

Research on the technology of carbonization of sewage sludge

Whole term

2002. 6~ 2004.3

(Purpose)

In this study, the role of carbonization was well understood and it was investigated that the characteristics of the carbonized product, effective usage, possibility of effective usage and the research state of the system of carbonization, and the cautions to manufacture carbonized products were confirmed. In addition, the characteristics, ingredients and performance of the carbonized material were analyzed, and the safety and the economical efficiency of the carbonized product were verified, and finally, a technical document was prepared.

(Results)

1) Research items and contents

The present state of the resource recovery, the abstract on the technology of carbonization and the characteristics of the carbonized products were evaluated. The items and contents of this research are mentioned in the table below.

Table: Contents of the research

Classification	Items	Contents
Abstracts on the technology of carbonization	1. Current state of the resource recovery of sewage sludge	<ul style="list-style-type: none"> • Final disposal of sludge, Summary of recycling state • Evaluation of necessity in reuse, resource recovery • Summary of the trends of effective usage and usage pattern
	2. Abstracts on the technology of carbonization	<ul style="list-style-type: none"> • Summary of the characteristics of the system and carbonized product • System classification and the general purpose of effective usage
Evaluation of the research items	3. Characteristics of the carbonized product etc.	<ul style="list-style-type: none"> • Characteristics and ingredients of the carbonized product • Verification of the safety
	4. Effective use of the carbonized product	<ul style="list-style-type: none"> • Summary of the sample case studies for effective use • Summary of the cautions for effective use
	5. Carbonizing system	<ul style="list-style-type: none"> • System characteristics, the structure of the carbonizing furnace • Material balance of the carbonizing furnace • Planned sludge characteristics, calculation method for the treatment capacity • Prevention of air pollution and safety
	6. Effect due to the installation	<ul style="list-style-type: none"> • Evaluation of the utility cost • Evaluation of the generated quantity of CO₂ • Evaluation of the effect on the energy reduction for effective use

	7. Maintenance	<ul style="list-style-type: none"> ▪ Inspection method of each treatment method and a summary of the items ▪ Confirmation of the related regulations (submitted data)
Preparation of a technical document		<ul style="list-style-type: none"> ▪ Contents of the technical document

(Summary)

In this study, the existing systems of carbonization were divided into 5 types based on the availability of a dryer, the method of heat transfer and the returning method of the carbonizing furnace; and each characteristic was summarized. In addition, the way of effective usage was introduced according to past records for the effective use of the carbonized product. Simultaneously, the characteristics and special features of the carbonized product were summarized, and new methods of application were proposed. In the case of installation of the system, not only the utility cost but also the environmental impact was taken into account, the effect of CO₂ emission on energy reduction and the availability of the carbonized product were evaluated. Eventually, a technical document was prepared on this study.

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Keywords

Carbonization, Sewage sludge, Effective use, Dry distillation