

Case Study



The information in this case study is reprinted from the American Cyanamid AM-9 technical manual. AM-9 was American Cyanamid's acrylamide grout product. Avanti's AV-100 Chemical Grout matches the chemical formulation, usage and performance of AM-9.

Title: Controlling Seepage During Shaft Sinking

Location: Mine Shaft #28, Viburnum, Missouri, U.S.A.

Owner: St. Joseph Leak Company

Application By: St. Joseph Lead Company

PROBLEM:

In order to reach newly discovered lead deposits, St. Joseph Leak Company had to sink large diameter deep shafts through permeable Lamotte Sandstone carrying ground water at high pressures. The #28 shaft had to bottom in water-bearing sandstone, a drift sump had to be cut, and a short spillrock raise driven to the loading pocket.

SOLUTION:

Before operations were started, St. Joseph Leak Company's research department collected all information available on grouting and investigated various materials and methods. AM-9 was selected because it would permeate sandstone, was easy to handle with available equipment, and gel times could be closely controlled.

APPLICATION:

Flow from initial test-hole was 60 gpm and static formation pressure was 360 psi. A total of 43,500 gallons of AM-9 solution was pumped into a double row of grout holes, 88 feet deep. Outer holes were spaced four feet apart, 13 feet from shaft center. Inner holes were collared 11 feet from the center and spaced between outer holes. Gel times varied from 20 to 40 minutes. Grouting pressure occasionally reached 1,100 psi but averaged around 400 psi.

RESULTS:

AM-9 Chemical Grout quickly sealed the smallest openings, effectively reducing water flow to well under one gallon per minute. Grouting was completed in 24 days with significant saving in time and labor. Techniques have been repeated with similar success in other St. Joseph Lead Company shafts.