

CENTRUL UNIVERSITAR NORD DIN BAI A MARE
Facultatea de Inginerie

*NORTH UNIVERSITY CENTRE OF BAI A MARE
Faculty of Engineering*

BULETIN ȘTIINȚIFIC

AL CENTRULUI UNIVERSITAR NORD DIN BAI A MARE

SERIA D

Exploatări Miniere

Prepararea Substanțelor Minerale Utile

Metalurgie Neferoasă

Geologie și Ingineria Mediului

Volumul XXXVIII Nr. 1

Indexat ProQuest, EBSCO, ERIH PLUS

SCIENTIFIC BULLETIN

OF NORTH UNIVERSITY CENTRE OF BAI A MARE

Series D

Mining

Mineral Processing

Non-ferrous Metallurgy

Geology and Environmental Engineering

Volume XXXVIII No. 1

Indexed ProQuest, EBSCO, ERIH PLUS

CENTRUL UNIVERSITAR NORD DIN BAIA MARE

FACULTATEA DE INGINERIE

BULETIN ȘTIINȚIFIC
AL CENTRULUI UNIVERSITAR NORD DIN BAIA MARE

SERIA D

Exploataři Miniere

Prepararea Substanțelor Minerale Utile

Metalurgie Neferoasă

Geologie și Ingineria Mediului

Volumul XXXVIII Nr. 1

Indexat ProQuest, EBSCO, ERIH PLUS



EDITURA UNIVERSITĂȚII TEHNICE DIN CLUJ NAPOCA - UTPRESS
ISSN 1582-0548, 2024

NORTH UNIVERSITY CENTER OF BAIA MARE

FACULTY OF ENGINEERING

SCIENTIFIC BULLETIN
OF NORTH UNIVERSITY CENTER OF BAIA MARE

SERIES D

Mining

Mineral Processing

Non-ferrous Metallurgy

Geology and Environmental Engineering

Volume XXXVIII No. 1

Indexed ProQuest, EBSCO, ERIH PLUS



**PUBLISHING HOUSE OF THE TECHNICAL UNIVERSITY OF
CLUJ-NAPOCA - UTPRESS**

ISSN 1582-0548, 2024

EDITORIAL BOARD

Editor- in-Chief

Vice Editor-in-Chief

Members

Assist. Prof. Dr. Eng. Dorel Gusat

Assist. Prof. Dr. Eng. Jozsef Juhasz

Prof. Dr. Eng. Ioan Bud

Assoc. Prof. Dr. Eng. Mirela Coman

Assoc. Prof. Dr. Eng. Elena Pop

Assist. Prof. Dr. Eng. Irina Smical

Assist. Prof.Dr.Eng. Valeria BREZOCZKI

SCIENTIFIC BOARD

Prof.Dr.Eng. Karol BALOG, University of Technology Bratislava, Slovakia

Prof.Dr.Eng. Güven ÖNAL, Istanbul Technical University, Turkey, President of Balkan Academy of Sciences for Mineral Technologies

Prof.Dr.Eng. Gerard VERRAES, Docteur d'état Montpellier, Prof. d'honneur de l'Université de Baia Mare, Ancien Directeur de Recherche, France

Prof.Dr.Eng. Ivan NISHKOV, University of Mining and Geology Sofia, Bulgaria

Acad.Prof.Dr. Oleg ADAMENCO, Ivano-Frankivsk Oil and Gas University, Ukraine

Prof.Dr. Jaroslav ADAMENKO, Ivano-Frankivsk Oil and Gas University, Ukraine

Prof.Dr. Lesia SHKITSA, Ivano-Frankivsk Oil and Gas University, Ukraine

Prof.Dr. Oleg MANDRIK, Ivano-Frankivsk Oil and Gas University, Ukraine

Prof.Dr.Eng. Deng JUN, Xi'an University of Science & Technology, China

Assist.Prof.Dr. Vassilis GIKAS, National Technical University of Athens, Greece

Prof.Dr.Eng. Victor ARAD, University of Petroșani, Romania

Prof.Dr.Eng. Sanda KRAUSZ, University of Petroșani, Romania

Prof.Dr.Eng. Romulus Iosif SÂRBU, University of Petroșani, Romania

Prof.Dr.Eng. Dan CONSTANTINESCU, University Politehnica of Bucharest

Prof.Dr.Eng. Teodor RUSU, University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, Romania

Assoc.Prof.Dr.Eng. Ion IOSUB, University of Pitesti, Romania

Prof.Dr.Eng. Ioan BUD, North University Center of Baia Mare, Romania

Assoc. Prof. Dr. Eng. Mirela COMAN, North University Center of Baia Mare, Romania

Assoc. Prof.Dr.Eng. Ioan DENUT, North University Center of Baia Mare, Romania

Assist. Prof.Dr.Eng. Dorel GUSAT, North University Center of Baia Mare, Romania

Assist. Prof.Dr.Eng. Jozsef JUHASZ, North University Center of Baia Mare, Romania

Assist. Prof.Dr.Eng. Valeria BREZOCZKI, North University Center of Baia Mare, Romania

The whole responsibility for the calculations rigor, experimental data, scientific affirmation and paper translation belongs to the authors. Papers will be send to Editorial Board on address:

Technical University of Cluj Napoca
North University Center of Baia Mare
Faculty of Engineering
Str. Dr. V. Babeş nr. 62A, 430083
Baia Mare, Romania
Tel. +40362-401266, Fax +40262-276153
Dorel.Gusat@irmmm.utcluj.ro

Guidelines for papers

1. Papers must be written in English, Microsoft Word and will not exceed 12 pages.
2. Paper includes: title, authors, institution, abstract, keywords, paper content, conclusions and references.
3. Page dimensions A4, top 2cm, down 2cm, left 2,5cm, and right 2cm.
Times New Roman font, single spacing.
4. Paper's title will be written with capital letters 14pts, bold, centered. Authors will be written with 12pts, bold, italic, centered. Affiliation will be written with 12pts, italic, centered. Abstract and keywords with 10pts, italic, justify. After title, affiliation, abstract, keywords leave one line space. Before and after each subtitle leave one line space. Paper text will be written with 12pts, justify, figures/tables included in the text. References will be listed with 10pts.

CONTENTS

1. THE IMPACT OF THE COVID-19 PANDEMIC ON THE IMPLEMENTATION OF CONSTRUCTION PROJECTS	
<i>Minodora D. M., Rădulescu C. M., Toader D. C.</i>	7
2. STUDIES ON ESTABLISHING THE CONDITIONS FOR CHEMICAL CORROSION AND THE INFLUENCE OF TEMPERATURE ON THE CORROSION RATE FOR A LOW-ALLOY STEEL	
<i>Pop A.</i>	8
3. RESEARCH ON STRETCHING BY FORGING	
<i>Pop E. A.</i>	9
4. STUDIES ON THE ELECTROCHEMICAL CORROSION TESTING OF ALUMINUM ALLOY SERIES 7136 BY MEASURING THE VOLUME OF RELEASED GAS	
<i>Pop A.</i>	10
5. THE POTENTIAL FOR ADAPTIVE REUSE OF THE BAIA SPRIE MINING PREPARATION PLANT IN THE CONTEXT OF URBAN REGENERATION	
<i>Ungureanu T., Lemian D.</i>	11
6. CONSIDERATIONS REGARDING SCLEROSING DUST IN BAIA MARE AND ITS SURROUNDINGS	
<i>Bud I., Duma S. S., Bud A.</i>	12
7. STUDIES AND RESEARCH ON THE OBTAINING BY ASSEMBLY OF AN INTERIOR STRUCTURE OF A BOEING 737 MAX AIRCRAFT	
<i>Jozsef J.</i>	13
8. ASPECTS REGARDING THE QUALITY STATUS OF SOME TRIBUTARIES OF THE SASAR RIVER IN THE GUTÂI MOUNTAIN AREA, MARAMURES COUNTY	
<i>Brezoczki V. M.</i>	14
9. REMOTE SENSING ENVIRONMENTAL DATA INTEGRATION FOR A QUARRY	
<i>Gusat, D., Bud. I.</i>	15

THE IMPACT OF THE COVID-19 PANDEMIC ON THE IMPLEMENTATION OF CONSTRUCTION PROJECTS

**DIANA MINODORA POP¹, CORINA MICHAELA RĂDULESCU¹
DIANA-CEZARA TOADER¹**

¹ *Universitatea Tehnică Cluj-Napoca, Facultatea de Științe, str. Victoriei nr.76,
Baia Mare, Romania, <https://stiinte.utclui.ro/>*

Abstract

The construction sector is characterized by an accentuated dynamism, which implies the rapid resolution of the numerous and different problems that arise either from the turbulence of the competitive environment or from various situations of risk and uncertainty. Unforeseen situations appeared suddenly with the outbreak of the Covid 19 pandemic, when entire human activity had to be remodeled and adapted to the new conditions. In the first months of the pandemic, the State of Emergency and then the State of Alert was implemented in all counties of the country, similar to the whole of Europe and the world, to prevent the spread of the new coronavirus. Activities in the construction sector were also disrupted by delays in the supply of raw materials. This was due to the temporary suspension of production in factories, at the beginning of the pandemic. The reduced amount of raw materials on the market also imposed an increase in prices. The present study aims to prioritize the risks and threats that influence construction projects – during the pandemic, having a significant utility in terms of the decision-making process in the implementation of construction projects.

Keywords: construction, project, risk management, pandemic, factors, Garrett ranking method

STUDIES ON ESTABLISHING THE CONDITIONS FOR CHEMICAL CORROSION AND THE INFLUENCE OF TEMPERATURE ON THE CORROSION RATE FOR A LOW-ALLOY STEEL

POP AURICA

¹*Technical University of Cluj Napoca, North University Center of Baia Mare,
Department of Mineral Resources, Materials and Environment Engineering, România
Corresponding author's e-mail address: Aurica.POP@irmmm.utcluj.ro
pop_aurica2003@yahoo.com*

Summary: *The paper presents studies conducted to establish the conditions for chemical (dry) corrosion and the influence of temperature on the corrosion rate for a low-alloy steel. Two samples of 16MnCr5 steel of different sizes are used, which are placed in an oven at different temperatures, namely 500°C (P2) and 800°C (P1). The mass variation, oxide film thickness, and corrosion rate for each sample are calculated, with these values presented in Table 2. It is observed that the oxide layer increases in thickness with longer maintenance times and higher temperatures. Additionally, the oxidation process depends on the composition of the steel and the environment in which heating occurs. The type of corrosion observed in the experiment is uniform, with the metal being uniformly destroyed over the entire surface and the corrosion products adhering well.*

Keywords: *Chemical corrosion, steel, corrosion rate, formed oxide layer*

RESEARCH ON STRETCHING BY FORGING

ELENA ANGELA POP

*Faculty of Engineering, North University Centre at Baia Mare,
Technical University of Cluj-Napoca, str. Victor Babes, nr. 62A, Baia Mare*

Abstract: The paper presents a theoretical and experimental study on stretch forging, this being a process used for modeling metals. In order to increase the homogeneity of the strain and stress distribution, it is recommended to use, for the initial stretch forging operations, $\epsilon_h = 20\%$. Industrial practice always strives to forge the material during the stretch forging operation, taking into account the results obtained in the laboratory. Many works, like the present one, propose a mathematical method for optimizing the stretching process of forged parts.

Keywords: forging, stretching, plastic deformation

STUDIES ON THE ELECTROCHEMICAL CORROSION TESTING OF ALUMINUM ALLOY SERIES 7136 BY MEASURING THE VOLUME OF RELEASED GAS

POP AURICA¹

¹Technical University of Cluj Napoca, North University Center of Baia Mare, The Department of Mineral Resources, Materials and Environment Engineering, România

Corresponding author's e-mail address: Aurica.POP@irmmm.utcluj.ro

pop_aurica2003@yahoo.com

Summary: The paper presents studies conducted to determine the corrosion rate under conditions where the nature of the resulting gas is known, and the quantity of gas released is a direct measure of the amount of corroded metal. The sample used in the experiment is an aluminum alloy 7136, which is tested for corrosion by being put in contact with an electrolyte, a corrosive solution of 0.7m NaOH at pH=11. The volume of gas is read, and it is observed that the reaction proceeds rapidly immediately after the sample is introduced into the basic solution, and after 8 minutes from the initiation of the reaction, the speed is slow. The 7136 aluminum alloy sample becomes passivated; there is no longer any free surface, and a black film is observed. The volumetric corrosion index, $K_{v(H_2)}$, the gravimetric corrosion index, K_g , and the corrosion penetration index, P , are calculated. The results are presented in the paper, and the dependence of these indices on time is graphically represented. The sample was analyzed (after the corrosion process) with the help of a KRUSS stereoscopic microscope. Images of the surface subjected to corrosion in an alkaline solution are presented in the paper. The final analysis indicates a type of general corrosion, where the entire surface of the alloy is affected by corrosion. The general and uniform attack represents the greatest destruction of metal in terms of quantity.

Keywords: Electrochemical corrosion, aluminum alloys, corrosion rate, gravimetric index

THE POTENTIAL FOR ADAPTIVE REUSE OF THE BAIJA SPRIE MINING PREPARATION PLANT IN THE CONTEXT OF URBAN REGENERATION

TEODORA UNGUREANU, DIANA LEMIAN

¹*National Institute for Research and Development in Construction, Urban Planning and Sustainable Territorial Development URBAN-INCERC, Bucharest, Romania*

²*Technical University of Civil Engineering Bucharest, Romania*

* Corresponding author: teodora.ungureanu123@gmail.com

Abstract: *This paper approaches the conversion of the Baia Sprie Mining Preparation Plant. The facility functioned as an integrated part of the Baia Sprie mining technology flow from 1950 to 2006. In 2006 the plant was closed down with the cessation of mining. It is currently in a state of abandon along with the entire mining complex. The adaptive reuse of the plant is proposed based on a site analysis and the study of examples of reuse of abandoned industrial sites.*

Key words: *industrial mining heritage, mining landscape, urban regeneration, adaptive reuse*

CONSIDERATIONS REGARDING SCLEROSING DUST IN BAIJA MARE AND ITS SURROUNDINGS

IOAN BUD¹, SIMONA SILVIA DUMA^{1*}, ADINA BUD

*¹Technical University of Cluj Napoca, North University Center of Baia Mare,
Department of Mineral Resources, Materials and Environment Engineering, România*

**Corresponding author's e-mail address: simona.duma@irmmm.utcluj.ro*

Summary: Specialists in the professional fields where the staff is exposed to dust have studied, found and differentiate the different effects depending on the type of dust, both in terms of mineral and organic dust.

These studies have led to regulations that differentiate mineralogical (amorphous silica, silica, crystalline, marble, etc.) and organic (wood essence, cellulose, tobacco, etc.). The granulometric fractions that differentiate the inhaled components that reach the pulmonary alveolus were also analyzed.

A distinction is required between dust type to assess public health risk based on experience gained in the professional environment, in particular mining, where it was well studied and later regulated. For România, especially in Baia Mare and its surroundings, it seems that this professional experience was ignored when the decision to close and green the mining perimeters was taken, the tailing ponds.

Key words: Dust, inert dust, sclerosing or toxic dust, exposure and inhalation, sclerosis, irreversible damages, silica, asbestos, human health risk

STUDIES AND RESEARCH ON THE OBTAINING BY ASSEMBLY OF AN INTERIOR STRUCTURE OF A BOEING 737 MAX AIRCRAFT

JOZSEF JUHASZ

Technical University of Cluj-Napoca, North University Center of Baia Mare, Dr. Victor Babes street 62A, Baia Mare, Romania

Abstract: *This paper presents studies and research on the current status of obtaining by assembly of aeronautical structures at the international level. After which the studies and research regarding obtaining by assembling an interior structure of a Boeing 737 MAX airplane are presented. These studies and researches were carried out with the indirect aid received from Universal Alloy Corporation Vietnam (UACV). The results and conclusions are presented, highlighting the advantages and disadvantages currently practiced in the assembly of aeronautical structures.*

Keywords: *Assembly, aircraft structure, inspection.*

ASPECTS REGARDING THE QUALITY STATUS OF SOME TRIBUTARIES OF THE SASAR RIVER IN THE GUTÂI MOUNTAIN AREA, MARAMURES COUNTY

VALERIA MIRELA BREZOCZKI

Technical University of Cluj-Napoca, North University Centre at Baia Mare, Engineering Faculty, Mineral Resource, Material, Environment Engineering Department, Dr. Victor Babes Street, Romania

Corresponding author's e-mail address: Valeria.BREZOCZKI@irmmm.utcluj.ro

ABSTRACT

The paper proposes to analyze aspects of physico-chemical quality for two water resources in the area of the Gutin mountains (the Șuior river and the Borzaș river), right tributaries of the Săsar river.

The water sources and water intakes located along their course and the laboratory equipment used in the analyzes carried out in the Environmental Factors Analysis Laboratory, Faculty of Engineering, CUNBM, using the Iris Vision HI801 spectrophotometer, the Hanna Instrument pH ISE laboratory multimeter is presented Hanna Instruments HI 93703 EC and Turbidimeter.

The monthly average values obtained were graphically represented and compared with the legislation regarding the quality standards that a water must meet to be potable.

The two water sources by the obtained values of the concentrations of the parameters pH, turbidity, Zn, Mn, nitrates, nitrites, sulfates, for the analyzed period successfully fall into the A1 quality state. The A2 quality state is supported by the presence in higher concentrations of the ammonium parameter, and the A3 quality state is given by the concentration of the Cu parameter, which can be explained by the geological peculiarities of the Gutâi Mountains, where it originates.

Key words: water catchment, surface water, water management

REMOTE SENSING ENVIRONMENTAL DATA INTEGRATION FOR A QUARRY

DOREL GUSAT*¹, IOAN BUD¹

¹ *Technical University of Cluj-Napoca, North University Center of Baia Mare
Baia Mare, Romania*

* *Corresponding author : Dorel.Gusat@irmmm.utcluj.ro*

Abstract: Integrating field models with satellite imagery can provide a comprehensive approach to analyzing environmental changes. This can help validate and calibrate satellite data

This analysis examines an open-pit quarry project in relation to Protected Area metrics. The goal is to minimize both environmental impact and investment costs.

Satellite imagery from the Copernicus program plays a crucial role in assessing land use and environmental changes, enabling a comprehensive evaluation of the quarry's potential effects on surrounding areas. By integrating this data with GIS information, we can effectively visualize and analyze spatial relationships, ensuring that project planning adheres to environmental regulations and minimizes disruptions to local ecosystems.

The analysis is conducted using an ArcGIS Pro license from the Technical University of Cluj-Napoca, specifically through the North University Center of Baia Mare within the Faculty of Engineering. This advanced GIS platform facilitates sophisticated spatial analyses, supporting informed decision-making for sustainable quarry development while safeguarding surrounding areas.

Keywords: Quarry, Environmental Monitoring Area, ArcGIS Pro, Rhinoceros 3D, Copernicus



2024

