

Formula 1

Content placeholder

Related Content

Title	Type	Slug
MSHA/OSHA Blasting Regulations Deep Dive	lesson	msha-osha-blasting-regulations
Emergency Response Planning for Blasting Incidents	lesson	blasting-emergency-response-planning
Noise and Airblast Modeling for Permitting	lesson	noise-airblast-modeling-permitting
Drill Rig Maintenance Inspection Checklist	resource	drill-rig-maintenance-checklist
Rock Mass Rating (RMR) Field Survey Sheet	resource	rmr-field-survey-sheet

Detailed Explanation

The Blast Design Excel Template v4.2 serves as a standardized computational framework for blast engineers and drilling supervisors to translate geological and geotechnical inputs into executable blast plans. Built in Microsoft Excel with embedded logic, data validation, and conditional formatting, it incorporates industry-standard methodologies—including the Konya & Walter (1991) and Langefors–Kihlström models—for predicting fragmentation, flyrock risk, and airblast levels. Users input site-specific data such as rock type (via RMR or UCS), explosive type and strength (e.g., ANFO density and VoD), borehole diameter, and desired fragmentation size (e.g., P80), and the template automatically computes optimal blast geometry and loading parameters. Advanced features include sensitivity analysis sliders, warning flags for over/under-stemming or excessive burden-to-spacing ratios, and summary reports for stakeholder review. Version 4.2 introduces updated vibration prediction algorithms aligned with USBM and DIN 4150-3 standards, enhanced compatibility with GIS-linked survey data, and export functionality for integration with mine planning software (e.g., MinePlan or Deswik).

Key Components

#	Component
1	Blast Geometry Calculator
2	Explosive Loading & Energy Distribution Module
3	Fragmentation & Vibration Prediction Engine

Applications

#	Application
1	Open-pit mining production blast design
2	Quarry bench optimization and cost-per-ton reduction
3	Civil infrastructure excavation (tunnels, foundations, road cuts)

Related Concepts

#	Concept
1	Rock Mass Rating (RMR)
2	Explosives Energy Index (EEI)
3	Peak Particle Velocity (PPV) Prediction

Tags

blasting, mining-engineering, excavation-optimization, Excel-tool, rock-fragmentation

ToolFusion Engineering