household bleach = Chlorox [®] = Javelle water) full strength. |
| 83. Oxalic acid, 50 grams + 20 sodium fluoride + 15 grams citric acid/liter of preferably warm water. | 124. Sodium hydrosulfate in talc poultice. |
| 84. Oxalic acid, 20 grams/liter of preferably warm water. | 129. Sodium pentachlorophenate, 1 part in 30 parts water. |
| 85. Oxalic acid, 40 grams/liter of water. | 131. Sodium pentachlorophenate (50% solution in water), 40-50 milliliter/liter of water. |
| 86. Paint remover, commercial. | 134. Sodium salicylamide, 1.5 ounces in 1 gallon water. |
| 87. Paraffin. | 136. Sodium silicate (water glass), 1 pound in 1 gallon water. |
| 88. Paraffin oil 10% to 25%, in varsol. | 138. Sodium silicate (water glass), 100 grams/liter of water. |
| 89. Phenylmercuric acetate, 1 part in 10 parts water | 139. Sodium trichlorophenate, 40% solution in water |
| 96. Potassium silicate, 1 pound in 1 gallon water. | 142. Spirits, methylated. |
| 99. Scouring powder containing bleach. | 144. Sulfuric acid, 1 part in 9 parts water. |
| 104. Soda, caustic (Drano [®] = sodium hydroxide), 1 pound/gallon water. | 146. Trichloroethylene poultice in fuller's earth. |
| 105. Soda, caustic (Drano [®] = sodium hydroxide), 1 part in 10 parts water. | 148. Trisodium phosphate, 2 pounds in 1 gallon hot water |
| 106. Soda, caustic (Drano [®] = sodium hydroxide), 5% solution in poultice. | 149. Trisodium phosphate, 1 part in 5 parts water by weight. |
| 107. Soda, washing (sodium carbonate), 2 ounces in 1 gallon water. | 150. Trisodium phosphate, 1 part in 6 parts water. |
| 108. Soda, washing (sodium carbonate), 1 pound in 1 gallon water. | 152. Trisodium phosphate, 1 pound in 1 gallon water. |
| 109. Soda , washing (sodium carbonate), 10 grams/liter of water. | 153. Turpentine. |
| 110. Soda, washing (sodium carbonate), 100 grams/liter of water. | 156 Water glass (see sodium silicate or potassium silicate). |
| 111. Sodium bicarbonate = soda ash = washing soda. | 157. Weed killer, commercial. |
| 112. Sodium carbonate = soda ash = washing soda. | 158. Whiting poultice. |
| | 159. Zinc silicofluoride, 1 part in 40 parts water by weight. |

NOTE: The chemicals mentioned here are described further in Table 10 of the original booklet.

TABLE 3 EQUIPMENT FORCLEANING MASONRY

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| 1. Auxiliary equipment. | 15. Hose with spray nozzle for water at high pressure. |
| 4. Boiler for steam. | 16. Ice. |
| 5. Boiler for water or hot water source. | 18. Knife or razor. |
| 6. Brush, fiber. | 20. Pump for high-pressure water. |
| 7. Bucket, nonmetallic. | 21. Pump for low-pressure recirculation of agent. |
| 8. Chisel. | 22. Sand (or other abrasive) blasting equipment. |
| 11. Equipment recommended by agent manufacturer. | 24. Scraper, wooden. |
| 13. Hose for steam. | 25. Sponge. |
| 14. Hose with spray nozzle for water at normal pressure. | 27. Vessel, trowel, and impervious cover for poultice paste. |

NOTE: Safety equipment is not listed in this table. Consult the Material Safety Data Sheet available from the chemical manufacturer for each chemical used.

TABLE 4 DIRECTIONS FOR CLEANING

1. Allow to soften and scrape off.
2. Apply agent.
7. Apply first agent, if dry rub or light abrasion fails.
8. Apply first agent.
11. Apply hot water under pressure.
13. Apply second agent.
15. Apply steam or hot water under pressure.
18. Apply with sponge.
19. Avoid etching.
20. Brush.
21. Burn stain.
22. Consult brick manufacturer before applying any agent to light-colored, brown brick, or sand-lime (calcium silicate) brick.
26. Do not sand blast.
27. Do not scrub.
29. Do not use hydrochloric acid.
31. Do not use on manganese brick.
32. Do not use on smooth, light colored clay masonry units, i.e. white, tan, bluff, or gray brick.
35. Dry surface.
38. Follow agent manufacturer's directions.
39. Freeze with ice and chip or cut off with razor blade or knife.
40. Mix agent with whiting.
41. Mix and apply ¼ inch poultice, cover, let dry 24 hours, and scrape or brush off filler.
42. Mix and apply poultice or soaked blotter or sponge, cover, dry 48 hours, brush, and water wash.
43. None. Stain will weather away.
46. Protect drains from wax coating.
47. Remove source of stain.
48. Repeat as needed.
49. Scrape stain.
50. Scrub brick, not mortar.
51. Scrub with agent and rinse with water.
52. Scrub with water.
57. Soak stain with water, apply agent, rinse with water, and dry
58. Spray apply agent slowly onto wall to keep surface moist. Collect agent at wall base and recirculate to agent storage tank for 5 to 30 minutes. Apply high-pressure water rinse.
59. Spray with abrasive dry.
62. Spray with agent.
66. Start at top of wall.
70. Wait for at least 3 days.
71. Wash with agent.
72. Wash with water.

NOTE: Safety operations for each chemical are listed in the Material Safety Data Sheet available from the chemical manufacturer. Appropriate safety operations are not listed in this table.