

LEAD INDUSTRIES ASSOCIATION

420 LEXINGTON AVENUE

NEW YORK 17, N. Y.

METALLIC LEAD PRODUCTS DIVISION

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CHEMICAL ABSTRACTS NO. 32

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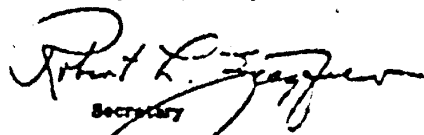
CHEMICAL ABSTRACTS

To Members of the Metallic Lead Products Divisions

Attached are two copies of reprints from the "Corrosion Forum" section of CRITICAL ENGINEERING, November and December, 1949 issues, discussing the performance of lead in contact with fluorine and caustic soda.

They are the tenth and eleventh in a series of articles, the first nine of which were covered by Chemical Bulletin Nos. 2, 9, 19, 20, 24, 25, 26 and 31.

Very truly yours,


Secretary



Fluorine versus • • •

Lead

KENNETH H. ROLL, Lead Industries Assn., New York, N. Y.

In contact with fluorine gas, particularly in the presence of moisture, lead is transformed into the fluoride. Behaving somewhat like lead sulphate, the fluoride coating or film on the lead surface prevents or substantially decreases further reaction. At temperatures up to at least 150 deg. C., lead is known to handle fluorine gas safely.

Lead fluoride is soluble in nitric acid or sulphuric acid, insoluble in acetic acid, hydrofluoric acid or ammonia. Its solubility in water at 20 deg. C. is 0.064 g./100 ml.

Often when fluorine encounters lead, it is only a minor constituent of other corrosive gases. Many ore roasting operations, for example, frequently evolve fluorine gas along with sulphur dioxide and other gases. In the recovery of these gases, particularly when converting to sulphuric acid, lead lined ducts and chambers are often employed. A large Belgian zinc ore roasting plant purges fluorine from its

roaster gases by means of several types of lead equipment, all of which have performed successfully for many years.

Fluorine removal is necessary in order to assure purity of the sulphur dioxide before conversion to sulphuric acid by the contact process. From the roasters, the hot gases containing fluorine are conveyed through water cooled lead coils and thence through lead ducts into the desulfurizing chamber. The latter is lined with sheet lead and constructed in such a manner that the fluorine is removed by solution in a water spray. The use of lead in handling hydrofluoric acid, one of the products of this reaction, was described in these columns in October.

Lead is regularly used as a washer in an adaptor assembly for external connections to the cylinder valves in use with compressed fluorine.

It thus appears that an important but restricted usage of lead is found in industry for combating corrosion by fluorine under various conditions of concentration, temperature and moisture content.

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340 West 42nd St., New York 36, N. Y.

