

## Case studies of Advanced Construction and Demolition waste(CDW) Recycling initiatives and technologies In JAPAN

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Title	Effective utilization technology of fly ash and coal ash	
Theme classification	<input type="checkbox"/>	Prevention
	<input type="checkbox"/>	Re-use
	<input type="radio"/>	Recycle
	<input type="checkbox"/>	Reduce Co2
	<input type="checkbox"/>	Legacy
	<input type="checkbox"/>	Business to overseas
	<input type="checkbox"/>	Etc.
Technology development stage	<input type="radio"/>	Practical use
	<input type="checkbox"/>	Scheduled to be put into practical use by 2020
	<input type="checkbox"/>	Scheduled to be put into practical use after 2020
Specific content	<p>(1) Technology to harden coal ash</p> <p>As a technology that can effectively utilize coal ash powder discharged from a coal-fired power plant in large quantities, we developed an “ash-crete” having a formulation that minimizes unit water content without using aggregate.</p> <p>The points of “ash-crete” technology are as follows</p> <p>① Efficiently express strength by compounding design with optimal water content ratio as an indicator</p> <p>② “ash-crete” is manufactured using “superfluid construction method” developed by our company. The “superfluid construction method” is a unique construction method which compacts and mixes powder mixed with very little amount of water by strong vibration</p> <p>③ For coal ash with large quality fluctuation, it is possible to quickly select blending by simple flow test.</p> <p>(2) Type of “ash-crete”</p> <p>① “ash-crete”</p> <p>For manufacturing block of artificial seabed mountains</p> <p>② “ash-crete” Type II (AC-II)</p> <p>For embankment / roadbed material of residential land construction work, coast maintenance work etc.</p> <p>③ “ash-crete” TypeS (AC-S)</p> <p>For general embankment materials</p>	
Appeal point	<p>- we have made effective use of over 1 million tons of coal ash, due to the development of “ash-crete” technology using coal ash powder. We will continue to actively make effective use of fly ash and coal ash and contribute to the reduction of co-fired by-products.</p>	

## Effective utilization technology of fly ash and coal ash “ash-crete” TypeS (AC-S)

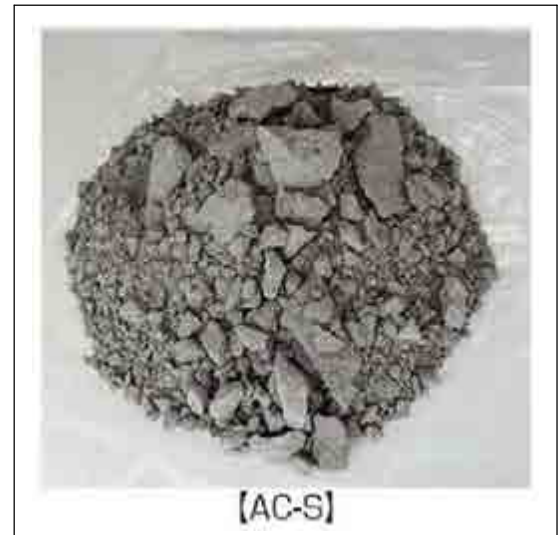
High-quality safe hardened body, “Ash-crete,” whose chief material is large amount of coal ash, “fly ash,” generated from coal-fired power plants, is applicable to most of marine block structures, such as artificial submarine mountains, seaweed bed blocks, artificial fish rests, etc.

Ash-crete Type S is a product for construction of embankment, which has been produced by utilizing the manufacturing technology of this hardened body. Its versatility has been enhanced through crushing to enable its handling in a manner similar to the case of ordinary embankment materials.

“S” of AC-S stands for the followings:

Shinchi (town),  
Soma (City), and  
Safety.

Namely, this “S” indicates the key factor of development, that is, contribution through local consumption of locally produced coal ashes from the Shinchi Power Plant of Soma Kyodo Power Company, and the wish for early reconstruction of quake-damaged areas.



### 【Usage and features of AC-S】

Usage ; Embankment, Underground Roadbed  
Weight ; 20% lighter than general embankments  
Safety ; Clear soil environmental standard  
Strength ; Compressive strength 10 to 15N/mm<sup>2</sup>  
grain size ; 200 mm or less, Adjustable



### 【Manufacturing process】



Production of cured body

Primary crushing

Secondary crushing

Product shipment

### 【Construction example】

AC-S has been employed for rehabilitation of the prefectural road, Soma Watari Route. With the supply started in July 2015, about 36,000 m<sup>3</sup> of AC-S supply is scheduled by March 2016. Coal ashes, the effective resources of the location of the coal-fired power plant, will be further recycled in the future in the form of AC-S, thereby preventing nature destruction due to quarrying of natural embankment materials and contributing to the surrounding regions.

