

3M Science.
Applied to Life.™

Take worker health and safety to the next level.

3M™ Personal Protective Solutions
for the Mining Industry



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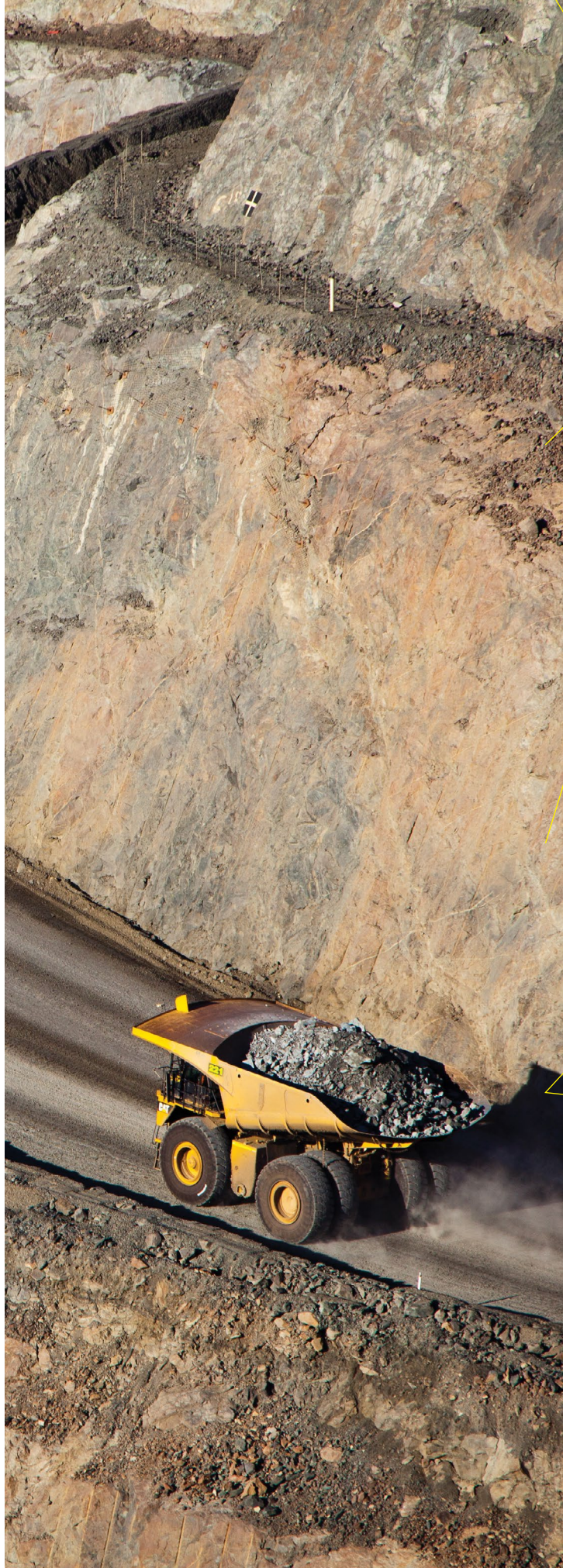
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For **50⁺** years, the safety behind your success

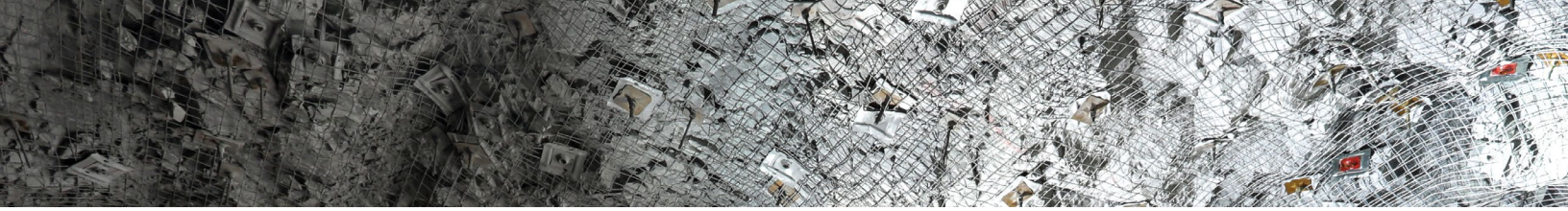
3M helps protect workers in a changing world. Across diverse industries and applications, our technology, knowledge and energy drive innovative solutions. Our goal is to help protect you from hazards in the work environment, so you can focus on the job at hand.

Over 50 years ago, 3M introduced the first U.S. Government-approved 3M filtering facepiece respirator, and the 3M™ E-A-R™ Classic Ear Plug.

Today, 3M remains dedicated to developing Personal Protective Equipment (PPE) to help get your workers back home: we apply science to life, helping protect workers' health and safety on the job, for employees today and tomorrow. Learn more about the history of our advancements and where we are going next.

[3M.com/safety50](https://www.3m.com/safety50)

50⁺ Years of
Health and Safety Leadership 



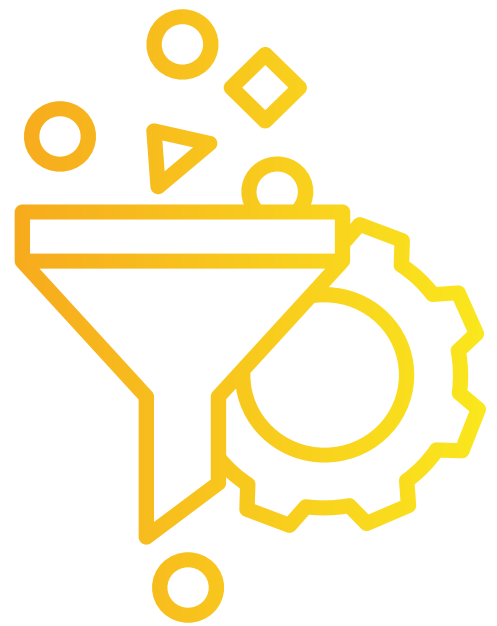
Ties that run deep

3M and the mining industry

When 3M was established in 1902, our founders had a simple goal: to mine for corundum, a mineral ideal for making sandpaper and grinding wheels. However, they soon discovered what they believed was corundum was actually low-grade anorthosite, which was unsuitable for making abrasives.

This setback could have ended our fledgling company, but our founders used it as an opportunity to develop the culture of innovation and collaboration that guides our company today.

This spirit of innovation has shaped the development of our catalog of personal protective solutions—and our roots in the mining industry has given us an understanding of the unique challenges your workers face. We are dedicated to serving you and share your commitment to improving worker health and safety.



We have safety down to a science.

Your workers deserve PPE that works as hard as they do, and that enables them to do their jobs with confidence. And because **PPE is the last barrier of protection, and it is only effective when worn properly 100% of the time**, it should also be comfortable and easy to use.

With a comprehensive health and safety program enhanced by PPE and support resources from 3M, you can help your teams stay safe. With our broad portfolio of solutions, industry knowledge and support resources, we know what it takes to help you select PPE appropriate for the needs of your mine site.

Why work with 3M?

- ▶ Innovative technologies
- ▶ Industry knowledge and hazard awareness
- ▶ Regulatory and standards knowledge
- ▶ PPE standardization and improvement programs
- ▶ Training centers and online education courses
- ▶ Authorized service and repair centers
- ▶ Broad channel/reseller network

3M Personal Protective Solutions

- ▶ Confined space entry, exit and rescue solutions
- ▶ Comprehensive fall protection solutions
- ▶ Disposable, reusable and powered air purifying respiratory protection
- ▶ Head, face, eye and skin protection
- ▶ Welding safety solutions
- ▶ Hearing protection and communication solutions



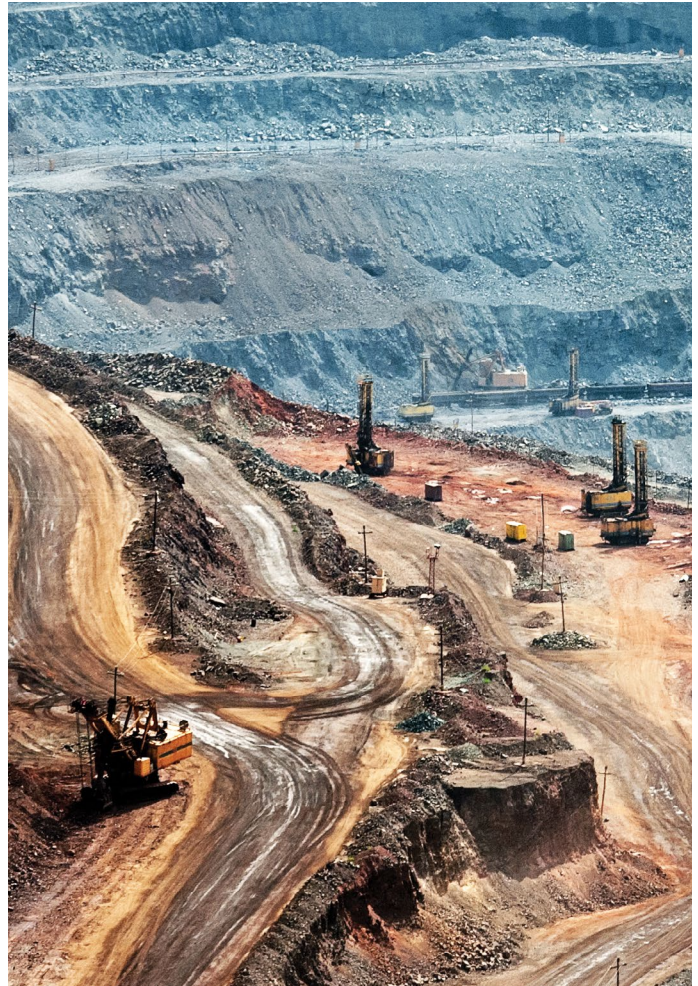
Building a strong health and safety culture

As critical as the minerals you mine

Industries around the world depend on access to mineral resources for raw materials and energy, and the mining industry is at the forefront of this critical work.

As the industry's profile rises, it is more important than ever to demonstrate a commitment to responsible mining practices, including building a strong health and safety culture at every mine site and processing facility. Workers can be exposed to hazards every day. Some of these can impact a worker immediately and others lead to chronic conditions that may not impact workers until their career in the mine is over. Therefore, the steps taken to protect them today will have a positive impact far into the future.

Education and proper PPE use are two of the fundamental ways to help protect workers against the hazards they face at every step of the mining process. 3M offers PPE designed for both performance and comfort – all from a global PPE manufacturer with product solutions including head, eye, face, respiratory, hearing and fall protection.



Common risks encountered in mining that can have the potential to be mitigated with PPE use:



- ▶ Particulates (dust, mist and fumes)
- ▶ Noise
- ▶ Flying objects (liquids, particles)
- ▶ Radiant heat
- ▶ Vapors and gases
- ▶ Oxygen deficiency
- ▶ Skin exposure
- ▶ Work in confined spaces
- ▶ Work at heights
- ▶ Sharp edges
- ▶ Falling objects
- ▶ Contact with electricity
- ▶ Impact against mobile and immobile objects

The impacts of everyday work hazards

Mine workers that are unprotected from the hazards encountered today, can often lead to significant long-term injuries and illness. Understanding the near- and long-term risks of common mining tasks—and how the proper use of PPE can help reduce them—is essential to keeping workers safe today and tomorrow.



Respiratory Hazards

- ▶ Some fatal occupational respiratory diseases can take up to **20 years or longer** to develop. As consequences of breathing hazardous substances are often not immediate.

Silicosis: a devastating and life altering illness

- ▶ **USA:** more than **23%** of reported silicosis deaths attributable to mining.¹
- ▶ **Latin America:** silicosis prevalence rate of **37%** among miners, and up to **50%** among miners over age 50.²
- ▶ **Australia:** It is estimated that one in five people who have been exposed for more than three years would develop silicosis.³
- ▶ **Worldwide:** one of the most common work-related injuries is pneumoconiosis, specifically caused by exposure to Respirable Crystalline Silica (RCS)⁴

1. NIOSH. 2022. Mining Topic: Respiratory Diseases. (<https://www.cdc.gov/niosh/mining/topics/respiratorydiseases.html>)

2. CODELCO. Fight against silicosis: A battle that Codelco is determined to win. (<https://www.codelco.com/sustentabilidad/publicaciones/informe-sustentable/una-batalla-que-codelco-esta-decidida-a-ganar>)

3. NCBI. 2021. Early Detection Methods for Silicosis in Australia and Internationally. (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8345652/>)

4. NCBI. 2010. Silicosis due to Denim Sandblasting in Young People: MDCT Findings. (<https://pubmed.ncbi.nlm.nih.gov/25610113/>)



Hearing Loss

- ▶ More than **120 million** workers in the world are exposed to noise levels above 85 dB. (WHO)
- ▶ The annual cost of unprevented hearing loss is in the range of **\$750–790 billion** globally. (WHO, 2017)
- ▶ Noise-induced hearing loss is one of the most common occupational injuries, and the second most self-reported occupational disorder. (NIOSH)

Occupational hearing loss: is permanent and 100% preventable

- ▶ **USA:** estimated **90%** of miners have developed hearing impairment by age 50.¹
- ▶ **Peru:** **48.4%** of workers suffer some illness due to noise exposure.²

1. Kan Sun and A. S. Azman. Evaluating hearing loss risks in the mining industry through MSHA citations. J. Occup Environ Hyg. 2018 Mar; 15(3):246-262.

2. Sub-bulletin Feb. 28, 2019. Energy & Mines Ministry. Government of Peru.



Work at Heights

- ▶ **68%** of accidents occur at heights of less than 2 meters. This occurs because, at low height, we have a lower perception of risk. (UK HSE)
- ▶ Falls are the **second leading** cause of unintentional injury and death worldwide. (WHO)

Falls from height: can cause disabling injury or death

- ▶ **Chile:** falls are the **second leading** cause of death in the mining industry.¹
- ▶ **USA:** Falls are the **second leading** cause of workplace injuries in 2020, responsible for **18.2%** of all injuries.²

1. https://www.susesu.cl/607/articles-590749_archive_01.pdf

2. <https://www.cdc.gov/niosh/injury/fastfacts.html>

Worker health and safety throughout

1 Mine planning and development

Mine planning and development is the process of determining the most efficient and cost-effective way to extract minerals from a deposit while considering various factors such as geological characteristics, economic feasibility, environmental considerations, and safety requirements.

Key safety considerations:

- ▶ Mitigating dust and respiratory hazards from drilling and blasting
- ▶ Protecting workers by providing protection from hazardous noise and improving communication while working around loud heavy machinery and equipment
- ▶ Managing eye and face hazards from chemicals and debris

2 Open pit extraction (surface)

Open-pit mining, also known as opencast mining, is a surface mining method used to extract minerals or ore deposits that are located near the surface of the Earth. It involves the excavation of an open pit or burrow in the ground, which allows access to the desired minerals or materials.

Key safety considerations:

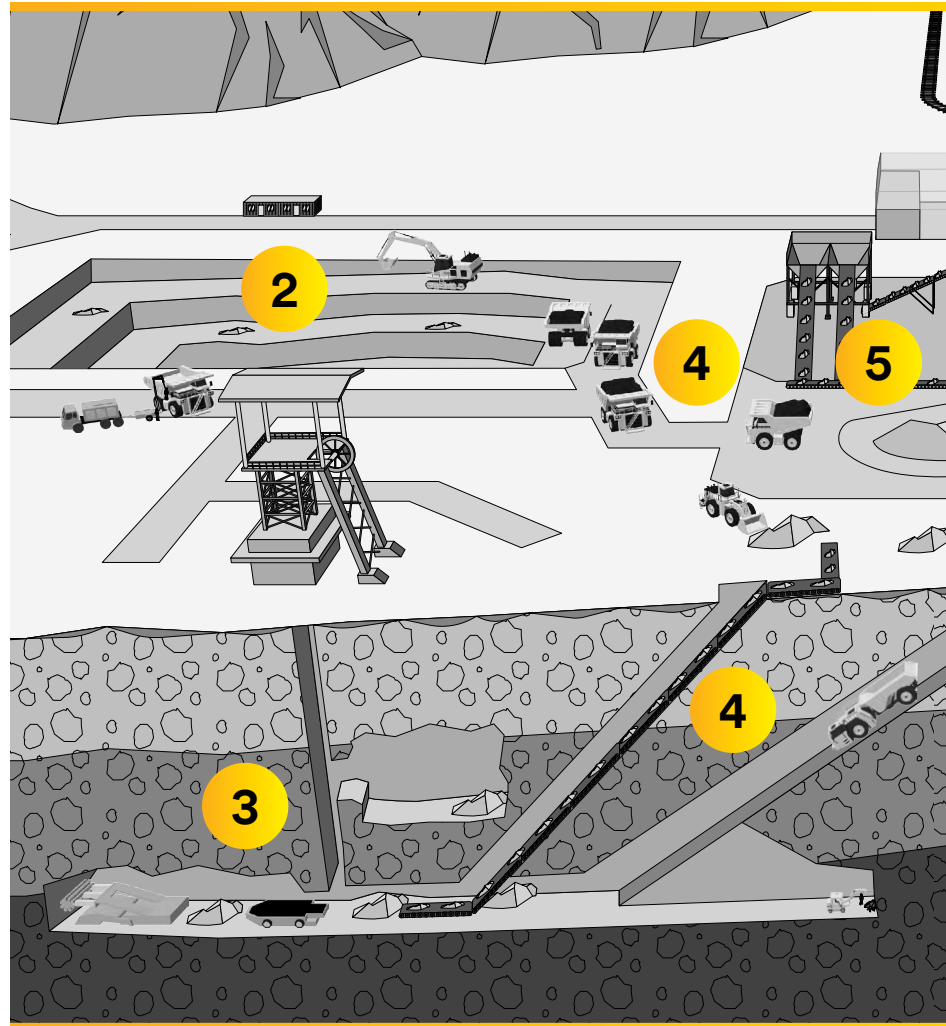
- ▶ Ensuring the stability of pit walls to prevent rockfalls and collapses
- ▶ Implementing proper maintenance and training programs for vehicles and equipment
- ▶ Managing traffic effectively to avoid collisions
- ▶ Providing fall protection solutions for tasks at heights
- ▶ Implementing dust control measures to protect respiratory health

3 Underground mining

Underground mining is a mining method used to extract minerals or ore deposits that are located deep beneath the Earth's surface. Unlike open-pit mining, which extracts minerals from an open pit or borrow, underground mining involves accessing the mineral resources by creating tunnels and shafts.

Key safety considerations:

- ▶ Safeguarding workers' hearing in noisy environments
- ▶ Mitigating exposure to hazardous gases, heat stress, fogging and the risk of rockfalls and cave-ins (intrinsically safe PPE may be required in potentially explosive environments)
- ▶ Implementing rock support systems, cementation, clear communication, gas monitoring and robust safety training programs



4 Internal transportation

Mining internal transportation refers to the movement of materials, equipment, and personnel within a mining operation. It involves the logistics and infrastructure required to transport various resources and personnel efficiently and safely within the mining site. Efficient and safe internal transportation systems are crucial for optimizing mining operations, ensuring timely delivery of materials, maintaining productivity, and minimizing downtime.

Key safety considerations:

- ▶ Ensuring proper planning, maintenance and adherence to safety protocols to ensure the smooth and safe movement of materials and personnel

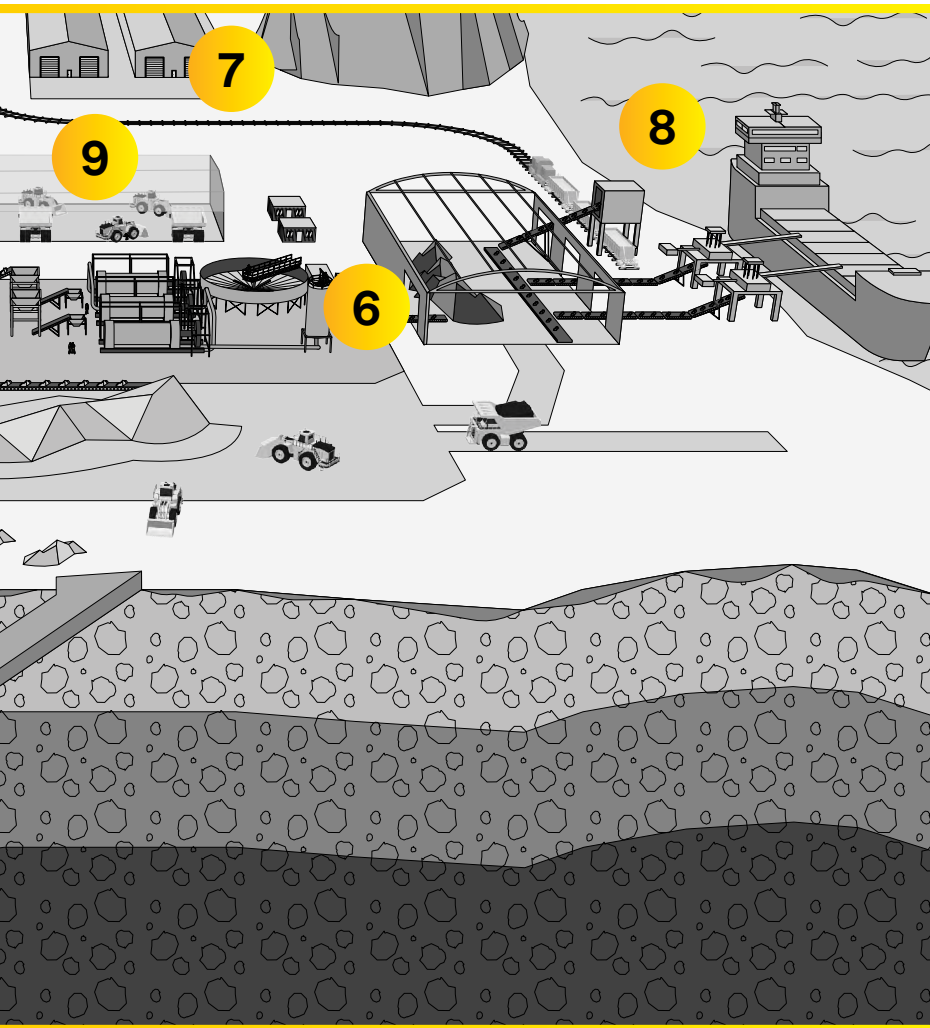
5 Crushing and grinding

Crushing and grinding are essential processes in the mineral processing industry, aimed at reducing the size of ore or rock particles to facilitate the extraction of valuable minerals. These processes involve breaking down the ore or rock into smaller, more manageable sizes, which can then be further processed or concentrated.

Key safety considerations:

- ▶ Protecting workers from exposure to noise, falling objects, electrical hazards, dust and silica
- ▶ Reducing the risk of slips, trips and falls
- ▶ Managing ergonomic risks related to manual handling and labor

the entire mining process



8 Outbound storage and transportation

Mining outbound storage and transportation refers to the processes involved in storing and transporting mined materials or products from the mining site to their intended destinations. Once minerals or ore have been extracted and processed, they need to be stored and transported efficiently and safely to reach customers, processing facilities, or distribution centers.

Key safety considerations:

- ▶ Minimizing the risk of material handling injuries and vehicle accidents
- ▶ Managing dust and particulate hazards
- ▶ Reducing fire and explosion risks
- ▶ Preventing spillage and environmental contamination
- ▶ Ensuring site security

9 Mining maintenance

Mining maintenance refers to the activities and processes carried out to ensure the proper functioning, reliability, and longevity of mining equipment, machinery, infrastructure, and facilities. It involves regular inspections, repairs, servicing, and upkeep of mining assets to prevent breakdowns, optimize performance, and minimize downtime. Maintenance tasks can range from routine preventive maintenance, such as lubrication and filter replacement, to more extensive repairs or overhauls of equipment components. Maintenance operations could often be the largest consumers of PPE. Crushing, grinding, separation, refining and pelletizing processes are very hard on equipment and the equipment requires frequent maintenance.

6 Ore separation

Mining ore separation, also known as mineral processing or beneficiation, refers to the process of separating valuable minerals from the surrounding gangue (unwanted material) in an ore deposit. The goal is to extract and concentrate the valuable minerals, such as metals or industrial minerals, for further use or refining.

Key safety considerations:

- ▶ Protecting workers from dust and particulate hazards during crushing and grinding operations
- ▶ Managing risks associated with moving machinery and equipment
- ▶ Reducing the risk of slips, trips and falls
- ▶ Protecting against heat and chemical exposure

7 Refining (Smelting, Roasting & Electrowinning)

Ore refining is the last process before commercialization. The process finishes with ore refined that then will be used to manufacture other things, as well as raw materials for other industries, for example:

- ▶ Aluminum (cans, airplane, furniture, etc.)
- ▶ Copper (electrical cables, coins, jewelers, musical instruments, etc.)
- ▶ Gold (coins, jewelers)
- ▶ Iron (steel manufacture, pipes, machines, with Ni+Cr+Mo stainless, etc.)
- ▶ Potash (agriculture fertilizer)
- ▶ Lithium (ion batteries)

Several different refining processes could take place during mining process, but most common are smelting, roasting, acid dissolution and electrowinning (electro deposition of metals)

Take on hazards for a safe and healthy shift

When the health and safety of mine workers is at stake, you want PPE that you can trust – and that your workers will feel good about wearing. With 3M™ Personal Protective Solutions, you can help ensure your workers are protected.



Respiratory Protection

From dust generated during ore extraction, separation and transportation to the chemicals used in processing and refining, mine workers are exposed to potential respiratory hazards at all steps of the mining process.

- ▶ 3M™ Disposable Respirators and Reusable Respirators
- ▶ 3M™ Versaflo™ Powered Air Purifying Respirators (PAPR)



Hearing Protection and Communication Solutions

Noise mitigation is a significant concern on mine sites, not only to help protect workers' hearing but to facilitate clear communication.

- ▶ 3M™ Earplugs
- ▶ 3M™ Earmuffs
- ▶ 3M™ PELTOR™ Headsets



Face and Eye Protection

Dust, particles and flying objects present a risk of eye injury during ore extraction, transportation and processing. Refining environments present additional risks such as chemical exposures, radiant heat and infra-red light.

- ▶ 3M™ SecureFit™ Protective Eyewear with Scotchgard™
- ▶ 3M™ Protective Faceshields



Head Protection

Falling objects and low clearances can put mine workers at risk of head injury.

- ▶ 3M™ SecureFit™ Hard Hats



Fall Protection

Working at heights is one of the most common causes of injury for mine workers around the world.

- ▶ 3M™ DBI-SALA® Fall Protection



Confined Space Entry, Exit and Rescue

Many steps of the mining process require workers to access and perform their roles in confined spaces, sometimes for extended periods of time.

- ▶ 3M™ DBI-SALA® Confined Space Solutions
- ▶ 3M™ Scott™ SCBA and Supplied Air Respirators



Emergency Breathing Apparatus

Mine workers may encounter low-oxygen environments in confined spaces or as the result of accidents such as underground fires.

- ▶ 3M™ Scott™ SCBA, 3M™ Scott™ Ska-Pak and 3M™ Scott™ ELSA™ for emergency use



Welding Safety

Welding can expose workers to welding fumes and UV radiation which can put them at risk for eye and respiratory injury.

- ▶ 3M™ Speedglas™ Welding Helmets
- ▶ 3M™ Adflo™ Powered Air Purifying Respirator Systems





Wear time: Get the most out of your protective equipment

PPE can only do its job when it is worn properly, 100% of the time.

What does it mean?

Wear time is the percentage of time a worker actually wears their required PPE vs. the amount of time they should wear it to achieve the *Assigned Protection Factor (APF)*. Used to help select respiratory PPE, APF assumes that workers use their required PPE properly 100% of the time they may be exposed while on the job. *Effective Protection Factor (EPF)* is the actual protection rate factor according to the wear time for each worker.

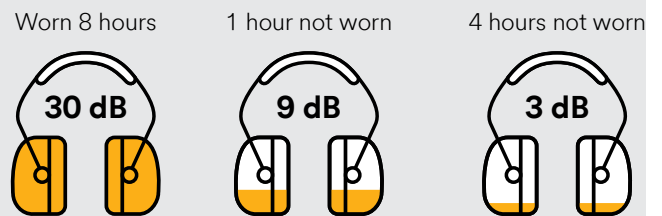
Impact on respiratory protection EPF

Respirator Type	APF	Percent of Time Respirator Worn & Associated EPF		
		100%	95%	80%
 Half-face respirator	10	10	7	3.6
 Full-face respirator	50	50	14.5	4.6
 Powered & Supplied Air	1000	1000	20	5
 SCBA	10,000	10,000	20	5

Colton, Craig. "Respiratory Protection." *Fundamentals of Industrial Hygiene*. Ed. Barbara Plog. Itasca: National Safety Council, 2012. 678-679.1

Impact on hearing protection

Effective protection drops when hearing protectors are not worn.



Even when noise seems to be at a reasonable level, noise above 85 dBA can still lead to long-term damage. Noise-induced hearing loss is caused by the damage and eventual death of sensory cells in your ears, called hair cells. Unlike some other cells, human ear hair cells never grow back.¹

¹ Based on 95 dBA TWA exposure and using NIOSH Recommended Exposure Limit of 85 dBA and 3 dB exchange rate.



Potential reasons why workers may not wear their PPE

- ▶ **Discomfort:** heat, humidity, lack of breathability
- ▶ **Performance:** fogging eyewear, inability to communicate clearly
- ▶ **Compatibility:** eye protection worn under earmuffs may impact hearing protection
- ▶ **Communication:** workers may remove PPE to communicate

Potential result: **lower wear time** and negative impact on worker health and safety.



The potential impact of low wear time

- ▶ Increased instances of occupational illness, e.g. silicosis/pneumoconiosis
- ▶ Increased instances of noise-induced hearing loss
- ▶ Increase in workplace accident rates
- ▶ Increase in Lifetime Injury Frequency Rate (LTIFR)
- ▶ Increase in worker fatalities
- ▶ Negative impact on welfare of workers and their communities
- ▶ Negative impact on business reputation
- ▶ Negative impact on Total Cost of Operation (TCO)



What can improved wear time do for you?

- ▶ Maximize Effective Protection Factor (EPF)
- ▶ Reduce time of exposure
- ▶ Reduce probability of accidents and occupational diseases
- ▶ Improve Lifetime Injury Frequency Rate (LTIFR)
- ▶ Improve health and social welfare of mining communities



Three keys to improving wear time

- ▶ **Fit:** select PPE optimized for wearability, validate with fit testing
- ▶ **Communication:** make it easier to speak and hear without removing PPE
- ▶ **Compatibility:** choose integrated and compatible PPE designed to be worn together

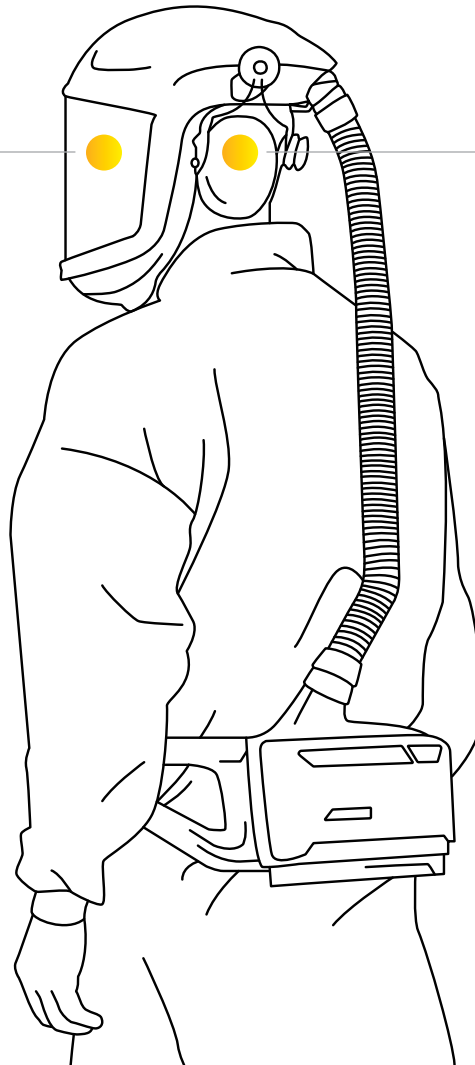
What does integrated protection look like?

3M™ Versaflo™ PAPR systems combine respiratory protection while unifying the other elements of select individual protection for hearing, eyes, face and head – all in a single system. This next-level PPE solution in turn may help to increase wear time, thanks to a combination of comfort, compatibility, communication, breathability, and fit.



3M™ Versaflo™ Powered Air Purifying Respirator (PAPR)*

- ▶ Integrated face and head protection for certain headgear
- ▶ Continuous airflow for breathability and comfort
- ▶ Accommodates limited facial hair
- ▶ Integrated heat protection accessories to protect against sparks, splashes and radiant heat during ore refining
- ▶ Available integrated head lamp accessories for underground mining and maintenance
- ▶ Can be combined with 3M™ Speedglas™ Welding Helmets



2-way radio and environmental listening

Mining processes such as crushing, electrowinning and smelting require both hearing and respiratory protection. In these high-noise environments, workers might remove their respiratory protection in order to communicate clearly – putting themselves at risk.

3M™ PELTOR™ Protective Communications*

- ▶ Enables clear communication without removing any PPE
- ▶ Environmental microphones for level-dependent protection
- ▶ Ambient listening allows workers to hear alarms and vehicles

*Not MSHA approved when intrinsically-safe approvals are required

Select 3M PPE safety solutions

Integrate with 3M™ M-Series



3M™ Versaflo™ Helmets M-300 Series



3M™ Versaflo™ TR-Series
Ready-to-use Kits



3M™ Versaflo™ Lamp
Bracket Kit M-940
Lamp not included



3M™ Versaflo™ M-307
M-940 not included



3M™ Versaflo™ M-407
M-940 not included

Radiant heat resistant covers



3M™ Versaflo™
Radiant Heat Cover
M-973N (for M-307)
M-975N (for M-407)
M-967 not included



3M™ Versaflo™
Gold Coated
Tinted Over-Visor
with UV/IR
M-967N

Accessories



3M™ Versaflo™
Backpack TR-927



3M™ Versaflo™
Heavy duty belt
TR-626



3M™ Speedglas™
Heavy-Duty Back Pack
BPK-HD



3M™ Versaflo™ Earmuff
attachment for M-Series
hard hat Z3AF/2

Available hearing and communication solutions



3M™ PELTOR™ Electronic
Earplug, EEP-100



3M™ PELTOR™
Twin Cup EX Headset



3M™ PELTOR™ Professional
In Ear Communication
Headset PIC-100



3M™ PELTOR™ WS™
ProTac XPI



3M™ PELTOR™ Boom
Microphone MT7V/1

Respiratory Protection Solutions



When tasks may expose workers to airborne hazards such as dust, mist, fumes, and chemicals, dependable respiratory protection may be required. 3M offers a broad portfolio of respiratory solutions – reusable and disposable respirators, powered air purifying respirators (PAPRs) – that help your workers breathe easy.



3M™ Versaflo™ TR-Series Ready-to-use Kits

3M ID:	Product #:	Description:
7100153815	TR-300N+ HIK	Particles
7100035755	TR-600-HIK	Particles, Gas and Vapor
7100150927	TR-800-HIK	Intrinsically Safe

Designed for on-the-job comfort, 3M™ Versaflo™ TR-Series Ready-to-use Kits contain everything your workers need to get started. Our PAPRs come with multiple airflow rates and our belts are adjustable for custom comfort. We've equipped our PAPRs with a user interface that alerts you when your battery is low or filter is loaded.



3M™ Versaflo™ M-Series Headgear

3M ID:	Product #:	Description:
7000052874	M-307	Respiratory hard hat with visor and face seal
7000002395	M-407	Respiratory helmet with visor and flame resistant shroud
7100265324	M-940	Mining lamp bracket

3M™ Versaflo™ M-Series Headgear is offered in multiple configurations to suit your environment, workforce, and potential airborne contaminants. Whether your environment calls for a faceshield or hard hat, this safety gear is easily connected to approved breathing tubes, and is approved for use in many of supplied air and powered air configurations. The 3M™ Versaflo™ Mining Lamp Bracket, M-940, is designed to securely hold a range of fixed and adjustable angle mining lamps.



3M™ Radiant Heat Accessories for 3M™ Versaflo™ Series Helmets M-307/M-407

3M ID:	Product #:	Description:
7100154129	M-973	Radiant heat cover for M-307
7100154130	M-975	Radiant heat cover for M-407
7100154127	M-961	Over-visor frame
7100154128	M-967	Gold coated tinted over-visor – UV/IR protection
7100154106	BT-927	Breathing tube radiant heat cover
7100260719	TR-381	Disposable PAPR cover for TR-300
7100260718	TR-681	Disposable PAPR cover for TR-600

3M™ Versaflo™ Radiant Heat Accessories are designed as a modular system, so you can customize coverage levels for tough environments. Intended for use on select M-Series helmets, which are compatible with a wide variety of 3M air sources.

Welding Protection Solutions



Help protect your workers from welding fumes, metal particles and UV, IR, and visible light with 3M™ Speedglas™ and 3M™ Versaflo™ products. These welding helmets and shields help protect workers' vision, while auto-darkening filter attachments help them see the weld puddle in greater detail. What's more, many 3M welding helmets can be combined with respiratory solutions (including PAPR assemblies) for respiratory protection.



3M™ Speedglas™ 9100MP Welding Helmet 27-0099-35SW, with Hard Hat and SideWindows, No ADF

3M ID: 7000128221

The 3M™ Speedglas™ Welding Helmet 9100 MP features ergonomic, adjustable head suspension for increased comfort, helmet stability and weight distribution. Auto Darkening Filter not included. Compatible with all 3M™ Speedglas™ Filters 9100 (V, X, XX). Meets ANSI Z89.1 2009 requirements for Type 1 Class G hardhats. Meets ANSI Z87.1 2010. Earmuff protection available as optional accessory.



3M™ Versaflo™ Resp M-Series Helmet Assembly with Flame Resistant Shroud and Speedglas™ Welding Shield, M-407SG, No ADF

3M ID: 7100168651

The 3M™ Versaflo™ Respiratory Helmet Assembly M 407SG, M Series Welding Shield includes a flame resistant shroud and is designed to help protect the user from certain airborne contaminants, and certain head, eye, face, and welding hazards. It has a lower weight and larger viewing area than the L 905SG, and is suitable for most operations commonly associated with plasma cutting, grinding, MIG, TIG, and GMAW welding. It can be combined with the 3M™ Versaflo TR 600 PAPR or 3M™ Speedglas™ Adflo PAPR and cartridges to build a complete welding system.



3M™ Adflo™ Powered Air Purifying Respirator HE System with 3M™ Speedglas™ Welding Helmet 9100 MP, 37-1101-30iSW

3M ID: 7100200573

3M™ Adflo™ Powered Air Purifying Respirator System with 3M™ Speedglas™ 9100 MP Welding Helmet is designed to help protect the eyes and face from radiation, sparks, and spatter. This system also includes respiratory protection, head protection, optional hearing protection, and a flip-up welding shield.



3M™ Particulate Respirator 8214, N95, with Faceseal and Nuisance Level Organic Vapor Relief

3M ID: 7000002083

3M Particulate Respirator 8214, N95 is designed to meet NIOSH certification standards: USA NIOSH R95, P95/P100. Some models available with flame resistant layers for applications such as welding or soldering which combines with cake resistant filter media and as well as the Activated Carbon Filter layer for the control of nuisance level organic vapors*

*3M recommended for relief against nuisance levels of organic vapors. Nuisance level refers to concentrations less than the OSHA PEL or applicable government occupational exposure limits, whichever is lower.

Communication Solutions



Noise – sources like tools, nearby process equipment and vehicles – not only puts mine workers' hearing at risk but can also be a major distraction during critical tasks. Help keep the volume down with hearing protection solutions from 3M, which include earplugs (disposable, reusable and electronic), earmuffs and headsets with integrated communications to help keep your workers protected and focused.



3M™ PELTOR™ WS™ ProTac XPI Headset Hard Hat Attached MT15H7P3EWS6

3M ID: 7100195960

The 3M™ PELTOR™ WS™ ProTac XPI Headset is a next generation Bluetooth® protective communication solution. With Bluetooth® multipoint connectivity, the headset can be simultaneously connected to two Bluetooth® enabled devices. And with the noise-cancelling boom microphone that carries a water and dust protected IP68 rating, workers can have clear, hands-free communication in noisy and harsh environments.



3M™ PELTOR™ Boom Microphone MT7V/1 Headset

3M ID: 7100099097

The 3M™ PELTOR™ Boom Microphone MT7V/1 enables clear communication when using a 3M™ Versaflo™ M-300 Series Respirator Hard Hat. The MT7V/1 Boom Microphone is compatible with most MT7 series 3M™ PELTOR™ Protective Communication Headsets. This noise-cancelling speech microphone enables clear communication in noisy environments.



3M™ PELTOR™ Twin Cup EX Headset

3M ID: XH001674254

The PELTOR™ Twin Cup Headset is an intrinsically safe approved, high attenuating headset with optimized acoustic design and excellent space for the ears, offer the best possible sound quality and comfort.



3M™ Versaflo™ Earmuff attachment for M-Series hard hat Z3AF/2

3M ID: XA007702625

Attach 3M™ PELTOR™ Headsets to your headtop or hard hat. Designed for use with 3M™ Versaflo™ Headtops M Series or 3M™ Speedglas™ Welding Helmet 9100 MP.

What does personal protection look like?

In several mining processes, workers are exposed to high levels of noise and respiratory hazards simultaneously. By combining two technology platforms, 3M can help provide both hearing and respiratory protection – enabling clear communication without removal of PPE.

- ▶ Crushing and grinding
- ▶ Electrowinning
- ▶ Vehicle maintenance
- ▶ Welding maintenance
- ▶ Sampling lab
- ▶ Roasting
- ▶ Smelting



3M™ SecureFit™ Hard Hats

- ▶ Ratchet suspension system featuring patented 3M™ Pressure Diffusion Temple technology that flexes and self-adjusts to the size of the wearer's head, reducing forehead pressure and increasing comfort for all-day wear
- ▶ Works well with a variety of 3M™ Protective Earmuffs and other accessories



3M™ SecureFit™ Protective Eyewear

- ▶ Anti-fog/anti-scratch coatings available, including 3M™ Scotchgard™ Protector coating
- ▶ Temples flex and self-adjust to the size of the wearer's head
- ▶ The flat and flexible temple design combines well with 3M™ Protective Earmuffs



3M™ Secure Click™ Half-Face and Full-Face Respirators

- ▶ Speaking diaphragm helps provide easy communication while working
- ▶ Filters/cartridges designed for easy breathability
- ▶ Exhalation valve helps direct exhaled breath and moisture downward
- ▶ Secure Click connection helps provide confidence that filters/cartridges are installed properly



3M™ PELTOR™ Protective Communications*

- ▶ Protect your hearing in noisy environments and hear ambient sounds below 82dB
- ▶ Improve ability to communicate with nearby colleagues, as well as to hear warning alerts, oncoming vehicles, or sounds from machines and processes



*Not MSHA approved when intrinsically-safe approvals are required

Respiratory Protection Solutions



3M™ Secure Click™ Half Facepiece Reusable Respirator with Speaking Diaphragm HF-800 Series

3M ID:	Product #:
7100172045	HF-801SD (Small)
7100172051	HF-802SD (Medium)
7100172000	HF-803SD (Large)

3M™ Secure Click™ Half Facepiece Reusable Respirator HF-800 Series helps protect against particulates and/or a wide variety of gases and vapors when used with approved 3M™ Secure Click™ filters and cartridges. This facepiece comes with many innovative features that make it the next generation in comfort, breathability and simplicity.



3M™ Half Facepiece Reusable Respirator 7500 Series

3M ID:	Product #:
7000002161	3M-7501 (Small)
7000002162	3M-7502 (Medium)
7000002163	3M-7503 (Large)

3M™ 7500 Series reusable respirators are made from an advanced silicone material to help give your crew comfort throughout their shifts. The adjustable features are designed to help reduce pressure and tension points on the wearer's face, while the adjustable head cradle provides a secure, personalized fit.



3M™ Rugged Comfort Quick Latch Half Facepiece Reusable Respirator 6500QL Series

3M ID:	Product #:
7000128237	3M-6501QL (Small)
7000128239	3M-6502QL (Medium)
7000128241	3M-6503QL (Large)

3M™ 6500QL Series has a resilient silicone face seal, offering extended facepiece life, while ensuring optimal fit with the use of the adjustable head cradle and straps. The facepiece features our proprietary quick latch design, which offers an easy, one-hand touch drop-down mechanism for putting the facepiece on and taking it off while moving in and out of contaminated areas.



3M™ Secure Click™ Full Facepiece Reusable Respirator FF-800 Series

3M ID:	Product #:
7100261327	FF-801 (Small)
7100261326	FF-802 (Medium)
7100261328	FF-803 (Large)

3M™ Secure Click™ Full Facepiece Reusable Respirator FF-800 Series helps protect against particulates and/or a wide variety of gases and vapors when used with approved 3M Secure Click filters and cartridges. This facepiece comes with exciting features that make it 3M's next generation in comfort, breathability and simplicity.



3M™ Full Facepiece Reusable Respirator 6000 Series

3M ID:	Product #:
7000002029	3M-6700 (Small)
7000002030	3M-6800 (Medium)
7000002037	3M-6900 (Large)

3M™ Full Facepiece Respirator 6000 Series is designed to help protect your workforce from certain airborne contaminants when used with approved 3M cartridges and filters, the 3M™ Full Facepiece Reusable Respirator 6000 Series is a reliable and easy to use solution in a variety of work environments and applications.

Hearing Protection Solutions



Noise – including from tools, nearby process equipment and vehicles – not only puts mine workers’ hearing at risk but can also be a major distraction during critical tasks. Help keep the volume down with hearing protection solutions from 3M, which include earplugs (disposable, reusable and electronic), earmuffs and headsets with integrated communications to help keep your workers protected and focused.



3M™ PELTOR™ X4 Earmuffs

3M ID:	Product #:	For use with:	Details:
7000104078	X4P3E	Standard hard hat	
7100097429	X4P5E	Standard hard hat	Electrically insulated
7100135827	X4P51E	Full brim hard hat	Electrically insulated

3M™ PELTOR™ X4 Earmuffs offer a slim lightweight option with a Noise Reduction Rating (NRR) between 25–27 dB, depending on attachment type. This low-profile earmuff is ideal for protection against mid- to high-level industrial noise and other loud sounds.



3M™ PELTOR™ Electronic Earplug, EEP-100

3M ID: 7100193144

3M™ PELTOR™ EEP-100 Electronic Earplug helps protect your hearing, and can help improve situational awareness and communications in challenging environments. This kit includes a protective charging case and an assortment of eartips.



3M™ PELTOR™ Professional In Ear Communication Headset PIC-100

3M ID: 7100262767

With the 3M™ PELTOR™ PIC-100 Headset, the 3M™ PELTOR™ Brand is introducing multiple innovative technologies to help workers stay protected and productive. Featuring on-demand fit-test functionality at the push of a button, users can obtain their personal attenuation rating to help verify if they have enough protection for their hazardous noise environment.



3M™ PELTOR™ ProTac III MT13H221P3E, Headset, Black, Helmet Attached

3M ID: 7100088423

The 3M™ PELTOR™ ProTac III Headset utilizes sound compressing environmental microphones to pick-up sounds in the surrounding environment, and when hazardous noises are present, the electronic circuit in the headset compresses the reproduced sound to 82 dBA.

Eye Protection Solutions



3M Protective Eyewear and Protective Goggles are designed to deliver comfort and performance, helping to keep workers safe. Featuring optional 3M™ Scotchgard™ Anti-fog Coating, which resists fog up to 11x longer than traditional 3M anti-fog coating, and proprietary 3M™ SecureFit™ Pressure Diffusion Temple technology that self-adjusts to the wearer's head size and shape.



3M™ SecureFit™ Protective Eyewear 500 Series

3M ID:	Description:
7100238909	Clear, SGAF, with Gasket
7100239195	Gray, SGAF, with Foam Gasket
7100239091	I/O Gray, SGAF

3M™ SecureFit™ Protective Eyewear 500 Series features a contemporary lens design coupled with adjustable ratchet temples and 3M™ Pressure Diffusion Temple (PDT) technology to help provide a more personalized fit. This sporty eyewear also offers optional foam gaskets, a variety of lens tints and models with Scotchgard™ Protector Anti-Fog Coating.



3M™ SecureFit™ Protective Eyewear 400 Series

3M ID:	Lens:
7100180049	Clear, SGAF, with Brow Guard
7100180050	Gray, SGAF, with Brow Guard
7100180051	Gray Indoor/Outdoor, SGAF, with Brow Guard

3M™ SecureFit™ Protective Eyewear 400 Series features 3M™ Pressure Diffusion Temple (PDT) technology, a soft one-piece nose bridge, dual-injected temples and a range of options, including various lens tints, brow guards, premium coatings, readers and more. Optional foam gasket helps reduce eye exposure to particulate hazards while providing added comfort and cushioning.



3M™ GoggleGear™ Protective Eyewear 500 Series

3M ID:	Description:
7100079187	Clear, SGAF, with Cloth Strap
7100112956	Clear, SGAF, with Neoprene Strap
7100168468	Gray, SGAF, Cloth Strap

3M™ GoggleGear™ Protective Goggles 500 Series features a low-profile design with adjustable strap, indirect ventilation, and 3M™ Scotchgard™ Protector Anti-Fog/Anti-Scratch Coating. Additionally, these goggles are D3 (droplet and splash) and D4 (dust) rated.

Head Protection Solutions



We design and manufacture hard hats and accessories to meet a diverse spectrum of needs. From safety helmets for working at height, to full-brim hard hats and solutions for working in elevated temperatures, 3M offers consistently reliable products.



3M™ SecureFit™ Hard Hat H-700 Series

3M ID: 7100239982

The 3M™ SecureFit™ H-Series Hard Hats provide 3M innovation in comfort while maintaining traditional cap and full brim designs. The suspension system incorporates patented 3M™ SecureFit™ Pressure Diffusion Technology, which flexes and self-adjusts to the size of the wearer's head, adding comfort and reducing pressure on the forehead by 30%. All models meet ANSI/ISEA-2020 Z89.1 standard.

For additional 3M™ SecureFit™ H-Series Hard Hat options visit:

[3M™ SecureFit™ H-Series Hard Hats Brochure](#)



3M™ SecureFit™ Full Brim Hard Hat H-800 Series

3M ID: 7100240027



3M™ Hard Hat 150 Lumen Task Light, HL200

3M ID: 7010316628

3M HL200 is a versatile headlamp that allows hands free lighting for industrial workers that need spot and flood light options. 150 lumen light for use with 3M™ Hard Hats. Weighing only 83 grams but able to run up to 150hrs on low flood setting and 28hrs on its high spot setting, this water resistant (IPX-4 rated) hard hat mounted head lamp is ideal for industrial lighting applications that need spot and flood lighting. Comes with 3AAA batteries and three attachment options.

*Average 30% reduction compared to previous generation 3M hard hats

Fall Protection Solutions



Working at heights requires comprehensive protection. 3M offers a wide range of personal fall arrest systems to help protect those working at heights, in addition to dropped objects protection for tools to help protect those working below.



3M™ DBI-SALA® ExoFit X300 Comfort Mining Safety Harness

3M ID: 1113197

Wherever your work takes you, staying comfortably fitted in your safety harness is critical. Designed for performance and productivity, our new line of 3M™ DBI-SALA® ExoFit™ X-Series Harnesses change the way you work and redefine what you should expect from a safety harness.



3M™ DBI-SALA® Nano-Lok™ Edge Twin-Leg Quick Connect Self Retracting Lifeline

3M ID: 3500276

3M™ DBI-SALA® Nano-Lok™ Edge Self-Retracting Lifeline's compact design is easily worn on the user's back and stays out of the way; it can also be used as a lanyard replacement. Whether the application requires single or twin leg configurations, mounting to an overhead anchor, or connection directly to a harness, there are numerous models to choose from to suit a variety of applications. 3M™ DBI-SALA® Nano-Lok™ Edge Self-Retracting Lifeline is designed to lock quickly stopping a fall and providing protection at low heights. In addition, tension is maintained on the lifeline, which helps reduce potential dragging and trip falls.



3M™ DBI-SALA® Sealed-Blok™ Self Retracting Lifeline

3M ID: 3400135

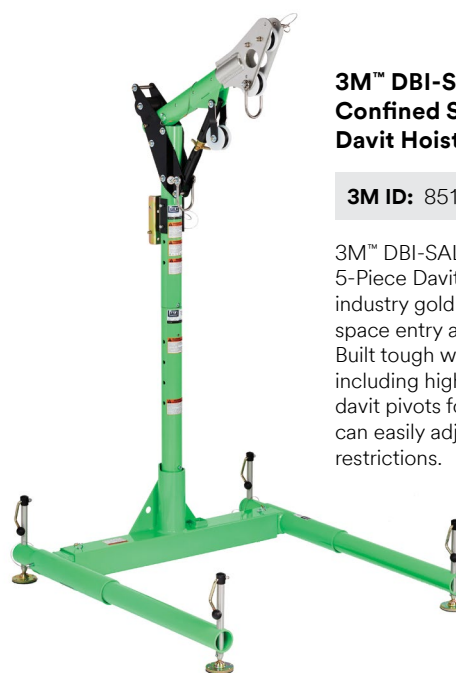
3M™ DBI-SALA® Sealed-Blok™ Self-Retracting Lifeline (SRL) incorporates a patented concept that helps separate components, such as the motor spring and brake, from foreign elements such as grease, moisture, and dirt. The 3M™ DBI-SALA® Sealed-Blok™ Self-Retracting Lifeline is IP-69K rated to provide protection against ingress of dust and high-temperature high-pressure water, for use in extreme environmental conditions. These lifelines are available in Overhead, Retrieval, and RSQ / Rescue SRL configurations.



3M™ DBI-SALA® Rollgliss™ R550 Rescue and Descent Device Kit with Rescue Wheel

3M ID: 3326100

Rollgliss™ R550 offers the choice of controlled descent rescue, evacuation or the versatility of assisted rescue with lifting capabilities. This state of the art, fully automatic controlled descent device can be used for rescue and evacuation from heights up to 1,640 ft. (500 m) for one user 310 lbs. (141 kg) or 574 ft. (175 m) for two users totaling 620 lbs. (282 kg).



3M™ DBI-SALA® Confined Space 5-Piece Davit Hoist System

3M ID: 8518000

3M™ DBI-SALA® Confined Space 5-Piece Davit Hoist System is the industry gold standard for confined space entry and retrieval applications. Built tough with lightweight materials including high-strength aluminum, the davit pivots for better rescue angles, and can easily adjust for overhead clearance restrictions.

Self-Contained Breathing Apparatus (SCBA)



For certain hazardous environments or rescue situations, atmosphere-supplying respiratory protection such as an Emergency Escape Breathing Device (EEBD), Self-Contained Breathing Apparatus (SCBA) or Supplied Air Respirator (SAR) may be required. 3M offers a range of solutions to help protect workers during emergencies.

Emergency Escape Breathing Device (EEBD):

An Emergency Escape Breathing Device (EEBD) is suitable for quick escape from hazardous industrial environments, helping ensure protection in escape situations.

SCBA and Supplied-Air Respirator with Escape Cylinder:

Self-Contained Breathing Apparatus (SCBA) and positive pressure Supplied-Air Respirators (SAR) with a combined escape cylinder are used for different types of operations and/or for emergency situations in mining operations. These may be used when atmospheric contaminants are unknown, Immediately Dangerous to Life or Health (IDLH), or when concentrations are potentially unstable.



3M™ Scott™ ELSA™ Emergency Escape Breathing Device (EEBD-N)

3M ID:	Duration:
7012473800	5 minutes
7012473802	10 minutes

The 3M™ Scott™ ELSA EEBD-N respirator is a cost-effective emergency escape breathing device designed for simple use, training and maintenance. The carry bag offers improved functionality while the redesigned hood fits all wearers (study available upon request).



3M™ Scott™ Industrial SCBA (ISCBA)

3M ID: Call for part number support.

The 3M™ Scott™ ISCBA SCBA provides respiratory protection in IDLH environments for most day-to-day industrial applications, and is suitable for stand-by respiratory protection



3M™ Scott™ Ska-Pak Supplied-Air Respirator

3M ID: Call for part number support.

The 3M™ Scott™ Ska-Pak Supplied-Air Respirator provides a combination escape SCBA and airline respirator, offering emergency respiratory protection for a variety of industrial applications.



3M™ Scott™ AV-3000 SureSeal Facepiece

3M ID:	Size:	Headnet:
7012474475	Small	Kevlar, 5-Strap
7100291955	Medium	Kevlar, 5-Strap
7012511862	Large	Kevlar, 5-Strap

The 3M™ Scott™ AV-3000 SureSeal Facepiece builds on the success of the AV-2000 and AV-3000 models through design enhancements for better fit, added comfort, improved field of vision and enhanced communications. The AV-3000 SureSeal facepiece uses SureSeal technology for enhanced comfort and fit, and holds NIOSH approvals when used with a wide range of 3M Scott respirators.



3M™ Scott™ Ska-Pak AT Supplied-Air Respirator

3M ID: Call for part number support.

The 3M™ Scott™ Ska-Pak AT Supplied-Air Respirator is a supplied-air respirator with escape cylinder with the added safety benefit of an automatic, hands-free air transfer capability to help reduce worker panic if primary air is interrupted.



3M™ Scott™ ACSi SCBA

3M ID: Call for part number support.

The 3M™ Scott™ ACSi SCBA features the innovative Advanced Carrying System (ACS) with a padded backplate molded to fit the spine and back muscles for increased comfort and flexibility. The ACSi SCBA enables quick turnaround and decon with pneumatics that can be removed from the backplate with a simple "quarter-turn" – no tools required.

Validate your protection



Fit testing (or fit validation) is a procedure to help verify the PPE selected is providing the expected level of protection. Fit can have a significant impact on protection, therefore, fit testing is a best practice and often is required by standards and regulations.

There are many factors that affect how well PPE fits the individual wearer, including size and shape of the wearer and other equipment or clothing worn at the same time.

3M has resources that can help you test and validate fit for a variety of PPE:



Respiratory fit testing

A respirator needs to fit and seal to a wearer's face. Otherwise, contaminated air can pass around the respirator and into the wearer's breathing zone.

Applies to all tight-fitting respirators, including:

- ▶ Filtering facepiece particulate respirators
- ▶ Half and full-facepiece respirators fitted with filters and/or cartridges
- ▶ Tight-fitting facepieces connected to powered or supplied air turbo units or used with breathing apparatus

3M.com/respiratorfit



Hearing fit testing

If earplugs or earmuffs do not fit the wearer's ear canal or head well, external noise may penetrate the inner ear, which can lead to noise-induced hearing loss.

Applies to:

- ▶ Earplugs
- ▶ Earmuffs
- ▶ Electronic earplugs and headsets

3M.com/EARfit



Eyewear fit validation

Eye protection needs to provide a good field of view, security of fit, and good coverage with minimal gaps between eyewear and the wearer's face. Safety goggles should be tight fitting without any gaps. The eyewear fit validation system from 3M is intended for standard safety glasses.

Applies to all protective eyewear, protective goggles and some visors:

- ▶ Protective eyewear
- ▶ Protective goggles

[Ask about the 3M™ Eyewear Fit System](#)

3M



Fit testing at your fingertips

Help fit testers and wearers follow the exact fit test protocol at every step of the process with the tap of a button.



For advice and support implementing a fit testing program, please contact your local 3M representative.

Hearing Protection

WARNING

These hearing protectors help reduce exposure to hazardous noise and other loud sounds. Misuse or failure to wear hearing protectors at all times that you are exposed to noise may result in hearing loss or injury. For correct use, consult supervisor and User Instructions, or call 3M PSD Technical Service in the USA at 1-800-665-2942 (Communications) and 1-800-243-4630 (Hearing).

WARNING

U.S. EPA specifies the NRR as the measure of hearing protector noise reduction. However, 3M makes no warranties as to the suitability of the NRR for this purpose. 3M strongly recommends personal fit testing of hearing protectors. Research suggests that users may receive less noise reduction than indicated by the attenuation label value(s) on the packaging due to variation in fit, fitting skill, and motivation of the user. Refer to applicable regulations and guidance on how to adjust attenuation label values. It is recommended that the NRR be reduced by 50% to better estimate typical protection.

Eye Protection

WARNING

These eye or face protection products help provide limited eye and face protection. Misuse or failure to follow warnings and instructions may result in serious potential injury, including blindness or death. For proper use, selection and applications against flying particles, optical radiation and/or splash see supervisor, read User Instructions and warning on the package or call 3M PSD Technical Service in the USA at 1-800-243-4630. In Canada, call 1-800-267-4414. 3M PSD products are for occupational use only.

Head Protection

WARNING

3M Head and Face Products provide limited protection only. Misuse or failure to follow warnings and User Instructions may result in serious personal injury or death. For proper use, see supervisor, User Instructions, or call 3M Personal Safety Division Technical Assistance at 800-243-4630.

Fall Protection

WARNING

Compliant fall protection and emergency rescue systems help prevent serious injuries associated with fall events. Users must read and understand the User Instructions provided with the product, and must be properly trained by their employers in the safe use of these systems before using them, per OSHA 1910.140 and 1926.503 or applicable local standards. Misuse or failure to follow warnings and instructions may result in serious personal injury or death. For proper use, see supervisor, User Instructions, or call 800-328-6146 (Opt. 1).

Respiratory Protection

WARNING

These respirators help to protect against certain airborne contaminants. Before use, the wearer must read and understand the User Instructions provided as part of the product packaging. A written respiratory protection program must be implemented meeting all the requirements of OSHA 1910.134 including training, fit testing and medical evaluation. In Canada, CSA standards Z94.4 requirements must be met and/or requirements of applicable jurisdiction, as appropriate. Improper use may result in sickness or death. For correct use, see supervisor and User Instructions, or call 3M PSD Technical Service in USA at 1-800-243-4630 and in Canada at 1-800-267-4414.

Welding Safety

WARNING

This product is designed to help protect the wearer's eyes and face from harmful radiation including visible light, ultra-violet radiation (UV), infra-red radiation (IR), sparks and spatter resulting from welding processes. These products must be used only by qualified persons who are properly trained in their use and maintenance. Misuse may result in permanent eye injury and vision loss. Always wear ANSI Z87.1 compliant safety spectacles in addition to any welding helmet. For correct use, see supervisor and User Instructions, or call 3M PSD Technical Service in U.S.A. at 1-800-243-4630 and in Canada at 1-800-267-4414.

Product Selection and Use: Many factors beyond 3M's control and uniquely within user's knowledge and control can affect the use and performance of a 3M product in a particular application. As a result, customer is solely responsible for evaluating the product and determining whether it is appropriate and suitable for customer's application, including conducting a workplace hazard assessment and reviewing all applicable national and/or European regulations and standards. Failure to properly evaluate, select, and use a 3M product in accordance with all applicable instructions and with appropriate safety equipment, or to meet all applicable safety regulations, may result in injury, sickness, death, and/or harm to property.

Warranty: Warranty conditions for 3M products are determined with the sales contract documents and with the mandatory and applicable clause, excluding any other warranty or compensation.

For industrial/occupational use only. Not for consumer sale or use.



Personal Safety Division
3M Center, Building 235
St. Paul, MN 55144-1000

For more information:
In U.S.:
Technical Assistance 1-800-243-4630
Customer Service 1-800-328-1667
3M.com/workersafety

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