



**8th International Conference
On
Sustainable Solid Waste
Management**

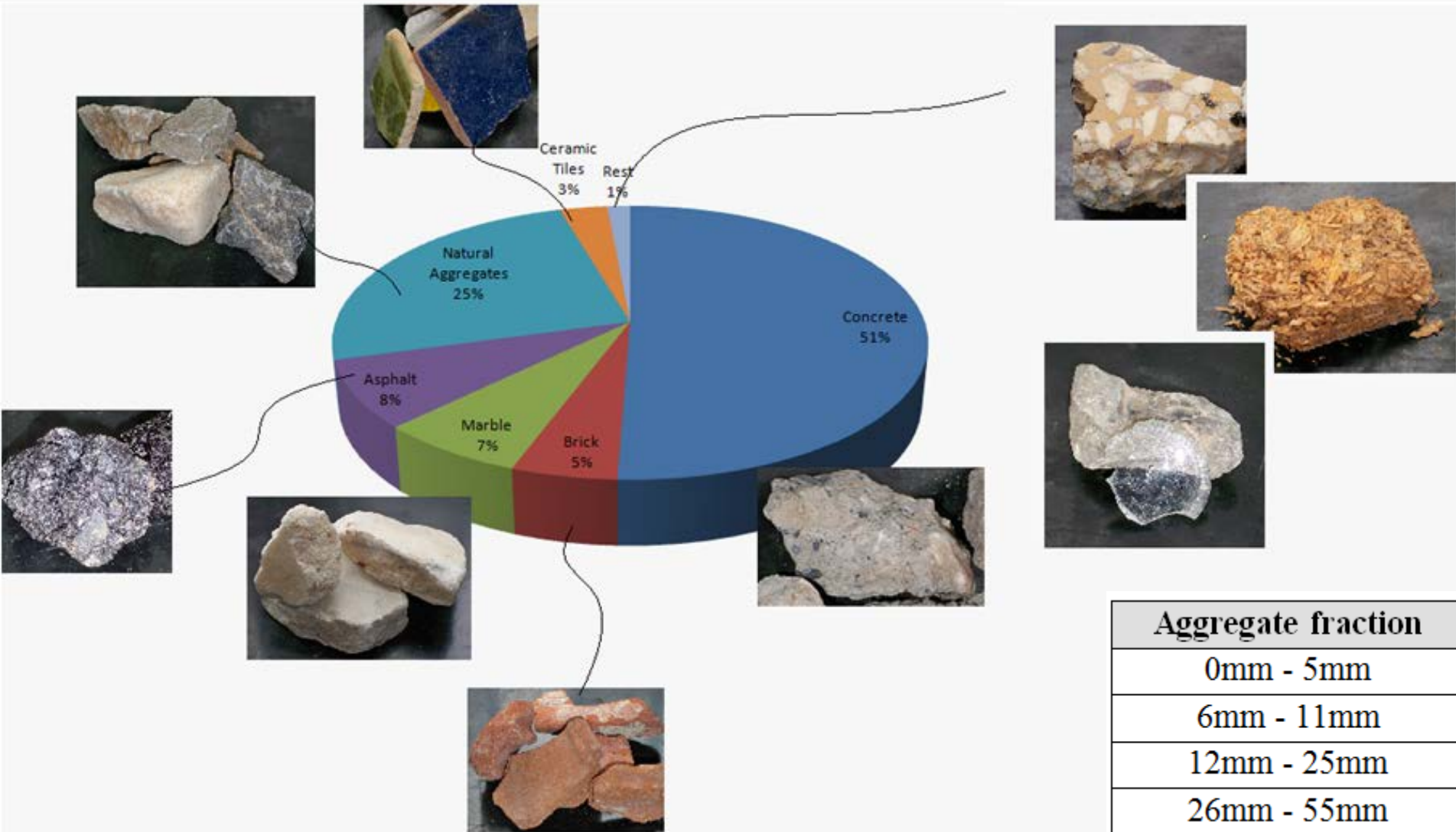
**Chemical and mineralogical properties
of recycled aggregates**

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Construction and Demolition (C&D) Waste



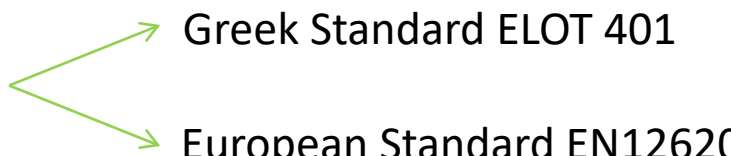
Recycled aggregates



Chemical properties of Recycled aggregates

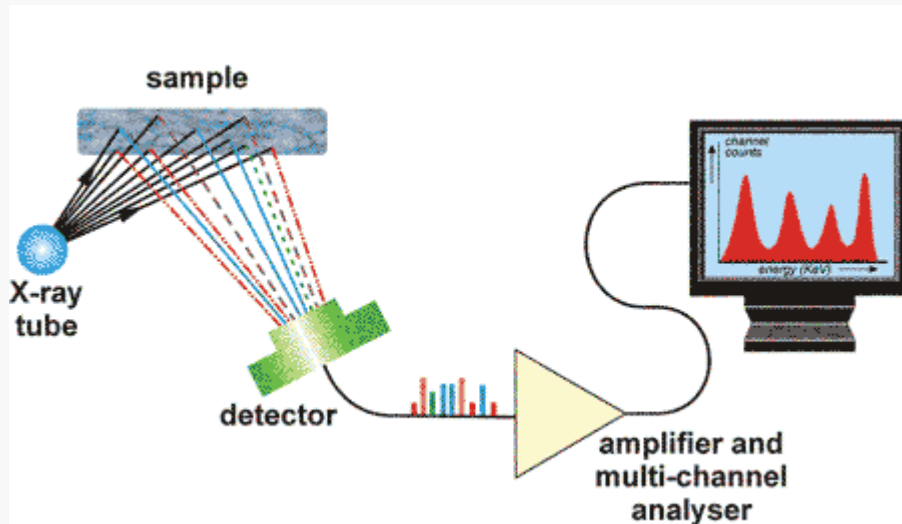
Property (content rate %)	Aggregate fraction			
	0-5mm	6-11mm	12-25mm	26-55mm
chloride content	0,95	0,78	0,67	0,51
total sulfur content	0,15	0,12	0,07	0,12
acid soluble sulfates	0,36	0,29	0,18	0,28
carbon content	20,25	27,43	28,45	23,98

➤ According to EN 1744-1 & EN 196-21

➤ Comparison with 
Greek Standard ELOT 401
European Standard EN12620

Mineralogical analysis of Recycled aggregates (I)

X-ray Fluorescence (XRF) method



Sample preparation



Mineralogical analysis of Recycled aggregates (II)

NOT Pretreated Recycled Aggregates

Chemical Element (Content rate %)	Aggregate fraction			
	0-5mm	6-11mm	12-25mm	26-55mm
SiO ₂	44,24	23,32	22,01	29,97
Al ₂ O ₃	6,99	5,38	4,34	7,22
Fe ₂ O ₃	5,41	2,63	1,93	2,54
CaO	28,58	41,40	37,48	31,17
MgO	2,39	2,62	2,51	3,36
K ₂ O	0,85	0,66	0,57	0,78
Na ₂ O	0,80	0,91	0,96	1,38

Mineralogical analysis of Recycled aggregates (III)

Pretreated Recycled Aggregates

Chemical Element (Content rate %)	Aggregate fraction			
	0-5mm	6-11mm	12-25mm	26-55mm
SiO ₂	26,35	15,33	20,20	25,36
Al ₂ O ₃	4,38	2,74	3,51	5,25
Fe ₂ O ₃	2,79	1,49	1,68	2,42
CaO	20,89	32,96	35,41	28,29
MgO	2,28	2,43	2,29	2,07
K ₂ O	0,34	0,40	0,45	0,76
Na ₂ O	0,32	0,62	0,93	1,22

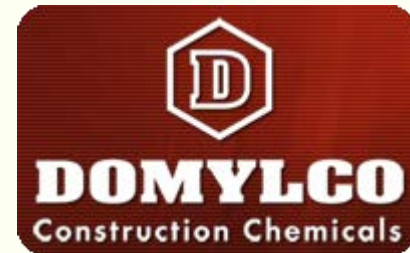
Conclusions

- Recycled aggregate can be used in concrete production
- Chemical and mineralogical properties / heterogeneity



lower concrete quality

Acknowledgements





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