

Grouts and Anchoring Solutions



www.bergerfosroc.com



constructive solutions

Our Profile

Berger Fosroc Limited, Bangladesh is a new joint venture entity formed between Berger Paints Bangladesh Limited and Fosroc International Limited on 31st January 2018.

Berger is one of the renowned names in the paint industry and the country's major specialty paint business with products and ingredients dating back more than 250 years. Over the decades, Berger has evolved to become the leading paint solutions provider in Bangladesh and has diversified into every sphere of the industry- from Decorative Paints to Industrial, Marine and Powder Coatings.

Fosroc International is the flagship company of the JMH Group which over the years has emerged as a leading supplier of construction products and solutions across the world. Fosroc world-wide backed by its rich history of over 75 plus years of international presence has operating companies spread across Europe, Middle East, India and Asia besides other emerging geographies, with over 20 manufacturing locations and distribution network in over 100 countries worldwide.

Berger Fosroc Limited in Bangladesh will provide complete solutions to all sectors of the construction industry, specializing in solutions for the construction of buildings, industrial facilities, power plants and to all types of transportation and civil infrastructure.

This new entity will be supported by the parent companies Group Research & Development facilities located in various International locations with state of the art laboratories and a team of dedicated Scientists pioneering product development and innovation.

Berger Fosroc's wide range of constructive solutions portfolio includes

- Cement Grinding Aids such as Cemax, Auracem
- Admixture products such as Conplast, Structuro, Auramix, Auracast
- Waterproofing products such as Supercast, Nitoproof, Proofex
- Precision Grouts & Anchors such as Conbextra, Cebex, Lokfix
- Joint Sealants such as Thioflex, Nitoseal
- Flooring products such as Nitoflor, Cemtop, Adhesives
- Concrete Repair & Protection such as Renderoc, Nitomortar, Nitocote, Dekguard.

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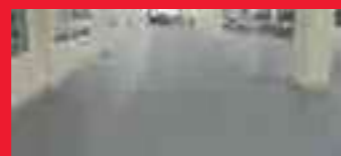
Product Range



Admixtures and Surface Treatments



Grouts and Anchors



Industrial Flooring



Concrete Repair



Structural Strengthening



Joint Sealants and Adhesives



Waterproofing



Cement Additives

Introduction to Grout

Fosroc has been servicing grout requirement of Indian industry for more than three decades. Conbextra range of cementitious and Epoxy grouts are considered to be the most dependable grouting solutions by engineers, erectors and machine manufacturers.

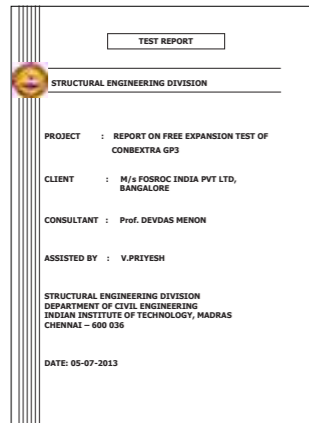
The journey started way back in mid-eighties when Indian power sector accepted the locally produced Conbextra GP2 and stopped importing cement grouts from European sources. Since then almost all the critical equipments like turbine, generator and other equipments in thermal power sector are grouted with Conbextra GP2. Consequentially the product is also accepted in other sectors like steel, petrochemical, cement and general engineering.

Conbextra range offers comprehensive solutions to grouting requirements of wide sectors like thermal power, wind energy, refineries, steel plants, transportation and precast. The range offers both cement and epoxy grouts.

Conbextra range of grouts offer high performance standards in terms of high early and ultimate strength, flow properties, high EBA (Effective Bearing Area) and also dynamic load resistance.

The product range outperforms industry laid norms and standards.

The product range has been certified by institutions of repute like Indian Institute of Technology, Chennai and strongly recommended by equipment manufacturers like BHEL in Power industry, Loche in Cement industry and also consultants.



Why Grout?

The typical machine installation sequence in industrial scenario calls for filling the gap between the steel base plate / frame and concrete foundation. The gap arises during alignment of steel frame as the frame cannot rest directly over the concrete foundation due to its uneven surface texture. The base frame therefore is placed over shim plates leaving gap between frame and concrete foundation.

The gap filling of foundation frame is a precision job and requires specially designed material with technical parameters in plastic and hardened state. The materials should fill the gap effectively achieving sufficient contact with steel plate without any cavities and also have

sufficient mechanical properties to effectively transfer the load of machine – static load and also vibrations – dynamic load to concrete foundation during service life of equipment.

As traditional concrete or mortars do not have sufficient flow properties and also shrink during hardening process, they are not suitable and therefore necessitates requirement of high precision engineering grouts like Berger Fosroc Conbextra range with specific technical parameters like non-shrink, high flow, high early and ultimate strength dynamic load resistance etc. These grouts can be either cementitious complying with ASTM C 1107 or epoxy grouts ASTM C 1181.

Grouting Solutions for Various Sectors



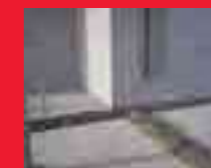
Industry



Power



Transport



Precast



Anchors

Product Range

	PRODUCT NAME	PRODUCT DESCRIPTION	W/P RATIO	STANDARDS COMPLAINE	ULTIMATE COMPRESSIVE STRENGTH	PACK SIZE
CEMENT GROUTS						
1	Conbextra GP1	Non Shrink , High Flow Cementitious grout with static Load Resistance	0.15	ASTM C 1107 Type A	45 N/ mm ²	25 Kgs
2	Conbextra GP2	Non Shrink , High Flow , High Strength Cementitious grout with static & Dynamic load resistance	0.18	ASTM C 1107 Type A	65 N/mm ²	25 Kgs
3	Conbextra STD	Non Shrink , High Flow , High Strength cementitious grout	0.12- 0.13	ASTM C 1107 Type A	65 N / mm ²	25 Kgs
4	Conbextra TS	Non Shrink , High flow cementitious grout suitable for grouting Height up to 500 mm	0.14	ASTM C 1107 Type A	65 N/mm ²	25 Kgs
5	Conbextra HF	Non shrink , Ultra High flow cementitious grout	0.19	ASTM C 1107 Type C	56 N /mm ²	25 Kgs
6	Conbextra AT	Non shrink , High Flow cmentitious grout with high Early & Ultimate strength	0.16	ASTM C 1107 Type A	80 N/mm ²	25 Kgs
7	Conbextra HES	Free fl ow, high strength, rapid setting, cementitious grout	0.21	ASTM C 1107 Type A	55 N/mm ²	25 Kgs
HIGH PERFORMANCE CEMENT GROUTS						
14	Conbextra UHS 90	Non shrink , High Flow , High Early & Ultimate strength cement grout	0.12	ASTM C 1107 Type C	90 N/ mm ²	25 Kgs
15	Conbextra BB92O	Non shrink , High Flow , High Early & Ultimate strength cement grout	0.11	ASTM C 1107 Type A	90 N / mm ²	25 Kgs
16	Conbextra BB92 IN	Non shrink , High Flow , High Early & Ultimate strength cement grout with Dynamic load resistance	0.11	ASTM C 1107 Type C	90 N / mm ²	25 Kgs
17	Conbextra BB72 IN	Non shrink , High Flow , High Early & Ultimate strength cement grout with Dynamic Load resistance	0.16	ASTM C 1107 Type C	75 N / mm ²	25 Kgs
18	Conbextra HR	Heat resistant cementitious grout	0.14	ASTM C 1107 Type A	90 N/mm ²	25 Kgs
19	Conbextra UW	Anti washout Underwater cementitious grout	0.22	ASTM C 1107 Type A	53 N/mm ²	25 Kgs
CABLE DUCT GROUTS						
20	Conbextra Cable Grout HS	Ultra High Flow, High Strength PT Cable duct grout	0.28 - 0.30	EN 447 / 445	70 N/mm ²	25 Kgs
21	Conbextra Cable Grout	Ultra High Flow PT Cable duct grout	0.33 - 0.35	EN 447 / 445	30 N/mm ²	25 Kgs

	PRODUCT NAME	PRODUCT DESCRIPTION	W/P RATIO	STANDARDS COMPLAINE	ULTIMATE COMPRESSIVE STRENGTH	PACK SIZE
CEMENT GROUT ADDITIVES						
22	Cebex 100	Non Shrink cement grout Additive	As per Site Mix Design		As per Site Mix Design	225 gms
23	Cebex 200	Non Shrink cement grout additive with Hydrogen free expansion system	As per Site Mix Design		As per Site Mix Design	225 gms
EPOXY GROUTS						
24	Conbextra EP10	Low viscosity epoxy injection system		ASTM C 1881	80 N/mm ²	1 Ltr
25	Conbextra EP75	High Flow , High Strength - High Exotherm Epoxy grout suitable for grouting heights upto 75 mm		ASTM C 1881	100 N /mm ²	14 Ltrs
26	Conbextra EP300	High Flow , High Strength - Low Exotherm Epoxy grout suitable for grouting heights upto 75 mm		ASTM C 1881	82 N/mm ²	14 Ltrs
27	Conbextra EBG (M)	Epoxy Bridge Bearing Grout		ASTM C 1881	60 N/mm ²	3 Ltrs

Grouting Solutions for Hydro Carbon, Steel and Heavy Engineering Sector

Berger Fosroc has a wide range of precision grouts ensuring the smooth running of plant and factory facilities from steel plants, petrochemical, cement plants, sugar etc. We understand the strains placed upon machinery and the importance of minimising downtime, and have the solutions to achieve these aims.



Column foundation



Cement grout machine foundation



Epoxy grout machine foundation



Lokfix Anchors

APPLICATIONS	GROUTS	PRODUCT DESCRIPTION	REFINERY			STEEL PLANTS		CEMENT PLANTS		GENERAL INDUSTRIES	
			Steel Column Foundation / Pipe racks	Compressor Foundation	Other Equipments	Steel Column Foundation / Pipe racks	Sinter Plant, Blast Furnace, Coke Oven and Other Equipment Foundations	Steel Column Foundation / Pipe racks	Mill Foundation/ Compressors, Pumps	Static Load Applications	Equipment Grout With Static and Dynamic Load
1	Conbextra GP1	Non shrink cementitious grout with static load resistance	●			●		●		●	
2	Conbextra GP 2	Plastic shrinkage compensated cementitious grout for static and Dynamic load resistance			●		●		●		●
3	Conbextra Std	Free flow, high strength, non-shrink, cementitious precision grout			●				●		●
4	Conbextra GP3	Dual shrinkage compensated cementitious grout with static and Dynamic load resistance			●		●		●		●
5	Conbextra HR	Heat Resistant cementitious grout					●				
6	Conbextra EP75 / 300	Free flow, High Strength epoxy grout		●							

Grouting Solutions for Power Sector

Power generation has been the key to economic and social development of any country. Berger Fosroc has been servicing this sector since last three decades. Conbextra range of grouts are widely accepted in thermal, hydel and wind power.

Lokfix anchoring systems are used in solar power sector.



Column foundation



Cement grout machine foundation



Epoxy grout machine foundation



Lokfix Anchors

APPLICATIONS		THERMAL POWER			WIND POWER		HYDEL POWER		SOLAR POWER	NUCLEAR POWER	
GROUTS	PRODUCT DESCRIPTION	Steel Column Foundation / Pipe racks	Turbine Assembly	BFP / ID Fan / ESP / Pumps and other Auxiliary Equipments	On shore Wind Mill Foundation	Precast Joints for Concrete Towers	Sluice Gates, Steel Column Foundations and Other Static Load Applications	Hydroturbine and Auxiliary Equipment	Solar Power Panel Foundation Bolt anchoring	Steel Column Foundation / Pipe racks	Equipment Grouts
1	Conbextra GP1	Non-shrink cementitious grout with static load resistance	●				●			●	
2	Conbextra GP 2	Plastic shrinkage compensated cementitious grout for static and dynamic load resistance		●							
3	Conbextra GP3	Dual shrinkage compensated cementitious grout with static and dynamic load resistance		●				●			●
4	Conbextra BB920	Sulphate resistant, high early and ultimate strength, plastic shrinkage compensated wind mill grout			●						
5	Conbextra BB92	High early and ultimate strength, plastic shrinkage compensated wind mill grout			●						
6	Conbextra BB72	Plastic shrinkage compensated cementitious grout for static load resistance				●					
ANCHORS											

Grouting Solutions for Transport Sector

Transportation sector in India has shown exponential growth in last couple of years. There are three major grouting applications in this sector – ballast less track (rail fixing plates), bridge bearings, bearings in elevated viaducts, cable duct grouting of post-tensioned cables – cable stay bridges. Berger Fosroc offers customised product solutions for these applications:



Cementitious bearing grout



Epoxy bearing grout



Cable duct grouting



Rail plate grouting

APPLICATIONS		BRIDGES		METRO			
		Rail , Road ,Cable stay Elevated Vaiducts		Ballastless Metro Track			
GROUTS	PRODUCT DESCRIPTION	Bearings	Stressing Cable Grouts	Injection Grouting of Shear Connectors	Rail Plate Grouting	Bearings	Stressing Cable Grouts
1	Conbextra GP1 Non-shrink cementitious grout with static load resistance						
2	Conbextra GP 2 Plastic shrinkage compensated cementitious grout for static and dynamic load resistance	●				●	
3	Conbextra GP3 Dual shrinkage compensated cementitious grout with static and dynamic load resistance	●				●	
4	Conbextra EBG Epoxy Grout	●				●	
5	Conbextra Cable Grout		●				●
6	Conbextra Cable Grout HS		●				●
7	Conbextra EP75 / 300 Free flow, high strength epoxy grout				●		
8	Conbextra EP10 Low viscosity epoxy injection grout			●			
GROUTING ADDITIVES							
7	Cebex 100		●				●
8	Cebex 200		●				●

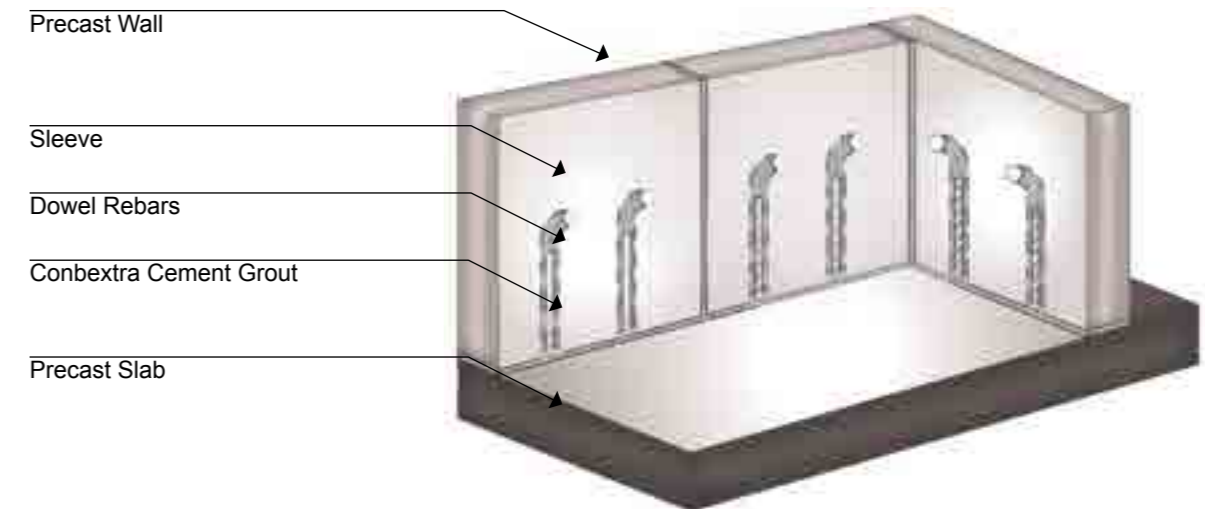
Grouting Solution for Precast Construction

Precast construction technique for mass housing is becoming increasingly popular and widely used these days.

Precast construction technique has large grouting applications between junctions of various precast elements. There are also grouting applications in dowel bar ducts.



1	Conbextra GP1	Non-shrink, high flow cementitious grout
2	Conbextra Std	Free flow, high strength, non-shrink, cementitious precision grout
3	Lokfix	Polyester anchor



Lokfix Polyester Anchors

Polyester resin grouts for high strength corrosion resistant anchoring of bolts and bars into concrete, rock, masonry or brickwork. The system offers high speed of installation and early application of load.

The typical applications are in the area of installation of dowel bars, safety fences like staircase grills, ground anchor for towers, solar power panel anchoring, cranes etc.




1	Lokfix S	Difference between hole dia and bar dia less than 25 mm. Suitable for vertically down holes
2	Lokfix P	Lokfix P is used in overhead or horizontal holes. The thixotropic nature of Lokfix polyester resin grout P reduces flow of grout out of the hole

Application Instructions



Project References


Selecting the correct grout requires more than looking at compressive strength. That is why Berger Fosroc provides a wide array of grouting products and complimentary ancillaries. We design our materials to exhibit 'best-in-class' properties, always looking at the critical issues such as material stability, flowability and ease of application, compressive, flexural and tensile strengths. Perhaps most critically, Berger Fosroc design the grouts to stand the test of time. Here is a selection of some of our projects from around the world:



King Fahad Causeway Saudi Arabia

The 25 km King Fahad Causeway, linking Bahrain to Saudi Arabia, is used by over 19 million passengers a year. Reducing maintenance cycles is a key aim of all designers, this critical piece of infrastructure is no different. This enormous structure has been supported by Berger Fosroc's Conbextra HF since its construction began in 1981.


The product was pumped under pressure between the segmental rings of the precast piles that support the bridge as they were lifted into place. The grout was selected for its flowability at high temperatures, stability under pumping pressure and dual shrinkage compensation. The speed of its set allowed rapid erection of the piles. Conbextra HF has weathered the elements and exposure, proving Berger Fosroc is the supplier of choice for critical and durable applications.



Paradip Oil Refinery India

Construction at the massive Paradip refinery for the Indian Oil Corporation presented a challenge to the Fosroc team. The processing units for crude oil required varying depths in application and base plate sizes were very large. To add to the difficulty, ambient temperatures during application frequently rose above 40°C. Of course, the grouts also had to exhibit resistance to a number of very aggressive chemicals and excellent flexural strength and creep resistance.

The team worked to produce special product formulations to meet the application procedures ensuring high contact, high strength and crack-free grouting beneath the machines. Our ability to produce bespoke solutions and a variety of products including Conbextra EP75, Conbextra EP300, Conbextra GP and Conbextra BB92 to meet application needs meant Berger Fosroc were the only company selected to supply the refineries' grouting.



Emirates Airline Cable Car UK

A novel piling technique was used to cast the supporting columns in the brisk tidal zone of London's River Thames. The use of Conbextra UW enabled a very high quality of concrete to be cast even under water. Once the piles were in place the initial skirt of the tower was set onto them almost immediately, meaning the early age compressive strength of Conbextra UW was another critical requirement.

Initially the proposed construction method and programme meant that the cable car would not be operational until the end of the summer. Berger Fosroc's Conbextra UW was an integral part of the success of the new innovative piling technique adopted due to its very high strength and anti-wash out characteristics. This innovative approach took 6 weeks off the completion time of the project; ensuring that it finished well ahead of schedule and was in place to assist in the logistics of staging the London 2012 Olympic Games.

Application Guidelines for Conbextra Grouts

The following procedure is designed to provide guidance to achieving the best grout pour results using Conbextra Cementitious Grouts. Consult your local Berger Fosroc team for specific site guidance.



1. Planning

Correct planning is essential. Calculate the correct material consumption factoring water addition and including material wastage. Ensure that the correct head/flow/distance has been calculated. Ensure the correct equipment is available including strapping or rods as well as sufficient mixing teams to undertake a continuous pour. Plan the correct amount of time that will be needed for the work. Ensure the correct working temperatures are achieved.



2. Preparation and Setting

Remove laitance, damage or contaminants from the slab conducting repairs if necessary. Ensure all corrosion deposits have been removed from the baseplate. Identify any high spots in the baseplate and drill through to prevent air entrapment. When setting the plate, using a threaded bolt to level is often the best technique, providing maximum adjustability before, during and after the pour. Levelling shims may also be used, but must be removed after the pour.



3. Fixing

Make sure the bolts and bolt holes are clean and dry with sufficient mechanical key. Apply Lokfix or Lokfix DUR resin anchors into the hole. Immediately place the holding bolts into the resin, applying in a twisting motion until the required depth is reached and some resin protrudes slightly above the line of the floor. Ensure the bolts are straight and centred and allow the material to set.



4. Formwork

Using timber, fix the shuttering around the baseplate. Gaps at the pouring end should not exceed 150 mm and at the free end no more than 50 mm. All shuttering should be watertight and supported sufficiently to be able to withstand the pressures of the grouting process. The shuttering should be designed to allow water release or removal. The grout box shall provide sufficient head of pressure in relation to the viscosity of the grout and the length of the pour. A smooth wood should be used and, where necessary, carefully applied Reebol mould release oil may be used.



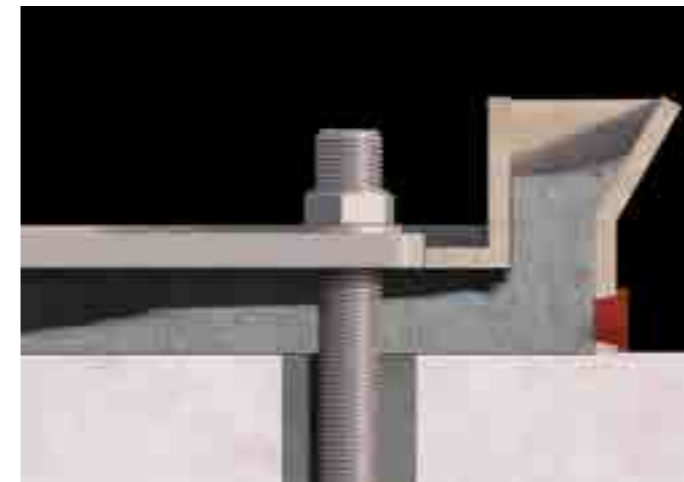
5. Saturation

Fill the formwork with clean water and allow it to stand for a minimum of 2 hours. Check formwork for leaks and plug where necessary. After saturation, drain water and remove any standing water in low spots using sponges or vacuum. Begin the grouting process immediately after completion of the saturation process. Do not saturate concrete when using Conbextra epoxy resin grouts!



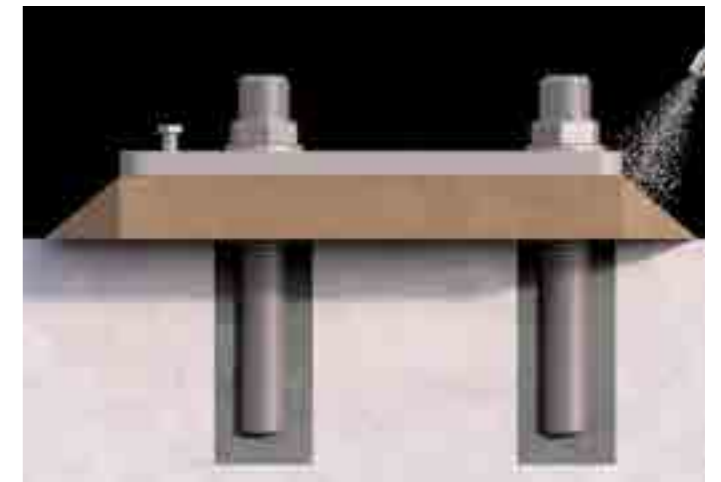
6. Mixing

Use a slow speed drill (appx 500rpm) with Mixer Paddle MR3, for large quantities a shear vane mixer may be used. Slowly add powder to a pre-measured amount of water, ensure consistency of water/powder ratio. Do not allow material to stand for more than 15 minutes. Material mixing process should ensure that a constant pour is achieved with no time gaps.



7. Pouring

Using the header box pour the grout continuously through the area, keeping gaps between pours to an absolute minimum and maintaining head of pressure. Check that material flows correctly beneath the plate, and any air vents are plugged as they become full. Pour only from one side to avoid entrapping air. Do not vibrate or agitate Conbextra grout when it is in its plastic state. For large area pours consider using a grout pump.



8. Finishing

Exposed edges of the material should be cured using Concre WB. The edges of the pour should not project above the bottom level of the baseplate, especially if movement is anticipated. 45° chamfers may be achieved by formwork, cutting the grout, or by using a Renderoc mortar. Observe material strength gain information prior to loading.



Leaders in constructive solutions

Important note :

Berger Fosroc products are guaranteed against defective materials and manufacture and are sold subject to its standard terms and conditions of sale, copies of which may be obtained on request. Whilst Berger Fosroc endeavours to ensure that any advice, recommendation specification or information it may give is accurate and correct, it cannot, because it has no direct or continuous control over where or how its products are applied, accept any liability either directly or indirectly arising from the use of its products whether or not in accordance with any advice, specification, recommendation or information given by it.



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