Industrial Waterproofing Guide
Successful Projects from Specification to Professional Installation
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Master Builders Solutions from BASF

Building on partnership. Our Master Builders Solutions experts find innovative and sustainable solutions to meet your specific construction needs. Our global experience and network help you to be successful – today and tomorrow.

Master Builders Solutions

The Master Builders Solutions brand brings all of BASF’s expertise together to create chemical solutions for new construction, maintenance, repair and renovation of structures. Master Builders Solutions is built on the experience gained from more than a century in the construction industry.

The know-how and experience of a global community of BASF construction experts form the core of Master Builders Solutions. We combine the right elements from our portfolio to solve your specific construction challenges. We collaborate across areas of expertise and regions and draw on the experience gained from countless construction projects worldwide. We leverage global BASF technologies, as well as our in-depth knowledge of local building needs, to develop innovations that help make you more successful and drive sustainable construction.

The comprehensive portfolio under the Master Builders Solutions brand encompasses concrete admixtures, cement additives, chemical solutions for underground construction, waterproofing solutions, sealants, concrete repair and protection solutions, performance grouts, performance flooring solutions.
Waterproofing solutions from BASF are used in most complex projects around the world.
Waterproofing of Industrial Buildings and Installations

The effective protection of building structures against water ingress or to prevent water loss to save water is a major challenge. BASF offers waterproofing solutions for complex industrial structures. From the foundations to the roof, under chemical attack or in areas where potable water and foodstuffs are in contact with the waterproofing membrane, BASF product systems have proven their reliability in countless projects around the world.

The Master Builders Solutions experts from BASF support detailed analysis, choice of product technology, project planning and expert application. Fast and secure product systems reduce down-time. High chemical resistance protects structures even in harsh environments.

The following pages guide you through some of our variety of solutions for industrial applications. Use this brochure to assess your needs and do not hesitate to contact us for more specific information.

1. Roof waterproofing
2. Storage of process water
3. Secondary containment
4. Water barriers for structure
5. Silos and food storage
Roof Waterproofing

A leaking roof is one of the most detrimental failures that can happen in manufacturing. Water ingress is likely to damage the structure of the building. Water leaks may also cause the loss of raw materials or products. Malfunctioning of machinery and the destruction of technical equipment may extend the serious problems a leaking roof can cause.

The long-term performance of a properly protected roof improves the durability of the building. At the same time, it secures the investment made into materials and assets.

Often, industrial roofs are very detailed with build-ups for air-conditioning, ventilation, windows and architectural shapes. Reliable waterproofing is only possible with liquid membranes because the liquid ensures full surface contact even in tiny corners.

BASF roofing systems based on polyurethane membrane systems can be installed on most substrates, even on old concrete, built-up felt asphalt and timber. The sprayed liquid membrane forms a fully bonded waterproofing membrane. There are no welds and seams, which are typically the weak spots of non-sprayed roofing sheet materials. With our roofing systems, even refurbishment is often possible without removing the old layers, offering substantial time and cost savings.

Complete solutions require compatible product systems
Efficient waterproofing of an industrial roof – both for new build and renovation – requires highly elastic and weather resistant systems. To fully complete the project, additional products are required, which must be fully compatible with the waterproofing system applied. BASF offers fully compatible products for maximum system security:

- Concrete repair systems for the basic building structure: MasterEmaco repair mortars.
- Polyurethane systems including primers, waterproofing membranes and protective topcoats: MasterSeal 2103, 2110, 2111, 2160.
- Ancillaries (covings, patching, etc.): MasterSeal 590.
- Joint treatment: MasterFlex 474, MasterFlex 472.
Our solutions

MasterSeal 2103
Spray-applied polyurethane membranes for complex, large and architectural roofs:

Main benefits:
- Seamless waterproofing membrane. Skylights and other roof elements can be integrated without any joints.
- No disposal of previous roofing system required. BASF systems adhere to most common substrates, saving extra time and cost.
- No hot works. Fast curing and easy spray application are highly efficient.
- High elasticity, crack bridging, UV and weather resistance for long-term durability.
- ETAG 005 certified.

MasterSeal M 689
Spray-applied polyurea membrane:

Main benefits:
- Spray application 1:1 – no special equipment.
- Very fast curing. Immediate serviceability.
- Application to horizontal surfaces and detailing in only one step. Faster completion.
- High elasticity, crack bridging and high mechanical resistance.
- Improved durability and long-term performance.
- High resistance to wearing and erosion. Surface can be directly exposed to mechanical loads.
- Fully bonded and monolithic – no laps, welds or seams – no risk of infiltration by water.
- ETAG 005 certified.

MasterSeal 2160
Hand-applied 2 C polyurethane membrane for complex and architectural roofs:

Main benefits:
- Seamless waterproofing membrane. Fixtures and other roof elements can be integrated without any joints.
- In renovation, application on existing substrate possible by means of different primers ensuring adhesion.
- Long pot life enables efficient, continuous application.
- High elasticity, crack bridging, UV and weather resistance for long-term durability.

MasterSeal M 811
Spray-applied 1:1 mixing ratio polyurethane membrane:

Main benefits:
- Spray application 1:1 – no special equipment.
- Very fast curing. Immediate serviceability.
- Seamless waterproofing membrane. Fixtures and other roof elements can be integrated without any joints.
- High elasticity, crack bridging and high mechanical resistance.
- Improved durability and long-term performance.
- High resistance to wearing and erosion. Surface can be directly exposed to mechanical loads.
- No disposal of previous roofing system required. BASF systems adhere to most common substrates, saving extra time and cost.
All water is not the same. Industrial water can be of differing quality, ranging from ultra-pure water to potable water, process water and wastewater. Water is a scarce resource; therefore, most companies are eager to use water more productively to be less water intensive.

In manufacturing, water is used either as an ingredient or as a cooling, flushing or cleaning agent or even a safety resource in the event of fire. Often, this water needs to be stored before it is used, re-used or goes for water treatment.

The waterproofing of silos, tanks, basins and reservoirs which store water as a product ingredient is necessary to maintain water quality and ensure water availability. When it is needed in the process, the production flow must be able to continue without delays or interruptions. In food and beverage production and in the pharmaceutical industry, potable water is used, which demands the use of potable water certified membranes.

The chemical and metal production and processing industries use tanks and reservoirs to supply and collect process water e.g. for cooling or in recirculation systems.

We offer sustainable waterproofing solutions for all the needs of industrial water management.

Sustainable solutions for industrial water management

- Efficient waterproofing contributes to less water-intensive operations
- High durability means lower cost of ownership
- Speed of construction enables increased productivity, lower labor requirements and faster income generation
- For more than a century, BASF has helped make construction projects better with proven systems that make a tangible difference to the performance of construction projects throughout their lifecycle
Our solutions

MasterSeal 6100 FX
High elasticity, crack-bridging, single component, polymer-modified cementitious membrane:

Main benefits:
- Spray or hand application.
- Single component. Just mix with water.
- Low density. Low consumption saves cost.
- Quick curing. Short downtime.
- High elasticity and crack bridging. High durability.
- Contributes to LEED credits.

MasterSeal M 689
100 % polyurea, spray applied polyurea membrane:

Main benefits:
- High resistance to wearing and erosion. Surface can be directly exposed to mechanical loads.
- Fully bonded and monolithic – no laps, welds or seams – no risk of infiltration by water
- ETAG 005 certified.

MasterSeal NP 474
Sealing of joints using highly adhesive and highly elastic sealants that ensure long-term durability and elasticity:

Main benefits:
- High durability due to high elasticity and elastic recovery, high toughness and Shore A hardness.
- No migration.
Secondary Containment

Environmentally hazardous chemicals and liquids are frequently an indispensable part of the production process. To prevent pollution of soil and water they require special measures for safe storage.

Secondary containment is usually required by national law to control liquid spills of dangerous waste or chemicals. Secondary containment is theoretically only used when accidental spillage takes place but, in practice, minor quantities of chemicals often escape from valves, connections, joints, etc.

Waterproofing systems for secondary containment structures e.g. basins, pipeline bridges or trafficked impounding basins, are is usually applied on common construction materials like concrete.

To efficiently waterproof the surface, elastic membranes with high waterproofing capabilities as well as high chemical resistance, of course, are required.

Complete solution with compatible product systems

To protect and waterproof secondary containment, not only chemically resistant but also crack-bridging membranes have to be used. Moreover, other products need to be available to assemble a complete system:

- Concrete repair for the basic building structure: MasterEmaco repair mortars
- Resin-based membranes: MasterSeal M 689, MasterSeal M 808, MasterSeal M 336
- Ancillaries (covings, patching, etc.): MasterSeal 590
- Joint treatment: MasterSeal CR 170, MasterSeal CR 171, MasterSeal CR 462
Our solutions

MasterSeal M 689
100% polyurea, spray-applied polyurea membrane:

Main benefits:
- Spray application 1:1 – no special equipment.
- Very fast curing. Less downtime.
- Application to vertical and horizontal surfaces in just one step. Faster completion.
- High elasticity, crack bridging, high mechanical and chemical resistance. Improved durability.
- High resistance to wearing and erosion. Surface can be directly exposed to mechanical loads. Long-term performance.
- Fully bonded and monolithic – no laps, welds or seams – no risk of infiltration by liquids.

MasterSeal M 808
Spray and hand-applied polyurethane membrane:

Main benefits:
- Can be applied by brush, roller or airless spray.
- High elasticity and crack bridging properties that prevent cracks from substrate to damage the membrane.
- High chemical resistance.
- Fully bonded and monolithic – no laps, welds or seams – no risk of infiltration by liquids.
- UV resistant, stable color.

MasterSeal CR 170, MasterSeal CR 171
Sealing of joints using highly adhesive and highly elastic sealants that ensure long-term durability and elasticity:

Main benefits:
- High elasticity and elastic recovery, ensuring long-term performance.
- High chemical resistance.
- ETA certified.
Water Barriers for Structures

Water is the biggest threat to building structures above ground. Gaseous emissions and pollutants in the atmosphere (such as dioxide and nitrogen oxide resulting from fossil fuel combustion) react with water molecules and produce acids. Acid rain pours these substances onto buildings, penetrating and damaging the structure.

Although considerable efforts have been made to reduce the release of these acid gases into the atmosphere, they can still be found and, thus, structures must be protected from aggressive emissions. The dry deposit of acidic compounds can also dirty buildings and other structures, leading to increased maintenance costs.

Connected to industry demands – not only in waterproofing

Since 1865, we have grown and gathered experience to become BASF – The Chemical Company. With 380 production facilities in more than 80 countries, BASF knows the challenges of sustainable development.

The protection of natural resources such as water and soil is part of our sustainability efforts, including secondary containment wherever necessary. Waterproofing is a key competence to meet the demands of a large variety of industries.

However, there are even more fields where BASF provides the most professional solutions and expert services:

- Concrete Repair – both structural and non-structural.
- Performance Grouts for structures and heavy equipment.
- Performance Flooring for industrial areas.
- Decorative Flooring for offices, social and public areas.
- Ucrete Flooring for floors exposed to aggressive environments, including chemicals.
Our solutions

MasterSeal M 338
Two-component, water-based epoxy coating, for waterproofing and protecting concrete elements:

Main benefits:
- Excellent adhesion to concrete and cement mortar even when damp (up to 8% damp acceptable). No need to wait for complete curing of concrete. Faster completion.
- Water-based. Environmentally friendly.
- Good abrasion resistance, medium chemical resistance, impermeable to water and carbon dioxide for long-term durability.
- Good water vapor permeability, resistance to water, weather and freezing conditions. Extended lifecycle.

MasterSeal M 336
Two-component, crack-bridging epoxy-polyurethane coating for concrete protection and waterproofing:

Main benefits:
- Excellent adhesion to concrete and mortar.
- High elasticity, static and dynamic crack bridging, down to 0 °C.
- Good resistance to weather and chemical attack, reduces maintenance.
- Impermeable to water and carbon dioxide and excellent freeze-thaw, impact and abrasion resistance. Long-term durability.

MasterSeal NP 474 or MasterSeal NP 472
Sealing of joints using highly adhesive and highly elastic sealants that ensure long-term durability and elasticity:

Main benefits:
- High elasticity and elastic recovery.
- High chemical resistance against acid rain.
- Long-term durability when exposed to weathering conditions.
Silos, Food and Beverage Storage

Silos are not only used in agriculture to store grain but also in the food and beverage industry to store a multitude of different products, both dry and liquid.

Concrete silos need to be protected internally and externally against different aggressive chemical and mechanical actions.

In agriculture and the food and beverage industry, the storage of grain, as well as liquids like wine and oil, requires membranes offering absolute integrity and safety in terms of human health.

This means inert membranes which do not contain any potentially dangerous raw materials and which prevent the migration of fluids and flavors.

Special solutions with compatible product systems

To protect and waterproof food and beverage storage silos, membranes with approvals for contact with foodstuffs have to be used. In addition, other products need to be available to assemble a complete system:

- Concrete repair for the basic building structure: MasterEmaco repair mortars
- Resin-based membranes: MasterSeal 191, MasterSeal M 808
- Ancillaries (covings, patching, etc.): MasterSeal 590
- Joint treatment: MasterSeal NP 474
Our solutions

MasterSeal M 391
Two component epoxy coating, certified for contact with drinking water and foodstuffs:

Main benefits:
- All raw materials included in the European positive lists.
- Approved for potable water, oil and wine contact and also for solid foodstuffs.
- Easily cleaned and disinfected.
- Resistant to severe chemical attack.
- Good mechanical and impact resistance. Long-term durability.

MasterSeal NP 474
Sealing of joints using highly adhesive and highly elastic sealants that ensure long-term durability and elasticity:

Main benefits:
- High elasticity and elastic recovery.
- High toughness and Shore A hardness.
- No migration.

MasterSeal M 808
Spray and hand-applied polyurethane membrane:

Main benefits:
- Can be applied by brush, roller or airless spray.
- High elasticity and crack-bridging properties that prevent cracks from substrate damaging the membrane.
- High chemical resistance.
- Fully bonded and monolithic – no laps, welds or seams – no risk of infiltration by liquids.
- UV resistant, stable color.
- Specific approvals for drinking water. Safe production and storage.
Summary of Waterproofing Solutions

Polyurethane membranes
Specially formulated polyurethane and hybrid systems are used to create impervious, fully bonded, highly elastic and seamless membranes. These are typically used on exposed roofs, inverted roofs, etc.

BASF offers both hand-applied and spray-applied systems with adequate primers suitable for application on a wide range of substrates. Proven polyurethane product systems are: MasterSeal systems with MasterSeal membranes.

High chemical resistance membranes: Polyurea, polyurethane and epoxy
When waterproofing capabilities have to be complemented by resistance to water containing dissolved chemicals, special polyurethane, polyurea and/or epoxy membranes are the normal choice.

Continuous, seamless, crack-bridging membranes offer excellent waterproofing in addition to resistance to dissolved chemicals. Proven high chemical resistance membranes are: MasterSeal 689, MasterSeal M 908, MasterSeal 191, MasterSeal M 336 and MasterSeal M 338.

Cementitious membranes
Cementitious membranes, usually polymer modified, are used to monolithically waterproof surfaces withstand ing positive water pressure (e.g. wet rooms, walkways, reservoirs, etc.) and negative water pressure (e.g. basements, etc.).

Ease of application (both by hand or machine) and suitability for use on damp substrates are key advantages of these products. Proven cementitious products are the MasterSeal 500 range, particularly new 1K elastic membrane MasterSeal 6100 FX.

Joint treatment and detailing
Buildings are subject to movements and are divided into different elements to prevent damage and facilitate ease of construction. The resulting structure causes the interruption of continuous membranes and needs to be sealed to prevent water penetration.

Proven auxiliary products are: MasterSeal NP 474, NP 472, CR 462 and MasterFlex CR 170/171 for surface sealed joints and MasterSeal 910 and MasterSeal 912 for internally sealed joints.
As investor, plant manager, engineer or main contractor you will always be interested in minimizing manufacturing downtime and optimizing the safe completion of your waterproofing project.

BASF answers these demands with proven product systems, specifiers support and the choice of the best technology for your project. However, if products are not used correctly or are combined with incompatible materials, the project may fail, resulting in additional cost and unnecessary delays.

BASF has developed a system including a variety of reliable products and proven technologies. These product systems are specifically tailored to interact, and their properties support each other. Our solution even comprises specially trained and skilled applicators for the safer completion of your industrial waterproofing projects.

**Product systems:**
Product systems with high performance characteristics are required in professional waterproofing applications. It goes without saying that these product systems are designed and certified for the specific intended use.

BASF offers a comprehensive range of products, documented and specifically certified in different European countries for use in the waterproofing of different industrial areas.

**Design:**
The Master Builders Solutions experts from BASF offer you know-how in the analysis and solution design process, combining reliable product systems into complete solutions.

**Detailing:**
Details (joints, transition points, penetrations, etc.) are often neglected but they unfortunately represent the most vulnerable points in any construction. Correct and complete solutions include the treatment of these critical points with adequate products for a full solution approach.

**Expertise in application:**
BASF offers qualified applicators, training seminars and site supervision. We recommend only the best applicators with trained and motivated workers for the desired product system performance.

**Experience:**
BASF offers you, as investor, engineer, specifier or contractor, the most extensive job experience, documented in hundreds of references of successful results in the most complex and demanding projects worldwide. Ask for your personal copy of our job references for waterproofing.
Master Builders Solutions from BASF for the Construction Industry

MasterAir
Complete solutions for air entrained concrete

MasterBrace
Solutions for concrete strengthening

MasterCast
Solutions for the manufactured concrete product industry

MasterCem
Solutions for cement manufacture

MasterEmaco
Solutions for concrete repair

MasterFinish
Solutions for formwork treatment and surface improvement

MasterFlow
Solutions for precision grouting

MasterFiber
Comprehensive solutions for fiber reinforced concrete

MasterGlennium
Solutions for high performance concrete

MasterInject
Solutions for concrete injection

MasterKure
Solutions for concrete curing

MasterLife
Solutions for enhanced durability

MasterMatrix
Advanced rheology control for concrete

MasterPel
Solutions for water tight concrete

MasterPolyheed
Solutions for mid-range concrete

MasterPozzolith
Solutions for water-reduced concrete

MasterProtect
Solutions for concrete protection

MasterRheobuild
Solutions for high strength concrete

MasterRoc
Solutions for underground construction

MasterSeal
Solutions for waterproofing and sealing

MasterSet
Solutions for set control

MasterSure
Solutions for extraordinary workability retention

MasterTop
Solutions for industrial and commercial floors

Master X-Seed
Advanced accelerator solutions for concrete

Ucrete
Flooring solutions for harsh environments

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