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### Data Article

# Experimental data on compressive strength and durability of sulfur concrete modified by styrene and bitumen



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#### ABSTRACT

In this data article experimental data on the compressive strength, and the durability of styrene and bitumen modified sulfur concrete against acidic water and ignition are presented. The percent of the sulfur cement and the gradation of the aggregates used are according to the ACI 548.2R-93 and ASTM 3515 respectively. For the styrene modified sulfur concrete different percentages of styrene are used. Also for the bitumen modified sulfur concrete, different percentages of bitumen and the emulsifying agent (triton X-100) are utilized. From each batch three  $10 \times 10 \times 10$  cm cubic samples were casted. One of the samples was used for the compressive strength on the second day of casting, and one on the twenty-eighth day. Then the two samples were put under the high pressure flame of the burning liquid gas for thirty seconds and their ignition resistances were observed. The third sample was put into the acidic water and after twenty eight days immersion in water was dried in the ambient temperature. After drying its compressive strength has been evaluated.

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## Specifications Table

Subject area	<i>Civil Engineering</i>
More specific subject area	<i>Concrete Technology, Sulfur Concrete</i>
Type of data	<i>Table, Figure</i>
How data was acquired	<i>Casting concrete samples in the laboratory</i>
Data format	<i>Raw</i>
Experimental factors	<i>The sulfur concrete was studied in the literature [1–3] and some samples of pure sulfur concrete were casted that the data wasn't recorded.</i>
Experimental features	<i>Using styrene and bitumen as modifiers of sulfur concrete</i>
Data source location	<i>Noushirvani Institute of Technology, Babol, Iran</i>
Data accessibility	<i>Data are presented in this article</i>

## Value of the data

- The data present the properties of concrete for different percentages of the modifiers.
- The data provide a useful point that by changing the percentages of the sulfur, the modifiers, and the emulsifying agent can reach to an optimum result.
- The data could be helpful for achieving the other properties of these kinds of modified sulfur concretes.

### 1. Data

The data include information on the properties of modified sulfur concrete:

- The properties of samples with different percentages of modifiers and different periods of chemical reaction time (different stirring times)
- Compressive strength on the second and twenty-eighth day of casting
- Compressive strength of a sample after twenty eight days immersion in acidic water
- Ignition resistance of the samples after thirty seconds being under a high pressure flame of burning liquid gas

### 2. Experimental design, materials and methods

#### 2.1. Experimental design

The data include three series of samples, two series of styrene modified samples ( Tables 1–3, and Figs. 4 and 5), and one series of bitumen modified samples (Table 4 and Fig. 7). For all series constant

**Table 1**

Aggregate gradation according to ASTM 3515.

Sieve size	3/4 in	1/2 in	No. 4	No. 8	No. 50	No. 200
Percent passing	100	90	62	44	15	8

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