BLASTONE FACILITIES CATALOG

BLASTONE

Global Leader of Superior Finishing Solutions for All Finishing Systems

Superior Abrasives | Superior Equipment | Superior Know-How

www.BlastOne.com

SUPERIOR SOLUTIONS. SUPERIOR RESULTS.

BLASTONE IS THE GLOBAL LEADER FOR ABRASIVE BLASTING AND FINISHING FACILITIES, EQUIPMENT, AND KNOW-HOW.

PERFORMANCE³

- SUPERIOR ABRASIVES
- SUPERIOR EQUIPMENT
- SUPERIOR KNOW-HOW

Established in 1975 to provide technical consulting, BlastOne has grown to become a single-source supplier of blasting and finishing facilities, equipment, abrasives and know-how to customers all over the world. BlastOne operates internationally from several offices across Australia, New Zealand, North America and UK.

We stand behind our brand claim of Superior Performance. It's something we define as 'Performance³' – the result of combining superior know-how with superior abrasives and superior equipment.

In short, it's something that delivers greater cost-efficiencies for our customers.

BLASTONE ABRASIVES
BLASTONE BLASTING
BLASTONE PAINTING
BLASTONE RENTAL
BLASTONE INSPECTIONS
BLASTONE SYSTEMS
BLASTONE SAFETY
BLASTONE TRAINING

THE DIFFERENCE **IS IN THE DETAILS.**

OUR CUSTOM **BLASTING AND FINISHING SYSTEMS** ARE DESIGNED AND BUILT TO MAXIMIZE PRODUCTIVITY, IMPROVE EFFICIENCY AND CREATE THE SAFEST WORKING ENVIRONMENTS.

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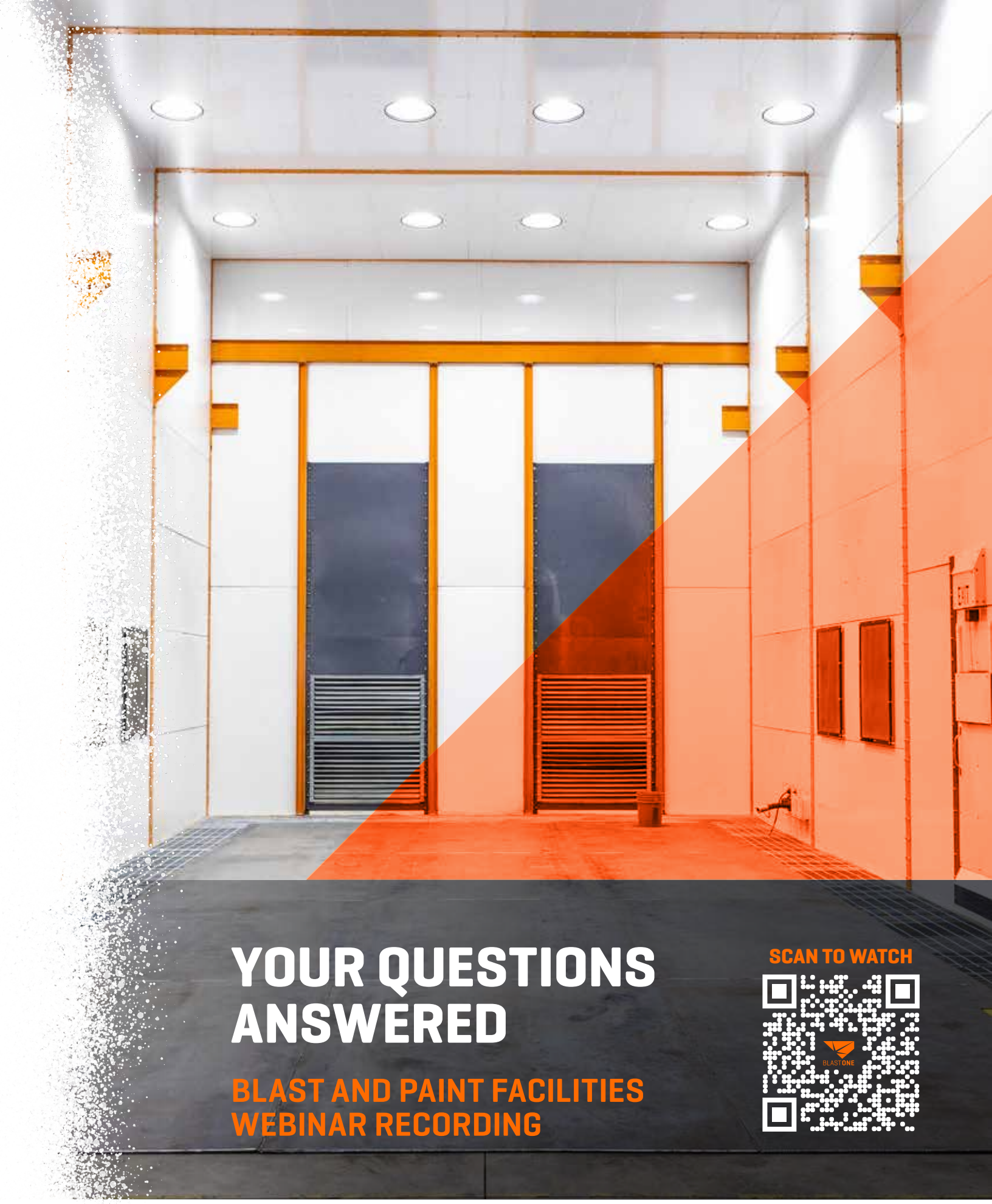


YOUR QUESTIONS ANSWERED

BLAST AND PAINT FACILITIES WEBINAR RECORDING

SCAN TO WATCH

BLAST **SYSTEMS**

To keep pace with the ever-changing needs of our clients, our products and services are **constantly evolving.**

POPULAR BLAST ROOM Q&A

You asked, We answered!

WHAT BENEFITS DOES A BLAST ROOM PROVIDE?

Adding a blast booth offers several advantages:

- Cost Reduction: Switching from expendable to recyclable abrasives can save on costs.
- Improved Quality and Productivity: An abrasive recovery system, typically under-floor, conveys spent abrasive to a central point for recycling, which can reduce ongoing costs, cleanup time and ensures consistent surface profiles.
- Safety and Cleanliness: Proper ventilation enhances operator visibility and ensures a safer environment for employees.

WHAT FACTORS SHOULD I CONSIDER BEFORE BRINGING BLASTING AND PAINTING IN-HOUSE FROM A SUBCONTRACTOR?

Before bringing blasting and painting in-house, consider:

- Available floor space
- Workflow and part throughput
- Start-up capital and ROI
- Added costs of abrasive, utilities, and blasting personnel

WHAT'S THE FIRST STEP TO SOLVE PRODUCTION BOTTLENECKS IN BLAST AND PAINT OPERATIONS?

Identify the bottleneck's location and assess part flow. BlastOne can assist in optimizing capacity through concept and design engagement.

HOW CAN I MINIMIZE CLEANUP TIME FOR MY BLASTER?

To reduce cleanup time:

- Ensure the right abrasive is used.
- Utilize a recovery floor.
- Calibrate the blast machine accurately.
- Consider adding a vacuum recovery unit.

HOW CAN I REDUCE UNPLANNED DOWNTIME IN BLAST AND PAINT EQUIPMENT?

Reduce unplanned downtime by:

- Implementing a thorough preventative maintenance schedule.
- Investing in equipment with low total cost of ownership.
- Using advanced control technology for easier troubleshooting.

WHICH CONSIDERATIONS ARE IMPORTANT BEFORE TAKING ON A NEW, LARGER PRODUCT LINE?

Consider:

- Modifying existing equipment or investing in new equipment.
- Cost and space requirements for handling larger parts.
- Determining proper material handling solutions.

ARE SCREW AUGERS THE BEST CHOICE FOR MOVING ABRASIVE?

Screw augers are outdated and can cause premature equipment wear. Our oscillating conveyor recovery floor offers a quieter, more efficient alternative and less maintenance.

WHAT'S THE TYPICAL LIFESPAN OF A BLAST AND PAINT SYSTEM?

Lifespan varies but with proper maintenance can exceed 30 years. Proper training for operators and maintenance staff is essential.

IS IT BETTER TO REPAIR OR REPLACE BLAST AND PAINT EQUIPMENT?

Evaluation of equipment condition and ROI is necessary. Sometimes component replacement suffices, while other times a complete upgrade maximizes profits.

IS RECYCLABLE ABRASIVE AVAILABLE, AND HOW CAN I UTILIZE IT?

Steel Grit is the most common abrasive recycled in blastrooms. Utilize a recovery floor to limit manual cleanup.

WHAT AIR/CFM CAPACITY IS NEEDED FOR A BLAST ROOM?

Nozzle size is the primary consideration, with ancillary equipment also impacting requirements.

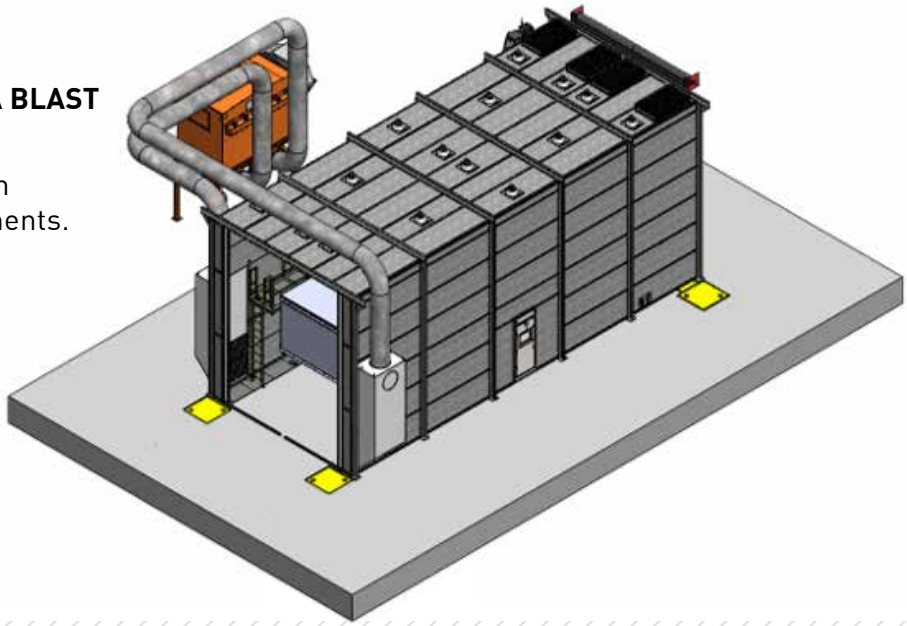
For manual blasting rooms, we find that (with a #7 nozzle) 500 cfm per nozzle at 125 psi is typically the right airflow, however we can help you determine this.

WHAT ARE THE ELECTRICAL REQUIREMENTS FOR ADDING A BLAST ROOM?

Lighting is the first consideration, its all mounted on the externals to keep dust out of the controls. Electric Deadman (on/off Controls) are always 12v.

IS BLAST ROOM DUST HAZARDOUS?

In most cases, no, but certain applications may contain hazardous dust such as metalizing requiring appropriate handling and disposal.



"... most importantly, my customers have noticed the difference as well. We have been able to deliver better more consistent finished product quality, complete the production and delivery much faster, and reduce the price that we charge. We have never been more competitive, and my customers have never been happier."

TERRY DESROCHERS, J.OSKAM STEEL FABRICATORS – PORT COLBORNE, ONTARIO

BLAST **ROOMS**

BlastOne designs and builds blast and paint rooms for many industrial applications - from small containerized blast rooms to multi-million dollar blast and paint facilities for ship sections. We design and construct the blast and paint room to suit your application and your budget.

Simply tell us your goals and we'll work with your team to find the best solution, delivered in the quickest time-frame, within your budget constraints.

KEY **COMPONENTS**

The facilities we design strive for high performance, reduced operating costs, and enhanced safety for blasting and painting shops, largely due to our state-of-the-art equipment. BlastOne's comprehensive range of products and equipment is crafted to ensure safety, efficiency, and quality at every stage. Committed to excellence, we offer not only top-tier products but also back them with a quality guarantee.

BLAST ROOM CHAMBER

The chamber itself is heavy duty and designed to withstand the test of time. The chamber incorporates the lights, rugged doors, air entry intake and exit exhaust plenums for efficient ventilation.

ABRASIVE RECOVERY AND RECYCLING

An abrasive recovery system – normally under-floor – conveys the spent abrasive to a central point for recycling and cleaning. The abrasive recycling unit cleans the used abrasive by separating dust, fines, paint flakes and trash from the reusable abrasive. The abrasive is then stored to be used again.

DUST COLLECTION

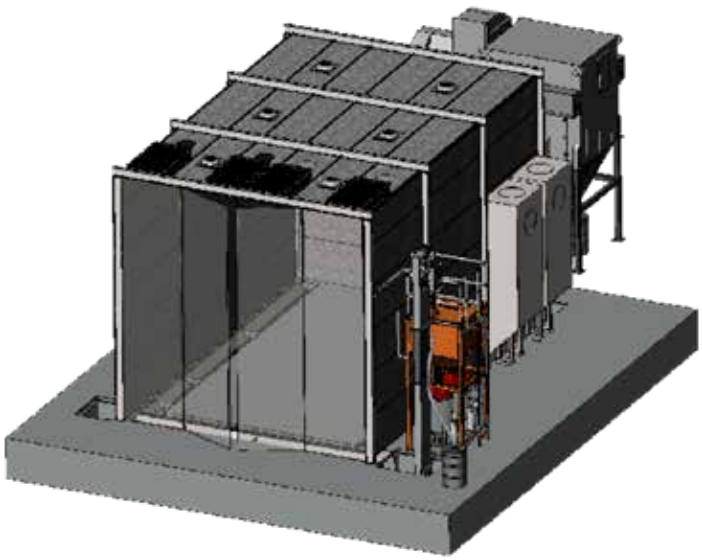
The dust collection and ventilation system introduces adequate airflow into the blast room, effectively minimizing dust levels, enhancing operator visibility, and quickly clearing the room of dust once blasting stops. The choice of dust collector impacts both the airflow in the room and the lifespan of your filter cartridges.

BLASTING EQUIPMENT

Blasting speed and duration, no matter how sophisticated your facility, will always be determined by your blast pot and pressures. Although it's only 5-10% of your booth cost, it will determine your productivity and efficiency for the next 20 years. Multiple outlet pots are typically installed to accommodate multiple blasters simultaneously.

BLAST ROOM CHAMBER

When designing a blast room, size is crucial. It's recommended to maintain around four feet of clearance on each side and above the largest item to be blasted, balancing cost considerations with operational efficiency. For instance, a smaller room typically requires a smaller dust collector, while a larger room requires higher capacity, affecting both initial setup costs and ongoing operational expenses. A room sized for your most common product is often sufficient, with larger items possibly accommodated outdoors. Floor lengths impact and determine abrasive recovery systems. Incorporating doors at both ends can expedite workflow, allowing for continuous loading and unloading of items, and are particularly beneficial for larger blast rooms.



BLAST**ONE**'S DUE DILIGENCE **ENSURES A BETTER OUTCOME**

At BlastOne, we understand the intricate nature of large blasting and painting facilities, where the integration of sophisticated technology and construction works is paramount.

CONSTRUCTION JOURNEY

Our proven process, known as the construction journey, is designed to mitigate risks, streamline costs, and ensure timely schedules for complex projects.

STANDARD PROJECTS

BlastOne also offers a refined protocol for less complex projects while still driving out risks, costs, and schedule uncertainties.

Whatever the size and complexity of your facility, BlastOne understands the factors needed to ensure your future success.

> **We have never dealt with a company that ensures their customers' needs are met, in such a professional and time effective way. This is a credit to both management and all their staff and support team.**

OWNER, LARGE ENGINEERING FACILITY, NEW SOUTH WALES, AUSTRALIA

Container Blast Room

Sometimes you just need another small blast room in the corner of your facility or one you can move from job to job.

Construction
- Modified shipping container

Typical Size
- 8' x 8' x 20' / 2.4 x 2.4 x 20 m

Material Handling
- Use a forklift, can have an optional swivel table

Recovery System
- Partial recovery with a shovel-in hopper

Usage
- 1-2 hours per day or for someone who needs something completely portable

A container blast room allow maximum flexibility.

Industrial Workshop

These booths are built to stand the test of time. Modular construction ensures we can size a booth to fit your needs. Industrial workshops are often seen in powdercoating facilities or light equipment manufacturing plants.

Construction
- Formed steel panels and support structure with wall wear lining protection

Typical Size
- 12' x 12' x 30' up to 16' x 16' x 80' / 3.6 x 3.6 x 9.1 up to 4.8 x 4.8 x 24 m

Material Handling
- Job carts / forklift / manual handling / crane slot / rail track cart / monorail / overhead crane systems

Recovery System
- Typically partial recovery, with conveyors running down both sides of the walls. This allows forklift traffic in the center

A high performance, durable blast room.

Outdoor Industrial

Some facilities lack the indoor space required for a new blast room. BlastOne can build a room anywhere you need it. An outdoor blast room is commonly found in a steel fabricators yard.

Construction
- Formed steel panels and support structure with wall wear lining protection

Typical Size
- 12' x 12' x 30' up to 24' x 24' x 100' / 3.6 x 3.6 x 9.1 up to 7.3 x 7.3 x 30 m

Material Handling
- Rail track carts / monorail / overhead crane systems

Recovery System
- Full floor recovery to maximize productivity and efficiency

Steel fabricators are looking to maximize productivity and efficiency

HIGH-PERFORMANCE BLASTING AT ANY SCALE AND IN ANY CLIMATE.

General Purpose Industrial

Heavy manufacturing requires a highly efficient finishing division to prevent bottle necks to the rest of their facility. Getting your material handling system right will be a major key.

Construction
- Formed steel panels and support structure with wall wear lining protection

Typical Size
- 24' x 24' x 80' / 7.3 x 7.3 x 24 m

Material Handling
- Monorail / work carts / overhead crane

Recovery System
- Full floor recovery

These blast rooms are customized to meet the needs of the specific items being manufactured

Robotic Facility

Railcar facilities are unique in they blast almost identical large objects every time. Robotic automation can revolutionize blasting inside and outside of your railcars.

Construction
- Formed steel panels and support structure with robotic blasting capability

Typical Size
- 21' x 21' x 90' / 6.4 x 6.4 x 27 m

Material Handling
- Rail tracks

Recovery System
- Full recovery

Railcar facilities use robots to ensure high speed and consistency

Ultra-Large Facility

Blasting ship modules can take several days, and often the room is a joint blast/ paint hall. Understanding your blast/ vacuum/prep time is going to be critical.

Construction
- Pre-engineered steel building with internal lining system

Typical Size
- 100' x 100' x 50' / 30 x 30 x 15 m

Material Handling
- Large carts for moving ship modules

Recovery System
- Partial floor with vacuum recovery for the inside of the module

Shipyards require very large blast and paint halls

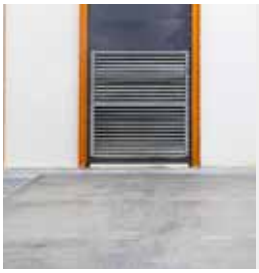
OUR CUTTING-EDGE BLAST ROOM DESIGNS RESULT IN LESS WASTE, A SAFER WORKFLOW, INCREASED PRODUCTIVITY AND MINIMAL IMPACT ON THE ENVIRONMENT.

STANDARD **FEATURES**

In BlastOne's blast booths, standard features include a modular design for flexibility, high-visibility lighting, and Lynx panels for durability. Working with BlastOne streamlines projects as we handle complexities and offer turn-key service, eliminating the need to engage multiple contractors. From simple installations to intricate projects, BlastOne delivers efficient and reliable solutions.

LIGHTING

Our externally mounted LED fixtures are protected by replaceable tempered glass covers for lasting durability and easy maintenance.



EXHAUST PLENUM

Exhaust plenums prevent abrasive from escaping into the airstream or dust collector by directing air downward through perforated metal. Any grit entering is captured and directed into the recovery system.

MODULAR DESIGN

Modular designs provide tailored solutions for blasting facilities, fitting diverse projects. They include hybrid blast halls and separate blasting halls, meeting specific specs and compatible with abrasive recovery and recycling equipment.

INTAKE PLENUM

Intake plenums, filled with eggshell corrugated material, prevent abrasive bounce-out and act as sound-dampeners, making our rooms quieter than competitors'.

PERSONNEL DOOR

Made from heavy, powder-coated sheet metal with soundproof foam, feature a sliding vision panel and a bottom shedder plate. They are lined with the durable Blastwhite Wall Protection system.

LYNX PANELS

Also known as interlock z-panels, are crafted from 11-gauge steel, interlock to prevent airborne particles from escaping, while enhancing structural integrity.

BLAST**ONE** OFFERS
TURNKEY INSTALLATIONS

FEATURES

BlastOne's special feature booths include catwalks for safe access, blastwhite wall protection for enhanced durability, custom doors for tailored solutions, a control panel for easy operation, viewing windows for monitoring, and door interlock switches for added safety. These features ensure optimal functionality and safety, providing operators with a comprehensive solution for their blasting needs.

CATWALKS

Catwalks in a blast room offer elevated platforms for operators to oversee operations and safely perform maintenance tasks. Positioned above the blast area, they enhance safety and workflow efficiency.

BLASTWHITE WALL PROTECTION

1/8" thick HDPE white sheets extend galvanized panels' lifespan by defending against abrasive ricochet and blast nozzle impact.

CUSTOM DOORS

Easy-to-use, heavy duty, rubber roll up doors give you back valuable floor space and have been designed to withstand the harsh abrasive blasting environment.

CONTROL PANEL

Control system that features a large touch screen, predictive maintenance, troubleshooting, and energy consumption savings.

VIEWING WINDOWS

Popular in robotic blast booths. Windows are equipped with a steel mesh cover for long life. This option, allows the robot operator to be outside the booth running the robot, which is inside the booth.

DOOR INTERLOCK SWITCHES

Door interlock switches communicate with the control panel whether the door is opened or closed. In turn, the control system will not blast if the door is open - for operator safety.

BlastOne starts our design process with understanding your strategic 10+ year growth goals. The building & necessary equipment are then developed around that.

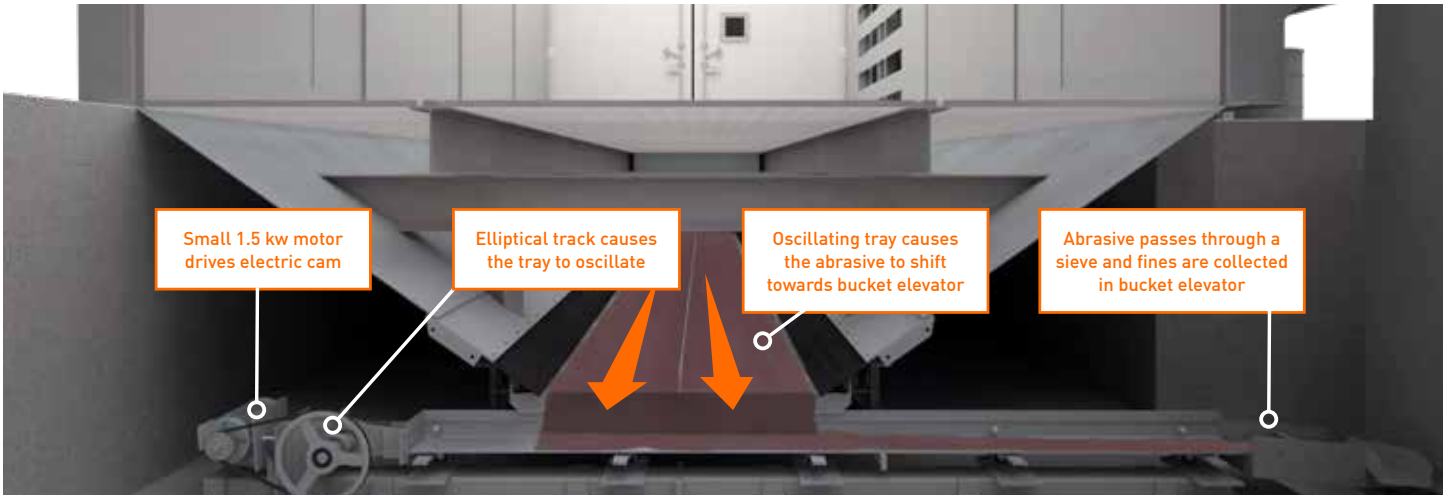
CONTACT US & LEARN MORE

BlastOne's unique methodology of Design | Build for your project results in clients achieving the following results:

- Project delivered up to 30% faster than standard methods
- Project delivered on budget
- Facility delivers the intended production & produces at the intended quality

ABRASIVE RECOVERY

Underfloor recovery systems are designed to efficiently recover spent abrasive, transporting it to the abrasive separation system and then to storage for reuse.



SHAPES AND **OPTIONS**

Recovery systems come in various shapes, each with distinct advantages and disadvantages to consider for optimal performance.

FULL FLOOR RECOVERY

A full floor recovery system becomes fully automatic and no manual clean-up is required, this system utilizes a Grate Floor and underfloor hoppers to capture every particle of spent abrasive from the Blastroom.

PARTIAL FLOOR RECOVERY

This is a semi-manual system includes a single inground Trench and Cross Conveyor, typically at the back of the blastroom, allowing you to sweep all the abrasive into the trench. It is a very cost effective option and is typically used when the blasting operation is required less than 20 hours per week.

PARTIAL FLOOR U-SHAPE

U-Shaped or H-Shaped Conveyor Systems utilize conveyors to move the abrasive along the outside of the blastroom, to a central point for recovery and recycling. This type of recovery system, is used by blasting operations that blast less than 40 hours per week. Typically when blasting, 80% of all abrasive will fall along the walls, leaving the remaining 20% to be swept or blown into the conveyor system.

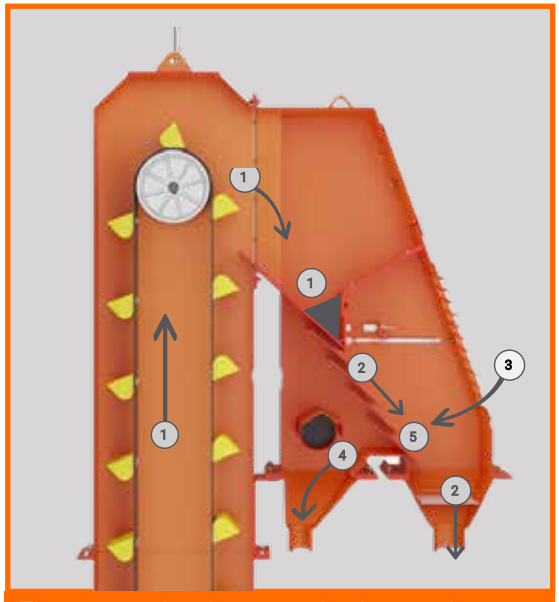
SWEEP IN | SHOVEL IN

This is a semi-manual system with no abrasive conveyors, it just has a simple below-ground hopper in the blastroom, connected directly to the abrasive recovery system. It is typically used when the blasting operation is required less than 10 hours per week.

ABRASIVE RECYCLING

Whether or not your blast facility is going to have a full floor recovery area or just a partial floor recovery, the problem remains that you will need to elevate the grit either before or after it is cleaned, to drop it back into the storage hopper atop the blast pot.

Essential to this process are abrasive separators, indispensable for segregating dust, fines, and debris from the usable abrasive.



The process involves transferring used abrasive via bucket elevator to storage, drawing in outside air, diverting fines to waste, and directing dusty air to the dust collector.

BLASTONE'S **ABRASIVE RECOVERY SYSTEMS**

BlastOne International specializes in surface preparation and abrasive recovery solutions for industrial applications, particularly in industries like construction, shipbuilding, and manufacturing. Their abrasive recovery systems are designed to efficiently collect and recycle abrasive materials used in blasting operations, reducing waste and improving cost-effectiveness.

KEY FEATURES

Efficiency
Their systems are designed to maximize the recovery of abrasives, minimizing loss and ensuring that as much material as possible can be reused.

Customization
BlastOne offers customizable solutions tailored to specific project needs and site conditions, ensuring optimal performance.

Durability
The equipment is built to withstand harsh working environments, ensuring longevity and reliability.

Safety
By minimizing airborne contaminants and improving workspace cleanliness, these systems enhance safety for workers.

Environmental Compliance
The systems help companies meet environmental regulations by reducing waste and improving recycling processes.

Cost Savings
By recovering and reusing abrasives, companies can significantly lower their operational costs.

> **"BlastOne's engineering and equipment have enabled us to cut our particulate emissions to zero while doubling our productivity. VT Halter Marine is delighted by the finished facility."**
>
> TIM PRYOR, FACILITIES MANAGER, VT HALTER MARINE

DUST COLLECTION

Dust collectors are essential in blasting environments in order to maintain worker safety and productivity. OSHA recommends that a typical blast room maintains a minimum airflow of 50ft/min past the operator. This ensures that the dust is being removed from the room, maintaining the blasters visibility and safe working conditions. Abrasive blasting creates an aggressive dust, so choosing a Dust Collector that has been designed for abrasive blasting is very important. A typical industrial dust collector designed for weld fumes, wood shavings or general ventilation will typically result in premature failures.

The efficiency of these systems is supported by correctly engineered blast room exhaust plenums, in addition to the ventilation ducting. These components need to be sized and configured correctly to ensure the right balance of airflow. The exhaust plenums ensure that the abrasive that may be entrained in the exhaust air drops out, and does not pass into the ducts. The correct ducting design ensures an optimal air speed where the dust doesn't settle out in the ducting, or too fast that the dust particles prematurely wear the cartridges inside the Dust Collector.

KEY **FEATURES**

The BlastOne Dust Collector has been designed and built from the "ground up" as a Blasting Ventilation Dust Collector. There are many unique features in BlastOne Dust Collectors that ensure a low long term operational cost.

ROUNDED TOP

The BlastOne dust collector features a distinctive rounded top, a design specifically engineered to prevent the accumulation of rainwater. This innovative feature significantly reduces the potential for rusting, ensuring enhanced durability and longevity of the collector.

SLIDING FILTER CARTRIDGE DESIGN

The BlastOne dust collector is equipped with a convenient slide- out filter changing feature. This design allows for easy and efficient replacement of filter cartridges, as they can simply be pulled out and replaced from outside the unit, streamlining maintenance and minimizing downtime.

BLASTONE DUST COLLECTOR SERIES **6K TO 40K CFM**
STANDARD FEATURES AND BENEFITS

VERTICALLY MOUNTED CARTRIDGES

Vertically mounted filters have an approximately 30% increased filter life over horizontal filters. This is because the dust can fall off a vertical filter into the waste hoppers, whereas with horizontal filters, the dust simply calls from filter onto the filter below it.

BOTTOM ENTRY DUCTWORK

Directing the air this way gives you maximum filter life, removing the risk or premature filter failure due to abrasive particles impacting directly into the filter. The dust entering at the base of the unit is dispersed over all the cartridges, rather than just the cartridges immediately in front of the duct on a side entry unit.

VACUDYNAMIC HIGH PERFORMANCE BACKWARDS INCLINED BLOWER FAN

The whole Dust Collection system is dependent on the fan. A Vacu-Dynamic fan, with the appropriate vacuum pressure for the ducting design, gives you the highest airflow pressure balanced with energy consumption.

AUTO CLEANING SYSTEM

The Maxi-Reverse Pulse jets provide longer life to your cartridges with our Eco-Clean Pulsing System. Integrated Controls with the entire blast room, allow the dust collector to only run when needed, but also run a cleaning cycle once blasting has ceased.

2.2 AIR TO CLOTH RATIO OR BETTER

The air to air cloth ratio is comparing the cubic feet of air per minute (CFM) to the square feet of filter media. If this number is too high, you'll have premature cartridge wear, if its too low, your machine will be too big. Blasting environments dictate an air to air cloth ratio of 2.5:1 or lower. Ample air-to-cloth ration extends the life of your filter cartridges, lowering your overall operational costs.

OPTIONAL FEATURES

These optional features are pre-engineered solutions which may or may not be relevant to your application. We recommend discussing which options may be best for you with BlastOne.

OPTIONAL MAINTENANCE ACCESS PLATFORM

The Dust Collector filters are a common replacement item. A standard option available is the ladder and maintenance access platform to allow maintenance workers access to the filter housing.

VFD VARIABLE FREQUENCY DRIVE MOTOR CONTROL

A VFD is a good option for an application where the ventilation capacity needs to be varied. It is also a way to create smart controls for your ventilation system, ramping capacity up and down according to whether you are blasting or not.

OUTDOOR PACKAGE

Weather-tight Sealed Pulse Valves designed to withstand outdoor environments. Insulated to protect from extreme cold. Good for cold locations or where the noise of the pulse valves needs to be mitigated.

AUTOMATED DUST HANDLING SOLUTIONS

Rotary Valve Dust Dump allows the dust collector to automatically discharge its load of dust into the waste containers. Used typically when discharging into bulk bags.

EXPLOSION RELIEF VENTING AND FIRE SUPPRESSION

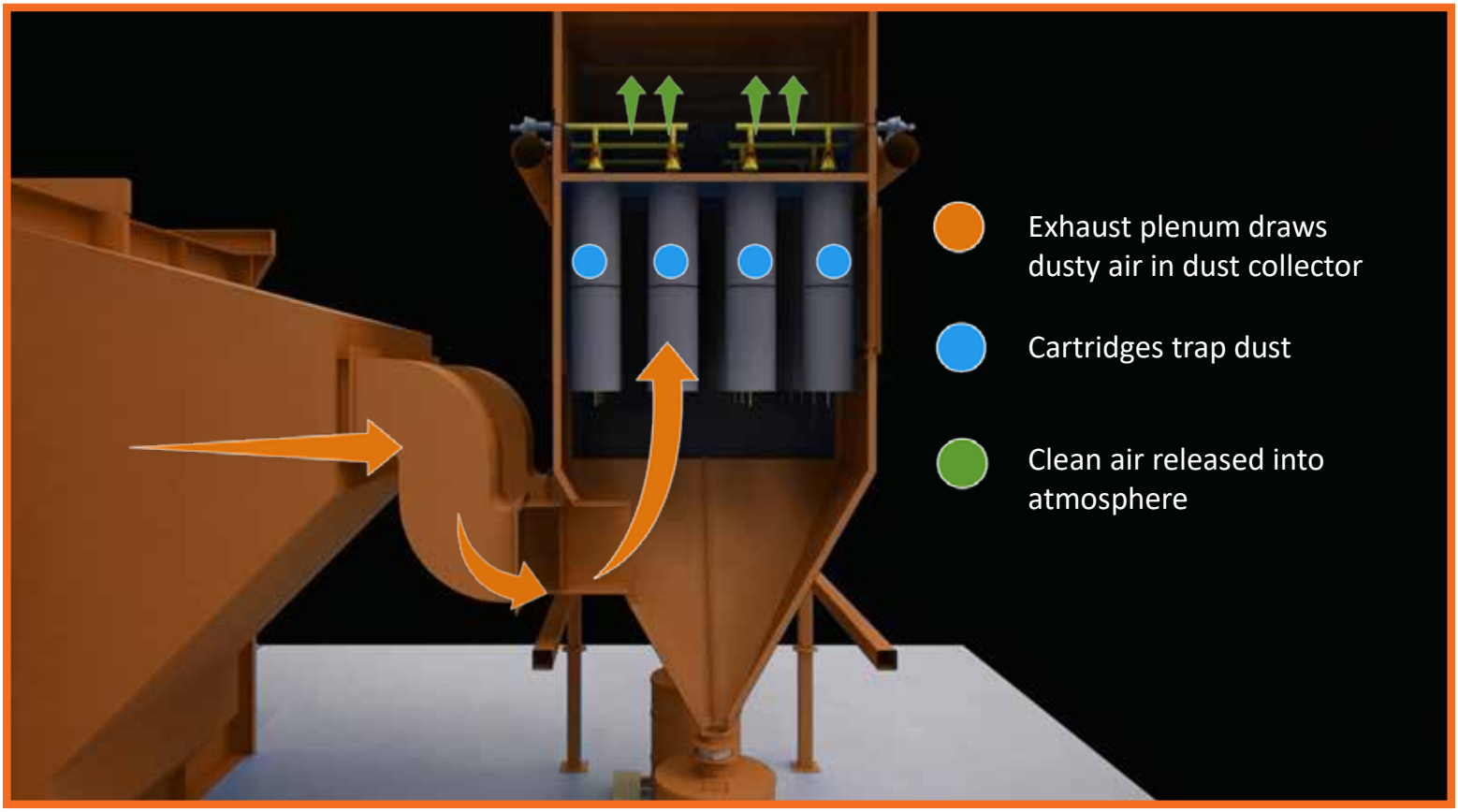
Optional when ventilating combustible dust. Integrated into dust collectors to prevent fires from spreading.

ULTRAWEB NANOFIBER FILTER CARTRIDGES

Premium filters to increase filter life and efficiency. MERV 15 maximum efficiency Cartridges will reduce the size and percentage of particles discharged to atmosphere.

EXPLAINING THE SELF CLEANING **FILTER CARTRIDGE SYSTEM - PART ONE**

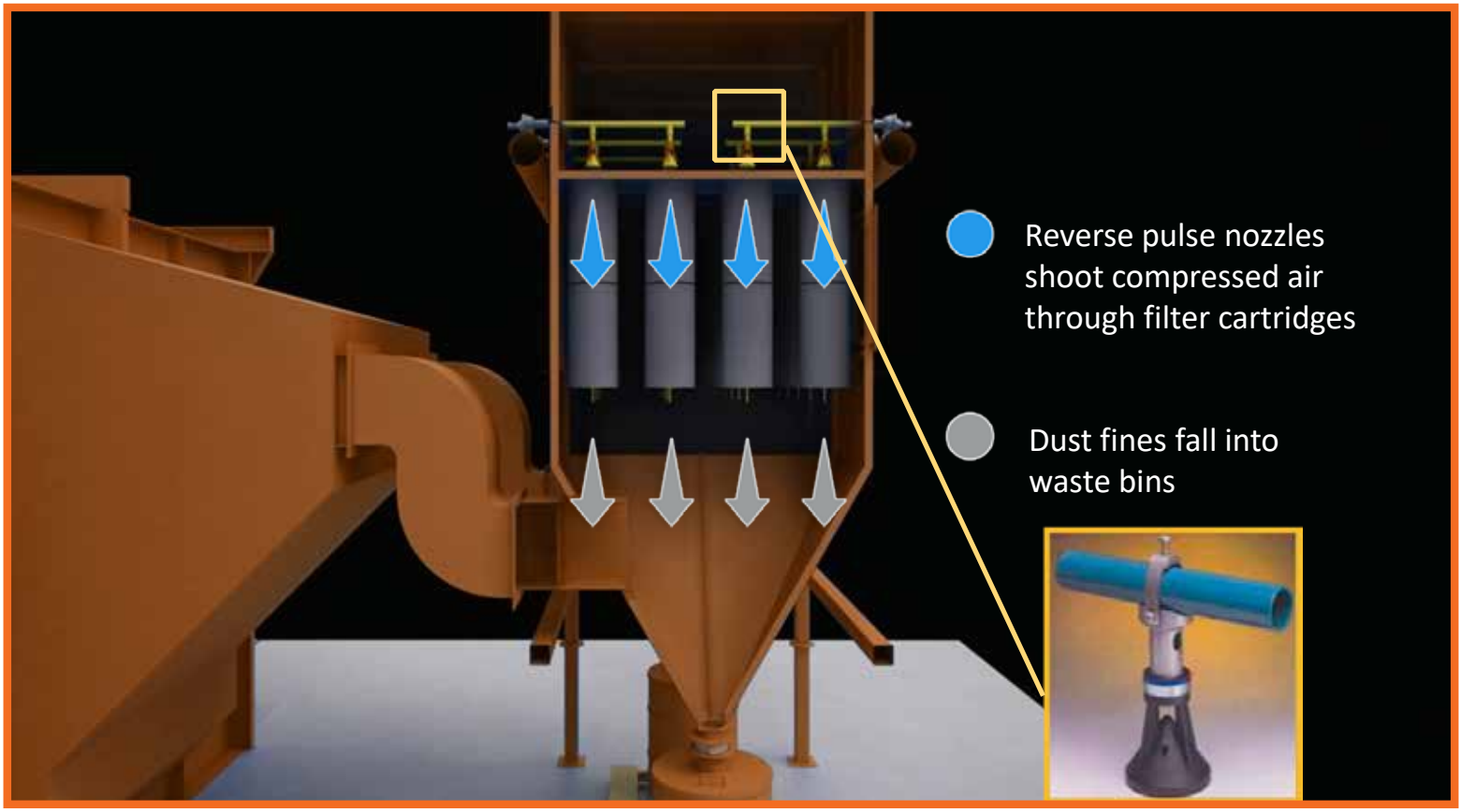
Dust from the blast room enters the dust collector into the dirty air plenum, the air passes through the filter cartridges, leaving the dust caked on the external. The clean air is either released into the atmosphere or back into the building to conserve heat and energy.



BLAST**ONE** OFFERS **CUSTOMIZED SOLUTIONS**

PART TWO

Using filter sensors, the dust collector automatically self-cleans by sending a quick burst of air backwards through the filters. This creates a shock wave, causing the dust to fall down into the lower chamber.



From concept to completion, BlastOne designs, engineers, and builds equipment that is safe, high-performing, and cost-efficient, custom-fitted to your facility and needs.

CONTACT US & LEARN MORE

- Dust Collectors
- Bucket Elevators
- Oscillating Conveyor
- Storage Hopper
- Dual Exhaust Plenum
- Custom BlastPot
- Mist Blaster
- MK COMBI System
- Squat Air Dyer

BLASTING EQUIPMENT

BlastOne abrasive air blasting equipment is built for highest productivity, safety and dependability.

The BlastOne blasting systems use full flow piping, significantly reducing pressure loss. Quality valves and precise controls result in significant reduction in abrasive costs, minimization of downtime and reduction in clean-up and abrasive disposal costs.

BlastOne blast machines are built by Schmidt® and other world leading equipment manufacturers.

KEY **COMPONENTS**

BlastOne blast machines are engineered for continuous, high-production use, with premium craftsmanship applied to every detail. Designed with advanced features to maximize efficiency, they not only boost production but also reduce maintenance costs, making your blasting jobs faster and more convenient.

BLAST POT

BlastOne blast pots are designed for efficient abrasive blasting, featuring advanced metering valves to reduce material use and minimize pressure loss. With 150 PSI working pressure, they boost productivity and offer ergonomic designs for safety and ease of use. Fast-acting controls further enhance performance and safety.

ABRASIVE STORAGE HOPPER

The BlastOne abrasive storage hopper is a key component of the recycling system, holding and dispensing cleaned, reusable abrasive. It includes two outlets with slidegate shut-offs, a loading port, and an access hatch for easy filling and maintenance. Suitable for both above-ground and below-ground setups, it features a heavy-duty mesh screen to block large debris, ensuring smooth integration into the facility's workflow.

AIR SUPPLY

The air supply system, essential for visibility and safety, includes ventilation with dust collection to reduce dust levels and improve operator visibility. It ensures quick dust clearance post-blasting, while the choice of dust collector affects airflow and filter life. The blast pot, connected to the air supply, controls blasting speed and efficiency, underscoring the need for a well-maintained and properly sized air supply for optimal blast booth performance.

INTELLIGENT CONTROLS

Intelligent controls enhance efficiency, safety, and performance by automating and monitoring the blasting process. They regulate airflow, pressure, and abrasive delivery, integrate with dust collection, provide automated start/stop, remote monitoring, safety interlocks, and data logging, and automate abrasive recycling.

DURABLE BLAST POTS ENGINEERED TO MAXIMIZE PRODUCTIVITY

Blast pots are essential components in custom-built blasting facilities, designed to efficiently deliver abrasive material for surface preparation. Built for durability and reliability, these pressurized vessels are engineered to handle a range of abrasive types while ensuring consistent flow and optimal blasting performance. Whether for small-scale projects or large industrial operations, blast pots are available in various sizes and configurations to meet specific requirements, ensuring effective results while maximizing productivity and minimizing downtime.

6.5 cu ft Blast Machine

MOST POPULAR

The 6.5 cu ft pot is an ideal unit for any job requiring high production work. The large capacity will mean less down time refilling the hopper.

Specified Capacity (app)
- 6.5 cu ft / 185 liters

Abrasive Capacity (app)
- Garnet - 950 lbs / 430 kg
- Steel Grit - 1580 lbs / 700 kg

Height (Excluding Handle)
- 47 in / 1195 mm

Length (Including Handle)
- 33 in / 855 mm

Width (Including Lift Lugs)
- 31 in / 785 mm

For high production work, easy to fill with large capacity

Part Number	Description
BMS 65CM	Schimidt 6.5 cu ft Combo/ Micro Blast Pot
BMS 65TV	Schimidt 6.5 cu ft Thompson II Blast Pot

10.0 cu ft Blast Machine

The 10 cu ft pot is designed for use in a blast room where 1 or 2 blasters can work off the same blast pot. Typically the pot would be refilled from a storage hopper.

Specified Capacity (app)
- 10.0 cu ft / 285 liters

Abrasive Capacity (app)
- Garnet - 1500 lbs / 670 kg
- Steel Grit - 2450 lbs / 1100 kg

Height (Excluding Handle)
- 59 in / 1500 mm

Length (Including Handle)
- 33 in / 855 mm

Width (Including Lift Lugs)
- 31 in / 785 mm

For site work or blasting room installation, 1 - 2 operators from one blast machine

Part Number	Description
BMS 1001CM	Schmidt 10 cu ft Combo/ Micro Blast Pot, Single Outlet
BMS 1001TV	Schmidt 10 cu ft Thompson II Blast Pot, Single Outlet

20.0 cu ft Blast Machine

The 20 cu ft blast pot is used in a large blastroom where 2-4 blasters operate from the one blast machine.

Specified Capacity (app)
- 20.0 cu ft / 570 liters

Abrasive Capacity (app)
- Garnet - 2950 lbs / 1350 kg
- Steel Grit - 4900 lbs / 2250 kg

Height (Excluding Handle)
- 68 in / 1725 mm

Length (Including Handle)
- 47 in / 1200 mm

Width (Including Lift Lugs)
- 37 in / 940 mm

For blasting room installation, 2 - 4 operators from one blast machine

Part Number	Description
BMS 200	Schmidt 20 cu ft Dual Outlet Thompson II Blastpot

STORAGE HOPPER

Efficient Abrasive Management for Optimal Blasting Operations

The abrasive storage hopper is a critical component in blast and paint booth projects, designed to streamline the handling and distribution of abrasive materials. Constructed with reinforced structural steel for durability, these free-standing hoppers are strategically positioned above blast pots, allowing for a gravity-fed system that ensures easy and efficient access to abrasives. They are integral to the recycling process, ensuring that clean, reusable abrasive is readily available for continuous blasting operations, thereby enhancing productivity and reducing downtime.

- **20 Cubic Feet Capacity allows for maximum storage to minimize refilling**
- **Modular Design with Fork Pockets ensures easy relocation and versatile setup**
- **Removable Lid offers adaptability for both indoor and outdoor use**
- **Shut-off Valve provides precise control of abrasive flow**

AIR SYSTEMS

The Heart of Blast and Paint Precision

Air systems are integral to the functionality and success of blast and paint booth projects, comprising a range of critical equipment and components. The significance of each component within the air systems cannot be overstated, as they collectively contribute to the seamless execution of the processes. To avoid operational interruptions and to extend the lifespan of the equipment, it is imperative to conduct proper maintenance and routine inspections of these air systems.

■ Air Compressors ■ Air Prep Systems ■ Air Powered Tools ■ Air Supply Hoses ■ Air Purification Systems ■ Air-Assisted Sprayers ■ Air Distribution Manifolds ■ Air Pressure Regulators ■ MegaFlow Bull Hose ■ Air Temperature Conditioners

SNAKEBITE NOZZLES

Powerful. Striking. Quiet.

The ultimate production tools that deliver lower noise, lower operator fatigue and improved project outcomes, ticking the box on the key challenges faced by the blasting industry today.

- **Low noise reduces your risk of hearing loss**
- **Blast longer and later in noise sensitive areas**
- **Reduce the risk of injury to operators**
- **Lower nozzle thrust reduces operator fatigue**

SNAKEBITE FLEX	SNAKEBITE XQ	SNAKEBITE STRIKE	SNAKEBITE LPS
Blast in and around hard- to-reach spaces with ease!	An Extra Quiet Blast Nozzle.	Achieve over 50% more production than high performance #8 nozzles.	Contractors working at lower pressures (70-90 PSI) can experience the same benefits as our revolutionary high pressure SnakeBite nozzles!

INTELLIGENT CONTROLS
INTELLIBLAST™

By providing live insights and enabling on-the-spot decisions, Intelliblast optimizes workflow efficiency, preventing downtime and wasted resources.

KEY BENEFITS:

- Stream real-time measurements of blast pressure and abrasive flow to your device.
- Immediate decision-making for faster, safer, and cleaner projects.
- Improved field performance and workflow efficiency with real-time monitoring.
- Remote job-site management for problem-solving and on-time, on-budget project completion.

MATERIAL HANDLING

Thoughtfully strategized and planned material handling procedures play a pivotal role in distinguishing between an efficient material handling system and one that falters in performance. Effective material handling encompasses a range of processes, including the movement, storage, control, and protection of materials throughout the blasting and coating operations.

Organizations can optimize their material handling systems to enhance efficiency, minimize downtime, and reduce operational costs by carefully considering factors such as workflow patterns, facility layout, and equipment selection. Implementing ergonomic designs and safety measures further ensures smooth material flow while safeguarding workers from potential hazards.

KEY **FEATURES**

Prioritizing strategic planning and meticulous execution in material handling operations not only fosters operational excellence but also strengthens competitiveness in today's dynamic business landscape. The following examples are standard methods used in industry, and combining several methods to achieve a superior result is typical.

CARTS- RAIL GUIDED AND INDEPENDENT

Carts, or trailers, come in a wide range of sizes and can be tailored to carry almost any load. They can be customized to move along designated tracks on the floor or operate independently. However, they typically rely on an external transportation source, like a tugger, forklift, or another vehicle, to move them around.

OVERHEAD CONVEYOR

Using overhead conveyance technology can significantly improve the efficiency of material movement in a blast and coat operation. Monorails, in particular, are well-suited for this purpose when dealing with a high volume of consistently sized and weighted parts.

OVERHEAD CRANE- EXTERNAL AND INTEGRATED

Overhead cranes stand out as exceptionally versatile material handling solutions. They can be positioned inside and outside blast and paint booths or integrated directly into the booth's structure. When situated externally, cranes often facilitate the movement of parts onto carts that traverse the booths or through designated openings in the booth's roof, known as "crane slots." These solutions are particularly well-suited for operations with high part weight and lower part volumes, as well as those factories requiring maximum flexibility.

SELF PROPELLED MATERIAL TRANSPORTER (SPMT)

Self-propelled material transporters, also known as "shipyard transporters" or "heavy-duty transporters," find widespread application in industries such as shipbuilding, wind energy manufacturing, foundries, passenger rail car manufacturing, and steel processing. These robust vehicles are primarily utilized for transporting exceptionally large or heavy objects. SPMTs offer versatility in operation, as they can function either as standalone units or be wirelessly interconnected for enhanced configuration flexibility.

BLASTONE®
WHEEL MACHINE SYSTEMS

For in-house, in line production surface preparation or batch cleaning of small parts, BlastOne offers airless shot blasting systems. Used for descaling, shot peening, deburring, surface finishing or for the removal of rust or paint.

Shot blasting is used extensively by foundries, steel fabricators, investment casters, automotive component manufacturers and heat treaters.

KEY **FEATURES**

All airless shot blasting systems are made up from these different components: airless blast wheels, blasting chamber, material handling, abrasive recycling and dust collection.

UNIQUE BLAST WHEELS

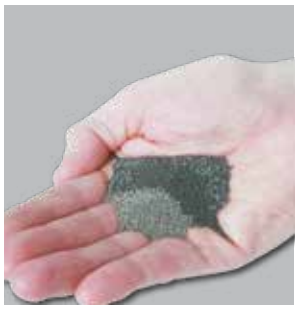
Blast wheels form the heart of any wheel blast machine. BlastOne has a range of unique wheels that we can select from in order to give you increased production and reduced maintenance costs.

LONG LASTING BLAST CHAMBER AND PARTS

Material components made from chrome-alloy, manganese and such metals of superior strength and wear resistance ensure that your airless wheel blasting machine will last for a very long time and minimize downtime.

MATERIAL HANDLING SYSTEMS

Installing the most efficient material handling system for your facility is very important to long-term productivity and profitability. BlastOne have global expertise in designing material handling systems to meet your production needs.



ADVANCED ABRASIVE RECYCLING

Using clean abrasive in your airless shot blasting system is crucial to success. All contaminants need to be completely removed to ensure that you are not impregnating the steel surface with old contaminants.

THE EXPERTS IN SHOT BLAST AND PEENING MACHINES

BlastOne offers a large range of both standard and custom made shot blast and peening machines. Increasing productivity and decreasing labor and general costs is a continuous thrust in any industry. Saving on downtime, maintenance and spares is fundamental.

HIGH QUALITY ABRASIVES, SPARE PARTS AND SERVICE

Recognizing the expertise required to service, maintain and supply the needs of installed shot blasting equipment, steel abrasives and replacement parts, BlastOne has created a dedicated team to operate as a separate specialized division.

Our focus is very simple: "To provide top quality longer lasting spares, superior technical advice and longer lasting abrasives."


Photo by Wheelabrator

ACHIEVE UP TO 30% EXTRA PRODUCTIVITY BY USING THE RIGHT ABRASIVE

Are you finding that your steel shot isn't lasting as long as it used to? Do you find you have to run cycle times longer in order to achieve a clean surface?

BlastOne's specialist wheel machine division are setting the benchmark in supplying top quality steel grit and steel

shot. Using top quality steel abrasives you can increase your production substantially. Simply using quality abrasives will give you a good quality clean surface in less time.

QUALITY MACHINES CALL FOR TOP QUALITY SPARES AND SERVICE

Superior quality spares last longer, which equates to less down time and less time spent on maintenance. Using genuine quality and affordable spares is a must.

With all machines we offer a fully integrated maintenance program ensuring you get maximum uptime and productivity from your machine. At BlastOne we will show you how you can

> **"After we upgraded ourmachine to using new wheels from BlastOne, we have increased our production time by 7%!"**
>
> **LARGE STEEL FABRICATOR, ADELAIDE SA, AUSTRALIA**

Tumble Blast Systems

BlastOne Tumble Blast machines are the 'workhorse' of the foundry industry. Offers excellent reliability and versatility for high performance batch cleaning.

Designed to suit a broad range of requirements and operating

conditions. BlastOne provides unequalled performance and durability in extreme conditions.

Can operate on a continuous, unmanned operation with the effectiveness of batch cleaning.

Unit typically has a single wheel.

Offers excellent reliability and versatility for high performance batch cleaning

Roller Conveyor Systems

Fully automated systems are designed by BlastOne to descale and remove rust from plate and structural members prior to fabrication.

Specially developed to meet the needs of the fabrication industry.

Effectively cleans large workpieces, eliminating the environmental problems and high labor costs associated with manual air blasting.

Unit typically has 4-12 wheels.

Fully automated system designed to descale and remove rust from plate and structural members prior to fabrication.

Spinner Hanger Systems

Designed to blast clean workpieces on an overhead conveyor, the BlastOne Spinner Hanger machine rotates the work hanger to achieve maximum exposure of the parts to the blast streams.

Various designs including turnstiles, Y-tracks, and flow-through cabinets are available to suit a range of requirements.

Used to clean castings and other large parts that cannot be tumbled.

Unit typically has 2-4 wheels.

Designed to blast clean workpieces on an overhead conveyor, achieves maximum exposure of the parts to the blast streams.

Turntable Machines

Rotary table machines made by BlastOne include both door mounted swing tables and cabinet mounted tables.

Clean castings and large work pieces that may not be suitable for a Tumble Blaster or Spinner Hanger.

Designed for rugged operation, rotary tables are among our most versatile machines.

Unit typically has 1-2 wheels.

Rotary table machines include both doors mounted swing tables and cabinet mounted tables.

Monorail Blast Machines

Used with an overhead monorail conveyor, these BlastOne Monorail Blast machines can be designed for higher throughput than the Spinner Hanger.

Typically powered by a chain conveyor or self-powered drives, the parts on hangers are automatically cleaned and transferred to the unload station.

Unit typically has 2-14 wheels.

Used with an overhead monorail conveyor, these machines can be designed for higher output than the Spinner Hanger.

BlastOne Preservation Lines

Before or after cutting, welding and fabricating steel components they are completely blasted by BlastOne Preservation lines to remove rust and mill-scale before primers and coatings are applied for corrosion protection.

A preservation system can include a pre-heating furnace, a pass-through shot blast unit, manual touch up booth, automatic or manual paint booth, a conveyor to carry dry and wet product and a drying tunnel or curing booth.

Various plate and profile widths can be automatically identified and

coated with the different primers in a continuous and controlled process.

Used for high production applications to ensure consistent productivity using automation saving time and money.

30 ITEMS THAT WILL MAKE YOUR BLASTING PACKAGE **SAFER, FASTER AND CLEANER.**

1	Nova 3 Blast Helmet
2	Multi Lens System. Standard or Tear-Off lens
3	Nylon Heavy Duty Blast Cape
4	Response deadman control handle
5	BlasterAll Gloves
6	Course Nozzle Holder
7	Snakebite Strike
8	Fitted Chicago Air Supply Hose or Red Rubber Air Hose
9	C40 Air Conditioner
10	SupaFlex™ Blast Hose – flexible and long lasting
11	Electric Deadman Control Cable - remote abrasive cutoff
12	BlasterAlls Blast Suit
13	RPB Breathing Air Hose - Noish Approved
14	Radex™ Breathing Air Filter with Regulator
15	Handway [on pot]
16	Pop-Up Valve – Urathene Material
17	Blast Machine 6.5 Pot
18	Abrasive Isolation Valve
19	Large Grip Handle [on pot]
20	Auto Air Valve [on pot, unseen]
21	Moisture Separator – for no pressure loss [on pot, unseen]
22	Spud coupling
23	Steeper 45° cone for better abrasive flow [on pot]
24	MegaFlow™ Air Supply Supersynthetic Bull Hose
25	Large Semi Pneumatic tires – makes moving the unit easier
26	Full flow plumbing [on pot, unseen]
27	TeraValve Abrasive Metering Valve
28	Sturdy frame [on pot]
29	Whipcheck
30	Gx4 Carbon Monoxide Alarm

It's the little things in a BlastOne System that make **ALL** the difference!

PERSONNEL **LIFTS**

Personnel lifts, also called man lifts, are commonly installed and used in blast rooms, spray booths and preparation booths where work is performed on larger objects.


LIFTMAN

MAN LIFTS

Man Lifts are commonly installed and used in blast rooms, spray booths and preparation booths where work is performed on larger objects.

Man Lifts are designed to replace the use of ladders in your blast and paint facilities. Ladders are one of the most common workplace hazards. By replacing them with man lifts, you can significantly increase safety for blast and paint personnel.

KEY **FEATURES**

Man lifts provide a significant improvement in job efficiency. Without the need for cumbersome ladders, the job gets done much more quickly and with higher quality, since the operator can more easily access all corners and angles.

LIFTMAN

- ATEX approved
- Selfcentered steering
- Twin wheels as option
- Delivered ready-to-use
- Controls and inlet inside cage
- Pneumatically operated
- Occupies minimum floorspace
- Sharp turning circle
- Steering and driving independent of height.

LIFTMAN FOLD

- ATEX approved
- Manual steering
- Twin wheels as option
- Delivered ready-to-use
- Outdoor and indoor use
- Controls and compressed air outlet inside cage
- Pneumatically operated
- Occupies a minimum of floor space
- Sharp turning circle for easy access

WALLMAN

- No contact with the floor
- Made to order
- Non slip floor in cage
- Three dimensional movement
- ATEX approved

WALLMAN XL

- Made to order
- Non slip floor in cage
- Three dimensional movement
- ATEX approved

LPI BLAST ROOM LIFT

- Withstand harsh and demanding environments
- Grit, sand, and shot blast
- Heavy duty sealed components
- Replace ladders
- Increase safety and productivity
- Lifts can be designed to fit your specific application.

LPI PAINT ROOM LIFT

- Enhance productivity
- Ergonomic for operators
- Pneumatically powered
- Hazardous environments
- Paint booths
- Wash booths
- Manufacturing processes
- Welding, assembly or loading bays
- Lifts can be designed to fit your specific application.




LIFTMAN

Portable personnel lift ideal for paint shops.

Weight Capacity
- 309 lb (140 kg)

Height (Raised)
- 9 ft (2.7 m)

Height (Lowered)
- 10.3 ft (3.1 m)

Unit Width x Depth
- 3.4 x 2.6 ft (1.1 x 8.4 m)

Cage Size
- 2.5 x 2 ft (8 x 6 m)

CE / UL Approved?
- Yes

Warranty Duration
- 36 months

Part Number	Description
SBPL 05	Liftman Portable Paint Booth Personnel Lift

LIFTMAN FOLD

Portable personnel lift ideal for offshore work.

Weight Capacity
- 309 lb (140 kg)

Lifting Height
- 9 ft (2.7 mm)

Lifting Height (Mast Folded)
- 5.5 ft (1.7 m)

Unit Width x Depth (outriggers out)
- 5.2 x 4.1 ft (1.6 x 1.3 m)

Unit Width x Depth (outriggers in)
- 5.2 x 2.8 ft (1.6 x 0.9 m)

CE / UL Approved?
- Yes

Warranty Duration
- 36 months

Part Number	Description
SBPL 06	Liftman Fold – Offshore Rated Personnel Lift

WALLMAN

Standard Duty 3 axis lift ideal for small to medium sized booths on a single shift operation

Weight Capacity
- 330 lb (150 kg)

Height (Platform)
- 10.7 ft (3.3 m)

Height (full unit)
- 13.7 ft (4.2 m)

Distance from Wall (retracted)
- 2.9 ft (0.9 m)

Distance from Wall (extended)
- 8.5 ft (2.6 m)

CE / UL Approved?
- Yes

Warranty Duration
- 36 months

Part Number	Description
SBPL 03	Wall-Man Paint Booth Personnel Lift

WALLMAN XL

Standard Duty 3 axis lift ideal for medium to large sized booth on a single shift operation

Weight Capacity
- 551 lb (250 kg)

Height (Platform)
- 20 ft (6 m)

Height (full unit)
- 22.3 ft (6.8 m)

Distance from Wall (retracted)
- 4.2 ft (1.3 m)

Distance from Wall (extended)
- 8.5 in (2.6 m)

CE / UL Approved?
- Yes

Warranty Duration
- 36 months

Part Number	Description
SBPL 04	Wall-Man XL Paint Booth Personnel Lift

LPI Blast Room Lift

Heavy Duty Blast lift, ideal for small to very large applications, multiple shift operations, with many customization options available

Weight Capacity
- 500 lb (227 kg)

Minimum Booth Height
- 15 ft (4.6 m)

Platform Height
- Customizable

Distance from Wall (retracted)
- 4 ft (1.2 m) - (customizable)

Distance from Wall (extended)
- 8.9 ft (2.7 m) - (customizable)

CE / UL Approved?
- Optional

Warranty Duration
- 12 months

Part Number	Description
SBPL 01	LPI Blast Lift Wall Mounted Personnel Lift

LPI Paint Booth Lift

Heavy Duty Paint lift, ideal for small to very large applications, multiple shift operations, with many customization options available

Weight Capacity
- 500 lb (227 kg)

Minimum Booth Height
- 12 ft (3.7 m)

Platform Height
- Customizable

Distance from Wall (retracted)
- 3 ft (0.9 m) - (customizable)

Distance from Wall (extended)
- 9.5 ft (2.9 m) - (customizable)

CE / UL Approved?
- Optional

Warranty Duration
- 12 months

Part Number	Description
SBPL 02	LPI Paint Lift Wall Mounted Personnel Lift

BLASTONE **ROBOTS**

To keep pace with the ever-changing needs of our clients, the products we supply and the services we provide are **constantly evolving.**

BLASTONE ROBOTS

Automated industrial and robotic blasting equipment require fixed, purposefully built infrastructure to operate.

BlastOne specializes in designing, building and commissioning robotic abrasive blasting facilities to provide custom solutions for our customer's corrosion control needs. BlastOne has teamed up with Blastman Robotics Ltd. to provide several options for our clients. Each blasting robot can be custom fit to each facility based on applications needs.

KEY **FEATURES**

BlastOne's robotic blasting systems are renowned for their precision, power, and tireless operation, surpassing traditional manual blasting methods. With a track record of reliability spanning 40 years and installations enduring for over two decades, these systems offer unmatched efficiency, safety, and quality in surface preparation and cleaning.

EFFICIENCY

BlastOne's abrasive robots are precise, powerful, and tireless workers, outperforming traditional manual blasting systems. They operate continuously with high pressure and precise control, reducing fatigue for manual blasters and increasing efficiency. Additionally, the automation ensures consistent performance from new operators.

RELIABILITY

With 40 years of expertise, BlastOne's robotic solutions are renowned for reliability and endurance. Installations have run for over 25 years, operating thousands of hours globally. Minimal maintenance, manageable by operators or on-site teams, ensures continuous operation even in extreme conditions, trusted by top robotics manufacturers.

OPERABILITY

With minimal training, a single operator can efficiently manage a multi-robot solution. This intuitive system requires no prior robotics experience. Operating the robot via familiar joysticks is akin to handling heavy-duty machinery. Customers often transition their manual blasters to robot operation, reducing fatigue, enhancing productivity, and lowering injury risks.

SAFETY

BlastOne's robotic solution greatly reduces the physical strain and danger of manual blasting, requiring only earplugs for noise protection. This minimizes the need for extensive safety equipment and significantly lowers the risk of workplace injuries, prioritizing the protection of workers.

QUALITY

BlastOne's robotics ensure consistent, high-quality results by eliminating human error and adjusting blasting angle, pressure, and abrasive material for optimal surface finish. Installation includes setting precise process parameters to meet customer requirements for roughness and preparation grade, backed by customer support for quality assurance.

BLAST**ONE ROBOTICS**

Fast Facts

- Robots are typically programmed to run a set blasting routine, without the need for human operator control or presence. These programs can be developed using offline software, or manually by using the attached teach pendant.
- Robots can be driven manually using the teach pendant, or with a set of joysticks that can be located in an optional attached cab or at a separate operator's station.
- Blastman robots can use a wide range of abrasive media to meet any surface preparation need. Additionally, two parallel blast nozzles ensure significant blast coverage with each and every pass.
- Blastman robots are built to withstand the aggressive environment of a blast booth. Motors and gearboxes are designed using sealed bearings and systems are located in protected locations within the robot body to eliminate exposure to grit and dust.
- Like all abrasive blasting systems, manual or robotic, hoses and nozzles will experience the most wear, and require regular inspection and replacement. Most of the commonly used spare parts are in stock at BlastOne.
- BlastOne employs technicians who are trained and skilled at maintaining and troubleshooting blasting robots. BlastOne provides onsite service if further assistance is needed. Our Support Line is available 24/7, call 1-800-999-1881.

DRIVE RESULTS, ENSURE SAFETY

TRANSFORM YOUR BLASTING PROCESS WITH BLASTONE'S ROBOTIC SYSTEMS

GANTRY BLASTING ROBOTS

Gantry robots in blast rooms offer versatile movement with up to 8 axes, and can be customized to fit specific room dimensions, accommodating single or double nozzles with diameters of 12-19 mm and pressures up to 10 bar.

B20S
8-AXIS

Applications include railway rolling stock, large steel structures, and castings.

B20CS
12-AXIS W/ CABIN

The cabin allows you to do a small amount of touch-up with human intervention.

B20LWS
7-AXIS

Uses a simpler boom to other robots, still allows access all around the workpiece.

B20CX
8-AXIS W/ CABIN

Allows blasting a diverse product range, from manual blasting to automated blasting.

WALL-MOUNTED BLASTING ROBOTS

Wall-mounted robots are ideal for confined vertical spaces, allowing for the option of two robots working from opposite walls or rotating the workpiece with a single robot, featuring longitudinal and vertical movements and accommodating one or two nozzles (12-19 mm diameter, up to 10 bar pressure), with dimensions tailored to the specific blast room and workpiece requirements.

B16XS
7-AXIS

Applications include small workplaces and complex workpieces.

B16S
7-AXIS

Applications include containers, turbine parts, castings, and freight wagons.

B16CX
7-AXIS W/ CABIN

Designed to replace manual blasting and suit non-serial and serial productions.

B12S
5-AXIS

Applications include tubular workpieces, such as windmill tower sections.

PAINT **BOOTHS**

To keep pace with the ever-changing needs of our clients, the product lines and services are **constantly evolving.**


BLASTONE


DANGER
NO ENTRY

TYPICAL PAINT ROOM Q&A

You asked, We answered!

Q: HOW DO I KNOW IF I NEED A SPRAY BOOTH?

Determining whether you need a spray booth depends on your operations, safety requirements, and compliance with regulations. If you are painting vehicles, parts, or products that require a controlled environment for a high-quality finish, a spray booth may be necessary. It helps manage hazardous vapors, reduces fire risk, and ensures compliance with safety standards like NFPA 33. Additionally, a spray booth provides a clean space for achieving a top-quality finish, helps meet environmental regulations by controlling emissions, and improves overall efficiency by reducing time and material waste. If quality, safety, and compliance are priorities in your painting operations, a spray booth is likely a valuable addition.

Q: IS A SPRAY BOOTH A HAZARDOUS ZONE?

Yes, the spraying area of a booth is classified as a Zone 1 Class 1 Hazardous Zone, extending 6.56 ft outside any booth opening. This zoning affects the placement of electrical switches, outlets, and equipment, necessitating careful space allocation.

Q: HOW BIG SHOULD MY SPRAY BOOTH BE?

Aim to accommodate at least 80% of workpieces fully within the booth work area, with recommended horizontal and vertical clearances of 3.28 to 4.92 ft and 3.28 ft respectively. Larger internal areas are needed for enclosed booths, whereas open front booths offer easier access to the workpiece.

Q: HOW MUCH SPACE IS NEEDED FOR A SPRAY BOOTH OR PAINTING AREA?

In addition to the paint area's footprint, allocate an additional 3.28-4.92 ft for the exhaust plenum, and consider door space, if applicable. Compliance with regulations, including hazardous zone extension and exit paths, must be accounted for, as well.

Q: HOW LONG DO FILTERS LAST?

Exhaust filters for over-spray typically need changing 1-4 times a year. Intake filters require changing every 12-18 months to prevent airborne particle contamination.

Q: WHAT ELSE SHOULD I KNOW?

A compliant spray booth must have an exhaust stack that extends beyond the height of the structure. This height is determined by local code. Compressed air, painting equipment and painter safety need to be considered, as well.

> **"This improved facility allows for larger portions of ships to be prepared and painted with modern environmental controls, ensuring our shipyard remains one of the safest, most efficient, and environmentally responsible in America."**
>
> PIERROBERTO FOLGIERO, CEO OF FINCANTIERI

TAILORED
SPRAYING SOLUTIONS.

PAINT ROOMS

BlastOne designs and builds paint rooms for many industrial applications - from small bench top paint booths to multi-million dollar paint facilities for ship modules. We design and construct the paint room to suit your application and your budget.

Tell us what you would like to paint and we'll collaborate with you and your team to ensure ewe can deliver a solution that meets your schedule and budget. BlastOne is committed to a new generation of finishing solutions.

KEY **FEATURES**

With a BlastOne spray booth you can now operate your coating process in a controlled environment without pumping fumes and overspray all over your workshop. The airflow is specifically designed to contain and exhaust all solvent fumes, while capturing the overspray in a simple yet effective low-maintenance filter system. Constructed from durable materials they are designed to remain modular and relocatable. Our staff are available to discuss your requirements anytime.

UNRESTRICTED AIRFLOW THROUGH FILTER

The BlastOne design incorporates the unique pleated card filter wall which captures airborne particles using the inertia separation principle. Overspray is retained outside the airstream in holding pockets giving it 3 to 5 times the life of fiberglass filters. This ensures an even airflow is maintained across the filter wall throughout the life of the filter.

LONGER WORKING LIFE

The BlastOne dry filter spray booth is made entirely from galvanised sheet metal for corrosion resistance and makes for a sturdy construction. This greatly improves the lifespan of the system.

RANGE OF CONFIGURATIONS

BlastOne spray booths are available in all sizes and configurations, including crossflow, semi-down, side-down draft and full down draft with positive pressure.

EASE OF INSTALLATION

The booth, subject to the client's individual requirements, can be supplied in panel form for easy assembly, requiring only the fitting of the fan, flue, lights, doors, and ducting, as well as the connection to an air and power supply.

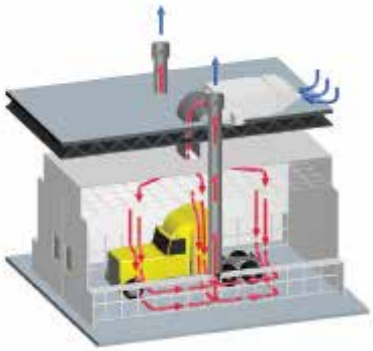
VENTILATION **OPTIONS**

As quality and service standards in the paint finishing market continue to rise, the industry has rapidly expanded, developing a wide range of methods and products to meet these demands. With this swift growth, designing an optimized paint system can feel like a daunting task. However, the process of creating the right system begins with a thorough evaluation of your current operations. A well-designed paint system can lead to fewer accidents, improved product quality, reduced healthcare costs, and a positive impression on visiting customers.

FOUR PRIMARY PAINT BOOTH CONFIGURATIONS:

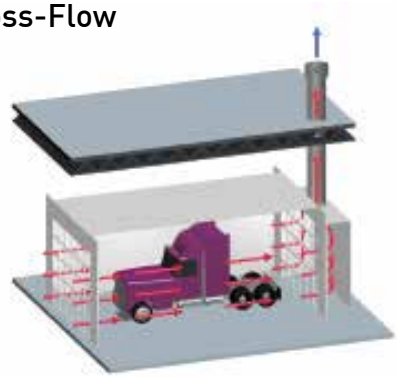
DownDraft

Side-DownDraft



Semi-DownDraft

Cross-Flow



> "Since we installed our BlastOne paint booth, we have not had more than 2 days of downtime over 2 years."
>
> **LARGE INDUSTRIAL PAINTER, MINNESOTA, UNITED STATES**

> "I would recommend BlastOne's paint booths to any company, large or small."
>
> **RAILCAR REPAIR FACILITY, IOWA, UNITED STATES**

CURING AND FINISHING **TECHNOLOGY**

A Significant Reduction in Paint Cure Times

The finishing division can easily become a bottleneck in any large-scale manufacturing, and one of the biggest culprits is the paint curing process. BlastOne's AquaTec paint booths drive up productivity in paint application and reduced cure time.

BLAST**ONE'S AQUATEC PAINT BOOTHS**

AquaTec Technology offers a highly efficient solution for boosting productivity in large-scale manufacturing, particularly in finishing operations where paint curing can cause bottlenecks. This advanced technology can be seamlessly integrated into BlastOne's custom-designed paint booths, optimizing both paint application and curing processes.

AquaTec booths feature strategically placed hot air nozzles that create a controlled, turbulent airflow, allowing the booth to function as a convection cure oven. This setup ensures paint dries more evenly and up to 30% faster than traditional curing methods, significantly reducing drying times and enhancing overall efficiency.

PRIMARY **BENEFITS**

- Evenly applied paint job on any surface type.
- Convection assists to cure finish more evenly.
- Reduced cure times of up to 30%.
- Single paint and cure location — no need move large machinery.

Bench Top Booths

The BlastOne bench-type spray booth is a unique solution to small parts spray painting. They can be designed to suit a diverse range of components whilst containing all fume and overspray to a small area of your workshop.

It is amazing what you can do in any size workshop while still complying with the regulations.

Construction
- Galvanized steel plates

Typical Size
- 4' x 4' x 3' to 8' x 4' x 3' / 1.2 x 1.2 x 1.0 to 2.4 x 1.2 x 1.0 m

Material Handling
- Manual handling piece by piece

The ultimate solution for small parts

Part Number	Description
MF 1000B	Benchtop Spraybooth 3.5' W x 7' L x 1.2'D (1.07m x 2.2m x 0.4m)
MF 2000B	Benchtop Spraybooth 6.5' x 7'W x 1.2'D (2m x 2.2m x 0.4m)

Spray Areas/ Filter Walls

BlastOne filter wall systems have been used successfully many times for the ventilation of designated spray painting areas. The compact design provides good directional airflow through painting areas, where the geometry of the workpieces makes using a spray booth impractical!

The filter wall system can also be used as a retractable spray booth, with collapsible side walls.

Construction
- Galvanized steel plates

Typical Size
- 7' x 7' to 12' x 140' wide / 2.1 x 2.1 to 3.6 x 43 m

Material Handling
- Forklift or overhead crane

Have a spray booth without walls, ultimate flexibility

Part Number	Description
MF 4020(FW)	Spray Filter Wall - 14'W x 7'H (4.2m x 2.2m)
MF 5020(FW)	Spray Filter Wall 16'W x 7'H (5m x 2.2m)
MF 3030(FW)	Spray Filter Wall 10.5'W x 10'H (3.2m x 3.1m)

Open Face Spray Booths

BlastOne spray booths can be designed to any size with the use of multiple extraction fans and filter banks.

Both wall and overhead lighting is easily incorporated, as well as escape doors, mixing benches and spray painting equipment.

Construction
- Galvanized steel plates

Typical Size
- 7' x 7' x 7' to 16' x 16' x 60' / 2.1 x 2.1 x 2.1 to 4.8 x 4.8 x 18.2 m

Material Handling
- Workcarts / forklift

This is one of the most common spray booths sold

Part Number	Description
MF 2020-1	Open Face Spray Booth - 6.5'W x 6.5'H x 3'D (2m x 2m x 1m)
MF 3030-2	Open Face Spray Booth - 10'W x 10'H x 6.5'D (3m x 3m x 2m)
MF 4040-3	Open Face Spray Booth - 13'W x 13'H x 10'D (4m x 4m x 3m)

Pipe/Structural Steel Painting Booth

BlastOne large spray booths are built in a modular design of panels, giving you versatility of location, alteration and re-location.

All booths come with a range of ventilation options, depending on your unique requirements.

Construction

- Steel panels with rigid steel structure

Typical Size

- 18' x 18' x 70' to 24' x 24' x 90' / 5.5 x 5.5 x 21 to 7.3 x 7.3 x 27.4 m

Material Handling

- Work carts / rail tracks / monorail / overhead crane

Ultimate productivity, typically with fast curing options

Heavy Manufacturing Paint Booths

BlastOne's industrial spray booths are specially designed for finishing large equipment such as trucks, buses, heavy equipment, watercraft, and trains. Tandem booth and outdoor freestanding booth systems are available to meet special product and space requirements. BlastOne's Industrial spray booths are available with many additional options to enhance the finishing environment and maximize productivity including personnel lifts, product hoists, and conveyor systems.

Construction

- Steel panels with rigid steel structure

Typical Size

- 18' x 18' x 70' to 24' x 24' x 90' / 5.5 x 5.5 x 21 to 7.3 x 7.3 x 27.4 m

Material Handling

- Work carts / rail tracks

High production booths for large heavy objects

Shipyard Painting Halls

Painting ship modules is different to other applications. The painting can take several days with different crews painting completely different coatings on the inside and outside.

It is important to understand the prep and paint times between coats.

Construction

- Formed steel panels and support structure

Typical Size

- 100' x 120' x 50' / 30 x 36 x 15 m

Material Handling

- Transporter for moving ship modules

Shipyard painting halls for module construction

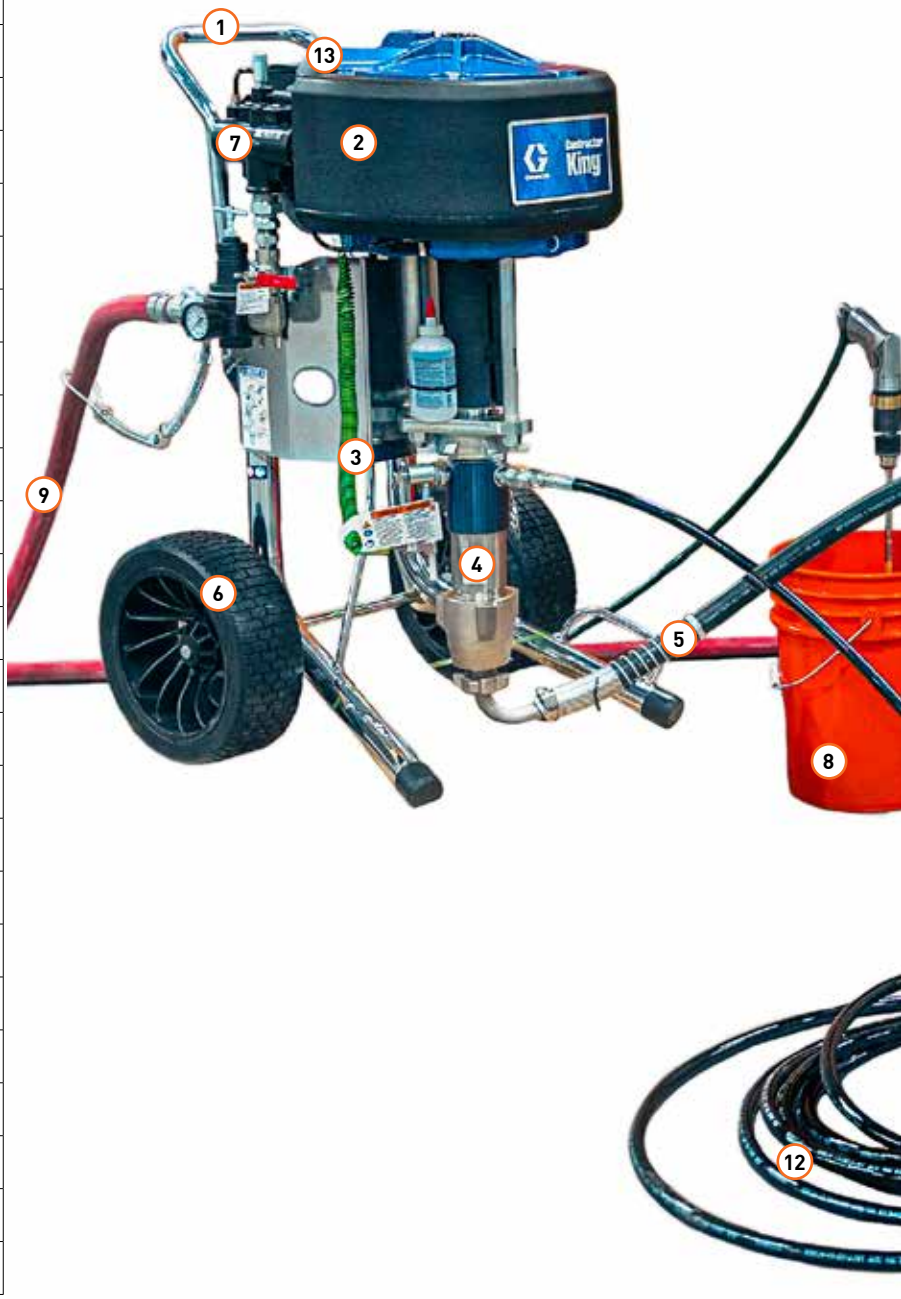
USING MAN LIFTS IN YOUR PAINT BOOTH

Using a BlastOne man lift in your paint booth can save you 50% in labor. Your industrial painter no longer has to climb ladders and trip over buckets. They can access anywhere in the paint booth from the man lift.

Call BlastOne for more information.

26 ITEMS THAT WILL MAKE YOUR PAINTING PACKAGE **SAFER, FASTER AND CLEANER.**

1	Heavy Duty Cart with Lift Handles, Contractor King
2	Rugged, Reliable Air Motor, Contractor King
3	Built-in Grounding Cord
4	Quick-Disconnect Endurance Pump Lower
5	Quick-Disconnect Paint Pickup Tube
6	Semi Pneumatic "No-Flat" Tires
7	Quick Access™ Intake Valve
8	5 Gallon Mixing Paint Bucket
9	1in Air Supply Line
10	Safety Whipcheck
11	Air Drill & Paint Mixer
12	3/8 x 50 ft Airless Spray Hose
13	Pressure Bleed Valve
14	T-Link Airfed Paint Respirator
15	PainterAlls Protective Suit
16	C40 Climate Control Tube
17	Radiator Brush
18	Head Sock
19	Silver Plus Airless Spray Gun
20	XHD Airless SwitchTip
21	MasterGrip Painting Gloves
22	Inline Swivel
23	1/4 x 6' Whip Spray Airless Hose
24	Certified Breathing Air Hose
25	Radex Breathing Air Filter
26	GX4 Carbon Monoxide Alarm



It's the little things in a BlastOne System that make **ALL** the difference!

TECHNICAL **SERVICES**

Blast Shield provides tailored support for your operations, offering expert troubleshooting and proactive maintenance planning for maximum uptime. With onsite inspections and quick deployment for recovery, our service ensures smooth operations.

TECHNICAL SERVICE

Maximize productivity and extend equipment lifespan with BlastOne's Technical Services. Our expert team offers regular site visits, repairs, upgrades, technical support, emergency callouts, warranty claims, and comprehensive staff training. Trust BlastOne for superior expertise, whole-life service, and world-class technical support to protect your equipment and maximize your facility investment.

KEY **SERVICES**

BlastOne's Technical Services include three key offerings to keep your operations efficient. Our 35 Point Inspection boosts equipment performance by identifying productivity issues and providing actionable recommendations. Blast Shield offers expert support and proactive maintenance planning for quick troubleshooting. Additionally, our extensive spare parts inventory with same-day shipping ensures minimal downtime and maximum productivity.

35 POINT INSPECTION

BlastOne's 35 Point Inspection enhances the performance and longevity of your industrial blasting and coating equipment. This thorough inspection covers all aspects of your setups, identifying areas where productivity and profits are lost. Our detailed reports provide actionable recommendations to optimize your operations. By examining maintenance logs, equipment functionality, structural integrity, and safety components, our Technical Services team ensures your facilities operate at peak efficiency.

BLAST SHIELD

Blast Shield offers customized operational support, providing dedicated expert assistance for swift troubleshooting responses whenever needed. Our proactive strategy includes analyzing and planning for maintenance and wear parts replacement to optimize system uptime. Through thorough onsite inspections and detailed reporting, we consistently refine our service to improve product performance. Our quick deployment ensures rapid onsite system recovery in case of any disruptions.

SPARE PARTS

BlastOne's spare parts inventory provides customers with extensive access to essential components, ensuring their operations remain efficient and productive. With same-day shipping, customers can swiftly obtain everything needed, from motor bearings and blasting abrasives to blaster PPE, all in one convenient order.

35 POINT INSPECTION

PRECISION INSPECTION FOR MAXIMUM PRODUCTIVITY

BlastOne equipment and facilities are designed to withstand the tough environment of industrial blasting and coating. While our equipment is built to last, regular maintenance and inspections are essential for extending its service life. Our 35 Point Inspection conducts a thorough investigation of your blasting and painting equipment, booth, and personnel procedures to diagnose exactly where you are losing productivity and profit.

KEY **FEATURES**

BlastOne's 35 Point Inspection provides a detailed report of findings and recommendations to optimize your equipment's performance and maximize productivity. Trust our Technical Services team to keep your operations smooth and efficient.

BLAST BOOTH INSPECTION

The Blast Booth inspection begins with a review of maintenance and repair logs to understand the equipment's history. We inspect the functionality of man doors, product doors, and sensors. The integrity of the grating, structure, walls, and exterior conditions are assessed. Underfloor recovery systems, elevator belt tracking and tension, and air wash systems are checked. We also evaluate the blast pots, hoses, and dust collectors. Finally, we document the control panel and verify the condition of PPE and breathing air filters.

PAINT BOOTH INSPECTION

The Paint Booth inspection also starts with a review of maintenance and repair logs. We verify the functionality of doors and sensors, inspect the grating and structural integrity, and assess the exterior for any issues. We check differential pressures across filters and document the control panel. The condition of PPE and breathing air filters is also confirmed. Any additional critical information is noted to ensure a thorough assessment.

BLASTSHEILD

MAXIMIZE UPTIME AND EFFICIENCY WHILE REDUCING COSTS

BlastShield is designed to keep your equipment running smoothly with minimal downtime. Prioritizing our Service Contract customers, we guarantee swift response times. Our 24/7 telephone support and weekday email support enable your maintenance staff to diagnose and resolve over 92% of equipment issues quickly and cost-effectively. For equipment with Remote Diagnostic functionality, we use secure, encrypted VPN tunnels to diagnose control system faults and equipment status remotely, ensuring a response within 24 hours on weekdays. If remote support isn't enough, our technicians are ready for emergency call-outs, with Service Contract customers receiving top priority and benefiting from our discounted rates.

SERVICE **LEVELS**

Our proactive approach includes analysis and planning for maintenance, maximizing uptime. Count on us for quick deployment and onsite recovery, ensuring smooth operations.

BRONZE | BI-ANNUAL

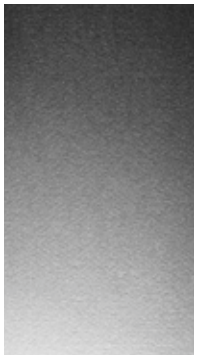
Entry-level package that provides essential support with pre-scheduled maintenance and inspections, expert meetings, and onsite startup support. Enjoy budgeted monthly billing, onsite training, and regular spare parts checkups to ensure smooth operations.

SILVER | QUARTERLY

Our Silver Package offers enhanced support with pre-scheduled maintenance and inspections, expert meetings, and onsite startup assistance. Enjoy budgeted monthly billing, onsite training, and spare parts checkups. Plus, benefit from proactive notifications for wear parts replacement and priority technical support with an assigned support lead available 24/7.

GOLD | MONTHLY

Our Gold Package offers pre-scheduled maintenance and inspections, expert meetings, and onsite startup support. Enjoy budgeted billing, onsite training, spare parts checkups, and proactive wear parts replacement notifications. Benefit from 24/7 priority support, remote training credits, a 12-hour SLA for downtime recovery, operations insights, and discounts on services and parts with a one-year price lock.



PLATINUM | WEEKLY

Our Platinum Package offers premium support with pre-scheduled maintenance and inspections, expert meetings, and onsite startup assistance. Enjoy budgeted billing, onsite training, spare parts checkups, and proactive wear parts notifications. Benefit from 24/7 priority support, remote training credits, a 12-hour SLA for downtime recovery, operations insights, discounts on services and parts, proactive parts shipping, permanent onsite technical support, and inventory management.

BLAST SHEILD
SERVICE PACKAGES

	BRONZE
Pre-Scheduled Preventative Maintenance & Inspections	BI-ANNUALLY
Pre & Post Inspection Meeting with BlastOne Product Experts	✔
Onsite operations start up support post PM completion	✔
Budgeted Monthly Billing	✔
Onsite training for technical teams during inspection visits	✔
Spare parts inventory checkups	✔
Proactive notification for wear parts replacement	
Priority Technical Support with an Assigned Support Lead (24/7)	
Remote training credits for customer staff	
12-hour SLA for onsite downtime recovery (subject to additional cost)	
Operations insights for optimization & continuous improvement	
Discounts on Additional Services and Parts (w/ 1 year price lock)	
Proactive shipping on spare parts and wear parts	
Permanent onsite support for technical service	
Onsite spare parts inventory management	

Increasing Your **Uptime** and **Efficiency** While **Minimizing** Your Cost.

SILVER	GOLD	PLATINUM
QUARTERLY	MONTHLY	WEEKLY
✔	✔	✔
✔	✔	✔
✔	✔	✔
✔	✔	✔
✔	✔	✔
✔	✔	✔
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SPARE PARTS

MINIMIZE DOWNTIME WITH OUR EXTENSIVE PARTS INVENTORY

BlastOne provides significant benefits to customers with access to large inventories of critical components stocked in warehouses. With same-day shipping, you can quickly receive everything you need, from motor bearings and blasting abrasives to blaster PPE, all in a single order. This ensures minimal downtime and maximum efficiency for your operations. Ideal for ensuring parts availability and uninterrupted production, BlastOne offers all required spare and wearing parts for our abrasive handling systems. Using BlastOne-supplied spare parts ensures equipment durability, efficiency, and compatibility, reducing unscheduled downtime and servicing hours. This is a key feature of BlastOne's Service Contracts program.

OPTIMIZE YOUR OPERATIONS

RELIABLE PARTS, READY WHEN YOU NEED THEM

CASE **STUDIES**

Explore success highlights and case studies from our industrial blasting projects. We deliver superior abrasives, top-notch equipment, and expert know-how, covering everything from equipment upgrades to robotic installations across multiple industries.


BLASTONE
ABRASIVE
STORAGE HOPPER

CUSTOMIZED **BLASTING SOLUTIONS**

OUR CUTTING-EDGE BLAST ROOM DESIGNS RESULT IN LESS WASTE, A SAFER WORKFLOW, INCREASED PRODUCTIVITY AND MINIMAL IMPACT ON THE ENVIRONMENT.

We offer custom designs to meet any production requirement from small parts to heavy machinery and structural steel components. Our blasting chambers are designed to incorporate monorail systems, product hoists and many other additional options to enhance your blasting operations.

BLASTING CHAMBERS

STRUCTURAL STEEL BLAST ROOMS

LARGE-SCALE SHIPYARDS

TAILORED **SPRAYING SOLUTIONS**

BLASTONE FINISHING SYSTEMS WILL GIVE YOU THE CONFIDENCE TO GUARANTEE A JOB WELL DONE.

We custom design our spray systems to maximize efficiency and minimize downtime. Starting with the highest-quality materials, we engineer and build your system to meet your needs.

PORTABLE SPRAY SYSTEMS

MEGA PAINTING HALL

SPRAY ROOMS

PROJECT HIGHLIGHTS AND **CASE STUDIES**

MARINE | **Blast and Paint**

COMPANY: Superior Marine

LOCATED: South Point, Ohio

OBJECTIVE: Introduce indoor blast and paint capabilities as an additional service within the river barge business sector.

SOLUTION: BlastOne designed, engineered, and installed blast and paint bays within the one facility. The dual-function facility offered blast and paint services for barge customers, and minimized upfront costs by preventing relocation.

RESULTS: The new facility is now able to blast and paint the largest barges on the Ohio River, in a controlled environment, while incurring low upfront costs to the company.

MARINE | **Blast and Paint**

COMPANY: VT Halter

LOCATED: Pascagoula, Mississippi

OBJECTIVE: Enhance blast and paint operations to reduce environmental impact, boost production efficiency, and reduce weather dependency in response to tightening regulations and increased demand for medium-sized ships.

SOLUTION: BlastOne collaborated with VT Halter engineers to create a customized, state-of-the-art blast and paint facility. The facility features a spacious 304'W x 120'L main building divided into a 150 ft blast hall and a 150 ft paint hall, capable of accommodating ship sections up to 105'W x 40'H x 80'L, weighing up to 500 tons each.

RESULTS: VT Halter finally has a serious competitive advantage over many of its competitors.

COMMENTS: *"BlastOne's engineering and equipment have enabled us to cut our particulate emissions to zero while doubling our productivity. VT Halter Marine is delighted by the finished facility," said Tim Pryor, Facilities Manager of VT Halter Marine*

INNOVATING SOLUTIONS FOR BLAST AND PAINT CHALLENGES.

MARINE | **Blast and Paint**

COMPANY: Fincantieri Marinette Marine (FMM)

LOCATED: Marinette, Wisconsin

OBJECTIVE: To expedite the production of Constellation-Class frigates for the US Navy by eliminating production bottlenecks in the surface preparation phase.

SOLUTION: BlastOne designed and built a modernized blast and paint facility, encompassing 25,000 ft^2 of climate-controlled finishing space with two dedicated painting bays and two blast and paint combination bays. The space has the capacity for 16 blasters and eight sprayers, optimizing space and output while prioritizing safety with state-of-the-art ventilation systems, continuous air quality monitoring, and camera systems.

RESULTS: Larger portions of ships can now be prepared and painted with modern environmental controls, ensuring safety, efficiency, and environmental responsibility.

COMMENTS: *"This improved facility allows for larger portions of ships to be prepared and painted with modern environmental controls, ensuring our shipyard remains one of the safest, most efficient, and environmentally responsible in America," said Pierroberto Folgiero, CEO of Fincantieri.*

MARINE | **Paint**

COMPANY: Irving Shipbuilding

LOCATED: Halifax, Nova Scotia

OBJECTIVE: Irving Shipbuilding was selected by the Royal Canadian Navy to construct the next class of Canadian Surface Combatant (CSC) and Arctic and Offshore Patrol Ship (AOPS) vessels as part of Canada's National Shipbuilding Strategy (NSS). To meet this challenge, Irving had to build a new facility capable of producing a significant number of naval ships and incorporate a large paint facility within the same building.

SOLUTION: BlastOne worked with Irving Shipbuilding Inc. to design and engineer a customized ship module paint facility. The massive paint facility measured a total of 88'W x 52'H x 180'L. BlastOne incorporated two separate paint booths. The system has 330,000 cfm of dehumidified air. During the curing phase, the air heats up to 140°F.

RESULTS: Irving Shipbuilding now has the ability to paint ship sections 365 days a year regardless of weather patterns, thanks to the built-in heating and de-humidification.

PROJECT HIGHLIGHTS AND **CASE STUDIES**

WIND | **Blast**

COMPANY: CS Wind

LOCATED: Windsor, Ontario, Canada

OBJECTIVE: Automate abrasive blasting for new wind tower sections, achieving speed and consistency while meeting strict cleanliness and roughness standards for durable coatings.

SOLUTION: CS Wind installed three treatment lines, each with an abrasive blasting chamber and painting room, housing Blastman B12 robots equipped with two ¾" nozzles. These wall-mounted robots have a 4-axis arm for precise movement, best suited for wind tower structures. To address material handling, specialized product carts with in-ground tracks and rollers were utilized. The robots are programmed to coordinate with the tower's movement, allowing sector-by-sector blasting with overlap, optimizing the process.

RESULTS: CS Wind's North American wind tower finishing facility now exceeds 2500 ft^2/hr through robot automation, a ten-fold increase over manual methods. The facility can easily switch abrasives, and robot programming, with five operational modes, ensures speed, precision, and flexibility.

WIND | **Blast**

COMPANY: Arcosa

LOCATED: Tulsa, Oklahoma

OBJECTIVE: Arcosa sought a solution to pretreat flat steel plates, removing scale before rolling and welding for steel wind tower sections.

SOLUTION: BlastOne provided an automated 8-wheel blast machine with a post-blast cleaning and recovery system for continuous reapplication.

RESULTS: The solution was successfully provided, installed, and commissioned, marking a significant milestone in Arcosa's production capabilities. The new machine, now in full operation, enhances efficiency and quality in the steel plate pretreatment process. Notably, the absence of a required pit for the machine resulted in substantial cost savings, exemplifying Arcosa's commitment to innovation and cost-effectiveness in their manufacturing operations.

SUPERIOR FACILITIES FOR SUPERIOR RESULTS.

HEAVY MANUFACTURING | **Blast and Paint**

COMPANY: TBEI

LOCATED: Lake Crystal, Minnesota

OBJECTIVE: To leverage a significant military contract as a catalyst for growth and expansion, focusing on technological advancement, talent acquisition, process innovation, and the development of new products and services within the context of an extensive portfolio.

SOLUTION: BlastOne provided a solution that included:

- Blast Booth with In-floor Oscillating Conveyor Recovery
- 2 Makeup Air Units
- 1 Dust Collector
- 1 Wash Bay
- 3 Paint Booths Side Down Draft, 3 IR Cure Ovens
- 1 Environment Control System
- A Start-up, Commissioning, and Training Package

RESULTS: TBEI now boasts increased production capacity and military specification compliance.

HEAVY MANUFACTURING | **Blast**

COMPANY: General Dynamics

LOCATED: Lima, Ohio

OBJECTIVE: Address rising production demand for refurbishing armored tanks and personnel carriers for the US military. Overcome capacity limitations and rising labor costs by automating the blasting process.

SOLUTION: BlastOne collaborated with General Dynamics, selecting an automated blast booth with an 8-axis Blastman robot to handle large blast nozzles. This solution integrates seamlessly with material handling, recovers 100% of steel grit, and optimizes floorspace with roll-up rubber doors.

RESULTS: 4x increase in blasting productivity was achieved, potentially quadrupling revenue. The automation project now allows for efficient completion of 95% of an armored vehicle in 3 hours using the robot.

COMMENTS: *"We are pleased with the Blastman robotic solution through BlastOne. Production results have been outstanding. We have moved from a cycle time of 12 man-hours down to less than three hours. Specifically, manual blasting touch-ups in the booth have decreased from 12 hours to 20 to 30 minutes."*

PROJECT HIGHLIGHTS AND **CASE STUDIES**

HEAVY MANUFACTURING | **Blast**

COMPANY: Large Mining Company

LOCATED: South Austrailia

OBJECTIVE: To meet demands from increased production and a growing work site, by swiftly deploying a portable blast room, ensuring the necessary blasting capabilities, and easy removal upon project completion.

SOLUTION: BlastOne provided a custom blast room solution using a standard shipping container from their Australian rental fleet, enabling the mining site to swiftly scale their blasting capability on a long-term rental basis. The container-based blast room equipment included abrasive recycling, high-efficiency dust collection, explosion-proof lighting, full-scale blasting equipment, and viewing windows, ensuring an efficient blasting solution.

RESULTS: The client now benefits from a highly efficient blast room that operates seamlessly on-site. The room's ease of mobility, facilitated by cranes, has significantly enhanced their operational efficiency and overall financial performance.

HEAVY MANUFACTURING | **Blast**

COMPANY: Komatsu

LOCATED: Pennsylvania, USA

OBJECTIVE: To address the unique requirement for a blast booth solution with crane access through the roof.

SOLUTION: A booth was designed to fit within the allocated area, featuring insulated panels to reduce noise levels. A lean-to section was added for recovery equipment, and the dust collector was ducted outside. The project encompassed the installation of the booth, which includes U-shaped oscillating conveyors, bi-fold doors, a blast-white finish for abrasion resistance, and a 12,000 cfm dust collector for efficient operation.

RESULTS: Komatsu has successfully implemented a dependable blasting solution that enables the seamless transportation of heavy products in and out of the booth using an overhead crane, all while maintaining the integrity of the booth seal and minimizing dust levels within the workplace.

BLASTONE KNOWS THE CORROSION CONTROL INDUSTRY.

HEAVY MANUFACTURING | Blast and Paint

COMPANY: Government Defense Contractor

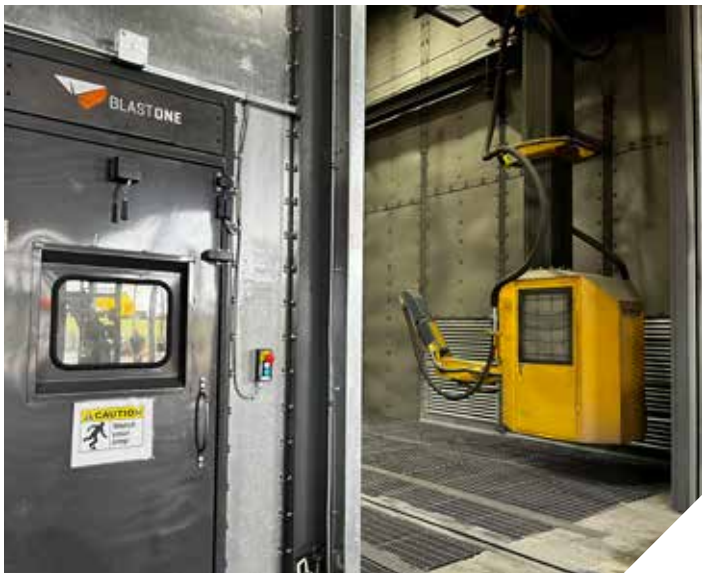
LOCATED: Indiana, USA

OBJECTIVE: Integrate a floor-lift logistic solution for our client's large products within the enclosed blast and spray booths, utilizing a tandem, cart-carriage system for safety and accessibility.

SOLUTION: BlastOne's solution offers a secure floor-lift system with a tandem cart-carriage, ensuring stability and adaptability for handling large products within the booths.

RESULTS: The client now benefits from a safe and efficient method for transporting large products within the booths and throughout the facility. With two independent units, they have added flexibility in moving heavy equipment.

COMMENTS: *"Based on our recent project, I would recommend BlastOne as a reputable company to do business with. The project was handled professionally, communication was sufficient, follow up was good when needed. Attention to detail was good as well, and the BlastOne Project Manager was a good representative for BlastOne, and pleasant to conduct business with." – Facilities Engineer*



HEAVY MANUFACTURING | Blast

COMPANY: HEIL Environmental

LOCATED: Port Payne, Alabama

OBJECTIVE: The project's objective was to improve the quality of finished products, reduce and eliminate weld splatter on the job site, and increase safety for employees.

SOLUTION: BlastOne designed and engineered a custom automated blasting facility. Project by the numbers:

- 24'W x 24'H x 50'L Blast Booth
- BlastMan B20CX Robot with Two Blasting Nozzles
- Two Manual Blast Hoses
- SSPC-SP6 Blasting Quality

RESULTS: Within the first few weeks of production, HEIL achieved an 88% labor reduction for surface preparation, cutting a task from 1.5 hours with five workers to just 50 minutes for one. The transition to automation revealed previously unnoticed weld quality issues, leading to process changes and improved product quality.

PROJECT HIGHLIGHTS AND **CASE STUDIES**

HEAVY MANUFACTURING | Blast and Paint

COMPANY: Granite State Manufacturing

LOCATED: Manchester, New Hampshire

OBJECTIVE: Granite State Manufacturing aimed to establish in-house abrasive blasting and painting capabilities to fulfill a large DoD contract, meeting stringent requirements and enhancing their position as a reliable supplier in defense manufacturing.

SOLUTION: Partnering with BlastOne, GSM devised a comprehensive blast and paint solution tailored to their needs. This solution included a Blast Booth with noise-reducing panels, a U-Shape Abrasive Recovery system, Dust Collection equipment, as well as a Paint Booth, Make-Up Air Unit, and Paint Mix Room.visibility with a new lighting system.

RESULTS: Implementation of BlastOne's solution enabled GSM to meet the DoD contract requirements in-house, solidifying their reliability as a supplier. The project resulted in shortened timelines, cost savings, and environmental improvements, addressing OSHA compliance concerns. Ultimately, GSM emerged stronger and better equipped to meet the evolving demands of the defense industry.

MANUFACTURING | Blast

COMPANY: CHEP

LOCATED: Dallas, Texas

OBJECTIVE: CHEP, specializing in supplying and rebuilding wood pallets with food-grade coatings for pharmaceuticals, food, and retail grocery markets, faced a challenge in cleaning non-food grade coatings off pallets to meet FDA standards. Their goal was to reduce the backlog of pallets with the wrong coating system and reintegrate them into their rental pool.

SOLUTION: Engaging BlastOne's services early on for studies on pallet cleaning, the project evolved into designing a Blast Booth solution. The 15'W x 12'H x 20'L Blast Booth, configured for non-recycled abrasive with two operators, was tailored to fit the existing space and facilitate material handling for pallets.

RESULTS: The implementation of the Blast Booth solution enabled the client to save approximately 250,000 wood pallets by cleaning them to the correct standards and reintegrating them into their rental pool. This not only resolved the backlog issue but also ensured compliance with FDA standards, enhancing the company's operational efficiency and asset utilization.

SUPERIOR PERFORMANCE IN EVERYTHING WE DO.

RAIL | **Blast**

COMPANY: UTLX

LOCATED: Arkansas, USA

OBJECTIVE: Create a high-production blast room for railcar refurbishment, emphasizing protective lining and coating processes. The goal is to boost production at a facility in Arkansas, including an aging wheel machine, with minimal downtime.

SOLUTION: BlastOne replaced an outdated railcar surface preparation wheel machine with a new robotic blast room at UTLX's facility. Initially, the blast room was set up for manual blasting to minimize downtime, complete with temporary access platforms for operators, which were later removed when the robotic components became operational.

RESULTS: Union Tank Car (UTLX) now has a state-of-the-art robotic blasting facility which gives them a substantial competitive advantage. The cycle time and subsequent cost reduction gives them excellent return on investment, and the quality and consistency of the blast process provide further key advantages.

RAIL | **Blast and Paint**

COMPANY: Vertex Railcar

LOCATED: Wilmington, NC

OBJECTIVE: Vertex Rail needed to make sure their new facility could churn out all types of railcars in high volumes. To drive productivity, they began looking to automate their blasting and painting process. BlastOne became the obvious partners for the project due to their experience and unique partnership with automation companies.

SOLUTION: BlastOne's proposal to Vertex included the following components:

- Fully automatic blasting system using Blastman robotics for blasting railcar exteriors
- Manual blast booth for touch up and blasting car interiors
- Full downdraft paint booth
- High temperature cure booth with AquaTec

RESULTS: Vertex Rail's entered into the railcar manufacturing market with enormous production capability with a fraction of typical finishing labor costs.

PROJECT HIGHLIGHTS AND **CASE STUDIES**

RAIL | **Blast**

COMPANY: Railcar Company

OBJECTIVE: To seamlessly integrate a second 100HP vacuum unit into our client's rail car repair facility's existing grit recovery system

SOLUTION: BlastOne created a sealed connection for the second vacuum unit, preventing overflow, and optimizing grit distribution within the existing recovery system. This approach not only ensures the efficient use of the current infrastructure but also generates substantial cost savings by reducing maintenance and downtime risks.

RESULTS: The client has successfully integrated the second vacuum unit into their daily operations, and both units are performing exceptionally well. The client expresses high satisfaction with the product's performance, highlighting BlastOne's exceptional workmanship and quality.

STEEL FABRICATION | **Blast and Paint**

COMPANY: Tronair

LOCATED: Toledo, Ohio

OBJECTIVE: Convert a 120,000 ft^2 facility into an efficient manufacturing center with the goal of achieving a 50% increase in productivity compared to previous facilities and the capacity for multiple blasters to work concurrently.

SOLUTION: BlastOne designed and engineered a custom blasting and painting facility for Tronair.

It included the following elements:

- Custom Abrasive Blast Room
- Built-in Abrasive Recovery System
- Unique paint cure mode to apply automotive finishes equipped in paint booth

RESULTS: We designed the finishing facility to align with the rest of Tronair's manufacturing equipment, enabling a seamless production process. The overall project was completed within 16 weeks. Tronair's newly established finishing facilities were equipped to blast and paint three different brands of ground support equipment under one roof.

TRANSFORMING PRODUCTIVITY WITH TURNKEY SOLUTIONS.

STEEL FABRICATION | **Blast**

COMPANY: Outdoor Hoop Structure Blast Room

LOCATED: Minnesota, USA

OBJECTIVE: Faced with weather constraints, limited blasting capacity, and the need for dust containment during outdoor operations, the client sought a solution to enhance their blasting capabilities.

SOLUTION: BlastOne proposed an innovative solution, an Outdoor Hoop Structure Blast Room. This structure, measuring 50'W x 80'L and set atop four shipping containers, provided a portable and weather-resistant environment for blasting operations. With a center clearance of 21 ft and equipped with fast rubber roll-up doors, the dome allowed for year-round blasting regardless of weather conditions.

RESULTS: The introduction of the Outdoor Hoop Structure Blast Room boosted profitability and workflow, allowing year-round blasting operations. Overcoming weather challenges and improving dust containment, the client established themselves as a top industrial painting contractor in Minnesota, ready for sustained success and expansion.

STEEL FABRICATION | **Blast and Paint**

COMPANY: J. Oskam Steel Fabricators

LOCATED: Port Colborne, Ontario

OBJECTIVE: Enhance in-house blast and paint fabrication processes to improve production efficiency and project quality, reducing subcontracting dependence.

SOLUTION: BlastOne recommended expanding the booth sizes from 15'W x 40'L to 20'W x 40'L, implementing a monorail system for equipment transport, switching from silica to garnet abrasive to enhance product quality, reduce production time, and lower project costs, and improving visibility with a new lighting system.

RESULTS: Our work with J. Oskam resulted in 50% labor reduction, 3X decrease in production times and overall improved product quality.

COMMENTS: *"... most importantly, my customers have noticed the difference as well. We have been able to deliver better more consistent finished product quality, complete the production and delivery much faster, and reduce the price that we charge. We have never been more competitive, and my customers have never been happier," said Terry Desrochers, Estimating Department Head*

PROJECT HIGHLIGHTS AND **CASE STUDIES**

STEEL FABRICATION | **Blast**

COMPANY: Jet Specialty

LOCATED: Corpus Christi, Texas

OBJECTIVE: To address production limitations caused by increased sales and eliminate bottlenecks in the blast room, while incorporating the existing blasting and painting facility, and ensuring the new facility is low maintenance and high productivity.

SOLUTION: BlastOne offered a solution with a 12'W x 20'L x 10'H pre-engineered blast room and efficient full-floor recycling equipment that can handle both GL40 steel grit and garnet abrasives, providing flexibility for various

RESULTS: The installation was finished in under a week, minimizing disruptions to production. The client has overcome blasting bottlenecks and equipment breakdowns that previously halted production.

COMMENTS: *"I would like to take a moment and compliment the install crew on an excellent and professional installation. It has been a pleasure working with him and his crew; he deserves a pat on the back for a job well done."*

STEEL FABRICATION | **Blast and Paint**

COMPANY: Steffes

LOCATED: Dickinson, North Dakota

OBJECTIVE: To bring abrasive blasting and painting operations in-house at Steffes, enabling greater control over the production schedule and driving increased profitability by eliminating subcontracting for these processes.

SOLUTION: With very limited space available, BlastOne designed and installed a blast room, paint booth, paint kitchen, and abrasive vacuuming system.

RESULTS: Steffes' blasting and painting operations have successfully migrated in-house. Nearly all manufactured materials are finished onsite, lowering project costs and increasing competitive advantages.

MAKING YOUR PRODUCTION FASTER, SAFER & CLEANER.

STEEL FABRICATION | **Paint**

COMPANY: Northwest Pipe

LOCATED: Washington, West Virginia

OBJECTIVE: Northwest Pipe Company sought to tackle overspray challenges during polyurethane application while seamlessly integrating with their existing conveyor system. Their goal was to maintain a safe and efficient working environment, adhering to their commitment to quality and innovation in the fabrication of steel pipes for fresh water applications.

SOLUTION: BlastOne provided a custom paint booth solution measuring 18'W x 10'L x 15'H, equipped with a Make-Up Air Unit. This solution was meticulously designed to fit over the existing inline conveyor system, ensuring effective containment of overspray and ventilation for VOC mitigation.

RESULTS: Seamless integration over the conveyor system ensured safer working conditions, prevented infrastructure buildup, and managed VOCs effectively, enhancing environmental sustainability and regulatory compliance.

STEEL FABRICATION | **Blast and Paint**

COMPANY: Advanced Surface Finishing

LOCATED: Westbury, NY

OBJECTIVE: With limited space and a shoestring budget, Advanced Surface reached out for a customized solution. Our client wanted to migrate its sandblasting operations in-house. This would reduce costs and lead times, while providing better service availability.

SOLUTION: A custom solution was implemented by constructing a booth using two 40 ft shipping containers, which were welded together. BlastOne equipped the booth with an abrasive recovery system and dust collection equipment, resulting in a custom abrasive blast room with a built-in abrasive recovery system. Additionally, the booth featured a unique paint cure mode suitable for applying automotive finishes.

RESULTS: Advanced Surface now has in house blasting operations. No longer reliant on subcontractor work, its finishing operations are quicker and significantly more profitable than they have ever been.

TECHNICAL REFERENCE

Guidelines for abrasive blasting and spray painting include daily maintenance checklists, safety protocols, cost comparisons, and technical tips to improve efficiency. Covering equipment upkeep, safety measures, and factors affecting blasting performance, these insights help enhance productivity and maintain safety during surface preparation and coating.

SURFACE PREPARATION
GRADES OF BLAST CLEANED STEEL

Assessment of degree of removal of rust, mill scale and other visual contaminants (inspected without magnification).

Important Note: Surface cleanliness is not a measure of surface profile – **see the following pages for notes on surface profile.**

Explanatory Details

Rust Grade A
Steel with the millscale layer intact and very minor, or no rusting.

Rust Grade B
Steel with spreading surface rust, and the millscale commenced flaking.

Rust Grade C
Rusty Steel with the millscale layer flaked and loose, or lost, but only minor occurrence of pitting.

Rust Grade D
Very rusty steel with the millscale layer all rusted and extensive occurrence of pitting.

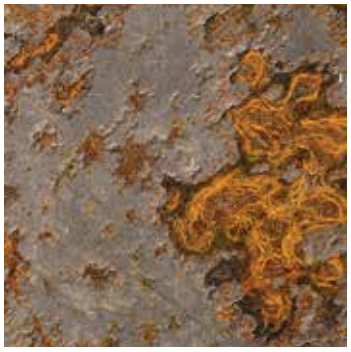
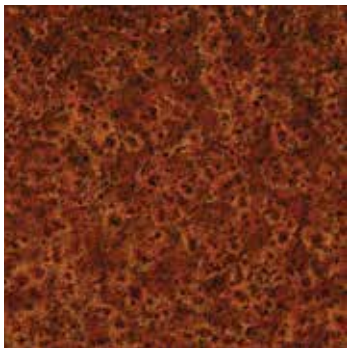
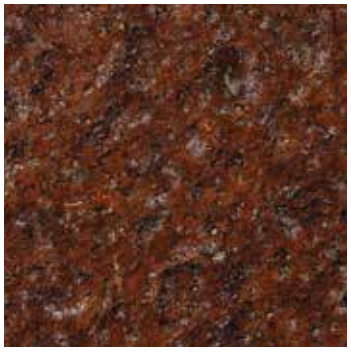
Blast Class 1 (SP-7/N4)
Very light, whip over blast clean with removal of loose surface contaminants.

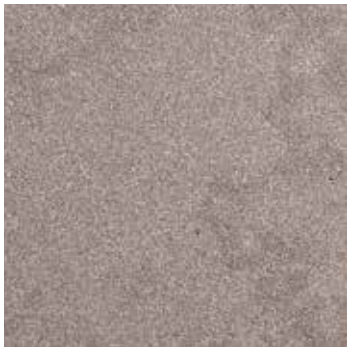
Blast Class 2 (SP-6/N3)
Substantial blast clean with wide spread, visible contaminant removal and base metal color appearing.

Blast Class 2 ½ (SP-10/N2)
Intense blast clean leaving shaded grey metal with only tiny, isolated flecks or strips of visible contaminants.

Blast Class 3 (SP-5/N1)
Complete blast clean with consistent, metal color all over and no visible contaminants.

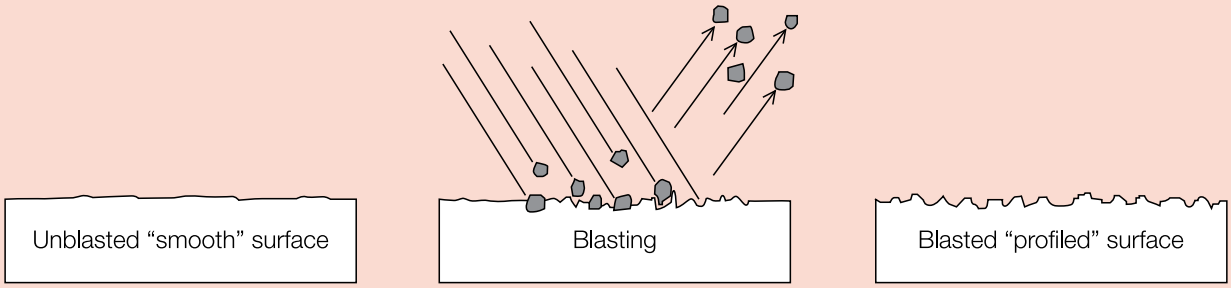
NOTE: All blasting preparation grades must be free of oil, grease and dirt.

	UNBLASTED	Comparable guide to BRUSH-OFF SSPC-SP7 (NACE No 4 / SA 1)
RUST GRADE A		This condition cannot normally be attained when removing adherent mill scale
RUST GRADE B		
RUST GRADE C		
RUST GRADE D		

Comparable guide to COMMERCIAL SSPC-SP6 (NACE No 3 / SA 2)	Comparable guide to NEAR-WHITE METAL SSPC-SP10 (NACE No 2 / SA 2½)	Comparable guide to WHITE METAL SSPC-SP5 (NACE No 1 / SA 3)	
			RUST GRADE A
			RUST GRADE B
			RUST GRADE C
			RUST GRADE D

Surface Profile – A Critical Element of Surface Preparation

Understanding Surface Profile



In the blast cleaning process, grains of abrasive are propelled with great force and energy at the work surface. Upon impact, the grains ‘dig’ into and then rebound out off the surface leaving a rugged, miniature ‘mountain – and – valley’ finish.

This surface roughness/etch/texture is the surface profile.

Surface profile is critical to coating performance by:

1) increasing the surface area

2) providing a ‘key/tooth/anchor pattern’ for the coating to lock and adhere to.

The difference between Surface Profile and Class of Blast

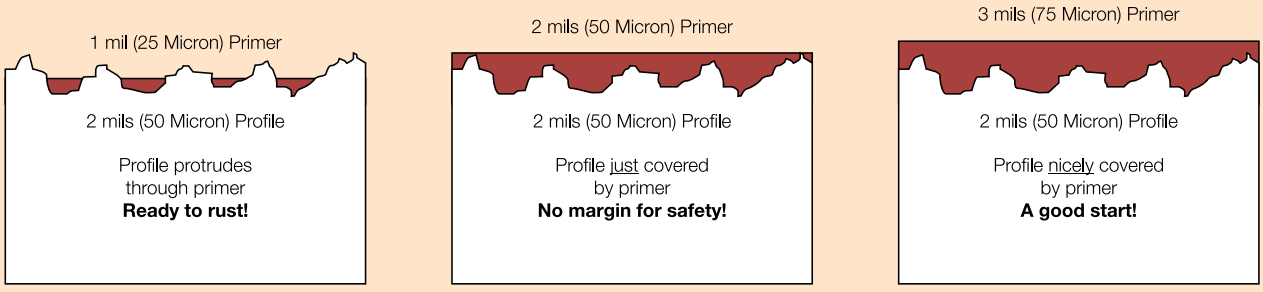
Surface profile is concerned with the ‘shape’ of the surface finish (and measuring the size of the ‘shape’ created) whereas Class of Blast is concerned with ‘cleanliness’ of the surface finish. (Putting it another way – Class of Blast is determining to what degree the rust, paint and other contaminants have been removed).

Both the Profile and the Class of Blast are important features of the surface finish and need to be separately specified in preparing a blast cleaned steel surface.

The pitfalls of Surface Profile

Excess Profile – While an absence of profile can be detrimental to coating adhesion, it can be equally disastrous to have an excessive profile height causing premature rusting and coating failure. In addition more profile means using more paint to cover the surface!

Consider these cases...



Rule of Thumb #1: Profile height should not exceed the primer coat DFT (Dry Film Thickness).

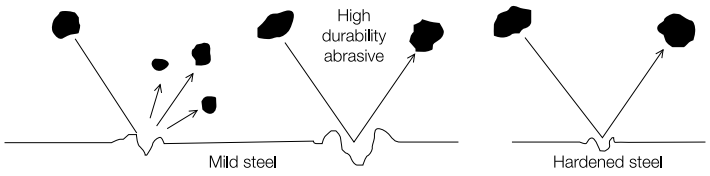
Rule of Thumb #2: Profile height should not exceed ⅓ the total coating system DFT.

Embedment – Embedment of abrasive particles in the surface is a threat posed by friable, irregular shape abrasives. The embedded particle or fragment can stand out as a ‘rogue’ peak above the surrounding profile and may protrude through the applied coating.

Surface Profile – A Critical Element of Surface Preparation

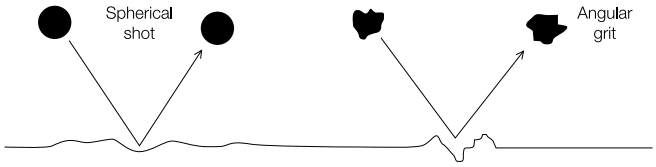
Factors which have an Effect on Surface Profile

Abrasive Durability – Surface Hardness e.g. Bicarb media vs Alox, Mild Steel vs Hardened Steel



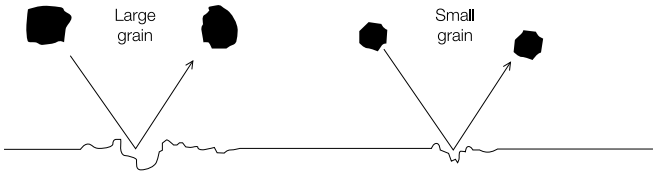
Variable		Effect
More durable abrasive	=	Deeper profile
Less durable abrasive	=	Shallower profile
Hardened steel	=	Shallower profile
Mild steel	=	Deeper profile

Abrasive Shape e.g. Steel Shot vs Steel Grit



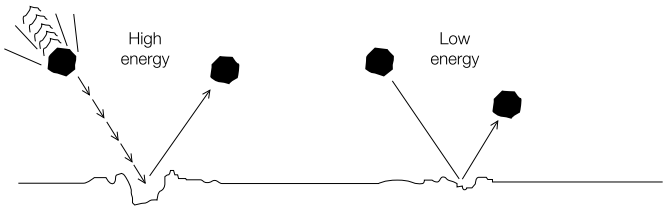
Variable		Effect
Round abrasive	=	Dimpled, peened profile
Angular abrasive	=	Sharper, rugged profile

Abrasive Size e.g. #20/40 Garnet vs 80# Garnet



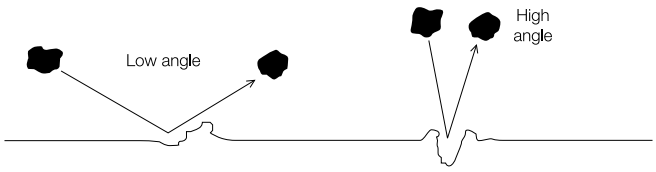
Variable		Effect
Larger abrasive	=	Deeper profile
Smaller abrasive	=	Shallower profile
See charts on next page for further details		

Impact Energy e.g. Nozzle pressure (abrasive velocity), nozzle wear, nozzle standoff distance, dwell time



Variable		Effect
Greater energy	=	Deeper profile
Lesser energy	=	Shallower profile
See charts on next page for further details		

Impact Angle e.g. Straight on blasting vs side reach blasting



Variable		Effect
Low angle	=	More scuffed profile
High angle	=	More peak 'n' valley even profile

Embedment e.g. Slag vs Garnet

Variable		Effect
Large friable irregular grains	=	Higher risk of embedment
Smaller durable regular grains	=	Lower risk of embedment

Abrasive Blasting Technical Data

Air Consumption (CFM) per Blast Nozzle Using Garnet Abrasive

Nozzle Size		Nozzle Pressure										
		50 psi	60 psi	70 psi	80 psi	90 psi	100 psi	110 psi	120 psi*	130 psi*	140 psi*	150 psi*
No. 2	1/8"	14	17	19	21	24	26	28	30	32	34	37
No. 3	3/16"	32	37	42	47	52	57	62	67	72	77	83
No. 4	1/4"	57	66	75	84	93	103	111	119	127	136	185
No. 5	5/16"	89	103	117	131	145	158	172	186	200	214	229
No. 6	3/8"	129	149	169	189	209	229	249	269	289	309	330
No. 7	7/16"	176	203	230	258	285	312	339	367	394	422	451
No. 8	1/2"	229	265	300	336	371	407	442	478	513	549	586
No. 10	5/8"	356	412	468	524	580	632	688	744	800	856	914
No. 12	3/4"	516	596	676	756	836	916	996	1076	1156	1236	1318
EFFICIENCY		47%	55%	64%	74%	86%	100%	115%	130%	145%	165%	175%

** Ensure equipment is rated for these pressures.*

Nozzle Pressure vs Efficiency

Blast Nozzle Pressure	Approximate Abrasive Velocity	Approximate Efficiency Factor
100 psi	675 kph (422 mph)	100%
95 psi	640 kph (400 mph)	93%
90 psi	585 kph (366 mph)	86%
85 psi	530 kph (331 mph)	80%
80 psi	495 kph (309 mph)	74%
75 psi	450 kph (281 mph)	69%
70 psi	420 kph (263 mph)	64%

Hose Selection Guide for Blasting at 100 psi Nozzle Pressure

Nozzle Number	No. 4	No. 5	No. 6	No. 7	No. 8
Nozzle Size	1/4" (6 mm)	5/16" (8 mm)	3/8" (10 mm)	7/16" (11 mm)	1/2" (13 mm)
CFM at 100 psi	103	158	229	312	407
Air Hose ID – minimum	25 mm (1")	38 mm (1 1/2")	38 mm (1 1/2")	50 mm (2")	50 mm (2")
Blast Hose ID – minimum	20 mm (3/4")	25 mm (1")	32 mm (1 1/4")	32 mm (1 1/4")	38 mm (1 1/2")

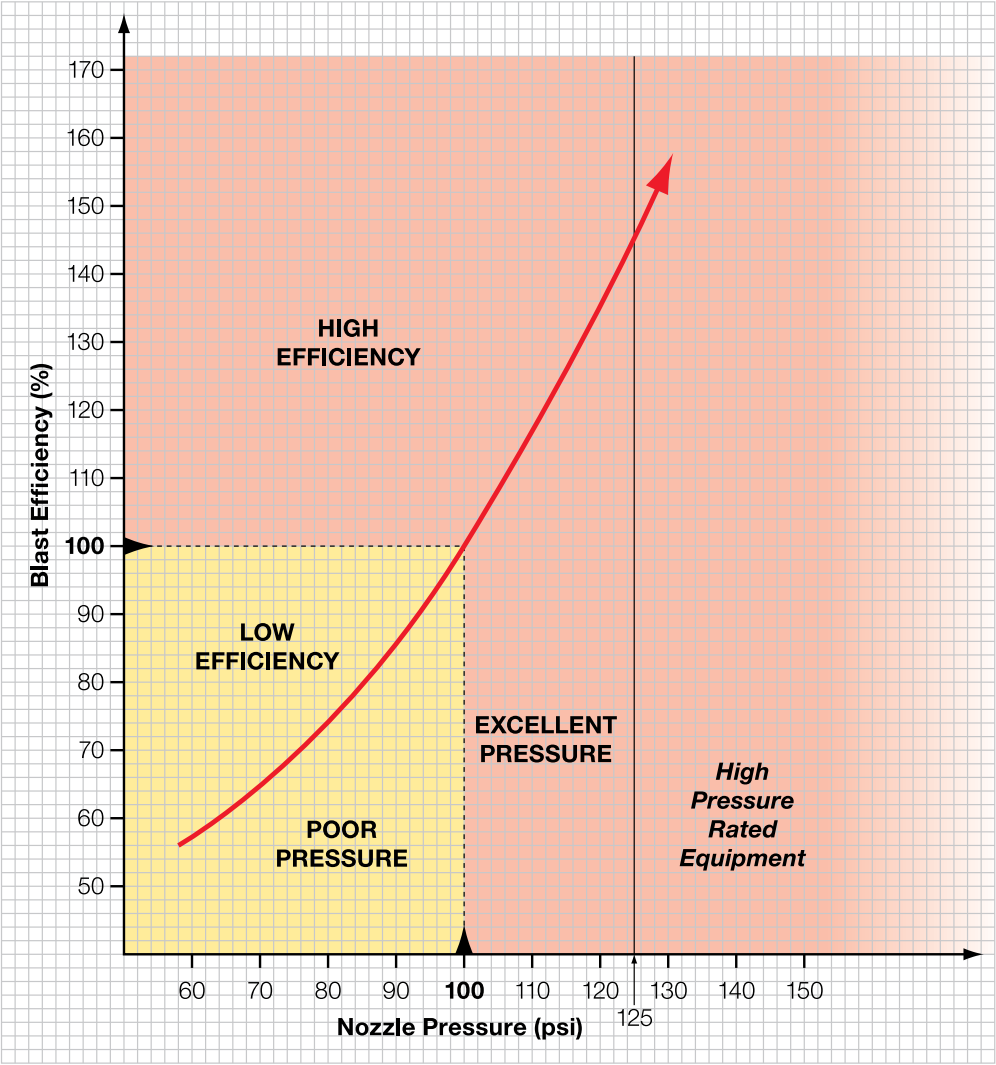
Typical ID – OD Relationship in Common Blast Hose

Standard Hose				Supa/Whip Hose			
ID		OD		ID		OD	
mm	inch	mm	inch	mm	inch	mm	inch
13	1/2"	33	1 5/16"	13	1/2"	30	1 3/16"
19	3/4"	40	1 1/2"	19	3/4"	33	1 5/16"
25	1	48	1 7/8"	25	1	40	1 1/2"
32	1 1/4"	55	1 5/32"	32	1 1/4"	48	1 7/8"
38	1 1/2"	60	2 3/8"	38	1 1/2"	55	2 5/32"

English USA Units/Metric Conversion Chart

3/16"	5 mm	1 1/4"	32 mm
1/4"	6 mm	1 5/16"	33 mm
5/16"	8 mm	1-1/2"	38 mm
3/8"	10 mm	1 9/16"	40 mm
7/16"	11 mm	1 3/4"	44 mm
1/2"	13 mm	1 7/8"	48 mm
5/8"	16 mm	2"	51 mm
3/4"	19 mm	2 5/32"	55 mm
1"	25 mm	2 3/8"	60 mm
1 3/16"	30 mm	2 1/2"	64 mm

Nozzle Pressure vs Blasting Efficiency



The Golden Rule of Thumb: Every 1 psi below 100 psi pressure at the nozzle equates to a 1.5% LOSS of blasting efficiency*

Nozzle Pressure			% Increase
94 psi	to	100 psi	9.4%
90 psi	to	100 psi	16%
80 psi	to	100 psi	35%
70 psi	to	100 psi	57%

* Approximate calculated efficiency – actual efficiency realized will vary, depending on abrasive type, abrasive size, nozzle size, nozzle type, nozzle wear, hose size, hose wear, moisture content of compressed air, temperature of the compressed air, etc...

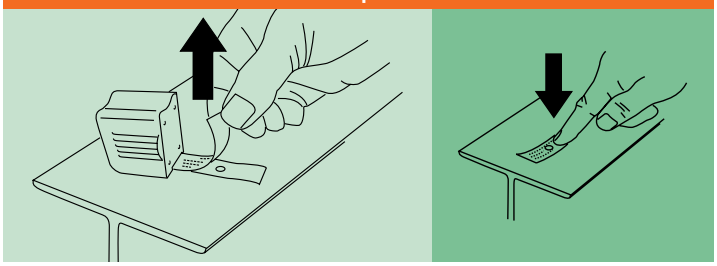
Did you know?

Increasing your nozzle pressure to 100 psi will boost your efficiency substantially!

Measuring Surface Profile

Using the Replica Tape Method to measure average maximum peak-to-valley profile height (Rz)

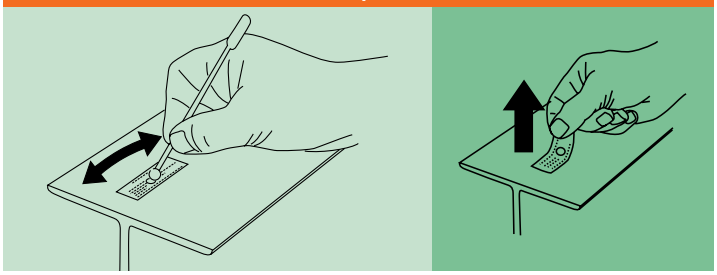
Step 1



Test Preparation

- Select a representative test site free of dust, dirt and pitting.
- Choose the appropriate grade of Testex tape – refer to Inspection Instruments **(page 321)** for details of the various scale measurement ranges.
- Peel a test tape strip from the roll – a 'bull's-eye' marker dot will remain on the slip paper.
- Apply the tape to the test surface – rub over the tape with a finger to ensure it is firmly adhered.

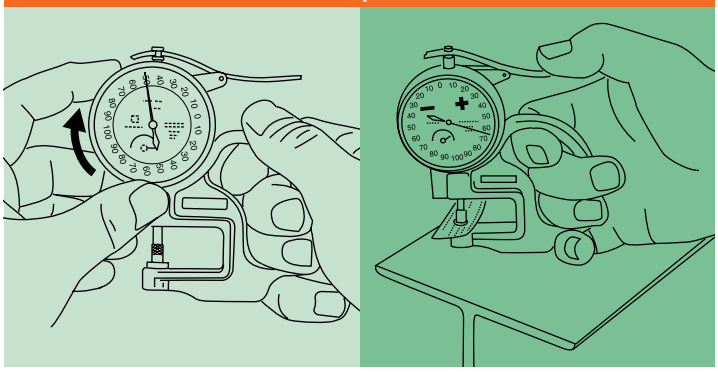
Step 2



Perform the Test

- Using moderate to firm pressure, rub the test window with the round-tip burnishing tool **– refer page 321.**
- Take care not to dislodge the test tape (caused by bumping the tool against the edge of the circular cutout window).
- Burnish the test window until it has uniformly darkened – the color indicates the profile has been impressed into the test tape.
- Peel the test tape strip from the surface.

Step 3



Measuring the Test Result

- Use a dial thickness gage with the correct specifications (i.e. accuracy, anvil spring pressure and anvil size) for replica tape – refer to Inspection Instruments, **page 321.**
- Clean the anvils and check/adjust the zero point.
- After cleaning and checking the gage zero point, adjust the dial to minus 2 mils (50 microns) (this compensates for the thickness of the tape carrier film and allows the profile measurement to be read directly from the gage).
- Centre the test tape between the anvils, gently allow the anvils to close on the tape, and note the reading on the dial.
- Take several readings to establish accuracy. (Reposition the tape in the anvils between each reading).

Sources of Error

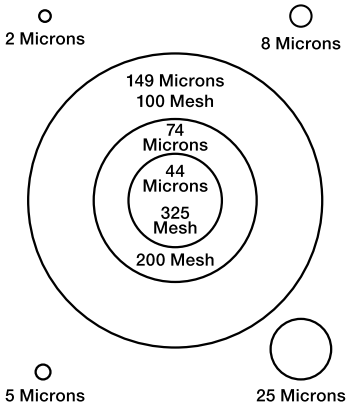
There are four major sources of error in determining the profile of a blast cleaned surface, which can be minimized with the following suggestions.

1. Inherent Profile Variation in the surface – perform at least 3 tests per 100 square feet (10 square metres) of area.
2. Contaminant particles in the anvils or tape – select a clean surface; clean and check the anvils; examine the test tape; double check any questionable readings. To indicate the size significance of seemingly tiny contaminants, please note that human hair is approx. 2 mils (50 microns) thick.
3. Improper Gage – a good gage has an accuracy of ±0.2 mils (±5 microns), closing force of 1.5N and at least one anvil 0.25" (6.3mm) diameter.
4. Deficient Impressing Technique – use a profile training tool to verify the burnishing technique is correct. **See page 321.**

Coatings, Filtration and Viscosity Information

Relative Size of Micronic Particles

Magnification: 50 Times



Relative Sizes

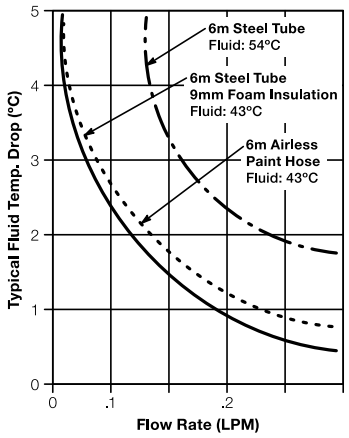
Lower Limit of Visibility (Naked Eye).....40 Microns
Lead Dust .....0.5 Microns
Asbestos Fibers.....0.2 Microns

Mesh	Micron	Opening Inches
10	1480	.075
20	750	.035
30	500	.022
60	238	.010
80	175	.007
100	149	.006
140	100	.004
200	74	.0029
250	60	.0024

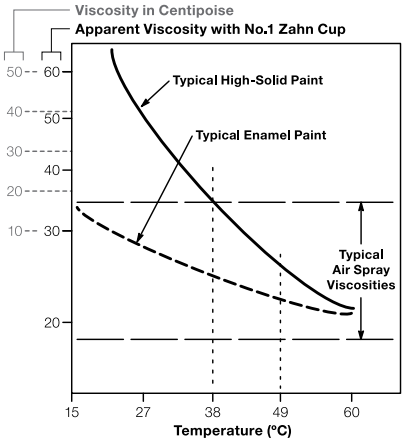
Paint Viscosity and Heater Performance

Typical Temperature Drop in Lines

Chart based on 21°C Ambient Temperature



Effect of Temperature on Viscosity



Typical Pressure Fed Air Spray Gun Flow Rates

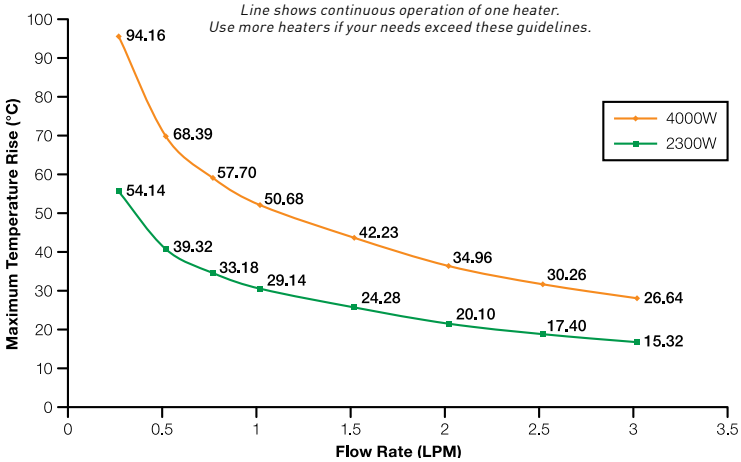
Orifice Size in. (mm)	Viscosity	Material Usage oz/min (l/min)
0.030 (0.762)	Light	4-12 (0.12-0.36)
0.042 (1.067)	Light-Medium	8-20 (0.24-0.60)
0.055 (1.397)	Medium	16-30 (0.48-0.90)
0.070 (1.778)	Medium-Heavy	16-35 (0.48-1.05)
0.086 (2.184)	Heavy	16-40 (0.48-1.20)
0.110 (2.790)	Heavy	16-45 (0.48-1.35)

For more information on Spray Guns and how to order, refer to page 351.

Maximum Temperature Rise vs Flow Rate

4000W Viscon HP Heater – Test Fluid: 10W Hydraulic Oil
2300W Viscon HP Heater – Test Fluid: 10W Hydraulic Oil

Line shows continuous operation of one heater.
Use more heaters if your needs exceed these guidelines.



Hepa/Merv Filter Chart

Your filters MERV Rating is a good way to help judge the effectiveness of the filter. MERV means Minimum Efficiency Reporting Value which was developed by the American Society of Heating, Refrigeration and Air Conditioner Engineers - ASHRAE. MERV values vary from 1 to 16. The higher the MERV value is the value the more efficient the filter will be in trapping airborne particles. Another consideration is air flow through the your HVAC system. Leaving a dirty air filter in place or using a filter that is too restrictive may result in low air flow and possibly cause the system to malfunction.

ASHRAE recommends MERV 6 or higher. US Department of Energy recommends MERV 13 LEED recommends MERV 8 at a minimum

See the chart below for filter MERV descriptions:

Standard 52.5 Minimum Efficiency Reporting Value	Dust Spot Efficiency	Arrestance	Typical Controlled Contaminant	Typical Applications and Limitations	Typical Air Filter/Cleaner Type
20 19 18 17	n/a n/a n/a n/a	n/a n/a n/a n/a	< 0.30 pm particle size Virus (unattached) Carbon Dust All Combustion smoke	Cleanrooms Radioactive Materials Pharmaceutical Man. Carcinogenetic Materials	>99.999% eff. On .10-.20 pm Particles" Particles Particulates >99.97% eff. On .30 pm Particles"
16 15 14 13	n/a >95% 90-95% 89-90%	n/a n/a >98% >98%	.30-1.0 pm Particle Size All Bacteria Most Tobacco Smoke Proplet Nuceli (Sneeze)	General Surgery Hospital Inpatient Care Smoking Lounges Superior Commercial Buildings	**Bag Filter**- Nonsupported microfine fiberglass or synthetic media, 12-36 in. deep, 6-12 pockets" **Box Filter**- Rigid Style Cartridge Filters 6 to 12" deep m ay use lofted or paper media.
12 11 10 9	70-75% 60-65% 50-55% 40-45%	>95% >95% >95% >90%	1.0-3.0 pm Particle Size Legionella Humidifier Dust Lead Dust Milled Flour Auto Emissions Welding Fumes	Superior Residential Better Commercial Buildings Hospital Laboratories	**Bag Filter**- Nonsupported microfine fiberglass orsynthetic media, 12-36 in. deep, 6- 12 pockets **Box Filter**- Rigid Style Cartridge Filters 6 to 12" deep m ay use lofted or paper media.
8 7 6 5	30-35% 25-30% <20% <20%	>90% >90% 85-90% 80-85%	3.0-10.0 pm Particle Size Mold Spores Hair Spray Fabric Protector Dusting Aids Cement Dust Pudding Mix	Commercial Buildings Better Residential Industrial Workplace Paint Booth Inlet	**Pleated Filters**- Disposable, extended surface area, thick with cotton-polyester blend media, cardboard frame **Cartridge Filters**- Graded density viscous coated cube or pocket filters, synthetic media **Throwaway**- Disposable synthetic panel filter
4 3 2 1	<20% <20% <20% <20%	75-80% 70-75% 65-70% <65%	>10.0 pm Particle Size Pollen Dust Mites Sanding Dust Spray Paint Dust Textile Fibers Carpet Fibers	Minimal Filtration Residential Window A/C Units	**Throwaway**- Disposable fiberglass or synthetic panel filter. **Washable**- Aluminum Mesh **Electrostatic**- Self charging woven panel filter

Dust Collector Ventilation Guide

Recommended Ventilation for Various Sized Tanks

Size of Tank	Volume in Cubic Feet	Cubic Feet of Solvent Vapor to Make 1% by Volume	Gallons of Coating Used to Make 1% by Volume of Solvent Vapor in Air	Air Changes per Hour Needed to Keep Solvent to 1% by Volume	Gallons of coating Sprayed in One Hour	Minutes Required to Change Air to Keep Solvent to 1% by Volume1	Recommended Suction Fan to Keep the Air Far Below Any Explosive Limit (Cubic Feet per Minute)	Recommended Changes of Air to Keep Solvent Fumes Far Below Explosive Limit
5,000 gals	668	6.7	0.26	19.30	5	3	1,000	40 seconds
10,000 gals	1,336	13.4	0.52	9.60	5	6	2,000	40 seconds
25,000 gals	3,342	33.4	1.30	3.80	10	8	2,000	1.7 seconds
50,000 gals	6,684	66.8	2.60	3.80	10	16	3,000	2.2 minutes
100,000 gals	13,378	133.6	5.20	1.90	10	31	5,000	2.7 minutes
250,000 gals	33,420	334.2	13.00	0.77	20	40	10,000	3.3 minutes
400,000 gals	53,500	535.0	20.80	0.48	20	62	10,000	5.4 minutes
13,500 bbls	75,800	758.0	29.40	0.34	50	35	25,000	3.0 minutes
27,000 bbls	151,600	1516.0	58.80	0.26	50	70	35,000	4.3 minutes
50,000 bbls	280,000	2800.0	108.30	0.14	50	130	50,000	5.6 minutes

1 This data is based on a specific coating. To obtain the gallons required of any coating to make 1% by volume of solvent vapor in air:

a. Multiply the percent solvents by volume by the cubic feet of solvent vapor per gallon. If there is more than one solvent, multiply the percentage of each by the cubic feet of vapor per gallon and add them. This will give the cubic feet of solvent vapor per gallon of coating.

b. Divide the cubic feet of solvent vapor to make 1% by volume by the cubic feet of solvent vapor per gallon of coating.

Cubic Feet of Solvent Vapor to Make 1% by Volume Cubic Feet of Solvent Vapor per Gallon of Coating.

This will give the gallons of coating required to make 1% by volume of solvent vapor in air.

Abrasive Size Conversion Chart

Chilled Iron Grit mm		Steel Grit mm		Steel Shot mm	
G02	<0.13				
G05	0.12-0.3	G120	0.125-0.3	S70	0.18-0.35
G07	0.18-0.42	G80	0.18-0.42	S110	0.3-0.5
G12	0.3-0.71	G50	0.3-0.71	S170	0.42-0.71
G17	0.42-0.85	G40	0.42-1.0	S230	0.6-0.85
G24	0.6-1.0	G25	0.7-1.2	S280	0.71-1.0
G34	0.85-1.2			S330	0.85-1.2
G39	1.0-1.4	G18	1.0-1.4	S390	1.0-1.4
G47	1.2-1.7	G16	1.2-1.7	S460	1.2-1.7
G55	1.4-2.0	G14	1.4-2.0	S550	1.4-2.0
G66	1.7-2.4	G12	1.7-2.4	S660	1.7-2.4
G80	2.0-2.8			S780	2.0-2.8
Glass Bead	**Micron**	**Garnet**	**Micron**		
A	850-600	20/40	850-250		
B	600-425	600/250	600-250		
C	425-250	Premium	600-200		
AB	300-180	Speedblast	500-150		
AC	250-125	Newsteel	300-150		
AD	212-106				
AE	150-90				
AH	90-45				
INDA					

Climatic Conditions for Safe Painting

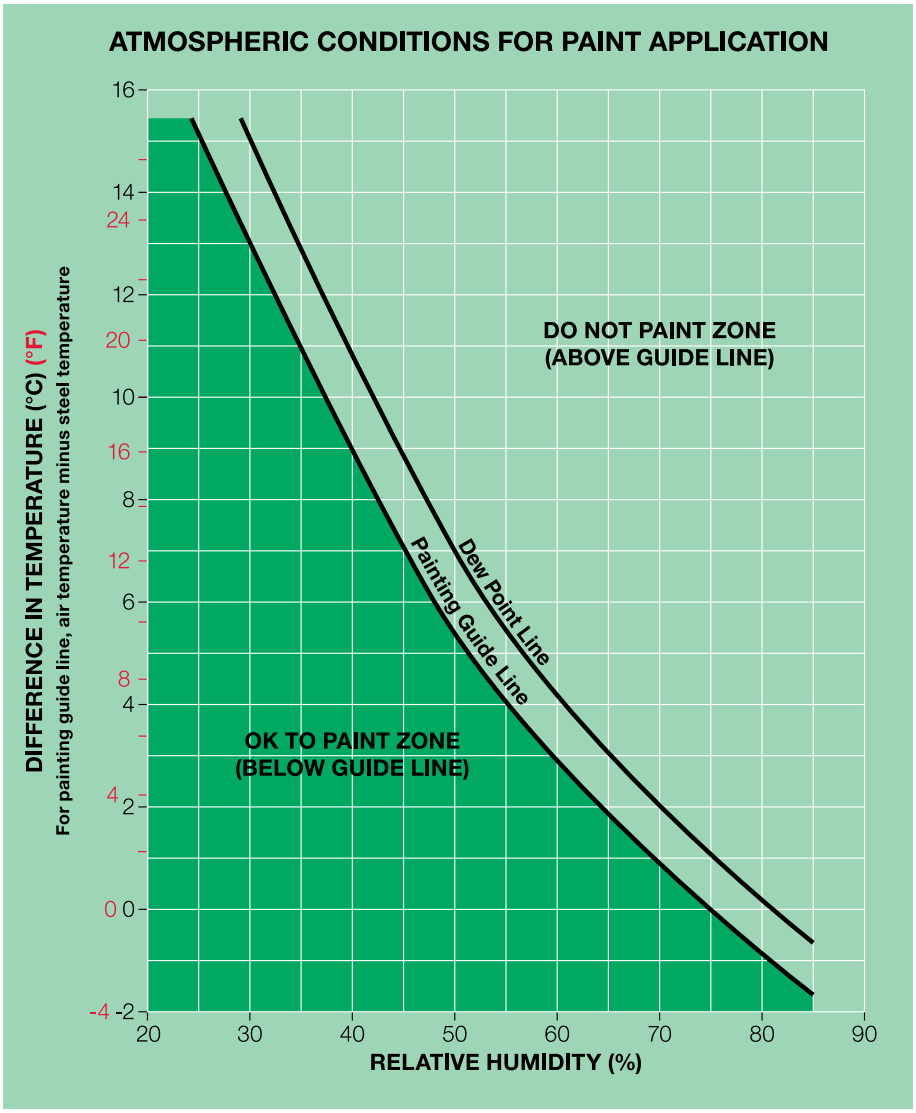
It is critical to the success of most coating systems, that the surface is completely free of moisture prior to and during paint application and curing.

Dewpoint

Condensation of water (dew) from the atmosphere on to the surface will occur, given the right conditions.

For a given set of conditions, the temperature at which condensation will occur is called the Dewpoint.

As long as the surface temperature is 3°C/5°F (or more) above the Dewpoint temperature, it is generally considered safe to paint as far as risk of condensation is concerned.



Instructions for use

1. Measure

- air temperature
- surface temperature
- relative humidity

Use the same instrument for reading the air and surface temperature, and with an accuracy of ±0.5°C (33°F).

2. Calculate

The temperature difference
i.e. air temperature minus surface temperature

3. Plot and intersect on the chart

the temperature difference
and the relative humidity

If the intersection point is
BELOW the guide line

- indicates conditions are safe to paint

ABOVE the guide line

- indicates UNSAFE conditions for painting

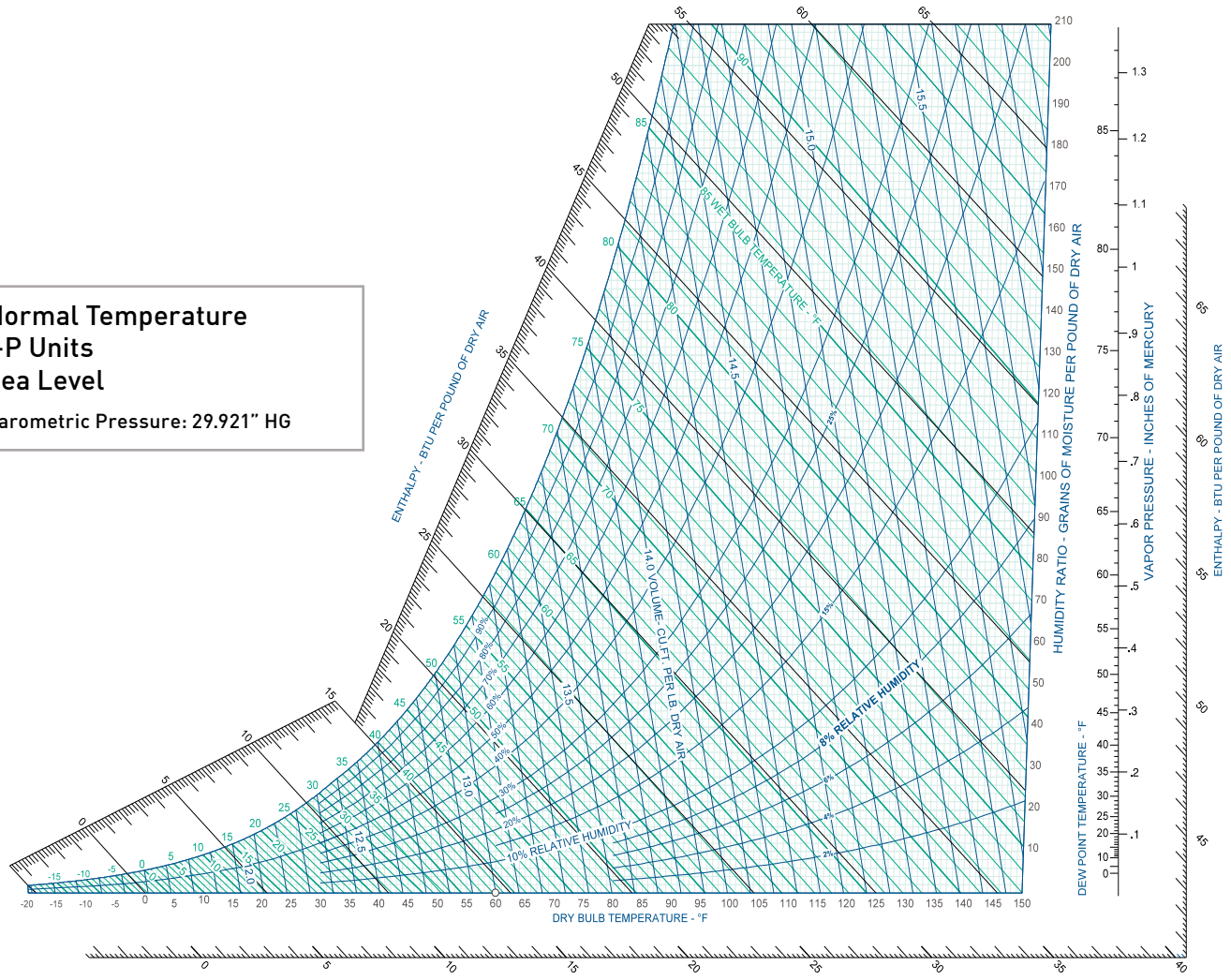
Psychrometric Chart

Dewpoint Scale: °F / °C to Grains per Pound

°F	°C	Grains/Pound	°F	°C	Grains/Pound	°F	°C	Grains/Pound	°F	°C	Grains/Pound	°F	°C	Grains/Pound
120	48.89	570.4	95	35.00	257.1	70	21.11	110.7	45	7.22	44.32	20	-6.67	15.06
119	48.33	552.8	94	34.44	248.9	69	20.56	107.0	44	6.67	42.64	19	-7.22	14.36
118	47.78	535.6	93	33.89	240.9	68	20.00	103.2	43	6.11	41.02	18	-7.78	13.67
117	47.22	519.0	92	33.33	233.1	67	19.44	99.88	42	5.55	39.47	17	-8.33	13.03
116	46.67	503.0	91	32.78	225.6	66	18.89	96.18	41	5.00	37.95	16	-8.89	12.40
115	46.11	487.3	90	32.22	218.3	65	18.33	92.82	40	4.44	36.49	15	-9.44	11.81
114	45.55	472.2	89	31.67	211.2	64	17.78	89.60	39	3.89	35.08	14	-10.00	11.24
113	45.00	457.5	88	31.11	204.3	63	17.22	86.45	38	3.33	33.73	13	-10.56	10.70
112	44.44	443.3	87	30.55	197.7	62	16.67	83.37	37	2.78	32.42	12	-11.11	10.18
111	43.89	429.4	86	30.00	191.2	61	16.11	80.43	36	2.22	31.15	11	-11.67	9.681
110	43.33	416.1	85	29.44	184.9	60	15.56	77.56	35	1.67	29.93	10	-12.22	9.205
109	42.78	403.1	84	28.89	178.8	59	15.00	74.83	34	1.11	28.75	9	-12.78	8.751
108	42.22	390.5	83	28.33	173.0	58	14.44	72.10	33	0.56	27.81	8	-13.33	8.323
107	41.66	378.3	82	27.78	167.2	57	13.89	69.54	32	0.00	26.52	7	-13.89	7.91
106	41.11	366.4	81	27.22	161.7	56	13.33	67.02	31	-0.56	25.32	6	-14.44	7.518
105	40.56	354.9	80	26.67	156.3	55	12.78	64.60	30	-1.11	24.19	5	-15.00	7.140
104	40.00	343.8	79	26.11	151.1	54	12.22	62.26	29	-1.67	23.08	4	-15.56	6.784
103	39.44	332.9	78	25.55	146.0	53	11.67	59.98	28	-2.22	22.03	3	-16.11	6.443
102	38.89	322.4	77	25.00	141.1	52	11.11	57.79	27	-2.78	21.02	2	-16.67	6.117
101	38.33	312.2	76	24.44	136.4	51	10.56	55.66	26	-3.33	20.06	1	-17.22	5.806
100	37.78	302.3	75	23.89	131.7	50	10.00	53.61	25	-3.89	19.13	0	-17.78	5.510
99	37.22	292.7	74	23.33	127.3	49	9.44	51.62	24	-4.44	18.24			
98	36.67	283.4	73	22.78	123.0	48	8.89	49.70	23	-5.00	17.40			
97	36.11	274.4	72	22.22	118.8	47	8.33	47.84	22	-5.56	16.58			
96	35.55	265.6	71	21.67	114.7	46	7.78	46.05	21	-6.11	15.81			

Normal Temperature
I-P Units
Sea Level

Barometric Pressure: 29.921" HG



Choosing the Right Tip

Choosing the right tip is extremely important for maximum productivity, because the tip determines the fluid flow and the size of the spray pattern — the fan size. Using the right tip results in maximum control and minimum overspray, which means faster work and less paint usage, **which ultimately means finishing the job quickly without wasting paint!**

To choose the right spray tip, you need to consider several factors, such as the material thickness, the sprayer's maximum flow rate and the best fan size for the job. Knowing when a tip is worn and why to replace it are also important.

So the next time you're selecting spray tips, consider these questions:

How thick is the material?

It's easy to determine which tip size to use when you know the type of material you'll be spraying. Lower viscosity (thinner) materials, such as stain or lacquer, require a spray tip with a smaller orifice or hole size. Heavier materials, like latex, require a tip with a larger orifice. Extremely heavy materials like elastomerics and blockfiller might require spray tips larger than .035.

What is the sprayer's maximum flow rate?

For optimum performance, the sprayer must have a maximum flow rate higher than the flow rate of the tip, so be sure the flow rate of the tip is less than the maximum flow rate of your sprayer. Why use a tip with a lower flow rate? Because as the tip wears, the orifice becomes larger, and the flow rate increases.

Tip flow rates are listed in the Tip Charts found on the following pages.

What is the best fan size for the job?

Fan size — the width of the spray pattern determines the area covered with each pass.

For a given tip orifice, a wider fan delivers a thinner coat, less defined spray pattern, more overspray and faster coverage on broad, open surfaces. A narrower fan delivers a thicker coat, more defined spray pattern, less overspray and better control when spraying small or confined surfaces.

To maximize productivity and lower labor costs, choose a tip with the right fan size. In general, a spray tip with a larger fan size increases production with less control, and a smaller fan size decreases production with more control.

Recommended Tip Sizes For Common Coatings

FILTER SCREEN	TYPICAL PRODUCTS	TYPICAL TIP SIZES (THOU)
#30	Hibuild epoxy high solids coatings	25 +
#60	General industrial coatings	17- 23
#100	Decorative industrial topcoats	11- 15
#200	Superfine finish topcoats	7 - 12

Make Sure Tip and Sprayer are Rated For Each Other

Suppose your sprayer has a flow rate of 0.38 gpm (1.4 Lpm), and you want to spray latex paint with a 0.017 in. (0.43 mm) tip.

The Tip Charts show that the 0.017 tip has a flow rate of 0.31 gpm (1.17 Lpm).

The Verdict? You can use the 0.017 tip, because it has a flow rate lower than the maximum flow rate of your sprayer.

Orifice Size Alone Determines Flow Rate of Tip

Tips 286415 and 286515 both have a 0.24 gpm (0.9 Lpm) flow rate but different fan sizes. Tip 286415 sprays an 8 in. (203 mm) fan with a thicker coat (more film build), and tip 286515 sprays a 10 in. (254 mm) fan with a thinner coat (less film build).

Do not try to increase the area covered with each pass by backing the gun away from the surface. From farther away, less paint will reach the surface and go to waste as overspray.

The Solution? Use a tip with a larger fan and orifice. Remember, if you use a tip with a larger fan but not a larger orifice, the film build will be less, and you'll have to move the gun slower.

Some Helpful Hints About Spray Tips

Tips on Tips

1. Use smaller orifice sizes to spray lower viscosity materials such as stains and lacquers. Use larger orifice sizes for heavier viscosity coatings such as latex or oil-based paints.
2. Spraying at the lowest possible pressure will greatly extend the service life of major pump components – and spray tips too!
3. Even though Graco Airless Spray Guns are built for long life, you can extend the life of your gun even more with a daily maintenance routine. At the end of each day, clean and oil your gun with a lightweight spray oil such as WD-40.

Expensive Decision

A contractor spraying with a worn tip uses, on average, 20% more paint and 20% more labor.

Consider this: assuming paint is $20/Gal. ($5.28/L) consumption is 5 Gal (19L) per hour, and labor is $36 per hour, the total cost is **$136 per hour**.

But if the contractor sprays with a worn tip?

Labor efficiency will decrease by 20% while paint consumption will increase to 6 Gal (22.7L) per hour, which will increase the **hourly cost to $163.20**.

The total cost increase will be $217.60 per 8-hour shift.

How Do You Determine if a Tip is Worn?

When a spray tip wears, the orifice gets bigger and rounder, which makes the fan pattern smaller.

When the fan has lost **25% of its original size**, it is time to replace the tip.

When a tip with a 12" (305 mm) fan wears down to a 9" (230 mm) fan, it outputs 30% more paint on 25% less area.

Continuing to spray with a worn tip produces the following results:

- Painting takes longer, more paint gets used,
- The finish may be uneven and have runs.

Replace Tips Often for Maximum Performance

Watch for runs or sags in the spray pattern as signs of a worn tip. Don't increase pressure to combat these problems.

You'll only waste paint and increase wear on the pump. Simply replace the worn tip. Worn-out tips also wear components in your equipment much faster. By spraying materials with correctly sized Graco tips and replacing tips when necessary, you'll maximize productivity, save paint and earn more profits.

Five Ways to Extend Tip Life:

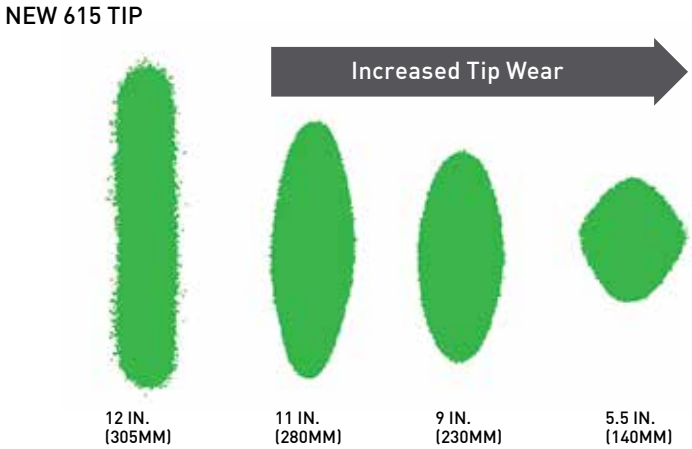
1. **Spray at the lowest pressure that atomizes the material.**
2. **Strain the material before you spray it.**
3. **Use the correct size filters.**
4. **Clean the filters after every use.**
5. **Clean the tip with a soft-bristled brush.**

Can You Afford the High Cost of Using a Worn Tip?

Choosing the right spray tip is essential for a quality finish no matter what material is being sprayed, but tips wear with normal use. It's impossible to say how long a tip will last, because there is a huge difference in abrasiveness from one coating to another.

For example, latex paints are usually more abrasive than lacquers or alkyd enamels. There's even a wide variation in the abrasiveness of latex paints from one manufacturer to another. And because paint is sprayed at different pressures, some tips will wear faster than others.

Abrasive material sprayed at too high a pressure or through too small a tip causes faster tip wear, which wastes time, paint and of course, money.



Paint Application Tables (English USA Units)

Corrected Volume Solids (to the nearest 1%) after adding thinner to various initial volume solids coatings

Formula

Corrected Volume Solids (CVS)

$$CVS = \frac{\text{Original Vol.Solids} \times 100}{(100 + \%\ \text{thinner added})}$$

Initial volume solids before thinning	Amount of Thinner Added per 5 Gallons										
	%	2.5%	3.125%	5%	6.25%	7.5%	10%	12.5%	18.75%	25%	27.5%
	qt	0.500	0.625	1.0	1.25	1.5	2.0	2.5	3.75	5	5.50
	US gallons			0.25	0.31	0.375	0.50	0.625	0.938	1.25	1.375
	100%	98	97	96-95	94	93	91	89	84	80	78
	95%	93	92	91-90	89	88	86	84	80	76	75
	90%	88	87	86	85	84	82	80	76	72	71
	85%	83	82	81	80	79	77	76	72	68	67
	80%	78	78	77-76	75	74	73	71	67	64	63
	75%	73	73	71	71	70	68	67	63	60	59
	70%	68	68	67	66	65	64	62	59	56	55
	65%	63	63	62	61	60	59	58	55	52	51
	60%	59	58	57	57	56	55	53	51	48	47
	55%	54	53	52	52	51	50	49	46	44	43
	50%	49	48	48	47	47	46	44	42	40	39
	45%	44	44	43	42	42	41	40	38	36	35
	40%	39	39	38	38	37	36	36	34	32	31
	35%	34	34	33	33	33	32	31	30	28	27
	30%	29	29	29	28	28	27	27	25	24	24
	25%	24	24	24	24	23	23	22	21	20	20

Application Wet Film Thickness (in mils)* to achieve required DFT for various volume solids coatings

Formula

Applied Wet Film Thickness (WFT)

$$WFT = \frac{\text{Dry Film Thickness (DFT)} \times 100}{\text{Corrected Volume Solids}}$$

Required DFT (Mils)	Volume Solids (%)													
		35	40	45	50	55	60	65	70	75	80	85	90	95
	1	2.9	2.5	2.2	2	1.8	1.7	1.5	1.4	1.3	1.3	1.2	1.1	1.1
	2	5.7	5	4.4	4	3.6	3.3	3.1	2.9	2.7	2.5	2.4	2.2	2.1
	3	8.6	7.5	6.7	6	5.5	5	4.6	4.3	4	3.8	3.5	3.3	3.2
	4	11.4	10	8.9	8	7.3	6.7	6.2	5.7	5.3	5	4.7	4.4	4.2
	5	14.3	12.5	11.1	10	9.1	8.3	7.7	7.1	6.7	6.3	5.9	5.6	5.3
	6	17.1	15	13.3	12	10.9	10	9.2	8.6	8	7.5	7.1	6.7	6.3
	7	20	17.5	15.6	14	12.7	11.7	10.8	10	9.3	8.8	8.2	7.8	7.4
	8	22.9	20	17.8	16	14.5	13.3	12.3	11.4	10.7	10	9.4	8.9	8.4
	9	25.7	22.5	20	18	16.4	15	13.8	12.9	12	11.3	10.6	10	9.5
	10	28.6	25	22.2	20	18.2	16.7	15.4	14.3	13.3	12.5	11.8	11.1	10.5

** Theoretically calculated figures and NOT applicable for zinc coatings*

Paint Application Tables (Metric Units)

Formula

Corrected Volume Solids (CVS)

$$CVS = \frac{\text{Original Vol.Solids} \times 100}{(100 + \%\ \text{thinner added})}$$

Corrected Volume Solids (to the nearest 1%) after adding thinner to various initial volume solids coatings

Initial volume solids before thinning	Amount of Thinner Added per 20 Liters										
	%	2.5%	3.125%	5%	6.25%	7.5%	10%	12.5%	18.75%	25%	27.5%
	mL	500	625	1000	1250	1500					
	liters			1	1.25	1.5	2	2.5	3.75	5	7.5
	100%	98	97	96-95	94	93	91	89	84	80	73
	95%	93	93	91-90	90	89-88	87	85	81	77	70
	90%	88	87	86	84	84	82	80	76	72	66
	85%	83	82	81	80	79	78	76	72	68	62
	80%	78	78	77-76	75	74	73	71	68	64	58
	75%	73	73	72	71	70	69-68	67	63	60	55
	70%	68	68	67	66	65	64	62	59	56	51
	65%	64	63	62	61	60	60-59	58	55	52	47
	60%	59	58	57	57	56-55	55	53	51	48	44
	55%	54	53	53-52	52	51	50	49	46	44	40
	50%	49	48	48	47	46	46	45	42	40	36
	45%	44	44	43	42	42	41	40	38	36	33
	40%	39	39	38	38	37	37-36	36	34	32	29
	35%	34	34	34	33	33	32	31	30	28	26
	30%	29	29	29	28	28	27	27	25	24	22
	25%	24	24	24	24	23	23	22	21	20	18

Formula

Applied Wet Film Thickness (WFT)

$$WFT = \frac{\text{Dry Film Thickness (DFT)} \times 100}{\text{Corrected Volume Solids}}$$

Application Wet Film Thickness (in microns)* to achieve required DFT for various volume solids coatings

Required DFT (microns)	Volume Solids (%)													
		35	40	45	50	55	60	65	70	75	80	85	90	95
	25	71	63	56	50	46	42	39	36	33	31	29	28	26
	50	143	125	111	100	91	83	77	71	67	63	59	56	53
	75	214	188	167	150	136	125	115	107	100	94	88	83	79
	100	286	250	222	200	182	167	154	143	133	125	118	111	105
	125	357	313	278	250	227	208	192	179	167	156	147	139	132
	150	429	375	333	300	273	250	231	214	200	188	177	167	158
	175	500	438	389	350	318	292	269	250	233	219	206	194	184
	200	571	500	444	400	364	333	308	286	267	250	235	222	211
	250	714	625	556	500	455	417	385	357	333	313	294	278	263
	300	857	750	667	600	546	500	462	429	400	375	353	333	316

** Theoretically calculated figures and NOT applicable for zinc coatings*

Paint Application Information (English USA Units)

Spreading Rate (ft²/gal)* achieving required DFT for various solids coatings

Formula

Theoretical Spreading Rate (SR)

$$SR = \frac{\text{Corrected Volume Solids (CVS)} \times 16}{\text{Dry Film Thickness (DFT)}}$$

Dry Film Thickness (mils) \ Volume Solids (%)	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
0.5	640	800	960	1120	1280	1440	1600	1760	1920	2080	2240	2400	2560	2720	2880	3040	3200
1.0	320	400	480	560	640	720	800	880	960	1040	1120	1200	1280	1360	1440	1520	1600
1.5	213	267	320	373	427	480	533	587	640	693	747	800	853	907	960	1013	1067
2.0	160	200	240	280	320	360	400	440	480	520	560	600	640	680	720	760	800
3.0	107	133	160	187	213	240	267	293	320	347	373	400	427	453	480	507	533
4.0	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400
5.0	64	80	96	112	128	144	160	176	192	208	224	240	256	272	288	304	320
6.0	53	67	80	93	107	120	133	147	160	173	187	200	213	227	240	253	267
7.0	46	57	69	80	91	103	114	126	137	149	160	171	183	194	206	217	229
8.0	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200
10.0	32	40	48	56	64	72	80	88	96	104	112	120	128	136	144	152	160
12.0	27	33	40	47	53	60	67	73	80	87	93	100	107	113	120	127	133
16.0	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
20.0	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	76	80

** Theoretically calculated figures may vary from practical spreading rates by as much as 50% or more.*

Paint Application Information (Metric Units)

Spreading Rate (m²/liter)* achieving required DFT for various solids coatings

Formula

Theoretical Spreading Rate (SR)

$$SR = \frac{\text{Corrected Volume Solids (CVS)} \times 10}{\text{Dry Film Thickness (DFT)}}$$

Dry Film Thickness (microns) \ Volume Solids (%)	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
20	10.0	12.5	15.0	17.5	20.0	22.5	25.0	27.5	30.0	32.5	35.0	37.5	40.0	42.5	45.0	47.5	50.0
25	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0	24.0	26.0	28.0	30.0	32.0	34.0	36.0	38.0	40.0
30	6.7	8.3	10.0	11.7	13.3	15.0	16.7	18.3	20.0	21.7	23.3	25.0	26.7	28.3	30.0	31.7	33.3
50	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0
75	2.7	3.3	4.0	4.7	5.3	6.0	6.7	7.3	8.0	8.7	9.3	10.0	10.7	11.3	12.0	12.7	13.3
100	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0
125	1.6	2.0	2.4	2.8	3.2	3.6	4.0	4.4	4.8	5.2	5.6	6.0	6.4	6.8	7.2	7.6	8.0
150	1.3	1.7	2.0	2.3	2.7	3.0	3.3	3.7	4.0	4.3	4.7	5.0	5.3	5.7	6.0	6.3	6.7
175	1.1	1.4	1.7	2.0	2.3	2.6	2.9	3.1	3.4	3.7	4.0	4.3	4.6	4.9	5.1	5.4	5.7
200	1.0	1.3	1.5	1.8	2.0	2.3	2.5	2.8	3.0	3.3	3.5	3.8	4.0	4.3	4.5	4.8	5.0
250	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4	3.6	3.8	4.0
300	0.7	0.8	1.0	1.2	1.3	1.5	1.7	1.8	2.0	2.2	2.3	2.5	2.7	2.8	3.0	3.2	3.3
400	0.5	0.6	0.8	0.9	1.0	1.1	1.3	1.4	1.5	1.6	1.8	1.9	2.0	2.1	2.3	2.4	2.5
500	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0

* Theoretically calculated figures may vary from practical spreading rates by as much as 50% or more.

Paint Application Information

Calculation of Test Voltage

For high voltage spark test Holiday Detectors

$$\text{Test Voltage (V)} = \frac{250 \times \sqrt{\text{Dry Film Thickness}^*}}{\text{Coating Factor (C)}}$$

Notes: Dry Film Thickness Value
- use the work specification thickness
- use the actual thickness if it is more than 25% above the work specification
- use DFT in Microns (Mils x 25.4).

Coating Factor		Coating Type
1	Ultra Hi-Builds	80%+ volume solids, e.g. Fusion bonded Epoxy, Solventless Epoxy Polyester - Vinyl Ester
2	Hi-Builds	60%-79% volume solids, e.g. Highbuild epoxy, Coal Tar Epoxy
3	Medium Builds	40%-59% volume solids, e.g. Medium epoxies
4	Low-Builds	15%-39% volume solids, e.g. Vinyl coating, Chlorinated Rubber

* in Microns

Airless Spray – Fluid Pressure Loss Calculation

For pressure loss through pipe or tube

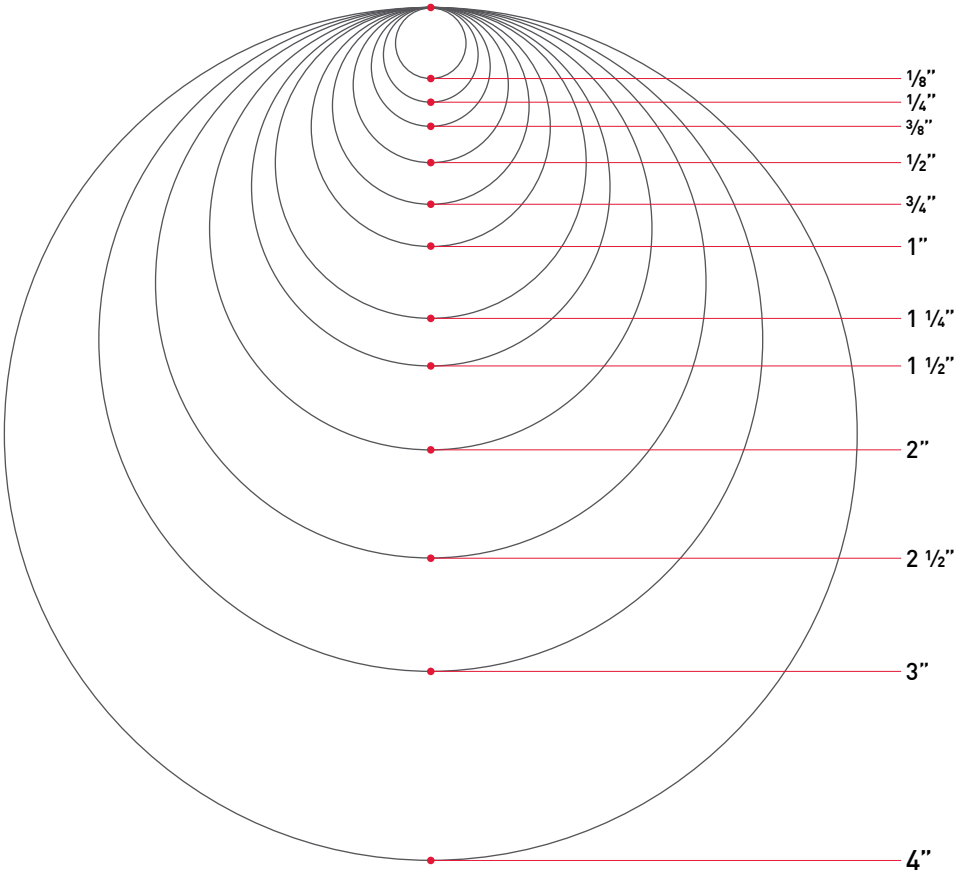
$$\text{Pressure Drop P (in psi)} = \frac{0.0273 \times Q \times V \times L}{D^4}$$

where.....
- Q = flow rate (in US gallons per minute)
- V = viscosity of fluid (in poise)
- L = length of pipe (in feet)
- D = internal pipe diameter (in inches)

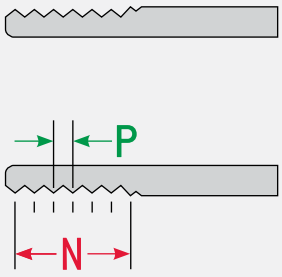
Threaded Fitting Sizes

Instructions for use

1. Place male fitting on the sizing circles and match the size.
2. The fitting size is printed outside and below the corresponding sizing circle.



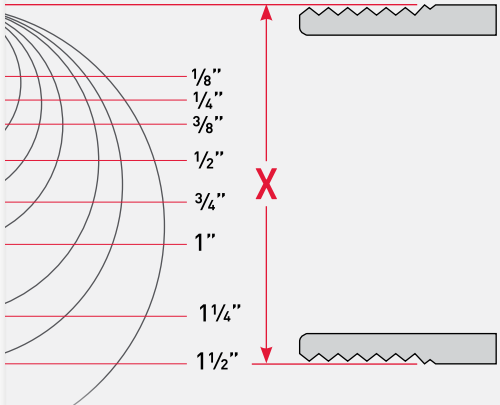
Thread Pitch Calculation



SIX WHOLE THREADS across the **'N' DISTANCE**

If there are SIX WHOLE THREADS within the N Distance and if N = ¾" then the calculation is 6 divided by ¾ which equals 8 TPI (TPI = Threads per Inch)

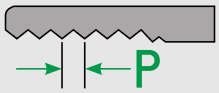
NB (Nominal Bore) Size Guide



Example: If the above fitting measurement at X is 1 7/8" (47.6mm), then the NB Size is 1 1/2" (38mm)

Figures highlighted on table

Threaded Fitting Sizes

Nominal Bore (NB) Pipe Size		Approx.Measurement of Outside Diameter of MALE THREAD 		Threads per Inch	Thread Pitch (Distance between each thread) 	
Imperial	Metric	Imperial	Metric	(TPI)	(inch)	(mm)
1/8" BSP	(6 mm)	(3/8")	9.5 mm	28	0.036	0.91
1/8" NPT	(6 mm)	(3/8")	9.5 mm	27	0.037	0.94
1/4" BSP	(8 mm)	(1/2")	12.7 mm	19	0.053	1.34
1/4" NPT	(8 mm)	(1/2")	12.7 mm	18	0.056	1.41
3/8" BSP	(10 mm)	(5/8")	15.9 mm	19	0.053	1.34
3/8" NPT	(10 mm)	(5/8")	15.9 mm	18	0.056	1.41
1/2" BSP	(13 mm)	(13/16")	20.7 mm	14	0.071	1.81
1/2" NPT	(13 mm)	(13/16")	20.7 mm	14	0.071	1.81
3/4" BSP	(20 mm)	(1 1/32")	26.2 mm	14	0.071	1.81
3/4" NPT	(20 mm)	(1 1/32")	26.2 mm	14	0.071	1.81
1" BSP	(25 mm)	(1 1/4")	31.8 mm	11	0.091	2.31
1" NPT	(25 mm)	(1 1/4")	31.8 mm	11 1/2	0.087	2.21
1 1/4" BSP	(32 mm)	(1 5/8")	41.3 mm	11	0.091	2.31
1 1/4" NPT	(32 mm)	(1 5/8")	41.3 mm	11 1/2	0.087	2.21
1 1/2" BSP	(38 mm)	(1 7/8")	47.6 mm	11	0.091	2.31
1 1/2" NPT	(38 mm)	(1 7/8")	47.6 mm	11 1/2	0.087	2.21
2" BSP	(50 mm)	(2 5/16")	58.7 mm	11	0.091	2.31
2" NPT	(50 mm)	(2 5/16")	58.7 mm	11 1/2	0.087	2.21
2 1/2" BSP	(65 mm)	(2 7/8")	73 mm	11	0.091	2.31
2 1/2" NPT	(65 mm)	(2 7/8")	73 mm	8	0.125	3.18
3" BSP	(80 mm)	(3 15/32")	88 mm	11	0.091	2.31
3" NPT	(80 mm)	(3 15/32")	88 mm	8	0.125	3.18
4" BSP	(100 mm)	(4 15/32")	113 mm	11	0.091	2.31
4" NPT	(100 mm)	(4 15/32")	113 mm	8	0.125	3.18
6" BSP	(150 mm)	(6 15/32")	163 mm	11	0.091	2.31
6" NPT	(150 mm)	(6 15/32")	163 mm	8	0.125	3.18

Compressed Air Pressure Loss in Air Hose

Hoseline Pressure Loss (psi)

Hose Inside Diameter	Hose Length	Free Air	Line Pressure (psig)						
(in)	(ft)	(cfm)	60	80	100	120	150	200	300
¾	50	60	3.1	2.4	2.0				
		80	5.3	4.2	3.5	2.9	2.4	1.8	1.2
		100	8.1	6.4	5.2	4.5	3.6	2.8	1.9
		120		9.0	7.4	6.3	5.1	3.9	2.7
		140		12.0	9.9	8.4	6.9	5.3	3.6
		160			12.7	10.8	8.9	6.8	4.6
		180				13.6	11.1	8.5	5.8
		200				16.6	13.5	10.4	7.1
		220					16.2	12.4	8.4
1	50	120	2.7	2.1					
		150	4.1	3.2	2.7	2.3			
		180	5.8	4.6	3.8	3.2	2.6	2.0	1.3
		210	7.7	6.1	4.0	4.3	3.5	2.7	1.8
		240		7.9	6.5	5.5	4.5	3.4	2.3
		270		9.8	8.1	6.9	5.6	4.3	2.9
		300		12.0	9.9	8.4	6.9	5.3	3.6
		330			11.8	10.0	8.2	6.3	4.3
		360			13.9	11.9	9.7	7.4	5.0
		390				13.8	11.3	8.7	5.9
		420				15.9	13.0	10.0	6.8
		450					14.8	11.4	7.7
1 ¼	50	200	2.4						
		250	3.7	2.9	2.4	2.0			
		300	5.2	4.1	3.4	2.9	2.3	1.8	1.2
		350	7.0	5.5	4.5	3.8	3.1	2.4	1.6
		400	8.9	7.0	5.8	4.9	4.0	3.1	2.1
		450		8.8	7.3	6.2	5.0	3.9	2.6
		500		10.8	8.9	7.6	6.2	4.7	3.2
		550			10.7	9.1	7.4	5.7	3.9
		600			12.6	10.7	8.7	5.7	4.6
		650			14.6	12.4	10.2	7.8	5.3
		700				14.3	11.7	9.0	6.1
		750					13.3	10.2	6.9
		800					15.0	11.5	7.8
1 ½	50	300	2.1						
		400	3.7	2.9	2.4	2.0			
		500	5.6	4.4	3.7	3.1	2.5	1.9	1.3
		600	8.0	6.3	5.2	4.4	3.6	2.8	1.9
		700		8.5	7.0	5.9	4.9	3.7	2.5
		800		10.9	9.0	7.7	6.3	4.8	3.2
		900			11.2	9.5	7.8	6.0	4.1
		1000			13.6	11.6	9.5	7.3	4.9
		1100				14.0	11.4	8.8	6.0
		1200					13.6	10.4	7.1
		1300					15.8	12.1	8.3
2	50	600	1.9						
		800	3.2	2.5	2.1				
		1000	5.0	3.9	3.2	2.7	2.2	1.7	1.1
		1200	7.0	5.5	4.5	3.8	3.1	2.4	1.6
		1400	9.3	7.4	6.1	5.2	4.2	3.2	2.2
		1600		9.6	7.9	6.7	5.5	4.2	2.8
		1800		12.1	9.9	8.4	6.9	5.3	3.6
		2000			12.2	10.4	8.5	6.5	4.4
		2200			14.6	12.5	10.2	7.8	5.3
		2400				14.7	12.0	9.2	6.3
		2600					14.1	10.8	7.3
		2800					16.2	12.4	8.5

Compressed Air Pressure Loss in Air Hose

Hoseline Pressure Loss (psi)

Inside Diameter	Hose Length	Free Air	Line Pressure (psig)						
(in)	(ft)	(cfm)	60	80	100	120	150	200	300
2 ½	50	1000	1.7	2.4	2.0				
		1500	3.7	2.9	2.4	2.0	2.4	1.8	1.2
		2000	6.5	5.1	4.2	3.6	2.9	2.2	1.5
		2500	10.0	7.9	6.5	5.5	4.5	3.4	2.3
		3000		11.2	9.3	7.9	6.4	4.9	3.3
		3500			12.4	10.6	8.7	6.6	4.5
		4000				13.7	11.2	8.6	5.8
		4500					14.0	10.7	7.3
3	50	2000	2.5	2.0					
		2500	3.9	3.0	2.5	2.1			
		3000	5.5	4.4	3.6	3.1	2.5	1.9	1.3
		3500	7.5	5.9	4.9	4.1	3.4	2.6	1.7
		4000	9.8	7.6	6.3	5.3	4.4	3.3	2.3
		4500		9.6	7.9	6.7	5.5	4.2	2.8
		5000		11.7	9.6	8.2	6.7	5.1	3.5
		5500			11.5	9.8	8.0	6.1	4.2
		6000			13.6	11.5	9.4	7.2	4.9
		6500				13.5	11.0	8.4	5.7
		7000				15.6	12.7	9.8	6.6
		7500					14.5	11.1	7.6

Threaded Pipe Fittings Pressure Loss Conversion Table

Expressed as length in feet of straight piping giving equivalent pressure loss

Nominal Pipe Inside Diameter (in)	Actual Pipe Inside Diameter (in)	Gate Valve	Long Radius Ell or on Run of Standard Tee	Standard Ell or on Run of Tee Reduced in Size 50%	Angle Valve	Close Return Bend	Tee Through Side Outlet	Globe Valve
½	0.622	0.36	0.62	1.55	8.65	3.47	2.10	17.3
¾	0.824	0.48	0.82	2.06	11.4	4.60	4.12	22.9
1	1.049	0.61	1.05	2.62	14.6	5.82	5.24	29.1
1 ¼	1.380	0.81	1.38	3.45	19.1	7.66	6.90	38.3
1 ½	1.610	0.94	1.61	4.02	22.4	8.95	8.04	44.7
2	2.067	1.21	2.07	5.17	28.7	11.5	10.3	57.4
2 ½	2.469	1.44	2.47	6.16	34.3	13.7	12.3	68.5
3	3.068	1.79	3.07	6.16	42.6	17.1	15.3	85.2
4	4.026	2.35	4.03	7.67	56.0	22.4	20.2	112
5	5.047	2.94	5.05	10.1	70.0	28.0	25.2	140
6	6.065	3.54	6.07	15.2	84.1	33.8	30.4	168
8	6.981	4.65	7.98	20.0	111	44.6	40.0	222
10	10.020	5.85	10.00	25.0	139	55.7	50.0	278
12	11.940	6.96	11.0	29.8	166	66.3	59.6	332

Surface Areas (English USA Units)

Universal 'S' Section Beams

Section Designation		Square Feet of Surface Area per Foot of Length		Square Feet of Surface Area per Ton	
					
		Minus one flange side	All around	Minus one flange side	All around
S-24	x 90	5.78	6.38	128.4	141.8
	x 79.9	5.75	6.33	143.9	158.4
S-20	x 95	5.15	5.75	108.4	121.1
	x 85	5.08	5.67	119.5	133.4
	x 75	4.93	5.46	131.5	145.6
	x 65.4	4.90	5.42	149.8	165.7
S-18	x 70	4.56	5.08	130.3	145.1
	x 54.7	4.50	5.00	164.5	182.8
S-15	x 50	3.91	4.38	156.4	175.2
	x 42.9	3.88	4.33	180.9	201.9
S-12	x 50	3.38	3.83	135.2	153.2
	x 40.8	3.31	3.75	162.3	183.8
	x 35	3.28	3.71	187.4	212.0
	x 31.8	3.25	3.67	204.4	230.8
S-10	x 35	2.92	3.33	166.9	190.2
	x 25.4	2.82	3.21	222.0	252.8
S-8	x 23	2.36	2.71	205.2	235.7
	x 18.4	2.33	2.67	253.3	290.2
S-7	x 20	2.14	2.46	214.0	246.0
	x 15.3	2.07	2.38	270.6	311.1

Universal 'S' Section Beams

Section Designation		Square Feet of Surface Area per Foot of Length		Square Feet of Surface Area per Ton	
					
		Minus one flange side	All around	Minus one flange side	All around
S-6	x 17.25	1.91	2.21	221.4	256.2
	x 12.5	1.84	2.13	294.4	340.8
S-5	x 14.75	1.65	1.92	223.7	260.3
	x 10	1.58	1.83	316.0	366.0
S-4	x 9.5	1.35	1.58	284.2	332.6
	x 7.7	1.32	1.54	342.9	400.0
S-3	x 7.5	1.13	1.33	301.3	354.7
	x 5.7	1.09	1.29	382.5	452.6
Miscellaneous shape					
M-5	x 18.9	2.08	2.50	220.1	264.6

Surface Areas (English USA Units)

Channels / 'C' Section Beams

Section Designation		Square Feet of Surface Area per Foot of Length		Square Feet of Surface Area per Ton	
					
		Minus one flange side	All around	Minus one flange side	All around
C-15	x 50	3.44	3.75	137.6	150.0
	x 40	3.38	3.67	169.0	183.5
	x 33.9	3.34	3.63	197.1	214.2
C-12	x 30	2.78	3.04	185.3	202.7
	x 25	2.75	3.00	220.0	240.0
	x 20.7	2.75	3.00	265.7	289.9
C-10	x 30	2.42	2.67	161.3	178.0
	x 25	2.39	2.63	191.2	210.4
	x 20	2.35	2.58	235.0	258.0
	x 15.3	2.32	2.54	305.3	334.2
C-9	x 20	2.16	2.38	216.0	238.0
	x 15	2.13	2.33	284.0	310.7
	x 13.4	2.09	2.29	311.9	341.8
C-8	x 18.75	1.96	2.17	209.1	231.5
	x 13.75	1.93	2.13	280.7	309.8
	x 11.5	1.90	2.08	330.4	361.7
C-7	x 14.75	1.73	1.92	234.6	260.3
	x 12.25	1.73	1.92	282.4	313.5
	x 9.8	1.70	1.88	346.9	383.7
C-6	x 13	1.53	1.71	235.4	263.1
	x 10.5	1.50	1.67	285.7	318.1
	x 8.2	1.47	1.63	358.5	397.6
C-5	x 9	1.30	1.46	288.9	324.4
	x 6.7	1.27	1.42	379.1	423.9
C-4	x 7.25	1.10	1.25	295.2	344.8
	x 5.4	1.07	1.21	396.3	448.1
C-3	x 6	.91	1.04	303.3	346.7
	x 5	.88	1.00	352.0	400.0
	x 4.1	.84	0.96	409.8	468.3
MC-18	x 58	4.06	4.42	140.0	152.4
	x 51.9	4.03	4.38	155.3	168.8
	x 45.8	4.00	4.33	176.7	189.1
	x 42.7	4.00	4.33	187.4	202.8
MC-13	x 50	3.26	3.63	130.4	145.2
	x 40	3.20	3.54	160.0	177.0
	x 35	3.20	3.54	182.9	202.3
	x 31.8	3.17	3.50	199.4	220.1

Channels / 'C' Section Beams

Section Designation		Square Feet of Surface Area per Foot of Length		Square Feet of Surface Area per Ton	
					
		Minus one flange side	All around	Minus one flange side	All around
MC-12	x 50	3.03	3.38	121.2	135.2
	x 45	3.00	3.33	133.3	148.0
	x 40	2.97	3.29	148.5	164.5
	x 35	2.94	3.25	168.0	185.7
	x 37	2.91	3.21	157.3	173.5
	x 32.9	2.88	3.17	175.1	192.7
	x 30.9	2.88	3.17	186.4	205.2
MC-10	x 41.1	2.76	3.13	134.3	152.3
	x 33.6	2.70	3.04	160.7	181.0
	x 28.5	2.67	3.00	187.4	210.5
	x 28.3	2.54	2.83	179.5	200.0
	x 25.3	2.54	2.83	200.8	223.7
	x 24.9	2.51	2.79	201.6	224.1
	x 21.9	2.54	2.83	232.0	258.4
MC-9	x 25.4	2.38	2.67	187.4	210.2
	x 23.9	2.38	2.67	199.2	223.4
MC-8	x 22.8	2.21	2.50	193.9	219.3
	x 21.4	2.21	2.50	206.5	233.6
	x 20	2.08	2.33	208.0	233.0
	x 18.7	2.08	2.33	222.5	249.2
MC-7	x 22.7	2.07	2.38	182.4	209.7
	x 19.1	2.04	2.33	213.6	244.0
	x 17.6	1.92	2.17	218.2	246.6
MC-6	x 18	1.88	2.17	208.9	241.1
	x 15.3	1.88	2.17	245.8	283.7
	x 16.3	1.75	2.00	214.7	245.4
	x 15.1	1.75	2.00	231.8	264.9
	x 12	1.63	1.83	271.7	305.0
MC-3	x 9	1.03	1.21	228.9	268.9
	x 7.1	1.00	1.17	281.7	329.6

Surface Areas (English USA Units)

Angles / 'L' Sections

Section Designation			Surface Area per Foot of Length	Surface Area per Ton
L 8	x 8	x 1-1/8	2.67	93.8
	x 8	x 1	2.67	104.7
	x 8	x 1	2.67	118.7
	x 8	x 7/8	2.67	118.7
	x 8	x 3/4	2.67	137.3
	x 8	x 5/8	2.67	163.3
	x 8	x 9/16	2.67	180.4
	x 8	x 1/2	2.67	202.3
L 6	x 6	x 1	2.00	107.0
	x 6	x 7/8	2.00	120.8
	x 6	x 3/4	2.00	139.4
	x 6	x 5/8	2.00	165.3
	x 6	x 9/16	2.00	182.6
	x 6	x 1/2	2.00	204.1
	x 6	x 7/16	2.00	232.6
	x 6	x 3/8	2.00	268.5
	x 6	x 5/16	2.00	322.6
L 5	x 5	x 7/8	1.67	122.8
	x 5	x 3/4	1.67	141.5
	x 5	x 5/8	1.67	167.0
	x 5	x 1/2	1.67	206.2
	x 5	x 7/16	1.67	233.6
	x 5	x 3/8	1.67	271.5
	x 5	x 5/16	1.67	324.3
L 4	x 4	x 3/4	1.33	143.8
	x 4	x 5/8	1.33	169.4
	x 4	x 1/2	1.33	207.8
	x 4	x 7/16	1.33	235.4
	x 4	x 5/8	1.33	271.4
	x 4	x 5/16	1.33	324.4
	x 4	x 1/4	1.33	403.0
L 3-1/2	x 3-1/2	x 1/2	1.17	210.8
	x 3-1/2	x 7/16	1.17	238.8
	x 3-1/2	x 3/8	1.17	275.3
	x 3-1/2	x 5/16	1.17	325.0
	x 3-1/2	x 1/4	1.17	403.4

Angles / 'L' Sections

Section Designation			Surface Area per Foot of Length	Surface Area per Ton
L 3	x 3	x 1/2	1.00	212.8
	x 3	x 7/16	1.00	241.0
	x 3	x 3/8	1.00	277.8
	x 3	x 5/16	1.00	327.9
	x 3	x 1/4	1.00	408.2
	x 3	x 3/16	1.00	539.1
L 2-1/2	x 2-1/2	x 1/2	.83	215.6
	x 2-1/2	x 3/8	.83	281.4
	x 2-1/2	x 5/16	.83	332.0
	x 2-1/2	x 1/4	.83	404.9
	x 2-1/2	x 3/16	.83	540.7
L 2	x 2	x 3/8	.67	285.1
	x 2	x 5/16	.67	341.8
	x 2	x 1/4	.67	420.1
	x 2	x 3/16	.67	549.2
	x 2	x 1/8	.67	812.1
L 1-3/4	x 1-3/4	x 1/4	.58	418.8
	x 1-3/4	x 3/16	.58	547.2
	x 1-3/4	x 1/8	.58	805.6
L 1-1/2	x 1-1/2	x 1/4	.50	427.4
	x 1-1/2	x 3/16	.50	555.6
	x 1-1/2	x 5/32	.50	657.9
	x 1-1/2	x 1/8	.50	813.0
L 1-1/4	x 1-1/4	x 1/4	.42	437.5
	x 1-1/4	x 3/16	.42	567.6
	x 1-1/4	x 1/8	.42	831.7
L 1	x 1	x 1/4	.33	443.0
	x 1	x 3/16	.33	569.0
	x 1	x 1/8	.33	825.0

Surface Areas (English USA Units)

Angles / 'L' Sections

Section Designation			Surface Area per Foot of Length	Surface Area per Ton
L 9	x 4	x 1	2.17	106.4
	x 4	x 7/8	2.17	120.2
	x 4	x 3/4	2.17	138.7
	x 4	x 5/8	2.17	165.0
	x 4	x 9/16	2.17	182.4
	x 4	x 1/2	2.17	203.8
L 8	x 6	x 1	2.33	105.4
	x 6	x 7/8	2.33	119.2
	x 6	x 3/4	2.33	137.9
	x 6	x 5/8	2.33	163.5
	x 6	x 9/16	2.33	181.3
	x 6	x 1/2	2.33	202.6
	x 6	x 7/16	2.33	230.7
L 8	x 4	x 1	2.00	107.0
	x 4	x 7/8	2.00	120.8
	x 4	x 3/4	2.00	139.4
	x 4	x 5/8	2.00	165.3
	x 4	x 9/16	2.00	182.6
	x 4	x 1/2	2.00	204.1
	x 4	x 7/16	2.00	232.6
L 7	x 4	x 7/8	1.83	121.2
	x 4	x 3/4	1.83	139.7
	x 4	x 5/8	1.83	165.6
	x 4	x 9/16	1.83	183.0
	x 4	x 1/2	1.83	204.5
	x 4	x 7/16	1.83	231.6
	x 4	x 3/8	1.83	269.1
L 6	x 4	x 7/8	1.67	122.8
	x 4	x 3/4	1.67	141.5
	x 4	x 5/8	1.67	167.0
	x 4	x 9/16	1.67	184.5
	x 4	x 1/2	1.67	206.2
	x 4	x 7/16	1.67	233.6
	x 4	x 3/8	1.67	271.5
	x 4	x 5/16	1.67	324.3
	x 4	x 1/4	1.67	402.4
L 6	x 3-1/2	x 1/2	1.58	206.5
	x 3-1/2	x 3/8	1.58	270.1
	x 3-1/2	x 5/16	1.58	322.4
	x 3-1/2	x 1/4	1.58	400.0
L 5	x 3-1/2	x 3/4	1.42	143.4
	x 3-1/2	x 5/8	1.42	169.0
	x 3-1/2	x 1/2	1.42	208.8
	x 3-1/2	x 7/16	1.42	236.7
	x 3-1/2	x 3/8	1.42	273.1
	x 3-1/2	x 5/16	1.42	326.4
	x 3-1/2	x 1/4	1.42	405.7
L 5	x 3	x 1/2	1.33	207.8
	x 3	x 7/16	1.33	235.4
	x 3	x 3/8	1.33	271.4
	x 3	x 5/16	1.33	324.4
	x 3	x 1/4	1.33	403.0

Angles / 'L' Sections

Section Designation			Surface Area per Foot of Length	Surface Area per Ton
L 4	x 3-1/2	x 5/8	1.25	170.1
	x 3-1/2	x 1/2	1.25	210.1
	x 3-1/2	x 7/16	1.25	235.8
	x 3-1/2	x 3/8	1.25	274.7
	x 3-1/2	x 5/16	1.25	324.7
	x 3-1/2	x 1/4	1.25	403.2
L 4	x 3	x 5/8	1.17	172.1
	x 3	x 1/2	1.17	210.8
	x 3	x 7/16	1.17	238.8
	x 3	x 3/8	1.17	275.3
	x 3	x 5/16	1.17	325.0
	x 3	x 1/4	1.17	403.4
L 3-1/2	x 3	x 1/2	1.08	211.8
	x 3	x 7/16	1.08	237.4
	x 3	x 3/8	1.08	273.4
	x 3	x 5/16	1.08	327.3
	x 3	x 1/4	1.08	400.0
L 3-1/2	x 2-1/2	x 1/2	1.00	212.8
	x 2-1/2	x 7/16	1.00	241.0
	x 2-1/2	x 3/8	1.00	277.8
	x 2-1/2	x 5/16	1.00	327.9
	x 2-1/2	x 1/4	1.00	408.2
L 3	x 2-1/2	x 1/2	.92	216.5
	x 2-1/2	x 7/16	.92	242.1
	x 2-1/2	x 3/8	.92	278.8
	x 2-1/2	x 5/16	.92	328.6
	x 2-1/2	x 1/4	.92	408.9
	x 2-1/2	x 3/16	.92	542.8
L 3	x 2	x 1/2	.83	215.6
	x 2	x 7/16	.83	244.1
	x 2	x 3/8	.83	281.4
	x 2	x 5/16	.83	332.0
	x 2	x 1/4	.83	404.9
	x 2	x 3/16	.83	540.7
L 2-1/2	x 2	x 3/8	.75	283.0
	x 2	x 5/16	.75	333.3
	x 2	x 1/4	.75	414.4
	x 2	x 3/16	.75	545.5
L 2-1/2	x 1-1/2	x 5/16	.67	341.8
	x 1-1/2	x 1/4	.67	420.1
	x 1-1/2	x 3/16	.67	549.2
L 2	x 1-1/2	x 1/4	.58	418.8
	x 1-1/2	x 3/16	.58	547.2
	x 1-1/2	x 1/8	.58	805.6
L 2	x 1-1/4	x 1/4	.54	423.5
	x 1-1/4	x 3/16	.54	551.0
L 1-3/4	x 1-1/4	x 1/4	.50	427.4
	x 1-1/4	x 3/16	.50	555.6
	x 1-1/4	x 1/8	.50	813.0

Surface Areas (Metric Units)

Universal Beams

Designation		Profile Distance	Profile Surface Area per metre	Profile Surface Area per tonne	Profile Distance Less One Flange Face	Profile Surface Area Less Area of One Flange Face per metre	Profile Surface Area Less Area of One Flange Face per tonne
		mm	m^2/m	$m^2/tonne$	mm	m^2/m	$m^2/tonne$
760 UB	244	2580	2.58	10.6	2310	2.31	9.47
	220	2570	2.57	11.7	2300	2.30	10.4
	197	2550	2.55	13.0	2280	2.28	11.6
	173	2530	2.53	14.6	2270	2.27	13.1
	147	2510	2.51	17.0	2250	2.25	15.2
690 UB	140	2330	2.33	16.6	2080	2.08	14.8
	125	2320	2.32	18.5	2070	2.07	16.5
610 UB	125	2090	2.09	16.7	1860	1.86	14.9
	113	2080	2.08	18.3	1850	1.85	16.3
	101	2070	2.07	20.3	1840	1.84	18.1
530 UB	92.4	1860	1.86	20.0	1650	1.65	17.8
	82.0	1850	1.85	22.4	1640	1.64	19.9
460 UB	82.1	1650	1.65	20.0	1450	1.45	17.7
	74.6	1640	1.64	21.9	1450	1.45	19.4
	67.1	1630	1.63	24.2	1440	1.44	21.4
410 UB	59.7	1490	1.49	24.8	1310	1.31	21.9
	53.7	1480	1.48	27.4	1300	1.30	24.1
360 UB	56.7	1370	1.37	24.1	1200	1.20	21.1
	50.7	1360	1.36	26.8	1190	1.19	23.4
	44.7	1350	1.35	30.1	1180	1.18	26.3
310 UB	46.2	1250	1.25	26.8	1080	1.08	23.2
	40.4	1240	1.24	30.2	1070	1.07	26.2
	32	1160	1.16	36.2	1010	1.01	31.5
250 UB	37.3	1070	1.07	28.6	922	0.922	24.7
	31.4	1060	1.06	33.7	914	0.914	29.0
200 UB	29.8	922	0.922	30.7	788	0.788	26.3
	25.4	912	0.912	35.9	779	0.779	30.7

Universal Columns

Designation		Profile Distance	Profile Surface Area per metre	Profile Surface Area per tonne	Profile Distance Less One Flange Face	Profile Surface Area Less Area of One Flange Face per metre	Profile Surface Area Less Area of One Flange Face per tonne
		mm	m^2/m	$m^2/tonne$	mm	m^2/m	$m^2/tonne$
310 UC	283	1940	1.94	6.85	1620	1.62	5.71
	240	1900	1.90	7.94	1590	1.59	6.61
	198	1870	1.87	9.45	1560	1.56	7.86
	158	1840	1.84	11.6	1530	1.53	9.66
	137	1820	1.82	13.3	1510	1.51	11.0
	118	1810	1.81	15.3	1500	1.50	12.7
	96.8	1790	1.79	18.4	1480	1.48	15.3
250 UC	89.5	1500	1.50	16.8	1240	1.24	13.9
	72.9	1480	1.48	20.3	1230	1.23	16.8
200UC	59.5	1200	1.20	20.1	996	0.996	16.7
	52.2	1190	1.19	22.8	989	0.989	18.9
	46.2	1180	1.18	25.6	982	0.982	21.2
150 UC	37.2	908	0.908	24.4	754	0.754	20.3
	30	899	0.899	29.7	746	0.746	24.6
	23.4	885	0.885	37.8	733	0.733	31.3
100 UC	14.8	563	0.563	38.0	464	0.464	31.3

Surface Areas (Metric Units)

Taper Flange Beams, Channels and Junior Universal Beams

Designation		Profile Distance	Profile Surface Area per metre	Profile Surface Area per tonne	Profile Distance Less One Flange Face	Profile Surface Area Less Area of One Flange Face per metre	Profile Surface Area Less Area of One Flange Face per tonne
		mm	m²/m	m²/tonne	mm	m²/m	m²/tonne
Taper Flange Beams							
178 x 89		658	0.658	29.4	569	0.569	25.4
152 x 76		562	0.562	31.4	486	0.486	27.2
125 x 65		470	0.470	35.7	405	0.405	30.8
100 x 45		349	0.349	48.5	304	0.304	42.2
Channels							
380 x 100		1130	1.13	20.7	1030	1.03	18.8
300 x 90		932	0.932	23.2	842	0.842	21.0
250 x 90		834	0.834	23.5	744	0.744	21.0
230 x 75		737	0.737	29.4	662	0.662	26.4
200 x 75		678	0.678	29.6	603	0.603	26.4
180 x 75		638	0.638	30.5	563	0.563	26.9
150 x 75		580	0.580	32.8	505	0.505	28.5
125 x 65		480	0.480	35.7	415	0.415	30.9
100 x 50		374	0.374	40.0	324	0.324	34.6
74 x 40		286	0.286	43.0	246	0.246	37.0
Junior Universal Beams							
180 UB	22	691	0.691	31.1	601	0.601	27.1
	18	685	0.685	37.8	595	0.595	32.9
150 UB	18	584	0.584	32.4	509	0.509	28.3
	14	576	0.576	41.1	501	0.501	35.8

External Surface Areas of Hollow Sections

Square

Designation		Profile Surface Area	
Nominal Size D x B	Nominal Thickness	Per Metre	Per Tonne
mm x mm	mm	m²/m	m²/tonne
254 x 254	9.5	0.975	13.8
	8.0	0.982	16.3
	6.3	0.989	20.6
203 x 203	9.5	0.772	13.9
	8.0	0.778	16.5
	6.3	0.786	20.7
152 x 152	9.5	0.569	14.2
	8.0	0.575	16.7
	6.3	0.583	20.9
	4.9	0.589	26.7
127 x 127	9.5	0.467	14.3
	8.0	0.474	16.8
	6.3	0.481	21.1
	4.9	0.487	26.8
102 x 102	9.5	0.366	14.6
	8.0	0.372	17.1
	6.3	0.379	21.3
	4.9	0.385	27.1
	4.0	0.389	32.9
89 x 89	6.3	0.329	21.5
	4.9	0.335	27.3
	3.6	0.340	36.6
76 x 76	6.3	0.278	21.8
	4.9	0.284	27.5
	4.0	0.288	33.3
	3.2	0.291	41.2
64 x 64	6.3	0.227	22.2
	4.9	0.233	27.8
	4.0	0.237	33.6
	3.2	0.240	41.5
51 x 51	4.9	0.182	28.4
	4.0	0.186	34.2
	3.2	0.189	42.0

Rectangular

Designation		Profile Surface Area	
Nominal Size D x B	Nominal Thickness	Per Metre	Per Tonne
mm x mm	mm	m²/m	m²/tonne
254 x 152	9.5	0.772	13.9
	8.0	0.778	16.5
	6.3	0.786	20.7
203 x 152	9.5	0.670	14.0
	8.0	0.677	16.5
	6.3	0.684	20.8
203 x 102	9.5	0.569	14.2
	8.0	0.575	16.7
	6.3	0.583	20.9
	4.9	0.589	26.7
152 x 102	9.5	0.467	14.3
	8.0	0.474	16.8
	6.3	0.481	21.1
	4.9	0.487	26.8
152 x 76	8.0	0.423	16.9
	6.3	0.430	21.2
	4.9	0.436	26.9
127 x 76	8.0	0.372	17.1
	6.3	0.379	21.3
	4.9	0.385	27.1
127 x 64	6.3	0.354	21.4
	4.9	0.360	27.2
	4.0	0.364	33.0
127 x 51	6.3	0.329	21.5
	4.9	0.335	27.3
	3.6	0.340	36.6
102 x 76	6.3	0.329	21.5
	4.9	0.335	27.3
	3.6	0.340	36.6
102 x 51	6.3	0.278	21.8
	4.9	0.284	27.5
	4.0	0.288	33.3
	3.2	0.291	41.2
76 x 51	6.3	0.227	22.2
	4.9	0.233	27.8
	4.0	0.237	33.6
	3.2	0.240	41.5
76 x 38	4.0	0.211	33.9
	3.2	0.215	41.8
64 x 38	4.0	0.186	34.2
	3.2	0.189	42.0

Surface Areas (Metric Units)

External Surface Areas of Circular Hollow Sections

Designation		External Surface Area	
Actual Outside Diameter	Nominal Thickness	Per Metre	Per Tonne
mm	mm	m^2/m	m^2/ tonne
457	9.5	1.44	13.7
	6.4	1.44	20.2
406.4	9.5	1.28	13.7
	6.4	1.28	20.2
355.6	9.5	1.12	13.8
	6.4	1.12	20.3
323.9	9.5	1.02	13.8
	6.4	1.02	20.3
273.1	9.3	0.858	14.2
	6.4	0.858	20.4
	4.8	0.858	27.0
219.1	8.2	0.688	16.1
	6.4	0.688	20.5
	4.8	0.688	27.1
168.3	7.1	0.529	18.7
	6.4	0.529	20.7
	4.8	0.529	27.3
165.1	5.4	0.519	24.4
	5.0	0.519	26.3
139.7	5.4	0.439	24.5
	5.0	0.439	26.4
114.3	5.4	0.359	24.8
	4.5	0.359	29.5
101.6	5.0	0.319	26.8
	4.0	0.319	33.2
88.9	5.9	0.279	23.1
	5.0	0.279	27.0
	4.0	0.279	33.3
	3.2	0.279	41.3
76.1	5.9	0.239	23.4
	4.5	0.239	30.1
	3.6	0.239	37.1
	3.2	0.239	41.6
60.3	5.4	0.189	25.9
	4.5	0.189	30.6
	3.6	0.189	37.6
48.3	5.4	0.152	26.6
	4.0	0.152	34.7
	3.2	0.152	42.6
42.4	4.9	0.133	29.4
	4.0	0.133	35.2
	3.2	0.133	43.1

Steel Plate Areas

Steel Plate Thicknesses			
Size (mm)	kg/m^2	One Side m^2/tonne	Both Sides m^2/tonne
3	24.14	41.42	82.84
4	32.18	31.07	62.14
5	30.23	24.86	49.72
6	48.27	20.71	41.42
8	64.37	15.54	31.08
10	80.46	12.43	24.86
12	96.56	10.36	20.72
16	128.70	7.77	15.54
20	160.90	6.21	12.42
25	201.10	4.97	9.94
28	225.29	4.44	8.88
32	257.40	3.88	7.77
36	289.60	3.45	6.90
40	321.80	3.11	6.22
45	362.00	2.76	5.52
50	401.30	2.49	4.98
55	442.50	2.26	4.52
60	482.70	2.07	4.14
70	563.20	1.78	3.56
80	643.70	1.56	3.12
90	724.10	1.38	2.76
100	804.60	1.24	2.48
110	885.00	1.13	2.26
120	965.50	1.04	2.08
140	1126.00	0.89	1.78
160	1287.00	0.78	1.56
180	1448.00	0.69	1.38
200	1609.00	0.62	1.24
225	1810.00	0.55	1.10
250	2011.00	0.50	1.00

Surface Areas (Metric Units)

Surface Areas of Angles

Equal Angles

Designation		Surface Area	
Nominal Leg Size A x B	Nominal Thickness	Per Metre	Per Tonne
mm	mm	m²/m	m²/ tonne
200 x 200	26	0.788	10.3
	20	0.788	13.1
	18	0.788	14.5
	16	0.788	16.2
	13	0.788	19.7
150 x 150	19	0.590	14.0
	16	0.590	16.7
	12	0.590	21.6
	10	0.590	26.9
125 x 125	16	0.491	16.9
	12	0.491	21.8
	10	0.491	27.3
	8	0.491	33.0
100 x 100	12	0.392	22.2
	10	0.392	27.6
	8	0.392	33.2
	6	0.392	42.8
90 x 90	10	0.352	27.7
	8	0.352	33.2
	6	0.352	42.9
75 x 75	10	0.292	27.8
	8	0.292	33.5
	6	0.292	42.9
	5	0.292	55.5

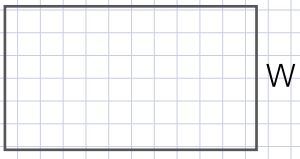
Designation		Surface Area	
Nominal Leg Size A x B	Nominal Thickness	Per Metre	Per Tonne
mm	mm	m²/m	m²/ tonne
65 x 65	10	0.255	28.3
	8	0.255	33.9
	6	0.255	43.4
	5	0.255	55.9
	13	0.788	19.7
55 x 55	6	0.215	43.6
	5	0.215	60.0
	16	0.590	16.7
50 x 50	8	0.195	34.3
	6	0.195	43.7
	5	0.195	56.0
	3	0.195	84.4
	12	0.491	21.8
45 x 45	6	0.175	44.2
	5	0.175	56.5
	3	0.175	85.1
	12	0.392	22.2
40 x 40	6	0.155	44.4
	5	0.155	56.9
	3	0.155	84.9
30 x 30	6	0.115	45.0
	5	0.115	57.4
	3	0.115	85.4
25 x 25	6	0.0953	45.8
	5	0.0953	57.7
	3	0.0953	85.1

Unequal Angles

Designation		Surface Area	
Nominal Leg Size A x B	Nominal Thickness	Per Metre	Per Tonne
mm	mm	m²/m	m²/tonne
150 x 100	12	0.491	21.8
	10	0.491	27.3
	6	0.255	43.4
150 x 90	16	0.471	16.9
	12	0.471	21.8
	10	0.471	27.2
	8	0.471	33.0
	16	0.590	16.7
125 x 75	12	0.392	22.2
	10	0.392	27.6
	8	0.392	33.2
	6	0.392	42.8
	12	0.491	21.8
100 x 75	10	0.342	27.6
	8	0.342	33.2
	6	0.342	42.9
	12	0.392	22.2
75 x 50	8	0.245	34.1
	6	0.245	43.6
	5	0.245	56.3
65 x 50	8	0.225	34.1
	6	0.225	43.6
	5	0.225	55.9

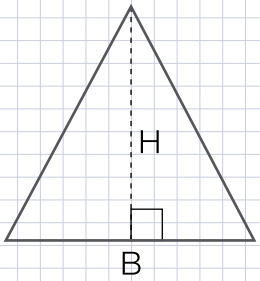
RECTANGLE

Area = Length x Width



TRIANGLE

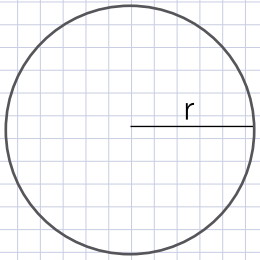
Area = ½ x Base x Perpendicular Height



CIRCLE

Area = π x radius^2

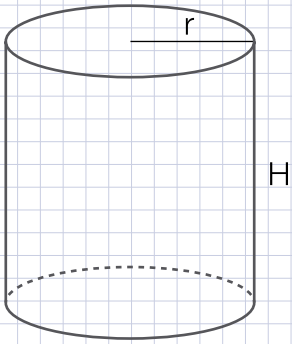
Circumference = 2 x π x radius
(or π x diameter)



CYLINDER

Area (ends not included) = 2 x π x radius x Height

Volume = π x radius^2 x Height

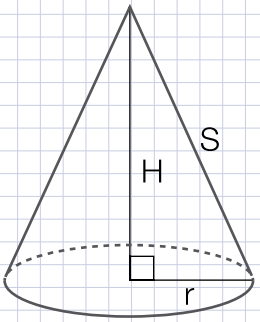


CONE

Area (excluding base) = π x radius x slant height

Volume = ⅓ x π x radius^2 x height

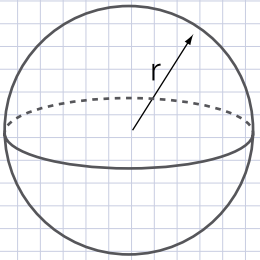
Slant height = $\sqrt{\text{radius}^2 + \text{perpendicular height}^2}$



SPHERE

Area = 4 x π x radius^2

Volume = 4/3 x π x radius^3



Conversion Factors

English USA to Metric Units

Length	
thousandth of inch (thou or mil)	x 25.4 = µm
inches (in)	x 25.4 = mm
feet (ft)	x 0.3048 = m
Area	
square inches (in^2)	x 645.16 = mm^2
square feet (ft^2)	x 0.0929 = m^2
Volume	
cubic inches (cu in)	x 16.38716 = cm^3 or mL
cubic feet (cu ft)	x 0.028317 = m^3
cubic feet (cu ft)	x 28.31701 = L
US gallons (gal)	x 0.83267 = Imp Gal
US gallons (gal)	x 3.7854 = L
US gallons (gal)	x 7.48052 = cu ft (ft^3)
quart (qt)	x 0.9464 = L
fluid ounces (fl oz)	x 29.57 = mL
Speed – Velocity	
feet per minute (ft/min)	x 0.00508 = m/s
feet per second (ft/s)	x 0.03048 = m/s
Flow Rate	
cubic feet per minute (CFM)	x 0.47195 = L/s
cubic feet per minute (CFM)	x 0.028317 = m^3/min
cubic feet per minute (CFM)	x 1.69902 = m^3/hr
US gallons per minute (gpm)	x 3.7854 = L/min
Weight – Mass	
pounds (lb)	x 0.4536 = kg
Bulk – Density	
pounds per cubic foot (lb/cu ft)	x 16.0185 = kg/m^3
pounds per cubic foot (lb/cu ft)	x 0.016019 = kg/L
Pressure	
pounds per square inch (psi)	x 6.8947 = kPa
pounds per square inch (psi)	x 0.0068947 = MPa
pounds per square inch (psi)	x 0.068947 = bar
Vacuum	
inches of mercury (in. Hg)	x 3.38638 = -kPa
inches of mercury (in. Hg)	x 13.596 = in. H_2O
Power	
horsepower (hp)	x 0.7457 = kW
Temperature	
degrees Fahrenheit (°F)	- 32, then x 0.5555 = °C

Metric to English USA Units

Length	
microns (µm)	x 0.03937 = thou or mil
millimetres (mm)	x 0.03937 = in
metres (m)	x 3.28083 = ft
Area	
square millimetres (mm^2)	x 0.00155 = in^2
square metres (m^2)	x 10.7639 = ft^2
Volume	
cubic centimeters (cm^3)	x 0.061023 = cu in
cubic metres (m^3)	x 35.3145 = cu ft
liters (L)	x 0.035315 = cu ft
Imp gallon (gal)	x 1.20095 = US gal
liters (L)	x 0.26417 = US gal
Imp gallon (gal)	x 6.22883 = cu ft (ft^3)
liters (L)	x 1.05668 = qt
milliliters (mL)	x 0.03381 = fl oz
Speed – Velocity	
metres per second (m/s)	x 196.85 = ft/min
metres per second (m/s)	x 3.28083 = ft/s
Flow Rate	
liters per second (L/s)	x 2.11887 = CFM
cubic metres per minute (m^3/min)	x 35.3145 = CFM
cubic metres per hour (m^3/hr)	x 0.58857 = CFM
liters per minute (L/min)	x 0.26417 = US gpm
Weight – Mass	
kilograms (kg)	x 2.2046 = lb
Bulk – Density	
kilograms per cubic metre (kg/m^3)	x 0.062428 = lb/cu ft
kilograms per liter (kg/L)	x 62.4277 = lb/cu ft
Pressure	
kilopascals (kPa)	x 0.145 = psi
Megapascals (MPa)	x 145.04 = psi
bar (bar)	x 14.504 = psi
Vacuum	
kilopascals vacuum (-kPa)	x 0.2953 = in. Hg
inches of water (in. H20)	x 0.07355 = In. Hg
Power	
kilowatts (kW)	x 1.341 = hp
Temperature	
degrees Celsius (°C)	x 1.8, then +32 = °F

Conversion Tables

Pressure

psi to bar, kPa (MPa)			bar, kPa (MPa) to psi		
psi →	bar →	kPa	bar →	kPa →	psi
40	2.8	276	1	100	14.5
50	3.5	345	2	200	29
60	4.1	414	3	300	43.5
70	4.8	483	4	400	58
80	5.5	552	5	500	72.5
90	6.2	621	6	600	87
100	6.9	689	7	700	101.5
110	7.6	758	8	800	116
120	8.3	827	9	900	130.5
130	9.0	896	10	1000	145
140	9.7	965	11	1100	159.5
150	10.3	1034	12	1200	174
	MPa			MPa	
1000	68.9	6.9	100	10	1450
1500	103	10.3	200	20	2901
2000	138	13.8	250	25	3626
2500	172	17.2	300	30	4351
3000	207	20.7	350	35	5076
3500	241	24.1	400	40	5802
4000	276	27.6	500	50	7250
5000	345	34.5	600	60	8700
6000	414	41.4	700	70	10150
7000	483	48.3	800	80	11600
8000	552	55.2	900	90	13050
9000	621	62.1	1000	100	14500
10000	689	68.9	1500	150	21750
20000	1380	138	2000	200	29000
30000	2070	207	2500	250	36260
35000	2410	241	3000	300	43500
40000	2760	276	3500	350	50760
50000	3450	345	4000	400	58000

Temperature

degrees Fahrenheit	degrees Celsius
°F ← →	°C
-20	-28.9
-10	-23.3
-4	-20
0-ZERO	-17.8
10	-12.2
14	-10
20	-6.7
30	-1.1
32	0-ZERO
40	4.4
50	10
59	15
68	20
70	21.1
80	26.7
86	30
90	32.2
100	37.8
104	40
122	50
140	60
158	70
176	80
194	90
212	100
230	110
248	120
266	130
284	140
300	148.9

Conversion Tables

Ventilation Flow Rates

CFM →	Liters/min →	m³/min →	m³/hr	m³/min →	CFM	m³/hr →	CFM
500	14,159	14.16	849.5	15	529.7	1000	588.6
1000	28,317	28.32	1699	25	882.9	2000	1177
2000	56,634	56.63	3398	50	1765	3000	1766
3000	84,951	84.95	5097	75	2648	4000	2354
4000	113,270	113.3	6796	100	3531	5000	2943
5000	141,590	141.6	8495	125	4414	7500	4414
6000	169,900	169.9	10,194	150	5297	10,000	5886
7000	198,220	198.2	11,893	200	7062	12,500	7357
8000	226,540	226.5	13,592	250	8829	15,000	8828
9000	254,850	254.9	15,291	300	10,590	20,000	11,770
10000	283,170	283.2	16,990	400	14,130	25,000	14,710
15000	424,760	424.8	25,485	500	17,660	30,000	17,660
20000	566,340	566.3	33,980	600	21,190	35,000	20,600
25000	707,930	707.9	42,476	700	24,720	40,000	23,540
30000	849,510	849.5	50,971	800	28,250	45,000	26,490
35000	991,100	991.1	59,466	900	31,780	50,000	29,430
40000	1,132,700	1133	67,961	1000	35,310	60,000	35,310
45000	1,274,300	1274	76,456	1250	44,140	75,000	44,140
50000	1,415,900	1416	84,951	1500	52,970	100,000	58,860
75000	2,123,800	2124	127,427	2000	70,630	125,000	73,570
100000	2,831,700	2832	169,902	2500	88,290	150,000	88,290

Compressed Air Supply Flow Rates

CFM →	Liters/second	Liters/second →	CFM
100	47.2	35	74.2
150	70.8	40	84.8
200	94.4	50	106
250	118	75	159
300	142	100	212
350	165	125	265
400	189	150	318
450	212	175	371
500	236	200	424
600	283	250	530
700	330	300	636
900	425	350	742
1000	472	400	848
1200	566	500	1059
1400	661	600	1271

Quick Cross Reference to some useful Industry Standards, Technical Guidelines and Publications

Paints/Coatings				
Reference	**AS, ASNZS**	**ASTM**	**ISO**	**OTHER**
General				
Glossary of terms	2310 HB73	D16 D4538 (Power Stations)	28199-1	
Batch sampling of coating	1580-102	D3925	15528	
Volume Solids, VOC	1580.301.1/2	D1353 D2369 D2832 D3960	11890 3251 3233	SSPC Guide 10 JIS K 5601
Urethanes, Isocyanate	3750.18	D2572		SSPC TU-8 SSPC-PS Guide 17.00 Selecting
Flashpoint	2106	D56 D7094	1516, 1523, 3679, 3680, 13736	EN456 BS3900.A9
Viscosity	1580.214	D1200 Ford Cup D4212 Dip Cup D5125 ISO Cup	2884	
Zinc Dust and/or Pigment	1580-504	D478 Yellow/Chromate D521 Powder D6580 Cured/Uncured	1249 Zn Chromate 3549 Dust 6745 Zn Phosphate	SSPC Paint 29
Compatibility with other coatings	1580.404.1	D5064 Patch Test		SSPC-TU 3, Overcoating
Pot life, other		D5201 D5682 Resistivity	9514	JIS K 5600-2 NRB 15742
Coating Systems and Specifications				
Structural Steel	2312 Atmospheric 3750.2 U.H.B. 3750.6 Polyurethane 2K		12944	*SSPC PA Guide 5* *(See also catalog* *p. 299-308)*
Primers- General	3750.9 Organic Zinc 3750.13 Epoxy 2K 3750.17 Etch 3750.20 Solvent Based	D4146 Formability Test	17652	SSPC PA1 etc. SSPC PS Guide 7.00 Shop Painting
Primers- Inorganic Zinc Silicate	3750.15 4848	D4752.10 MEK Test		SSPC Paint 20, 30 etc UNE 48293
Marine	1580.481.5 Testing	F718 F941 F1130 Inspection	15181 Anti Fouling 20340 Offshore	AP 941 Offshore ABS 0049 Inspection NACE SP0108 Offshore SSPC-PS 19 Anti Fouling
Galvanising, Hot Dip	1397 Sheets 4680 Fabricated 4791 Process 2309 Durability	A90 Thickness Test A123 Specifications A780 Repair	1461 Fabricated Items	SSPC Guide 14 Repair
Thermal Metal Spray	2331.3 Testing	B833 Wire Specs. C633 Adhesion E1920 Surface Prep E2109 Porosity	2063 2064 Thickness	NACE No 12 Specs. SSPC CS23.00 SSPC QP6 Contractor Qualifications AWS C2.23M EN 15339 Safety
Fusion Bonded Epoxy [FBE]	3862	A972 Pipe Piling A950 H & Sheet Piling	21809-2 Submerged Pipes	NACE RP0394 NACE RP 0402 Joints
Coating – Inspection				
General	1580 3894	D3276 Guide D5161 Instruments D6237 Concrete	4628	SSPC-TR 4 NACE 80200 NACE RP 02 88
Inspector Qualifications	3998	D4228	9712	
Reporting	3894.10 Climatic 3894.11 Equipment 3894.12 Coating 3894.13 Daily Check 3894.13 Daily Painting	D3276 D5161		SSPC QS1 Records SSPC Guide 17 Safety
Degree of visible rust	1580.481.3	D610	4628.3 8501-1	SSPC VIS 1 Visual Standard SSPC VIS 2 Visual Standard
Assessing Durability	1580.457.1 Weathering 1580.481	D6943 Immersion D6577 Test Methods		MIL C 48947
Assessment of Climatic Conditions	3894.7	E337 Psychrometer	4677 Psychrometer 8502-4	

Quick Cross Reference to some useful Industry Standards, Technical Guidelines and Publications

Paints/Coatings

Reference	AS, ASNZS	ASTM	ISO	OTHER
Coating – Inspection *(continued)*				
Blistering/Peeling	1580.481.1.9/10	D714	4628-2	JIS K 5600-8-2
Chalking	1580.481.1.11	D4214	4628-6	
Wet Film / Powder Thickness	1580.107 3894.3	D1212 Organic Coatings D4414 WFT & Powder D7378 Powder	2808	NFT 30 125
Dry Film Thickness [DFT] – Non destructive [ND]	1580.108.1	G12 Pipeline	2178 2808	SSPC PA-2
DFT – ND – Eddy Current	3894.3 Eddy Current	B244, B499, D7091, E376	2360	
DFT – Destructive	1580.108.2 PIG 1580.408.4	D1005 Organic Coatings D4138 PIG	2808-5B PIG 2409 PIG	
DFT – Metallic Coating	2331.1	A90 Galvanising B530 Nickel Coating B659 Metallic & Inorganic		
Ultrasonic Thickness – coating and substrate	2452.3 Coating 2083 Calibration 4653 Operator Qualification	D6132 Coating E797 Substrate	12710 Instruments 18175 Performance	SSPC PA 9 Ctgs on concrete
Adhesion	1580.408.2 knife 1580.408.4 cross cut 1580.408.5 pull off	C633 Thermal Spray D3359 Tape Test D4541 Pull Off D6677 Knife D7234 Concrete	2063 Metallic Ctgs 2409 Cross Cut 4624 Pull Off 16276-1 Pull Off 16276-2 Cross Cut	BS 1881.207 Concrete DIN 1048 Concrete EN13144 Metallic Ctgs
Continuity (Porosity/Holidays)	3894.1 High Voltage 3894.2 Wet Sponge	D4787 On Concrete D5162 On Steel G62 Pipeline	28199.3	NACE RP 0274 Pipeline NACE TM 0384 NACE SP 01 88 NACE SP 04 90 Pipeline
Continuity (Porosity/Holidays) – Glass / Vitreous / Enamelled Steel		C536 C537	2746, 8289	BS 7793 1344.11
Salt Spray test	2331.3.1 Metallic Ctgs	G85 D5894 Salt plus UV	9227 21207	
Hardness/Cure	1580.405 Hardness 3894.4 Cure 1580.401 Cure	D2583 Barcol Impressor D2240 Elastomeric D3363 Pencil Test D5402 Solvent Resistance D4752.10 MEK Rub Test	868 Durometer 1518 Scratch 2815 Butchholz 15184 Pencil Test	DIN 53505 Durometer
Impact Resistance	1580.406	D2794, D6905 Organic Ctgs G14 Pipeline Coating G17 Penetration	20567-2 21227-2 6272-1 Assessment	GOST R 53007 BS 3900
Gloss	1580.602 3894.8	D523 D5767	2813	
Surface Profile	1627.4 3894.5	D4417 D7127 Stylus	3274 8503-1/2 8503-5 Testex 8503-4 Stylus	NACE RP 0287 Testex SANS 5772 BS7079 C5 Testex

Surface Preparation – Abrasives

Reference	AS, ASNZS	ASTM	ISO	OTHER
General	1627.4.2			MIL A 22262 Ship Hull
Metallic			11124 Specifications 11125 Testing	SSPC-AB3 New SSPC-AB2 Recycled
Non Metallic (Slag/Mineral etc)			11126 Specifications 11127 Testing	SAC GB/T 17849 SSPC-AB1 Single Use BS 7079 F10 Garnet BS 7079 F9 Staurolite
Testing for contaminants in abrasive	1627.4.2.3.2	D7393 Oil D4940 Ionic / Chlorides	11127.7 Chlorides	SSPC-AB2 Recycled Ferrous
Reference	**AS, ASNZS**	**ASTM**	**ISO**	**OTHER**

Quick Cross Reference to some useful Industry Standards, Technical Guidelines and Publications

Surface Preparation – Abrasive Blasting and Other Methods

Reference	AS, ASNZS	ASTM	ISO	OTHER
Abrasive Blasting	1627.4	F1330 Internal Pipe D1730 Aluminum	8504-2 12944-4	BS 7079 NBR 7348
Abrasive Blasting – Visual/Pictorial	1627.9	D2200 Guide to using	8501-1	BS 7079-A1:SUPP1 SSPC VIS 1 *(See below classes)* Coated and uncoated before and after Blasting
– White Metal [No visible contaminants]	127.4.B2.5 'Visually Clean'		Sa 3.0	SSPC-SP 5 NACE No 1
– Near White Metal [Maximum 5% staining only]	127.4.B2.4 'Very Thorough Clean'		Sa 2.5	SSPC-SP 10 NACE No 2
– Commercial [Maximum 33% staining only]	127.4.B2.3 'Thorough Clean'		Sa 2.0	SSPC-SP 6 NACE No 13
– Industrial [Max. 10% Adherent Contaminants remaining]	-		-	SSPC-SP 14 NACE No 8
– Brush Off / Sweep [all loose contaminants removed]	127.4.B2.2 'Light Clean'		Sa 1.0	SSPC-SP 7 NACE No 4
Water Jetting/Hydroblasting	4233.1 Safety 4233.2 Equipment	E1575 Safe Practice		SSPC SP WJ-3 NACE WJ-3 NACE 00615 Interpretation NBR 7348
Water Jetting – Visual/Pictorial Showing various grades of flash rusting – Clean to Bare Substrate – Very Thorough Cleaning – Thorough Cleaning – Light Cleaning		D2200 Guide to using	8504-1 Visual	SSPC VIS 4 NACE VIS 7 *Both of these illustrate the below:* NACE WJ-1 Visual NACE WJ-2 Visual NACE WJ-3 Visual NACE WJ-4 Visual
Wet Abrasive Blast Cleaning	1627.4.3.2	D5367 Inhibitors		SSPC-TR 2 NACE 6G198
Wet Abrasive Blast Cleaning – Visual Showing various grades of flash rusting		D2200 Guide to using		SSPC VIS 5 NACE VIS 9
Hand Tool Cleaning	1627.7	D2200 using Visual Stds		SSPC VIS 3 Visual Standard SSPC-SP 2
Power Tool Cleaning – Bare Metal with profile – Commercial with profile – Minimal, remove all loose material	1627.2	D2200 using Visual Stds		SSPC VIS 3 Visual Standard SSPC-SP 11 SSPC-SP 15 SSPC-SP 3
Pickling, other	1627.5			SSPC-TU 6 Chemical
Thermal Pre-cleaning				NACE 6G194 SSPC SP TR-1 DIN 32539
Degreasing/Solvent Cleaning	1627.1 1580.105.1	D6361 General		SSPC SP1
Concrete	4548	D4259 Immersion D4260 Acid Etching D4262 PH Level D4263 Moisture Level D5295 Membranes	7783 Vapor Transmission	SSPC-SP 13 SSPC PA 7 Coating SSPC-TU 10 Thick Coatings NACE No 6 NACE 6G197 ACI 515R Practices
Concrete – Visual				ICRI Tech Guideline 03732
Compressed air contaminants [oil etc]		D4285	8573	JIS B8391
Surface Cleanliness and contamination Water Soluble Salts and Chlorides	1627.1 3894.6 3894.12		8502-5 Ion Tube 8502-6 Bresle 8502-9 Conductometric TRI 5235 Effects	NACE SP0508 NACE 6G186 SSPC Guide 15 ISO 8502-10 BS 7079 B5 Ion Tube ISO 8502-6 SANS 5770
Surface Cleanliness and Contamination Dust and other	1627.1	F22-13 Water Break Test	8502-3 Dust on tape	PSPC MSC.215(82) PSPC MSC.244(83) SANS 5771 Millscale
Surface Finish, other	3978	A802 Steel Castings		

Quick Cross Reference to some useful Industry Standards, Technical Guidelines and Publications

Site Safety and Portable Equipment

Reference	AS, ASNZS	ASTM	ISO	OTHER
Electrical Installations – Site	3012			
Electrical Equipment – Explosive Atmosphere	2381 60079		13702 Offshore 6184	EN 50014 EN 60079, IEC 61241
Pressure Vessels	1210			ASME PV CODE
Fall Arrest Systems	1891	F887 Climbing	10333	EN 353
Protective Clothing	2616, 4501	F2588 Mist Test	14877	
Confined Spaces	2865	D4276		ANSI Z117.1

Respiratory Protection, Dusts

Reference	AS, ASNZS	ASTM	ISO	OTHER
Respirators/Helmets	1715 1716	F2704 Air Fed Respirators WK14247 Specification	16900	ANSIZ88.2 EN 143
Air Filters	1324	F778 Airflow Resistance		EN 779
Vapors	2986	D6062		
Dust	2724, 2985	D4532	6184 Combustible	PN91/Z-04030.06
Crystalline Silica Dust		E2625 (Construction) E1132 (General Exposure)	24095	PN91/Z-04018.03 SAC GB 16225
Air Sampling	1811 3580 3640	E1370	10882, 16000	BIS IS5182 SSPC TU7 Air / Soil

Lead Paint and Containment

Reference	AS, ASNZS	ASTM	ISO	OTHER
Lead Paint Management	3580.9	D5702 Heavy Metals E1728 Dust Wipes E1864 Systems Evaluation STP1226 Risks and Controls	6503	SSPC Guide 7 Disposal SSPC Guide 18 SSPC QP2 Contractor Qualifications
Paint – Soluble Lead Content	1580-501	D3618 D4834 D3335 E1753	2745 6503	BS3900
Industrial Vacuum Cleaners	60335	F1977 Filtration Efficiency		IEC 60335
HEPA Filters	4260	F1471	29463	EN 1822
Dust Collectors				SSPC Guide 16 Specification
Dehumidification				NACE 6A192 SSPC TR 3
Containment Sheeting			13468 Light Transmission	BS 7955 FR Sheeting BS EN 1263 Installation

Coating Application

Reference	AS, ASNZS	ASTM	ISO	OTHER
Spray Paint Booths	4114.1			EN 12215 EN 12981 EN 13355
Airless Spray Equipment	1580.205.4 Test		8028 Hoses	ONORM EN 1953 Safety SAC GB/T 20023 Hoses
Electrostatic Spray	2268 3754 Powder			SAC GB 12367 EN 50059

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