Grouting Solutions Portfolio for Nuclear Facilities

BASF fully understands the regulatory requirements of the NRC for safety related materials. We have trained customer service, production and quality control teams that monitor dedicated commercial grade materials from production to delivery on site.

Our grouts are formulated to provide resistance to vibration and to accept the unique demands of dynamic loading, temperature extremes and radiation found in nuclear power generation facilities around the world.

APPLICATIONS

- Nuclear Safety Applications
- Commercial Grade Dedication
- Tanks
- Pumps
- Fan Housings
- Drive Motors
- Turbines
- Generators
- Anchoring
CEMENTITIOUS GROUTS

MasterFlow 4316
Ultra high-strength, hybrid performance precision grout for machinery
MasterFlow 4316 provides high early and ultimate compressive strengths over a wide variety of application and service temperatures. The superior performance of MasterFlow 4316 lies in its novel hydraulic binder with applied nanotechnology and premium material aggregates which, when mixed with water, produces a flowable and pumpable grout that can be installed in temperatures ranging from 35 to 100° deg F (2 to 38° C).
- High early strength with low creep for rapid turnaround — up to 4,300 psi at 8 hours
- Excellent effective bearing area (95%) for even load distribution
- Extremely dense material with proven fatigue resistance — durable
- Outstanding shrinkage, impact and vibration resistance
- Exceptional temperature resistance — up to 1000° F (538° C)
- Homogeneous, flowable and pumpable
- Positive expansion when tested according to ASTM C 1090
- Freeze/thaw stable
- Coefficient of thermal expansion equivalent to concrete
- 16,000 psi ultimate strength

MasterFlow 928
High-precision mineral-aggregate grout with extended working time
Approved for use in Nuclear Safety Related applications, Compliant with ASME NQA-1 and US NRC 10CFR50 Appendix B
MasterFlow 928 grout is a hydraulic cement-based mineral aggregate non-shrink grout with extended working time. It is ideally suited for grouting machines or plates requiring precision load-bearing support. It can be placed from fluid to damp pack over a temperature range of 45 to 90° F (7 to 32° C).
- Extended working time
- Freeze/thaw resistant making it suitable for exterior applications
- Hardens free of bleeding, segregation, or settlement shrinkage to provide maximum effective bearing area for optimum load transfer
- Contains high-quality, well-graded quartz aggregate for optimum strength and workability

MasterFlow 713
High-precision non-shrink mineral-aggregate grout
Approved for use in Nuclear Safety Related applications, Compliant with ASME NQA-1 and US NRC 10CFR50 Appendix B
MasterFlow 713 is a cement-based grout with specially graded mineral aggregates. It can be used at any consistency from fluid to damp pack for applications that require precision support and early form stripping or shoulder trimming.
- Hardens free of bleeding and settlement providing maximum effective bearing area for optimum load transfer
- Highly fluid allowing pumpability into intricate or inaccessible areas
- Fluid, flowable, plastic, or damp-pack consistencies to help adjust to jobsite conditions
- Freeze/thaw resistant making it suitable for exterior applications

MasterFlow 100
General construction, mineral-aggregate non-shrink grout
MasterFlow 100 is a non-catalyzed, multi-purpose construction grout containing mineral aggregate.
- Can be extended with clean, well-graded coarse aggregate to fill large voids
- Hardens free of bleeding when properly placed and yields a high effective bearing area for proper support and load transfer

MasterFlow 885
High-precision, non-shrink metallic aggregate grout with extended working time
Approved for use in Nuclear Safety Related applications, Compliant with ASME NQA-1 and US NRC 10CFR50 Appendix B
MasterFlow 885 is a cement-based metallic aggregate grout with extended working time. It is ideally suited for grouting machines or plates requiring optimum toughness and precision load-bearing support, including machine bases subject to thermal movement.
- High fluidity for ease of placement; self-consolidating
- Extended 30 minute working time ensures proper placement under a variety of conditions
- Hardens free of bleeding, segregation, or settlement shrinkage to provide maximum effective bearing area for optimum load transfer
- High tolerance to thermal movement, effects of heating and cooling making MasterFlow 885 ideal for harsh manufacturing environments
- High quality well-graded blend of metallic and quartz aggregate provides high strength, impact resistance; handles dynamic and repetitive loads

MasterFlow 816
Aggregate-free cable and duct grout
MasterFlow 816 cable grout is a cement-based aggregate-free grout. It produces a fluid, pumpable, non-shrink, non-bleeding, high-strength product with extended working time. It provides corrosion protection for highly stressed steel cables, anchorages, and rods.
- Pumpable
- Non-shrink / hardens without bleeding or resultant voids
- Protects tendons from corrosion
- Can achieve 20–30 second flow per ASTM C 939
- Flow Cone Method
- Suitable for conventional grouting where clearances are between 1/4 to 1" (6–25mm)

MasterFlow 1206
Universal post-tensioning duct grout for highly stressed steel
MasterFlow 1206 is a cement based product with specially graded spherical aggregate that produces a pumpable non-bleeding high-strength grout. It has extended working time, especially in vertical duct placements or configurations with a steep vertical rise without settlement shrinkage. It is bleed resistant for horizontal, inclined, and vertical tendon configurations. It meets all compressive strength and vertical height change requirements of ASTM C 1107 (CRD C 621) at a modified flow.
- Can be pumped or re-circulated for long periods of time
- Can be used over a wide range of mixed grout and placement temps
- No added chlorides to inhibit corrosion between 1/4 to 1" (6–25mm)
EPOXY GROUTS

MasterFlow 648
High-strength, high-temperature, high-flow epoxy grout
Approved for use in Nuclear Safety Related applications, Compliant with ASME NQA-1 and US NRC 10CFR50 Appendix B
MasterFlow 648 is a three-component modified epoxy resin-based grout with variable fill rates. It combines high-temperature performance and crack resistance with excellent flow characteristics.

- High early and ultimate strengths for rapid turnaround
- Low creep maintains equipment alignment
- Retains physical properties at elevated temperatures increasing the service range
- Excellent flowability with high bearing area for even load distribution
- Variable fill ratio for desired flowability
- Resists impact and dampens torque
- Durable bond to concrete and steel optimizes load transfer

MasterFlow 649
High-strength, high-temperature, high-flow epoxy grout
MasterFlow 649 grout is a three-component modified epoxy resin-based grout. It combines high-temperature performance and crack resistance with outstanding flow characteristics.

- High early and ultimate strengths with low creep for rapid turnaround
- Superior physical properties at high temperatures increases the range of in-service temperatures
- High flowability with excellent bearing area for even load distribution
- Resists impact and dampens torque
- Durable bond to concrete and steel optimizes load transfer

MasterFlow 678
Deep-pour multiple-use epoxy grout
MasterFlow 678 is a low-exotherm, three-component epoxy grout used for deep sections of epoxy grout, with low-heat generation.

- Long working time helping to facilitate proper placement
- Excellent creep resistance, even at high temperatures increasing product performance over a wider temperature range
- Can be placed in lifts of up to 18” thick without reinforcement making it ideal for deep pours

MasterFlow 668
Epoxy chock-grout for mounting equipment
MasterFlow 668 chock grout is a three-component modified epoxy resin-based grout. It is used where high performance properties are required in less-accessible spaces subject to thermal shock and high vibrations. It can be placed from ½ - 3” (12.75 - 76mm) thick on a base grout pour, directly to the concrete or steel-to-steel.

- Highly flowable to conform to worn or irregular surfaces
- Excellent physical properties at a wide temperature range
- May be used to replace metal chocks, eliminating costly milling
- Low creep over a wide temperature range minimizes deformation under sustained loads

MasterFlow 647
Liquid epoxy grout for pressure or gravity application
MasterFlow 647 grout is a two-component, modified epoxy resin-based grout. It is specially formulated for injection or gravity feed. The material will penetrate and fill voids, cracks, and fissures. MasterFlow 647 exhibits excellent adhesion to concrete or steel that is properly prepared whether wet, dry or oil-contaminated concrete.

- Chemical resistant for use in a wide range of application environments
- Low viscosity helps to penetrate fine cracks
- Simple mix ratio for ease of use in the field
- Can be extended for wide range of options for crack repair and void filling
- Fast cure rate for rapid return to service
- Accelerator available for increased usage capabilities at low temperatures
- Liquid resin can be stored at low temperature (20º F) making it easy to transport and store
Master Builders Solutions from BASF

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.

Master Builders Solutions products from BASF for the Construction Industry:

- **MasterAir®**: Solutions for air-entrained concrete
- **MasterBrace®**: Solutions for concrete strengthening
- **MasterCast®**: Solutions for manufactured concrete product industry
- **MasterCem®**: Solutions for cement manufacture
- **MasterEmaco®**: Solutions for concrete repair
- **MasterFinish®**: Solutions for formwork treatment
- **MasterFlow®**: Solutions for precision grouting
- **MasterFiber®**: Comprehensive solutions for fiber reinforced concrete
- **MasterGlenium®**: Solutions for high-performance concrete
- **MasterInject®**: Solutions for concrete injection
- **MasterKure®**: Solutions for concrete curing
- **MasterLife®**: Solutions for enhanced durability
- **MasterMatrix®**: Advanced rheology control solutions for self-consolidating concrete
- **MasterPel®**: Solutions for water tight concrete
- **MasterPolyheed®**: Solutions for high-performance concrete
- **MasterPozzolith®**: Solutions for water-reduced concrete
- **MasterProtect®**: Solutions for concrete protection
- **MasterRheobuild®**: Solutions for super-plasticized concrete
- **MasterRoc®**: Solutions for underground construction
- **MasterSeal®**: Solutions for waterproofing and sealing
- **MasterSet®**: Solutions for retardation control
- **MasterSure®**: Solutions for workability control
- **MasterTop®**: Solutions for industrial and commercial floors
- **MasterWeld®**: Solutions for construction adhesives
- **Ucrete®**: Flooring solutions for harsh environments

LIMITED WARRANTY NOTICE: BASF warrants this product to be free from manufacturing defects and to meet the technical properties on the current Technical Data Guide, if used as directed within shelf life. Satisfactory results depend not only on quality products but also upon many factors beyond our control. BASF MAKES NO OTHER WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO ITS PRODUCTS. The sole and exclusive remedy of Purchaser for any claim concerning this product, including but not limited to, claims alleging breach of warranty, negligence, strict liability or otherwise, is shipment to Purchaser of product equal to the amount of product that fails to meet this warranty or refund of the original purchase price of product that fails to meet this warranty, at the sole option of BASF. Any claims concerning this product must be received in writing within one (1) year from the date of shipment and any claims not presented within that period are waived by Purchaser. BASF WILL NOT BE RESPONSIBLE FOR ANY SPECIAL, INCIDENTAL, CONSEQUENTIAL (INCLUDING LOST PROFITS) OR PUNITIVE DAMAGES OF ANY KIND.

Purchaser must determine the suitability of the products for the intended use and assumes all risks and liabilities in connection therewith. This information and all further technical advice are based on BASF’s present knowledge and experience. However, BASF assumes no liability for providing such information and advice including the extent to which such information and advice may relate to existing third party intellectual property rights, especially patent rights, nor shall any legal relationship be created by or arise from the provision of such information and advice. BASF reserves the right to make any changes according to technological progress or further developments. The Purchaser of the Product(s) must test the product(s) for suitability for the intended application and purpose before proceeding with a full application of the product(s). Performance of the product described herein should be verified by testing and carried out by qualified experts.