



CRAFT ASBESTOS PROJECT

CONTENTO TRADE SRL

Technological innovation for the environment

G1ST - CT – 2002 – 50198

01.08.02 – 01.08.04

The main aims of this project are the treatment and the asbestos waste processing into products which are similar to a natural stone.



BRIEF DESCRIPTION:

Partners:

Contento Trade srl, Italy
IBET, Netherlands
JSJ Jodeit, Germany
IPAS, Belgium
Fibrecount, Netherlands

Objectives:

The transformation of asbestos waste into products which are similar to a natural stone for civil engineering (the construction of dikes). It's used a process to treat asbestos waste in fusion oven and a section for manufactured product.
The project aims to obtain the highest cost of 250 Euro for ton of the product.

It includes:

The wish to develop a new technology which could melt asbestos with saving of 25% compared to the present technologies costs and to transform it into a product with added value, used in building (trade).

OBJECTIVES:

The asbestos waste represents a big environmental and financial problem in Europe. Every year about 500.000 tonnes of these wastes must be disposed of on the EU territory.

This quantity will remain the same or will even grow during the next 15 years. There are however two factors that complicate the affair: the difficulty in handling asbestos because of its characteristics (airborne asbestos fibers) and the variability of the wastes containing asbestos.

Many costly technologies were developed recently that aim on asbestos destruction or immobilisation while this project seeks to develop new technology to fuse the asbestos saving up to 25% in comparison with the current technologies and to transform it into a product with the added value that could be used in construction.



The new technology is capable to treat and transport almost any type of the asbestos waste.

In Italy about 15.000-20.000 ton of wastes containing asbestos are dumped every year.

Taking into account that in Italy there are still about 2,5 million tons of c&d wastes containing asbestos, and that the average lifetime of the building actually constructed is estimated at 50 years, we can calculate that about the 80% of the 2,5 millions tons of c&d wastes containing asbestos will be demolish in the next 50 years. This means that the average of material to be dumped and inerted every year will be of 40.000 tons for the next 50 years.

In the next 50 years in Mediterranean countries we will find the following situation:

- ✓ For Italy about 40.000 tons of material containing asbestos to be dumped;
- ✓ For France about 59.000 tons of material containing asbestos to be dumped;
- ✓ For Spain about 32.000 tons of material containing asbestos to be dumped.

About the asbestos dumping costs in Italy:

- ✓ fibrous asbestos (the most dangerous): between 0.77-0.87 euro/kg (only one landfill in Italy accept this kind of waste)
- ✓ asbestos cement: 0.20 euro/kg

In Italy, the treatment processes for the c&d wastes containing asbestos are the following:

	Treatment	Principle	Final volume of the waste	Final destination of the waste
Treatment finalized to the control of the polluting agents	Conditioning in cement matrix	Mixture with cement and eventually additives	Inferior to the initial volume	Landfill
	Conditioning in resin matrix	Mixture with polymeric materials	Superior to the initial volume	Landfill
Treatments finalized to the transformation of the fibrous structure of asbestos	Chemical treatment	Modification of the waste structure and precipitation of not-toxic salts	Increase after the mud processing	Landfill Building industry



	Lithification	Melting at high temperature (1.300-1.450 °C)	Inferior to the initial volume	Landfill Use as inert agent
	Vitrification	Melting with additives at high temperature (1.000-1.300)	Inferior to the initial volume	Landfill Use as inert agent
	Clinker production	Backing with clay and limestone	Inferior to the initial volume	Use as hydraulic cement
	Ceramization	Backing at 700-1.000°	Inferior to the initial volume	Thermal insulating and electric material

MAIN INNOVATIONS

The goal of this project is to highlight the most appropriate types of application for the waste characteristics of the lead and zinc primary fusion.

The newly studied and developed concepts of this project are connected to:

- ✓ The possibility of the wastes use as a replacement for the natural raw material.
- ✓ The environmental control of the waste and materials obtained from the waste processing.

The former implies the waste chemical and physical properties study according to the existing norms for the final products.

The latter will require a detailed approach as for the mechanisms of wastes leaching, as for the final products.

MARKET PERSPECTIVES

The final goal of the project was to develop the new technology for the asbestos containing wastes fusion and transformation into the products of added value to be utilized in the civic engineering field.

These products could be similar with the artificial basalt stone that is used in the dams or roads construction.



The new technology based on the simple fusion that comes from glass production, will be used in construction of two new plants for this type of waste treatment in Europe.

RESULTS OBTAINED

1. Estimation of the asbestos wastes quantities in various European countries;
2. Investigation of the different disposal methods in every European country for each asbestos containing wastes type;
3. Every European country legislative situation concerning asbestos wastes;
4. The fusion test – excellent results (great crystallization and homogenizing);
5. Test di fusione con risultati molto buoni (ottima cristallizzazione ed omogeneizzazione);
6. The quality control report for the fused products based on some parameters: water absorption, break resistance and density;
7. The costs calculation for the installation of the fusion section and for the whole plant;
8. Wastes treatment system financial valuation report;
9. The report on the crystallisation tests, viscosity measures, refractory materials corrosion; competitive methods for the asbestos transformation;
10. The key figures discussion from the financial point of the view: the treatment costs, profit from the final product, the negative value.