

# PASTE 2023

25<sup>TH</sup> INTERNATIONAL CONFERENCE ON

## PASTE, THICKENED & FILTERED TAILINGS

APRIL 30 - MAY 3, 2023 | BANFF, ALBERTA, CANADA

### Approved Abstracts

***The following list of authors have been invited to prepare and submit a full paper for consideration for inclusion in the final conference program of Paste 2023.***

*Author list complete as of 11/20/2022.*

#### **Filtered tailings plant design at Krumovgrad Mine**

*Isaac Ahmed, Andrea Diaz, Golder Associates Ltd., Canada, Peter Kerry, Peter Corrigan, Golder Associates UK Ltd., Ireland, Francis Stewart, Dundee Precious Metals Krumovgrad, Bulgaria*

#### **Influence of sample molding methodology on bauxite residue rheological characterization**

*Paulo Alfenas, Debora Chacara, Norsk Hydro, Brazil, Jessica Duarte, Pimenta de Avila Consultoria, Brazil*

#### **Sustainable management of bauxite mining tailings and industrial residue in Amazonia**

*Paulo Alfenas, Norsk Hydro, Brazil, Raphael Vieira Costa, Paschoal Cataldi, Brazil*

#### **Compressive behaviour of mature fines tailings treated by microbially induced calcite precipitation**

*Shima Atashgahi, Fangzhou Liu, Yang Liu, Nicholas Beier, University of Alberta, Canada*

#### **Cover system modeling for a dry stacking tailings deposit considering different coverages and parameters of influence on the hydric balance**

*Karine Basto, Jessica Duarte, Claudia Martins Bhering Dominoni, Pimenta de Avila Consultoria, Brazil, Raphael Rodrigues, Brazil*

#### **Reduction of strength losses on paste backfill with sludge cake**

*Ignacio Bazan, Paul Ainsworth, Paterson & Cooke (UK) Ltd., United Kingdom*

#### **An alternative to NaOH in alkali-activation of ground granulated blast furnace slag in formulation of cemented paste backfills**

*Tikou Belem, Noureddine Ouffa, Université du Québec en Abitibi-Témiscamingue, Canada, Mostafa Benzaazoua, Mohammed VI Polytechnic University (UM6P), Morocco, Romain Trauchessec, André Lecomte, Université de Lorraine, France*

## Prediction of the mechanical properties of cemented paste backfill using artificial intelligence approaches

*Tikou Belem, Mariem Amri, Hatem Mrad, Université du Québec en Abitibi-Témiscamingue, Canada, Louis-Philippe Gélinas, Agnico Eagle, Canada, Faouzi Masmoudi, École Nationale d'Ingénieurs de Sfax, Canada*

## Experimental validation of a prediction model of the compressive strength of cemented rock fills

*Tikou Belem, Ghada Rafrat, Hatem Mrad, Université du Québec en Abitibi-Témiscamingue, Canada, Louis-Philippe Gélinas, Agnico Eagle, Canada, Abdelkader Krichen, École Nationale d'Ingénieurs de Sfax, Tunisia*

## Assessment of static liquefaction susceptibility of early age cemented paste backfills

*Tikou Belem, Université du Québec en Abitibi-Témiscamingue, Canada, Mamert Mbonimpa, RIME/UQAT, Canada, Jeffrey Oke, RockEng, Canada, Louis-Philippe Gélinas, Agnico Eagle, Canada*

## A case study on the commingling of tailings and waste rock at a Brownfields open cast mine in Ghana

*Johan Boshoff, Louise McNab, Gold Fields Ltd, Australia, Roland Turner, Nathaniel Asifu Mensah, Gold Fields Ltd, Ghana*

## Assessing the creep properties of filtered tailings in continuous permafrost regions: methodological developments and preliminary results

*Vincent Boulanger-Martel, Weber Anselmo dos Ramos Souza, Bruno Bussière, Mamert Mbonimpa, Mutaz Nujaim, RIME-UQAT, Canada*

## Impact of feed solids on tailings filtration

*Chris Braun, Ken Rahal, FLSmidth, United States*

## Evaluating the dry stacking performance of commingled waste rock and filtered tailings

*Ralph Burden, G. Ward Wilson, University of Alberta, Canada*

## Filtered tailings evaluation as a medium and long term solution, for Codelco installations

*Gonzalo Caro, Hector Recaval, Eduardo Carreño, Codelco, Chile*

## Effects of climate conditions on the hydrogeological behaviour of a filtered tailings storage facility located in Northern Canada

*Madison Chai-Onn, Polytechnique Montréal, Canada*

## Evaluation of design criteria for internal drainage systems

*Adriano Ciuffi, Daniel Arvani, Ronaldo Pantoja, Paulo Alfenas, Hydro, Brazil*

## Backfilling tailings above an active cave mine

*Nicholas C Clarke, Imtech P/L, Australia*

## Is the implementation of dry stacking for tailings storage increasing? A southern African perspective.

*Andrew Copeland, Knight Piésold Consulting, South Africa*

## Fruta del Norte paste plant – case study

*Leslie Correia, Rob Brown, Paterson & Cooke, Canada*

## PIT slack flow detection – 3 methods to determine flow status of a paste reticulation system

*David Coulton, Paterson & Cooke Nordic, Sweden*

## Geochemical and hydrogeological characterization of mixtures of waste rock and tailing to control the acid mine drainage

*Aniseh Dadashi, G. Ward Wilson, University of Alberta, Canada, Bruno Bussière, RIME-UQAT, Canada*

## Stacked deposits of thicken and filtered ultrafine tailings using geo-bags technology - Concepts & lessons learned

*Fernando Da Silva, SNC-Lavalin, Canada*

## Tailings filtration: linking process performance with geotechnical outcomes

*Ross de Kretser, Acclarium Consulting, Australia, Fiona Sofra, Rheological Consulting Services, Australia*

## Improved slurry dewatering via process water conditioning: Equipment sizing and tailings risk implications

*Ross de Kretser, Acclarium Consulting, Australia, Andrew Vietti, Fredre Dunn, Vietti SlurryTec, South Africa*

## Hypothetical failure simulation of a filtered tailings facility using an empirical method and two-and three-dimensional stability analyses

*Claudia Martins Bhering Dominoni, Karine Basto, Raphael Gonzales, Jessica Duarte, Pimenta de Avila, Brazil*

## Instrumenting a waste rock barricade during a continuous pour - a case study

*Khadija El Mahboub, Iamgold, Canada, Jeffrey Oke, ROCKENG, Canada, El Mkadmi Nawfal, NEMCCO, Canada, Tikou Belem, Université du Québec en Abitibi-Témiscamingue, Canada*

## A comparison between in-situ techniques to measure undrained shear strength of tailings

*Iman Entezari, Dallas McGowan, Joseph Glavina, ConeTec, Canada*

## Estimation of wall closure associated with stope excavation underneath a sill mat made of backfill

*Chuan Fan, China, Li Li, École Polytechnique de Montréal, Canada*

## Evaluation of bauxite tailings performance as a material for mining dam closure - a case study

*Andre Faria, Fernando Goncalves, Matheus Dutra, Pimenta de Avila Consultoria, Brazil*

## Shear strength assessment of consolidated treated fluid fine tailings using applied suction method

*Bereket Fisseha, Tetra Tech Canada, Canada, G. Ward Wilson, University of Alberta, Canada, Delwyn Fredlund, University of Saskatchewan, Canada*

## Avoiding dam failures: Is filtration the best solution?

*Tim Fitton, Fitton Tailings Consultants, Australia*

## On implementation of paste and thickened tailings solutions to achieve environmental social and governance (ESG) targets for Gold Fields Tailings Storage Facilities (TSFs) in Western Australia

*Priscilla Garvey, Gold Fields, Australia, Andres Ortiz, Saxum Consulting, Australia, Claude Prinsloo, SRK Consulting (Australasia) Pty Ltd, Australia*

## Arctic backfilling: challenges and lessons-learned

*Louis-Philippe Gélinas, Agnico Eagle, Canada*

## Study of the reduction of resistance in the time of specimens tested by UCS for pasta filling

*Gerardo Gonzales, Golder Associates, Peru*

## Using cemented paste backfill (CPB) strength profiles to assess the potential for continuous pouring and liquefaction resistance

*Murray Grabinsky, Andrew Pan, Will Bawden, University of Toronto, Canada, Ben Thompson, Paterson & Cooke Canada Inc, Canada, Ryan Veenstra, Newmont, Australia*

## A new dosing method proposal for polymer-treated oil sands tailings

*Raymond Guang, Paterson and Cooke, Canada*

## Column tests on effect of drainage condition and cement dosage on self-weight consolidation behavior of mine backfill slurry

*Lijie Guo, Qinghai Ma, Guangsheng Liu, Xiaocong Yang, Beijing General Research Institute of Mining and Metallurgy, China*

## Determination of the relationship between direct tensile test and Brazilian splitting test of cemented tailings backfill

*Lijie Guo, Guoxing Tang, Guangsheng Liu, Xiaocong Yang, Beijing General Research Institute of Mining and Metallurgy, China*

## Vacuum disc filters go beyond

*Jurgen Hahn, BOKELA GmbH, Germany*

## Design and commissioning of coal fly ash filter plant

*Jason Hamelehle, James Keat, Casey Schmitt, Paterson & Cooke, United States*

## Application of filtered tailings storage method at TÜPRAG Efemçukuru Gold Mine

*Yavuz Selim İNCİ, Görkem Uzunçelebi, Halil Ürkmez, TÜPRAG Metal Madencilik Sanayi ve Ticaret A.Ş., Turkey, Sean Ennis, Peter Kimball, Ernesto Ruiz Castro, Stantec, Canada*

## Consolidation and unsaturated properties of thickened tailings and centrifuged cake for mine closure

*Louis Katel Kabwe, G. Ward Wilson, David Barsi, Nicholas Beier, University of Alberta, Canada*

## From slurry to soil: creating soil from oil sands tailings

*Heather Kaminsky, Mohammed Ghuzi, Chibuike Chigbo, Simon Sun, Amanda Schoonmaker, NAIT, Canada*

## Why variability matters - the struggle for optimum dosing

*Heather Kaminsky, NAIT, Canada*

## The new norm for gold miners and how change in mine waste management could help

*Ibrahim Karajeh, WSP Golder, Canada*

## Selection and operation of Metso Outotec 2nd generation paste thickener at the New Afton Mine

*Jennifer Katchen, Sam Carlberg, New Gold Inc., Canada, Simon Courtenay, Metso Outotec Australia Limited, Australia*

## Evaluation of automatic polymer dosing control to optimise the performance of belt presses

*Jeremy Adam Koenig, Andrew Dowd, John Ballantyne, Russell Schroeter, SNF, Australia*

## Using InSAR to assess tailings consolidation

*AJ Koleshwar, TRE Altamira Inc, Canada*

## Effects of low suction and drying-wetting cycles on filtered tailings shear strength

*Hung Le, Thomas Pabst, Polytechnique Montréal, Canada*

## Design of a reliable pressure measurement method for paste backfill pipelines

*Chris Lee, Golder Associates Ltd. (Member of WSP), Canada*

## Rheology of concentrated iron ore tailings and their components: effect of a composite additives

*Yee-kwong Leong, Professor, Australia*

## A cost effective solution to a tailing rheology problem meeting the legislated environment constraints with the use of a cheap additive

*Yee-kwong Leong, Professor, Australia, Scott Bensley, Jason Drewett, Rio Tinto, Australia*

## Parameterization of the behavior of bauxite tailings in the densification in temporary storage quadrants

*Mauro Lima, Hydro, Brazil, Patricia Sousa Silva, Leonardo Martins Agripino, Norsk Hydro, Brazil*

## Oil sands – backfill for tailings management

*Sue Longo, Golder, Canada, Scott Morton, Drift Resources, Canada*

## The evolution of co-disposing stopes at Newmont Tanami Operations

*CJ Mackay, Ryan Veenstra, Newmont, Australia*

## Does adding aggregate to paste backfill increase strength?

*Pierre Mainville, Barr Engineering, Canada*

## Conversion of an existing industrial facility of pellet feed filtration to tailings filtration

*Thamiris Mascarenhas, Marconi Silva, Vale S.A., Brazil*

## Backfilling in the permafrost: prediction of the pressure loss and temperature distribution along the paste backfill pipeline system

*Mamert Mbonimpa, Patrick Kalonji Kayumba, RIME-UQAT, Tikou Belem, Université du Québec en Abitibi-Témiscamingue, Canada, Serge Ouellet, Canadian Malartic Mine, Canada, Louis-Philippe Gélinas, Agnico Eagle, Canada*

## Numerical procedure for scaling up pressure loss from mini flow loop tests

*Mamert Mbonimpa, Patrick Kalonji Kayumba, RIME-UQAT, Tikou Belem, Université du Québec en Abitibi-Témiscamingue, Canada, Ouellet Ouellet, Canadian Malartic Mine, Canada, Louis-Philippe Gélinas, Agnico Eagle, Canada*

## Hydraulic dewatered stack – an improved strategy for tailings management

*Murray Mcgregor, SRK Consulting, United Kingdom*

## How to compact filtered tailings

*Gord McKenna, McKenna Geotechnical Inc, Canada*

## A case study on the selection and performance of amphibious vehicles in a product, operating TSF and legacy tailings environment

*Louise McNab, Johan Boshoff, Gold Fields Ltd, Australia*

## Rheological testing for dam break modelling

*Gordon Ian McPhail, Roxana Ugaz, Francisco Garcia, Water, Waste and Land, Australia*

## The production and management of coal and copper dry tailings

*Steve Meiring, Ausenco, Australia*

## Comparative analysis of empirical methodologies to assess flow liquefaction susceptibility of filtered uranium tailings - a case study

*Stefhany Melendez, Brahian Roman, University of Applied Science (UPC), Peru*

## Comparing various thixotropic models and their performance in predicting flow behavior of treated tailings

*Ebi Meshkati, Boskalis, Netherlands, Arno Talmon, Mohamed Nabi, Deltares, Netherlands, Paul Simms, Carleton University, Canada, Reza Moussavi Nik, Imperial Oil, Canada*

## Hydraulic design of a thickened tailings gravity discharge and distribution system

*Udoy Mirdha, Cristian Riquelme, Betty Lin, Hatch, Canada*

## Study of the effects of arsenic trioxide roaster waste on the mechanical behavior of cemented paste backfills using RSM

*Amirhossein Mohammadi, Isabelle Demers, Mostafa Benzaazoua, University of Quebec in Abitibi-Témiscamingue, Canada, Nicholas Beier, University of Alberta, Canada*

## How high is too high?

*Raúl Norambuena Mardones, SRK Consulting, Canada, Colleen Caldwell-Crystal, SRK Consulting, USA, Diego Cobos, SRK Consulting, Columbia*

## Developing predictive empirical filtration models for advanced tailings handling

*Jinali Nupehewa, Piia Suvio, Vesa Koponen, Metso Outotec, Finland, Jason Palmer, Metso Outotec, Australia*

## The impact of tailings properties on conveying system designs

*Chris Olsen, FLSmidth, United States*

## Effect of Particle Size Distribution on the Dewatering Circuit Design Case Study: Iron Ore Tailing of the Gol-E-Gohar Mining and Industrial Company

*Gholamabbas Parsapour, Vali-E-Asr University of Rafsanjan, Islamic Republic of Iran, Saeid Zare, Shahid Bahonar University of Kerman, Islamic Republic of Iran, Mojtaba Ghorbannejad, Alireza Hasankhoei, Gol-E-Gohar Mining and Industrial company, Islamic Republic of Iran*

## Rheological and geotechnical characterization of a bauxite residue

*Guilherme Pinto, Lucas Jesus, Rafaela Carvalho, Gabriel Cunha, Lucas Porto, Pimenta de Avila Consultoria, Brazil*

## Undrained shear strength prediction of a bauxite tailing based on K-Nearest Neighbor method

*Guilherme Pinto, Pimenta de Avila Consultoria, Brazil, Santos Tatiana Barreto, Universidade Federal de Ouro Preto, Brazil*

## Use of calcium oxide to reduce the moisture present in filtered iron ore tailings

*Tigao Pires, Maycon Alves, Nilson Paula, Vale S. A., Brazil*

## Sustainable sand production from tailings generation in iron ore benefit phases

*Tiago Pires, Vale S.A, Brazil*

## Use of geotubes for moisture reduction in iron ore tailings

*Tiago Pires, Vale S.A, Brazil*

## Large scale thickened tailings delivery and linear distribution system upgrade and optimisation

*Behnam Pirouz, Sadegh Javadi, ATC Williams, Australia*

## Estimating rheological properties of liquified tailings for dam break simulation using site-specific parameters and laboratory testing

*Behnam Pirouz, Zerui Lu, Sadegh Javadi, ATC Williams, Australia*

## Large strain shearing behaviour of untreated and polymer treated specimens clayey silt slurry

*David Reid, Bandana Tiwari, Andy Fourie, University of Western Australia, Australia*

## Influence of degree of compaction on pore pressure generation during isotropically consolidated-undrained triaxial compression tests on bauxite filtered residue

*Raphael Rodrigues, Brazil, Karine Basto, Claudia Martins Bhering, Dominoni, Jessica Duarte, Pimenta de Avila Consultoria, Brazil*

## Experimental and numerical characterization of filtered tailings behavior under large deformation

*Brahian Roman, Melannie Rosas, University of Applied Science, Peru*

## Co-disposal of waste rock with unclassified tailings through cemented paste backfill at Jinchuan Nickel Mine

*Zhuen Ruan, Aixiang Wu, Jiandong Wang, Pengjie Wu, Shaoyong Wang, University of Science and Technology Beijing, China, Long Zou, Zhongjie Chen, Jinchuan Group Co., China*

## Using delithiated beta spodumene to reduce the carbon footprint of cemented paste backfill

*Amin Safari, IGO Limited, Australia, Hazel Lim, Tianqi Lithium Kwinana, Australia*

## Analytical aspects of bauxite tailings thickener feed in physical-chemical laboratory routines

*Jefson Saldanha, Jafson Rodrigo de Moraes Saldanha, Hydro, Brazil*

## Introduction of admixture at Newmont Tanami

*Ryan Salter, MB Solutions, Australia*

## Dry stack filtered tailings: seepage behaviour during construction process

*Bryan Sanchez, Miguel Sutta, Julio Soto, Ivan Benites, Ausenco, Peru*

## Transforming rare earth minerals tailings, a successful application of Accelerated Mechanical Consolidation (AMC)

*Oscar Santiago, Phibion, Australia*

## Rheological comparison between very thickened tailings and its importance in transportation

*Francisco Scheihing, Cristian Cortés, Jorge Martínez, Ausenco Chile Limitada, Chile*

## Novel, economic, and reliable filtration of porphyry copper tailings

*Dave Seago, University of Alberta, Canada, Christian Kujawa, Extrakt Process Solutions LLC, United States, Gavin Freeman, Extrakt Process Solutions LLC, Canada, David Meadows, Bechtel Mining and Metals, United States*

## Unsaturated soils in thickened and filtered tailings: benefits for practice

*Paul Simms, Carleton University, Canada*

## Rheology for deposition control and deposit failure risk analysis

*Paul Simms, Carleton University, Canada*

## The first paste filling in a sublevel stoping mine: a case study of Aripuana

*Drielle Souza, Ravel Julio da Fonseca, Josiane Coeli, Nexa Resources, Brazil*

## Loop pumping tests of crushed rock mixed with thickened tailings

*Anna Stalnacke, Thord Wennberg, LKAB, Sweden, Anders Sellgren, Lulea University of Technology, Sweden*

## Underground paste plants: Innovative solutions to address ESG and permitting

*Fallon Tanentzap, Andrew Hall, RMS, Canada*

## Technical and economical assessment of dst alternatives for an iron ore project - a case study

*Mark Taylor, TAKRAF, Australia, Joey de Guzman, TAKRAF DELKOR, Canada, Rico Neumann, TAKRAF, Germany*

## Best practices in continuously (and not continuously) pouring paste backfill

*Ben Thompson, Paul Carmichael, Paterson & Cooke, Canada, Ryan Veenstra, Newmont, Australia, Murray Grabinsky, University of Toronto, Canada, William Bawden, Bawden Engineering Inc., Canada*

## A review of modern paste admixture technology and paste mix designs

*Bernie Ting, Mojdeh Sharafi, T Engineering, Canada, Sara Arcila, Sika Canada, Canada, Fabian Erismann, Martin Hansson, Sika Services, Switzerland*

## Application of risk-based tailings management at TÜPRAG Efemçukuru Gold Mine

*Halil Ürkmez, TÜPRAG METAL MADENCİLİK SANAYİ VE TİCARET A.Ş., Turkey*

## Handling dewatered tailings: the three root causes of poor material discharge and bin hang-ups

*Derek Vaile, Kamengo Technology Inc, Canada*

## Tailings dewatering with the EKS-DT Process

*John Vandersleen, Ed Hanna, ElectroKinetic Solutions Inc., Canada*

## Choking an underground cemented paste backfill reticulation system

*Ryan Veenstra, Hamish Rose, Newmont, Australia, Alan Rosewall, Paterson and Cooke, Australia*

## In situ pipeline data monitoring

*Ryan Veenstra, Alfred Lopez, Adam Zajac, Hamish Rose, Newmont, Australia, Anouk van Pol, INGU, Canada*

## Design of a filtered tailings pile considering unsaturated conditions

*Gino Omar Calderon Vizcarra, Vale S.A., Brazil*

## Case study Brucejack paste backfill system

*Erik Vlot, Weir Minerals, Netherlands, Lukas Fleming, Newcrest Brucejack, Canada, Dominic Balthazar, Weir, Canada*

## Case study holistic approach to tailings management

*James Wickens, Paterson & Cooke Consulting Engineers (Pty) Ltd, South Africa*

## Potential errors in paste fill rheology measurements

*James Wickens, Paterson & Cooke Consulting Engineers (Pty) Ltd, South Africa*

## Optimal paste backfill specification development

*Stephen Wilson, Paterson & Cooke UK Ltd, United Kingdom*

## Are filtered tailings the most suitable technology for TSF projects in Brazil?

*Marco Yalle, Jessica Rodriguez, Ausenco Peru S.A.C., Peru*

## Co-processing of fresh oil sand tailings and fluid fine tailings

*Simon Yuan, Nan Wang, Adedeji Dunmola, Meghan Curran, Jasmyn Sharp, Audrey Lanoue, Syncrude Canada Ltd., Canada*

## Mixing behavior of waste rocks poured in a paste backfill

*Yuyu Zhang, Li Li, Polytechnique Montréal, Canada*

## A numerical study on the mixing behaviors of waste rocks poured in a paste backfill

*Yuyu Zhang, Li Li, Polytechnique Montréal, Canada*

## Effect of nanofibrillated cellulose on the geotechnical properties of oil sands tailings

*Yunhai Zhang, Nicholas Beier, University of Alberta, Canada, Keith Gourlay, Gurminder Minhas, Performance BioFilaments Inc., Canada*

## Real time predictive modelling of multiphase flows in thickened tailings pipelines

*Enzu Zheng, Andrew Chryss, Keri Constanti-Carey, CSIRO Mineral Resources, Australia*

Mechanical properties and mesoscopic analysis of rock-backfill-rock composite sample under dynamic loading

Di Zheng, China, Lijie Guo, Beijing General Research Institute of Mining and Metallurgy, China, Guangsheng Liu, Xiaocong Yang, BGRIMM, China

Efficient dewatering of unclassified tailings with flocculant: role of ultrasound

Liyi Zhu, University of Alberta, Canada, Peng Yang, Beijing Union University, China, Wensheng Lyu, University of Science and Technology Beijing, China, Kun Wang, Shandong University of Science and Technology, China

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