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Gunite is simply pneumatically applied concrete. That is concrete applied as a spray through a hose and a nozzle under pressure. To the layman, gunite has become a catch-all term for both gunite and shotcrete or both dry-mix and wet-mix concrete. However, in the swimming pool business, gunite specifically refers to dry-mix concrete in which water is added late, at the nozzle head. What Is Gunite? On this page, we explain what gunite is (pneumatically applied concrete) and what it is not. Gunite is commonly used to build swimming pools and hardscapes because it is durable and lends itself to creative and unusual shapes and sizes. Learn more about gunite. What Is Rebound? Rebound is simply the inevitable overspray that happens when you apply concrete under pressure through a hose and nozzle. On the linked page, we include more details about how rebound is approached, minimized, and handled by Union Gunite. Learn more about rebound. Gunite vs. Shotcrete Here, on the linked page we explain the differences between gunite and shotcrete. The terms are often used interchangeably, but they have specific meanings in the swimming pools business. Learn more about gunite vs shotcrete. Gunite is a versatile material with many applications. We have only recently begun to explore the many creative possibilities of pneumatically sprayed concrete. Please contact Union Gunite for all your commercial and residential gunite needs in the Houston, Texas area. Contact us using the convenient form on our page. Gunite What is Galvanic Corrosion? Galvanic Corrosion requires 3 elements: 2 different types of metals in contact with each other and a solution that is corrosive such as water. The increased corrosion rate of the anode is called Galvanic Corrosion. We can provide Corrosion Control. Is Helifix Cost Effective? When demolition of a building seems like the only option, there are solutions that can be more advantageous and less disruptive. Helifix is a long-term repair solution making it more cost effective. Gunite are a member of the Helifix Approved Installer Network. Does Gunite work on Multi-Storey Car Park Refurbishment? Gunite provide remedial repair and refurbishment solutions to extend the service life of all types of car parks. Our network of regional offices across the UK ensure we have national coverage. See our case studies for some of the Multi-Storey Car Parks we have worked on. How does Gunite ensure that restoration of historical buildings is sympathetically achieved? The cleaning and repair of the country's heritage assets requires a carefully planned approach to prevent further damage and ensure that the final restoration results meet the aesthetic and structural requirements. See our case studies for examples. What types of External Façade Cleaning do you undertake? Gunite offers a range of external façade cleaning and restoration solutions to maintain and protect concrete, brick, stone and render façades. What sort of waterproofing does Gunite do? Gunite has the in-house expertise to design and install a range of bespoke tanking, sealing and waterproofing systems to prevent the ingress or egress of water. The control of water penetration through below ground and water retaining structures has always been a challenge for the construction industry. Gunite have a dedicated department for waterproofing. Do you have experience with Liquid Roofing? As approved installers for many of the UK's liquid roofing and deck membrane systems Gunite can provide guaranteed liquid roofing and deck membranes for both new build and refurbishments. What balcony work can you do? Gunite undertakes the design, manufacture and installation of a large range of balcony balustrades and handrailing. We have the facility to manufacture and design bespoke balcony types, including any supporting engineering calculations for the loadings on the railing and fixings. Are Gunite experienced in Brickwork Repair? Gunite is one of the UK's leading brickwork repair and repointing contractors. With 30 years industry experience we have built a reputation for consistent, successful project delivery. As one of the founding members of the Concrete Repair Association (CRA), we continue to be committed to the promotion, development and practice of concrete repair and allied disciplines. The Concrete Repair Associations remit covers advancing education, technical training, and Health and Safety matters in the specialist construction sector. What are Measured Surveys? When a property is being redeveloped, restructured, or added to with an additional aspect e.g. a building extension, a measured survey will give you a full representation of your building. This will provide you with the necessary required accurate blueprint essential for when creating the plans for your project. What sectors do we provide services for? Commercial & Retail, New Build, Heritage, Public Building, Social Building, Education, Health Care, Hotels & Leisure Commercial & Retail New Build Heritage, Public Buildings Social Housing Education Healthcare Hotels & Leisure Gunite Infrastructure Does Gunite do Injection Waterproofing Through our Infrastructure department, Gunite carry out the injection waterproofing and leak sealing of a variety of sub-terrain structures utilising polyurethane injection resin techniques that react with water to form a highly elastic, hydrophobic seal against water ingress. The resin reacts quickly with water and expands to produce an open-cell, rigid foam that is ideal for stemming water ingress at defects in concrete structures and both steel and secant piled walls. Could you explain what Sprayed Concrete is? Here at Gunite (Eastern) Ltd we provide both wet-mix (shotcrete) and dry-mix (gunite) methods of sprayed concrete. The word Gunite to describe shot sprayed concrete was originally a name that specifically referred to the dry-mix pneumatic cement application process. What sort of coatings and linings do you use? Gunite (Eastern) Ltd offer a variety of epoxy, polyurethane, polyurea and cement silicate -based specialist materials for the chemical resistant lining of containment bunds, chambers, and manholes. Our systems can be used within manufacturing, heavy industry, power generation and clean and wastewater environments. For surface preparation Gunite (Eastern) Ltd offer a number of options, from conventional open abrasive blasting with grit media, to open blasting with water suppression to dust free preparation utilising the sponge media blasting process. Click here for more details Our project requires specialists in Confined Space and Restrictive Access. Can Gunite Group help? Our teams are fully trained to High Risk Confined Space Training C&G 6150-03 as a minimum with a number of operatives trained in Rescue procedures. Gunite have the in-house capability to provide its own trained and experienced stand-by confined space rescue teams. We have a team of surveyors, managers, operatives and consultants who have a wealth of experience in External Refurbishment, Infrastructure and Waterproofing. Why not get in touch to find out how we can help you today? Gunite (Eastern) Ltd Registered in England Number 2702580 Website built by Climb Online Gunite, also known as shotcrete (sometimes), is concrete that is applied through a hose and nozzle at high pressure. This is called a pneumatic application. In pool construction, gunite specifically refers to a dry-mix concrete and shotcrete is specifically a wet-mix concrete. However, in other types of construction, the terms gunite and shotcrete are sometimes used interchangeably. The process of shooting concrete out of a "gun" (or nozzle) was originally patented in 1907 using a dry mix with water being added at the nozzle. Today, gunite generally means just pneumatically applied concrete. Since gunite is made of concrete, gunite has the same ingredients as concrete: cement, sand, and water. Gunite is commonly used in the construction and repair of concrete swimming pools, and that's what it is best known for. However, gunite has many other applications as well, both commercial and residential. Gunite is used for the hardscape part of landscaping, and it is also used, for example, in commercial buildings, bridges, tunnels, and mines, both in construction and repair. There are some distinct advantages for using gunite over normal, poured concrete. Because of how it's applied (pneumatically), gunite does not have any pockets or voids that poured concrete can have. That makes gunite stronger than poured concrete. It's also much easier to sculpt unusual shapes and designs with pneumatically applied concrete as opposed to poured concrete. If you are looking for gunite in the Houston area, this is our business. Union Gunite can fulfill all your gunite needs for both commercial and residential projects. Please contact us, and let us help you. Thinking about getting a new swimming pool for your backyard? You probably know about the three types of inground pools: concrete, fiberglass, and vinyl liners. If you've been leaning towards getting a concrete pool, you've probably heard the term "gunite" at least a few times. We've been in the pool business for a long time, so we can sometimes take our knowledge and terminology for granted -- but we know there can be a lot to learn about inground swimming pools before you can confidently make the best choice for your backyard oasis. Want to know more about gunite pools? You've come to the right place. Let's start with the obvious and most straightforward question: what is gunite? What is gunite? (a brief history of concrete) Gunite is concrete. To be more specific, the term "gunite" actually refers to the process through which concrete is transformed from a big old glob of thick goo into a beautiful and functional swimming pool. Concrete isn't always easy to work with. It's a dense industrial material that dries quickly and retains its solid shape superbly for a very long time. Historically, most concrete construction used removable forms or molds to create shaped concrete, or workers would use concrete as a form of mortar to bind other materials together or to strengthen their exteriors. Concrete has been used for thousands of years, and many concrete structures are still standing today. Roman architecture is the best-known example of durable concrete structures from the ancient world, but we now know concrete-like mixtures have been used as a building material since roughly 6,500 BC. How does the gunite process work? The gunite process was invented in 1907 by a taxidermist named Carl Akely -- who apparently dabbled a bit in industrial construction when he wasn't stuffing animal carcasses -- to fix the Field Columbian Museum in Chicago. Gunite uses pressurized air to push dry concrete mix through a tube or hose. This dry mixture combines with water in a nozzle at the end of the hose, which shoots the now-mixed concrete onto whatever surfaces it's pointed at. Gunite results in a relatively thin layer of wet concrete, which is blasted at high speed and pressure onto any surface to which it can adhere. The combination of high pressure and absolutely last-second mixture of the dry concrete mix with water needs to be conducted just right, or the final mixture may be too dry or become too wet and not adhere properly to its intended final surface. This is why gunite construction relies on the expertise and talent of the nozzleman controlling the flow of dry mix and water at the nozzle. What is gunite made of? Gunite, as mentioned earlier, is a process for applying concrete to various surfaces. Concrete hasn't changed much since Roman times. It's typically a combination of cement, sand, and some type of aggregate -- little bits of hard material that are slightly larger than sand, such as crushed stone or small pieces of gravel -- mixed with water. There are a few different types of cement, but it's usually made of lime or silicate powder. China produces most of the world's cement, and cement is actually the most widely-used manmade material in the world, and is second only to water as the most widely-used substance in the world. In many ways, cement and water are the building blocks for our modern society. Concrete is just a somewhat more complex and resilient product that makes water and cement more effective than they might be on their own. What is a gunite pool? Gunite-built concrete pools have been around since the 1940s. They became popular backyard features after World War 2, as millions of returning soldiers moved their families to new suburbs and began seeking out more creature comforts for their properties. Concrete pools have been around for centuries -- Roman baths were usually made of concrete, for example. Gunite simply made it easier for local construction companies in the United States (and elsewhere) to build attractive and highly customizable pools in suburban backyards, without as much heavy equipment and time-consuming form construction (remember, forms create shapes or molds into which concrete can be poured until it dries) as might have been otherwise needed. How are gunite pools made? Like all other types of inground pools, a gunite pool begins with the dig or excavation. Heavy machinery will move into your backyard to dig a hole that's as near to the depth, width, shape, and size of the pool design you want. Once this hole is ready, workers begin installing plumbing for your pool while also reinforcing the walls and floor of the excavated hole with steel rebar, which forms a sturdy cage onto which the pool builder's nozzleman can spray gunite. Gunite has some critical advantages over the similarly-applied shotcrete (read more about the similarities and differences in our Gunite vs. Shotcrete article), one of which is its ability to be applied in stages, rather than requiring a one-and-done approach. Most forms of concrete, including shotcrete, don't bind well together if applied at different times, which can create structural cracks or flaws, and otherwise mess up the visual integrity of the desired concrete surface. Gunite-applied concrete, however, is applied with so much pressure, and mixed with water at such a late stage in the process, that a good nozzleman can spray gunite several days apart and still create a durable, attractive concrete surface without risking structural flaws. How long does gunite take to cure? Once all the concrete has been sprayed down by the gunite process, the concrete must be left to cure for a period of time before the concrete pool can be safely filled with water. Concrete applied by the gunite process needs to cure for roughly one month (28 days) for the particles and molecules in the concrete mixture to fully bond together and reach their maximum strength and durability. While it is possible to lay down additional gunite-sprayed concrete while existing concrete surfaces are curing, it will extend the total cure time. For this reason, most gunite pool builders will still try to complete the gunite application process quickly, so as to avoid an extended period of curing. Bad weather conditions can interfere with the curing process as well, and gunite pool surfaces may often develop small cracks regardless of the nozzleman's skill. What else is involved in constructing a gunite pool? The visible surface of a cured gunite swimming pool is typically covered in plaster or tile, or some other "finished" material, to create a more consistently even surface texture and color. Since this may not happen for at least a month after the final spray, your pool builder will typically install any coping around the edge of the pool, and will generally build your patio area while the gunite cures as well. While waiting for your gunite pool to cure, your pool builder might also install any add-ons and accessories included in your project, such as fencing, retaining walls, landscaping, and water features that don't need to originate inside the pool itself. How long does it take to build a gunite swimming pool? From start to finish, the gunite pool construction process will usually take between three to six months to complete -- and that's just the active period in which something is actually happening in your backyard. A combination of extraordinarily high demand and constrained supplies of raw materials have stretched builder backlogs out for months, if not well into next year. It's quite possible any gunite swimming pool you sign up for won't be ready for use until the end of 2022's swim season. This isn't to say you'd be able to get other types of pools in the ground and ready for use much earlier. But if you must swim ASAP, a gunite pool might not be your best option. What does a gunite pool cost? Historically, gunite swimming pools have cost between $55,000 and $100,000 for a turnkey installation, with essential options included. However, we rarely see gunite installations that cost less than $100,000 in today's COVID-era pool market. Because gunite pools (and shotcrete pools, for that matter) can be customized to any size, shape, and depth, with just about any features imaginable, their costs can quite quickly shoot past the six-figure mark, even if you're trying to install a smaller and less distinctive gunite pool design. What to expect when maintaining a gunite pool Gunite pools can also be costly to maintain over time. On average, we've seen gunite and shotcrete pools cost over $2,700 a year over a 10-year period. This $27,000-plus maintenance cost for 10 years includes more chemicals and electricity usage than you'd need for similarly-sized fiberglass or vinyl liner pools. It also includes expensive but unavoidable replastering and acid washing costs -- the surface of your concrete pool might look great on day one, but it won't last forever, and you'll have to effectively replace it all every 10-15 years. Check out our infographic for more information on the maintenance costs for gunite pools, as well as for fiberglass and vinyl liner pools: If you're still working through your options before buying an inground swimming pool, try our quick Pool Type Quiz. It takes just a couple of minutes, and you'll come away with much greater clarity on the type of pool that might best suit your backyard and unique needs. Just click the button below to start your quiz! If you're shopping around for a fiberglass pool, feel free to take a look at our catalog of models, visit our extensive video library, try out our pool cost calculator, or request custom pricing using the button below. Editor's note: This article was updated on September 12, 2023. Editor's note (5/17/24): This article was originally written by Alex Planes. Any opinions expressed are those of the author. Any prices referenced were based on information that was readily available at the time. River Pools is a brand of inground fiberglass pools produced via the River Pools division of the manufacturing facility in Fortville, IN. While our expertise is in fiberglass pool manufacturing, we have a network of expertise relating to all things inground pools. Our own collective experience from over the years spans manufacturing, project design, installation, and pool service. We often tap into this knowledge base and share information freely with homeowners, just like you, who are considering having a swimming pool installed in your backyard. Please feel free to contact us if you need gunite professionals for your project in the Houston, Texas, area. We supply and install gunite in both commercial and residential applications. You can use the convenient form. Phone: 713-992-8803 Fax: 346-241-1313 Email: Email Placeholder Address: 10201 Windsor Lane Houston, TX 77031 Skip to content Union Gunite is the leading purveyor of gunite in Houston, Texas and the surrounding areas. We supply and install gunite for residential and commercial projects including swimming pools, outdoor living areas, and hardscapes. One of the great advantages of gunite is that it can be sculpted into all kinds of unique shapes to fit your design. Our two main services areas are: Gunite For Pools Gunite pools are built on site and offer limitless customization for their shape and configuration. Gunite swimming pools are made from reinforced concrete, and they are much more durable than other types of pools. Learn more about Gunite For Pools. Gunite For Retaining Walls Gunite is very commonly for retaining walls that are a part of any landscape. Gunite is durable and lends itself to unusual or creative shapes and also to very large applications. Gunite can be used to create artificial rocks, platforms, bars, tables, and anything just about anything else. Learn more about Gunite For Retaining Walls. We have a team of conscientious professionals who work carefully and efficiently to give you a neat, precise, and polished look to your gunite projects. Call us at (346) 341-7373 or contact us online for a free consultation.. When it comes to creating durable and versatile concrete structures, gunite is a method that stands out for its effectiveness and wide range of applications. Used extensively in construction, repair, and even artistic endeavors, gunite offers a robust solution for many challenges faced in the industry. But what exactly is gunite, and why is it so highly regarded? Let's take a closer look. Gunite, also known as dry-mix shotcrete, is a form of concrete application that involves spraying a dry cement-sand mixture through a hose and adding water at the nozzle just before application. This process contrasts with wet-mix shotcrete, where the water and concrete mix are combined before being pumped through the hose. The dry-mix approach of gunite allows for greater control over the water content and consistency of the mixture, making it ideal for specific construction needs. The process of applying gunite involves several key steps: Mixing the Dry Ingredients: A dry mixture of cement and sand (and sometimes aggregates) is prepared and fed into a delivery hose. Spraying: The dry mix is conveyed through the hose by compressed air. At the nozzle, water is introduced to hydrate the mix just before it is sprayed onto the target surface. Application: The high velocity of the spray ensures that the gunite mixture adheres well to the surface, creating a dense and strong layer. The applicator can control the thickness and texture during the process. Finishing: After the application, the gunite surface is smoothed and finished according to the project's requirements, whether it's a smooth finish, a textured surface, or sculpted details. 1. Superior Control:Gunite allows for precise control over the water content, which can be adjusted at the nozzle based on the specific needs of the application. This ensures optimal consistency and strength. 2. Versatility in Application:Because of its dry-mix nature, gunite is highly adaptable to different project types, from structural repairs to new construction. It's particularly effective in situations where access is difficult or in complex forms and shapes. 3. Strong Bonding Capability:The high velocity of gunite application creates a strong bond with the substrate, which is essential for creating durable structures that can withstand significant stress. 4. Durability and Longevity:Gunite's dense and strong application makes it highly resistant to weathering, cracking, and wear, ensuring the longevity of the structures it's used to create or repair. **1. Swimming Pools:One of the most common uses of gunite is in the construction of swimming pools. Its adaptability to various shapes and the ability to create smooth, watertight surfaces makes it ideal for custom-designed pools. **2. Slope Stabilization:Gunite is often used in geotechnical applications to stabilize slopes and embankments. Its strong adhesion and ability to form a protective layer over soil and rock help prevent erosion and landslides. **3. Bridge and Marine Repairs:In the construction and repair of bridges and marine structures, gunite is used to reinforce concrete elements, fill voids, and protect against the harsh effects of water and weather. **4. Structural Strengthening:Gunite is frequently employed in the repair and strengthening of aging or damaged structures. It can be used to add a new layer of concrete to existing surfaces, enhancing their strength and extending their lifespan. **5. Architectural Features and Sculptures:Gunite is also popular in creating architectural features, such as decorative facades, sculptures, and other artistic elements. Its ability to be molded and shaped while maintaining strength makes it a favorite in creative construction projects. Gunite offers a unique blend of flexibility, strength, and durability, making it an excellent choice for a wide variety of applications. Whether you're looking to build a custom swimming pool, stabilize a slope, or restore an aging structure, gunite provides a reliable and effective solution. Its ability to be applied in difficult-to-reach areas and its strong bonding capabilities make it especially valuable in challenging projects. Additionally, the control it offers over the mixture's consistency ensures that the finished product meets the highest standards of quality and durability. In summary, gunite is more than just a method of applying concrete; it's a powerful tool that enhances the quality and longevity of the structures it's used to create. If you're considering gunite for your next project, trust experienced professionals to deliver the best results. Our team is ready to help you explore the possibilities and bring your vision to life with precision and expertise. Guniting is a process that uses an air-pressured stream of dry mix cement and sand, or a wet mix of cement, sand, and water.The mixture is then sprayed onto a surface or into a formwork to create a durable, waterproof layer that can be used as a protective coating, or as a base layer for further construction.Guiniting is a fast process. So, Guniting is a great choice for applications where a strong, water-resistant surface is needed. It is commonly used for building fireproof walls and for strengthening existing walls and structures. The mixture consists of cement, sand, and water that is mixed to form a slurry before being forced through the nozzle. This slurry is sprayed onto the surface in layers and left to dry, reinforcing the existing material and creating a solid bond.Differences between shotcrete and guniting are tabulated below:GunitingShotcreting1Begun in the early 1900Begun in recent years2Mortar is formedConcrete is used3Coarse aggregates are not used at allSmall-sized coarse aggregates are used4Less thickness is obtainedGreater thickness can be obtained5Materials are conveyed through a hose in dry form till the nozzleMaterials can be conveyed in either dry/wet form till the nozzleConcrete gunite machineGuniting gunAir compressorNozzleHose for material, air, and waterPressure tank for water supplyAdmixture dispenserThe guniting concrete procedure is as follows:Cement and sand are mixed thoroughlyThen special air pressure mechanical feeder known as the gun is filled with the prepared mixture of cement and sandInside the gun, the cement-sand mixture is fed into the delivery hose with the help of a feed wheel or distributorThe delivery hose carries the mixture to a special nozzle by compressed airPerforated manifold present inside this special nozzle spray water under pressure onto the cement-sand mixture (usage of more or less water content has an effect on guniting as discussedWater If admixtures are to be added, then they are mixed with waterThe quantity of water sprayed in the nozzle can be controlled by the operator with the help of regulating valve gets intimately mixed with cement-sand mixture forming the mortar.The mortar jet is sprayed out from the nozzle to the surface to be gunited at a high velocity of 90-120 m/s and a pressure of 2-3 kg/cm2.After each layer of gunite is applied, a spot-welded steel wire mesh fabric is provided.The diameter of the wire is 5mm.When the meshes are to be joined, they should overlap each other by one mesh so that continuity is maintained.The provision of wire mesh reduces initial shrinkage and prevents cracking in the freshly placed material.The thickness of Guniting is limited to 200 mm according to cost considerations and design requirements. Maximum rate of deposition of guniting is 15 m3/h.Guniting work specifications are listed below:Guniting ratio of 1:3 is normally used in guniting.Water cement ratio of 0.3 is used normally during guniting.Maximum size of sand should not exceed 10 mm.Distance between the nozzle and the backing surface should not be more than 1 m.Nozzle velocity should not exceed 140 m/s.Rebound should not be re-used.Guniting is used for:Repair of dams, spillways, bridge piers, sewerage pipes, water mainsProtection of canal banksProtection of steel girders from corrosionWaterproofingLining of canals/reservoirs/tunnelsRepair of spalled concrete structures due to corrosion in the reinforcementRepair of inferior quality concrete workProvision of impervious layerConcreting on curved or folded sectionsConcreting for horizontal/vertical surfaces or overhead surfaceCompressive strength of about 560-700 kg/cm2 can be obtained at 28 daysHigh impermeability of the gunited surface is obtainedRepairs can be done effectively in a short timeConcreting can be done to the surface of any shape – undulating, spherical, or curved, hence it is versatileConcreting can be done to special shapes and features like swimming pools, waterfalls, etcHighly skilled labour is requiredRebound of mix obtained is a wasteHauling of rebound material adds to the costDust hazard is highWork cannot be continued in adverse weather like windy weatherGuniting is generally prepared by the mixture of cement and sand kept at the ration of 1:3. i.e. one part of cement and three parts of sand.Thickness of Guniting> 200 mmRate of deposition of guniting> 15 m3/h.Velocity of guniting gun90-120 m/sPressure of guniting deposition2-3 kg/cm2Mix ratio of guniting1:3Diameter of wire mesh5 mmCompressive strength at 28 days560-700 kg/cm2Addition of pozzolana5% by weight of cementI hope this article on "Guniting" remains helpful for you.Civil ConceptRead More:-Top 5 Cause of Honeycomb in Concrete – Remedies of HoneycombHoneycombing in concrete | Types, Effects, and Remedies of HoneycombCause, Effect, and Types of Segregation of concreteProperties of fresh and hardened Concrete – Segregation, Bleeding, etc As we talked about on our What Is Gunite page, gunite is pneumatically applied concrete, and in the swimming pool business, gunite refers to a dry mix in which water is added in the nozzle (or gun). When you apply concrete under pressure with a spray nozzle, some of the concrete bounces off the intended surface and lands where it should not. This concrete that bounces off or overspray is called "rebound". The harder the surface that gunite is being applied to, the more rebound there is. That means that during any project, there will be more rebound in the beginning when the gunite is first being applied, and the amount of rebound decreases once there is a layer of gunite to spray onto. Once there is an initial layer of gunite, the surface is much softer, so there is less "bounce back". That said, rebound can be minimized with two things: skilled persons handling the nozzle, and gunite equipment that is in good repair. Union Gunite is very experienced at handling the application of gunite, so we will minimize any rebound. We also keep our equipment in excellent condition so as to avoid this problem as much as possible. In any case, rebound is always addressed and cleaned up as needed, so it is not a cause for concern. Some small amount of rebound is always present when concrete is applied pneumatically. What is important is that it is minimized, controlled, and then cleaned up. Please contact Union Gunite for all your gunite needs in the Houston, Texas area. Contact us at any time. Skip to content The gunite is a mixture of cement and sand, in the proportion of 1:3. It is the term given for the "dry shotcrete process." Guniting is the most effective process of repairing concrete work that has been damaged due to inferior work or other reasons and is used for providing an impervious layer. Gunite is sprayed pneumatically onto the surfaces at a high velocity under a pressure of about 20 to 30 N/cm2. Once the gunite is applied, it starts a simultaneous process of consolidation and settling. The application of shotcrete in both dry and wet forms has become a standard method in many construction projects, from repair and reinforcement of existing structures to the creation of new ones. Gunite offers a range of benefits over traditional concrete, such as its ability to be applied in challenging locations and its faster curing time. As a result, it is used in a wide variety of engineering applications, including tunnels, pools, slopes, and foundations. Shotcrete Types: Dry Shotcrete and Wet Shotcrete Shotcrete can be applied in two distinct methods: dry shotcrete and wet shotcrete. Each method has its unique set of advantages and is suited for different types of projects. Below is a more detailed explanation of each type. Dry Shotcrete In dry shotcrete, the dry mix of cement and sand is transported to the nozzle through a hose using compressed air. The dry ingredients are kept in a hopper, and the mixture is pneumatically pushed through a hose. At the nozzle, water is added, and the mixture is thoroughly mixed just before being sprayed onto the surface. The ability to adjust the water content at the nozzle during the application process makes dry shotcrete an attractive choice for certain conditions. The dry application method is particularly beneficial when there are frequent interruptions during the application process. This method allows the technician to pause and start again without losing consistency in the material mix. Dry shotcrete is also useful for situations where an immediate set is required, such as in areas where moisture might be a concern, or a quick build-up of material is necessary. Wet Shotcrete In wet shotcrete, the materials are pre-mixed in a batch plant and delivered to the nozzle in a wet form. The mixture includes cement, water, and aggregates. The wet mixture is propelled through the nozzle by compressed air, where it is sprayed onto the surface. Wet-mix shotcrete is generally easier to apply than dry shotcrete, with less rebound and dust generated during the application process. The primary advantage of wet-mix shotcrete is the reduction in material waste, making it ideal for larger-scale applications where the volume of material needed is substantial. The wet process also ensures more consistency in the mix and provides faster application speeds. It is often used in projects such as large tunnels, dams, and retaining walls. Advantages of Guniting Guniting, as an efficient and cost-effective method of applying shotcrete, has numerous advantages that make it the preferred choice for many civil engineering applications. Below are the primary benefits of using gunite in construction projects: Simultaneous Placement and Consolidation – One of the primary benefits of guniting is that placement and consolidation of the shotcrete occur simultaneously. This means that the material is compacted as it is applied, ensuring that it adheres firmly to the surface. Better Adhesion than Regular Concrete – Gunite has superior adhesion properties compared to regular concrete, allowing it to bond strongly to a variety of substrates, including steel, rock, and existing concrete surfaces. Steel Fiber Reinforcement – Steel fibers can be incorporated into the shotcrete mix to enhance its strength, durability, and flexibility. This makes gunite an ideal solution for applications that require superior tensile strength and resistance to cracking. Cost-Effectiveness – Gunite is often more affordable than traditional methods of concrete placement due to its ability to reduce material waste and the speed of application. This can significantly reduce labor and material costs. Reduced Shrinkage and Permeability – Gunite is designed to minimize shrinkage and permeability, providing a more durable and water-resistant surface than conventional concrete. Applications of Gunite Gunite has a broad range of applications in various civil engineering projects. Its versatility allows it to be used for both new construction and repair work in a wide variety of environments. Below are some of the most common applications of gunite in construction: Slope Stabilization In areas with steep slopes or unstable earth conditions, gunite is often used to stabilize the ground. The shotcrete is sprayed onto the slope, providing a reinforced surface that prevents further erosion and protects the slope from landslides. This application is commonly seen in mountain roads, highways, and retaining walls. Tunneling Gunite is widely used in tunneling projects to reinforce the tunnel walls and ceilings. The shotcrete provides a temporary or permanent support system for the tunnel as excavation progresses. It helps to prevent collapse and ensures that the structure remains stable until permanent support systems, such as steel or concrete liners, are installed. Water Tanks and Pools Gunite is frequently used in the construction of water tanks, swimming pools, and artificial ponds. Its water-resistant properties make it an ideal material for these applications, providing long-lasting durability and preventing leaks. Retention Walls Retention walls are often constructed in areas where soil or rock needs to be retained to prevent erosion. Gunite is used in these applications to form strong, durable, and stable walls that resist hydrostatic pressure. Structural Reinforcement In older buildings or structures that require reinforcement, gunite is often used to strengthen the existing foundation or walls. The shotcrete is applied to the surface, increasing the overall strength and stability of the structure. Mining Applications Gunite is also used in mining operations to reinforce mine shafts and tunnels, providing an additional layer of protection for workers and equipment. It helps to stabilize the mine environment and reduce the risk of collapse. Conclusion Gunite, or dry shotcrete, is a highly versatile and effective construction method that offers many advantages over traditional concrete placement methods. Its ability to be applied in challenging environments, the quick curing time, and its adaptability to different project requirements make it a popular choice for various applications in civil engineering. Whether used for slope stabilization, tunneling, structural reinforcement, or water features, gunite provides a reliable, cost-effective solution that ensures durability and longevity in the built environment. While gunite is probably best known for its use in swimming pools, gunite has many other applications. After swimming pools, gunite is very commonly used in the hardscape that it part of any landscape. Gunite works great in retaining walls, for many of the same reasons that it is used in swimming pools: It's durable and lends itself to unusual or creative shapes and also to very large applications. When traditional concrete is poured into forms, there is always the risk for voids which affect the strength of the concrete. When concrete is applied pneumatically, under pressure and through a hose, the risk of voids is minimized, and the finished product is much stronger. There is considerable skill required to supply and install gunite correctly. However, if you use professionals like those with Union Gunite, your gunite creations like retaining walls will be durable, installed quickly, and they can be any shape or size you want. Don't forget that gunite can be used for more than just retaining walls. Gunite can be used to create artificial rocks, platforms, bars, tables, and anything else hard outside that can be constructed out of concrete. Gunite is a versatile building material that has unlimited potential. Union Gunite supplies and installs gunite all over the Houston, Texas area with their experienced team of professionals. Contact us at any time for your gunite needs. Join TheConstructor to ask questions, answer questions, write articles, and connect with other people. When you join you get additional benefits. Have an account? Sign In The trade terms for sprayed concrete are gunite and shotcrete. Gunite and shotcrete are alternative forms of concrete, distributed by a hose at a high velocity, which enables us to reach awkward surfaces such as tunnels, bridges, swimming pools and train stations. Instead of being poured onsite to form solid ground bases for sheds, car parks, extensions and more, sprayed concrete is dry and attaches quickly to the host surface. Sprayed concrete/ gunite or shotcrete can be used for: Artificial ponds Dikes and dams Ditches and channels Domes Mining Pools Retention walls Slope stabilization Structural reinforcement Tunneling Water tanks The advantages of gunite and shotcrete Sprayed concrete offers many advantages and can be used for more applications, compared to traditional, poured concrete. Gunite and shotcrete can be placed, compacted and strengthened which makes it easy to manage. These types of concrete create an incredibly strong bond with any surface, offers reduced shrinkage (which means it's less likely to crack) and has a lower permeability (which means it can better protect structures from steel corrosion). To improve the strength and ductility of poured concrete, it is usually incorporated with wire mesh but sprayed concrete can be combined with steel fibre to increase this. Gunite and shotcrete are typically less expensive than poured concrete. What's the difference between gunite and shotcrete? There's not much difference between gunite or shotcrete apart from the application process. Gunite is a dry-gun concrete and shotcrete is a wet-gun concrete. For gunite, dry concrete is put into the hopper and forced out of a hose, through a nozzle. The person operating the gunite distribution can control the addition of water by altering the nozzle and by the time the gunite reaches the host surface, it will be fully mixed. This forms a better batch because there's more control over the amount of water that is being added to the dry concrete. The control over the nozzle allows for even distribution, better placement and optimal accuracy. Wet-mix shotcrete is already mixed and is applied using the same hose method but with this mix, there is no additional water. This is the preferred method as it reduces dust and has less of a rebound, which means there's less wastage during application. For help and advice, call Easy Mix Concrete Services LLC on 512-361-4198 – your local concrete company who are here to provide excellent services and deliver all quantities of concrete. We aim to beat any price in the city, and we have an 'only pay for what you use' policy – so expect an honest and straightforward service. The are several different types of swimming pools, but gunite (or concrete) pools are the most common and have many advantages. Gunite pools are built on site and there is no limit on how they can be shaped and configured. Other types of swimming pools like fiberglass or vinyl have limits to the shapes they can have. Since gunite pools are built on site, it's also possible to create and integrate interesting components like seats for bar or a hot tub that are difficult or impossible to achieve with other types of pools. Because gunite swimming pools are made from reinforced concrete, they are much more durable than other types of pools. They last for ages and look good with a minimum of regular maintenance. In contrast, vinyl pools require new vinyl liners every seven to eight years. Another advantage of gunite pools are size. The biggest pools are always gunite. That is because when you are using pneumatically applied concrete, there are no limits on either size or shape. It's much easier to go big and/or be creative with swimming pool size and shape. Union Gunite has highly trained professionals working with the concrete for your pool, dryscape, or other application, whether it's for a commercial or residential property. We will handle your gunite with the utmost care and attention. Please contact Union Gunite for all your pneumatically applied concrete (gunite) needs in the Houston, Texas area. Contact us at any time. Gunite can be defined as a mortar made up of cement and sand that is transmitted by a gun. On a backing surface, it is pneumatically driven through a nozzle where high-velocity water is supplied. Guniting is the process of applying mortar or concrete under pneumatic pressure with a cement gun, resulting in highly strong concrete with a high bond. The high-velocity mix that exits the nozzle strikes the surface that needs to be fixed or protected. The coarser particles bounce from the surface during the process, leaving a superb bond coat of fine grout in close proximity to the backing surface. A thin layer of grout forms during the process, acting as a cushion, minimizing the percentage rebound in subsequent layers. Because the rebound material contains more coarse components than the mix leaving the gun, the composition of the material deposited on the backing surface differs from that of the mix leaving the gun. Guniting Rebound becomes the most important consideration in the application of gunite because it affects the economy. The following are approximate rebound values for various working conditions: Basements 30% Vertical Walls 40% Overhead Slabs 50% Beam Sides and Bottoms 55% Columns 65% The material is compacted as a result of the impact caused by the jet force. For guniting, a relatively dry mix is preferred because the material will support itself without sagging even in vertical and overhead applications. The guniting process is done in 40-50 mm layers. Following the application of the first layer and its drying, all loose material and laitance is removed with a hammer in order to find fake regions caused by a lack of bond or rebound pockets. During the second layer's placement, these pockets are cut and refilled. The compressive strength of a good properly compacted gunite cured for 28 days reaches 42 N/mm2. Gunite weighs 2300 kg/m3 in average. The curing period for guniting can last for 7 days. Also Read : Different Types of Mortar Used in ConstructionAlso Read : Concrete Expansion Joint Filler Materials Gunite can be used to make thin-section structures such as folding plates, shells, and thin walls, as well as tunnel and swimming pool linings.It's also utilised to restore concrete that's been damaged by fire, earthquakes, or chemicals.It can also cover prestressing wires and steel pipelines with protective coatings.From an architectural standpoint, guniting is best suited for providing rough surface texture.For refractory castables, pneumatic guniting is also used. The proportions in place for various mixes for optimum nozzle velocity are shown in the table below. Nominal Mix Place in Gun(Cement: Sand)Mix in Place(Cement: Sand)1 : 3 1 : 21 : 3.5 1 : 2.81 : 4 1 : 3.11 : 4.5 1 : 3.31 : 5 1 : 3.61 : 6 1 : 4.1 For walls, guniting should begin at the bottom. The first gunite coating should completely surround the reinforcement. The distance between the nozzle and the backing surface should be between 0.6 and 15 metres.It is necessary to thoroughly clean the backing surface. Cleaning is followed by wetting and damp drying on concrete and masonry surfaces.The nozzle velocity must not exceed 140 m/s. The material granules in the nozzle interact with the rebound material at higher velocities, resulting in a porous mass with lower strength.Water pressure should be 0.45-0.675 N/mm2 greater than air pressure. If the air or water pressure changes, a certain amount of a too dry or too wet mix is applied, resulting in a splotchy appearance.For structure repair, the thickness of gunite should not be less than 40 mm.Reusing the rebound material is not recommended. Authored by: Vikrant ManeA civil engineering graduate by education, Vikrant Mane is a blogger and SEO enthusiast at heart. He combines his technical knowledge with a love for creating and optimizing content to achieve high search engine rankings. On the What Is Gunite page, we talked briefly about the differences between gunite and shotcrete. We will go into some more detail here. Shotcrete and gunite are both different forms of pneumatically applied concrete. "Pneumatically applied" means that the concrete is applied under pressure through a hose and a nozzle or "gun" instead of poured into forms like traditional concrete. Gunite can be an umbrella terms for both gunite and shotcrete, but in the swimming pool business, gunite and shotcrete refer to different things. Gunite Gunite is a dry-mix concrete or a mixture of cement and sand that flows through a hose, and water is added at the last minute at the nozzle. The person handling the nozzle uses his or her skill and experience to increase or decrease the amount of water added depending on the project and the behavior of the concrete. Shotcrete Shotcrete, on the other hand, is a wet-mix concrete. That means that the concrete is already mixed with water before it flows through the hose. The wet mix is typically delivered to the jobsite in a cement-mixer truck. There are advantages and disadvantages to each, and your professional gunite person should be the one to decide what to use depending on the application. For example, clean-up is easier and faster with gunite (the dry mix) because it is dry. However, shotcrete tends to create slightly less rebound. Both gunite and shotcrete have their place in construction and repair of concrete surfaces. Union Gunite is available for all your gunite needs in the Houston, Texas area. Contact us using the convenient form on our Contact page.