



CASE STUDY

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R.D.S. – CZ,
S.R.O.

&



BRNO
UNIVERSITY OF
TECHNOLOGY



RESEARCH IN THE FIELD OF COMPOSITION AND
KILN MODE OF GLASS-SILICATE MATERIALS
THAT ARE COMMONLY USED FOR TILING
INTERIOR AND EXTERIOR OF BUILDINGS

implementation agency

financial sponsor

media partners

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This project is implemented
within the framework of the Regional
Innovation Strategy of South Moravia

Company – Voucher Recipient
R.D.S. – CZ, S.R.O. ([WWW.RDSCZ.CZ](http://www.rdscz.cz))

Address	Vazová 2498, 688 01 Uherský Brod
Specialization	Building Materials
Size	Small Enterprise
Profile	<p>Since 2000, apart from its main activities (wholesale and retail businesses), the R.D.S. CZ, s.r.o. has focused on research and development in the field of glass sintering. It has created its own working and technological procedures, including the device for frit processing. Currently, the company is dealing with the possibility of processing waste glass from industrial production and even processing of secondary materials produced within the process of old TV screens and monitors disposal etc.</p> <p>More information: www.rdscz.cz</p>

Knowledge Provider
BRNO UNIVERSITY OF TECHNOLOGY
Faculty of Civil Engineering
Technology of Building Materials and Components Department
(www.fce.vutbr.cz/thd)

Profile	<p>Scientific and research activities of the institute is focused on technology, use of building materials and study of construction components including their testing. Research of matter and materials aims for maximization of their effective usage for building constructions, taking into account its lifespan and economic use. The stress is put on the tasks dealing with the ecological issues including building materials and construction protection and follow-up rehabilitation.</p>
Responsible Researchers	<p>prof. Ing. Rostislav Drochytka, CSc.</p> <p>doc. Ing. Jiří Bydžovský, CSc.</p> <p>Ing. Tomáš Melichar</p>

Cooperation

Realization Period

11/2006 – 6/2010

Value

146 000 CZK (without VAT)

Subject

Research in the field of composition and kiln mode of glass-silicate materials that are commonly used for tiling (which means surface finish of building constructions) both interior and exterior of buildings. These components are produced by sintering process in furnace aggregates. Primarily, the science and research activities were focused on maximization of secondary or waste material (especially various types of recycled glass) utilization.

The impact of material on the required technical and esthetical parameters was verified.

Outputs

Final report contains information about science and research works carried out, starting from testing of each potential material for its usefulness, proposal of mixtures, adjustments of kiln mode and subsequent gradual cooling, analyses of physical-mechanical (e.g. solidity, absorption, freeze resistance) and chemical (e.g. lead and cadmium tendency to leach out) parameters of sintred elements on the glass bases.

Utilization and Asset

Results of the research point out the advantage of using recycled glass from dismantled TV screens and coloured packing (limited impurity) glass in full extent. It sets up the possibility to fully substitute glass-silicate burden, while preserving existing parameters for products.

The benefit lies mainly in utilization of screen glass, which is characterized as dangerous waste (due to the lead and other objectionable material content), as well as hardly usable fractions of packing and flat recycled glass, for production of tiling components. These are characterized by excellent parameters (physical mechanical as well as durability) and they are potentially interesting from the esthetical point of view (e.g. architectonic view). It positively influences both ecological (utilization of secondary materials and potential energy demands decrease of production process) and economical aspect.

The achieved results can be used as a base for semi-operational verification of chosen formulas and materials for glass-silicate components production and for increasing competitiveness of these components on domestic as well as foreign market.

Evaluation of Cooperation – Antonín Klabáčka (Director of R.D.S. - CZ, s.r.o.)

„High-quality of staff and equipment base of the Faculty of Civil Engineering of Brno University of Technology enabled us to obtain precious knowledge that will be used to increase efficiency in sintered components production in R.D.S.- CZ company and strenghtening our competitiveness.“

<p>Has the company cooperated with any other research institution before?</p>	<p><i>„Yes, with Brno University of Technology. We have especially good experience with the Institute of Building Materials and Components. That is why we asked this university for cooperation again.“</i></p>
<p>Would there be any cooperation even without the innovation voucher?</p>	<p><i>„Most probably, but using innovation voucher enabled us to carry the research activities out to larger extent.“</i></p>



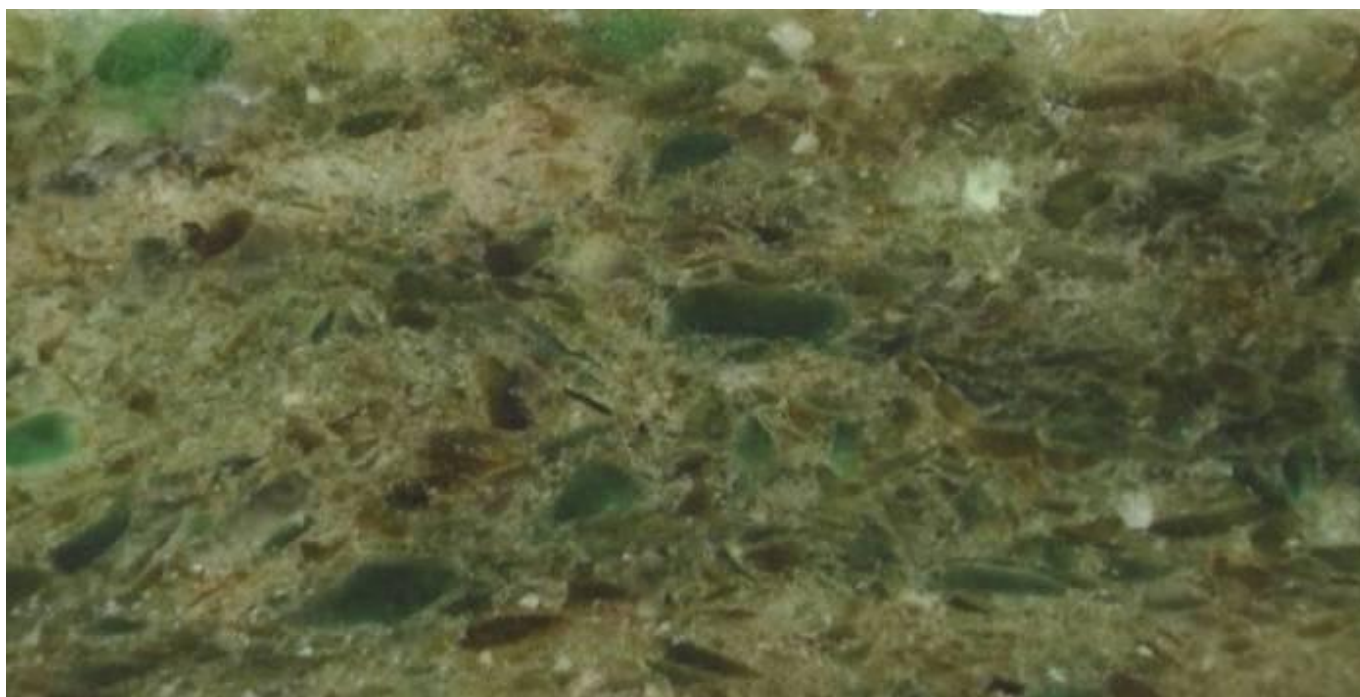


Figure 1: Structure (texture) of a sample produced from recycled coloured packing glass (fraction 0 to 4 mm) at maximal temperature of 800 °C.



Figure 2: A product made of dismantled screens (cone part – fraction 0 to 16 mm) at maximal temperature of 700 °C.