Distribution Partner

StoTherm Classic®

The most resilient external wall insulation system withstands wind and weather

Facade

The risk of severe weather is steadily increasing due to global warming – and so is the number of damages to insulated facades. Protect your buildings!
Our recommendation: StoTherm Classic®.

StoTherm Classic® is demonstrably better

The best! The most durable! The most sophisticated! The world of advertising is full of superlatives – even when it comes to thermal insulation. But which provider should you believe?

At Sto, we don't just make big claims, we also provide the proof: our globally popular EWI system StoTherm Classic® has undergone four rigorous tests. The result? It lasts and lasts and lasts.

A really good EWIS can take a lot: today, a football hits the facade; tomorrow, a bicycle scrapes around the corner. And then there's the weather, with severe storms, rain, and hail showers constantly testing the facade's resilience.

In order for an EWI system to even get approved, it has to demonstrate its shock and impact resistance in the compulsory test procedures of the ETAG 004 guideline. However, the testing methods specified by ETAG (European Technical Approval Guideline) by no means cover all the risks that insulated facades are exposed to on a daily basis. So what to do?

We strive to provide our customers with the highest quality, which is why we continuously optimize our systems and rigorously test them according to all regulations and requirements to ensure the utmost safety for your clients.

On the following pages, we will show you everything we test and trial with our StoTherm Classic® in advance. We describe the background and testing methods, giving you an insight into our extensive testing program.

See for yourself a system that delivers on its promises. Demonstrably better: StoTherm Classic®.

„Hail damage now accounts for around 38 percent of building damage in Southern Germany, and the trend is rising."

Frankfurter Rundschau online, 2009

cover photo:
ALEA - Riedpark, Lauchringen, DE
Building owner: TRENOVA Immobilien GmbH, Bad Säckingen, DE
Planning: Rheiner & Villinger, Ühlingen-Birkendorf, DE
Application: Balaschow Gipserbetrieb, Lauchringen, DE; Elvis Gojak, Gipser-Maler-Trockenbau, Laufenburg, DE
Sto-Expertise: StoTherm Classic®, Sto-Stone Bossage Tiles, StoSignature Texture: Linear 2 +Effect: Coating 10 Partial

StoTherm Classic® passes the simultaneous test

September 2012, Forschungszentrum für integrales Bauwesen FIBAG in Graz, Austria. StoTherm Classic® is the first, and to date, only external wall insulation system to undergo the simultaneous test.

The StoTherm Classic® test setup is subjected to simultaneous exposure to rain showers, heavy hail, and storms up to hurricane strength. The result after subsequent surface inspection: no cracks, no damage, no defects.

Tests are examinations under laboratory conditions. Typically, individual aspects are tested. This is the major difference from the simultaneous test conducted by the FIBAG Institute, where the facade setup is subjected to three natural forces at the same time, making it a nature-identical experiment. The rain simulates the amount of a heavy rain shower at 1 liter per square meter per minute, hail is represented by ice balls up to 50 mm in size shot at the facade at up to 32 shots per minute at a 45-degree angle, and a turbine generates hurricane-force winds with speeds up to 130 km/h. Combined, these are peak values that are usually not reached in our regions.

The conclusion is clear: an external thermal insulation composite system that passes this simultaneous test can withstand anything. StoTherm Classic® has passed.

Test procedure for the FIBAG simultaneous test
The test specimen, a system setup approximately 2 x 3 meters in size, is mounted vertically on a wall. The rain grid for simulating heavy rain is placed 0.4 meters in front of the specimen. The wind generator is positioned at a 45° angle (horizontal) and 1.5 meters away from the specimen. The hailstorm testing machine is placed 1 meter in front of the specimen, centered. Hailstones with diameters ranging from 30 to 50 mm are shot at the specimen at a 45° angle (vertical). After the sequence, the system is inspected for cracks or damage, and the results are recorded.

FIBAG simultaneous test

Test criterion	Resistance to wind, mass hail, and rain showers
Practical examples	Severe weather, heavy storm, hurricane with heavy rain and hail
Regulations	Simultaneous test for EWIS at FIBAG, Graz, Austria
Test result	In its standard version, StoTherm Classic® can withstand wind speeds up to 130 km/h, rain up to 1 l/m² and min, and mass hail with 32 shots/min without resulting in any damage.

„It doesn't get any tougher than this. For me, the simultaneous test is definitely the toughest test in the world."

Axel Schellenberg, Approvals and testing, Sto SE & Co. KGaA

Image below: During the visual inspection by the expert, the system must be free of damage, meaning without any cracks.

Image right: Tornadoes and hurricanes are generally rare in temperate climates. However, the simultaneous test simulates exactly these extreme conditions. Test champion: StoTherm Classic®. Unbeatable.

StoTherm Classic® is shock and impact-proof

With EWIS, insulation is crucial, but so is the system's resilience. After all, the facade must withstand wind and weather and endure daily wear and tear for years to come.

To clearly demonstrate the safety of the system, a simple yet effective procedure has been established: the so-called hard body impact test.

As the name suggests, the hard body impact test involves differently sized steel balls being dropped from various heights onto EWIS structures. The results provide information on the strength of the facade being tested: Are there any cracks? Does the system become deformed?

StoTherm Classic® has passed this test with flying colours. The results demonstrate that purely organic systems have the highest resistance to hard impacts. Already its standard version, StoTherm Classic®, has an impact resistance of up to 15 joules, thereby exceeding the ETAG requirements by a full 50 %.

„The impact resistance of the rendered surface is a central quality criterion for facade systems."

Thomas Scheuch, Technical Consultant, Market Development, SE & Co. KGaA

Test procedure for the shock and impact resistance test

The test is performed in two stages with steel balls being dropped vertically from a specified height onto the test body. In stage 1, a 0.5 – kg ball is dropped from a height of 0.61 m, corresponding to an impact energy of 3 joules. Following this, a 1-kg ball falling from a height of 1.02 m is used (10 joules). After each impact, any damage, deformation, cracks, or penetration are recorded.

Mechanical resistance of external wall insulation systems

The hard body impact test demonstrates the level of energy in joules needed to cause surface damage

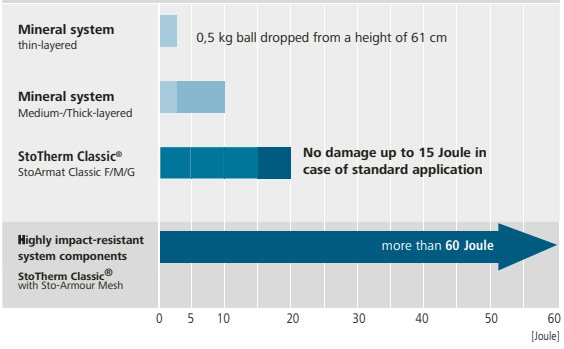


Photo right:
Passed with flying colours: StoTherm Classic® exceeds the requirements of the ETAG by 50 per cent.

StoTherm Classic® is hail-resistant

Experts agree: the risk of severe weather is constantly increasing as a result of global warming – and so is the amount of damage to insulated facades.

In southern Germany, hail, along with floods and fire, is the main cause of building damage. This also catches the attention of insurers. Secure your buildings!
Our tip: StoTherm Classic®.

Hail damage to the facade can result in expensive refurbishments. But those who have StoTherm Classic® on their facades can rest easy. Because the insulation system absorbs the kinetic energy of impacting hail stones thanks to its high durability. The fully organically designed and hence very flexible system springs back immediately after the impact without causing spalling or crack formation in the finishing render.

The durability of StoTherm Classic® was demonstrated during a largescale test series. Whereas the mineral systems did not satisfy the strictest test requirements, StoTherm Classic® was even able to withstand the heaviest hail stones.

„The facade has to withstand a great deal: hail stones as big as golf balls are not uncommon anymore."

Daniela Meidroth, System Technology and System Testing, Sto SE & Co KGaA

Test procedure for the hail resistance class test
The EWIS structures are bombarded with hail stones of a defined size and at a defined speed at a 45° angle. The classification is determined based on the largest hail stone which did not cause any damage to the test body when damage occurs in the class above.

Test for the Swiss Hail Protection Register

Test criterion	Classification of the resistance to hail stones based on kinetic energy
Practical examples	Mechanical stress on the facade due to severe weather with hail shower
Regulations	Test regulations from the Vereinigung Kantonaler Feuerversicherungen (VKF) [Swiss Cantonal Fire Insurance Association] for determining hail resistance (classification for the Swiss Hail Protection Register)
Test result	In the corresponding system structure, StoTherm Classic® achieves the highest hail resistance class, HR 5. Protection can be significantly enhanced by inserting a second layer of reinforcing mesh

Each test body must withstand five separate bombardments with hail stones and remain free of damage. The watertightness and appearance criteria are examined for rendered facades.

The corresponding StoTherm Classic® system structure meets the requirements of the highest hail resistance class, HR 5. Watertightness and appearance also remain undamaged after the facade has been bombarded with 5 cm hail stones travelling at a speed of approx. 111 km/h (30.8 m/s).

Photo right:
Hail stones for the laboratory test

StoTherm Classic® is at home in every climate zone

In the development of new products, in the search for the best possible, we do not stop halfway. It is a long journey before a product system from Sto is actually released to the market. Intensive research and testing are carried out, repeatedly checked and optimized.

After more than 40 years on the market and nearly 100 million square meters installed in all climate zones, the StoTherm Classic® facade insulation system is probably the most studied and tested building system ever.

In 1964, we realized our first test object: a simple mountain hut in the Austrian Montafon. The hut was finished with EPS panels, and a top coat was applied to protect the insulation layer from mechanical damage. This way, we gained valuable insights into long-term behavior, effectiveness, and the special challenges of extreme climatic conditions.

A commercial building in Tuttlingen (south of Germany) also proves that Sto's thermal insulation withstands the decades unscathed. The house was insulated and plastered in the best Sto manner 43 years ago. It still stands in excellent condition today. No cracks, no flaking – the facade withstood all stresses from moisture, hail, exhaust gases, and thermal tensions.

Sto focuses on absolute safety: We test the long-term behavior under all conceivable climatic conditions. And we make our products fit for worldwide use: in all climate zones of the earth – from northern Canada to the Southeast Asian rainforests.

Leading development work has made Sto the global market leader in EWIS – more than 100 million square meters of processed area prove the trust in Sto.

Photo right:
Whether extreme heat or severe cold: Special circumstances always require special measures. StoTherm Classic® offers reliable protection and is suitable for any climate

„Anyone who wants to be successful in our industry must think long-term, just like Sto"

Michael Keller, Executive Board Member for Sales Sto Germany, Distribution and Central Services, Sto SE & Co KGaA

StoColor Dryonic® S preserves the power of colors

No matter how much weathering and sunshine a facade is exposed to, StoColor Dryonic® S with SunBlock Technology ensures that even intense facade colour shades retain a radiance that lasts. Optional X-Black Technology prevents the facade from heating up.

The facade paint offers free choice from a wide range of colours. Here too, Dryonic® Technology keeps the facade dry and clean in a sustainable manner.

Even though we all love the sunshine, it bleaches pigments, which can lead to the facade paint fading and unsightly marks on the building facade. With the StoColor Dryonic® S facade paint, you can counteract this. The integrated SunBlock Technology protects the facade from fading due to direct UV radiation and keeps intense colors permanently brilliant.

Our Facade paint with X-black Technology also prevents the facade from heating up as a result of direct sunlight. The near-infrared-reflective facade paint is able to keep temperature peaks caused by solar radiation reliably below 70 °C.

Product advantages

- Very quick drying after rain and dew formation
- Biomimetic principle for dry facades to protect against algae and fungal attack
- Without biocidal film protection
- Extremely wide colour shade variety and high level of colour stability thanks to SunBlock technology
- Available with option of heat shield against solar heating (X-black Technology)
- Excellent hiding power
- Very high mechanical resistance
- Pure acrylate binding agent
- Minimal extender material breakdown (not easily scuffed)
- Water vapour permeable
- CO_2 diffusion: class C1 in accordance with EN 1062-1
- Alkali-resistant
- Texture-retaining
- Very good adhesion to almost all conventional construction substrates
- Low overspray airless application

Photo right:
Like a sunshade, StoColor Dryonic® S repels UV rays and protects the pigments from fading in the long term. This saves you the cost of repainting.

„The idea of preserving the intensity of colours with integrated solar protection."

Stefan Basler, Product Manager, Segment Facade Coatings,
Sto SE & Co KGaA

StoTherm Classic® is ball-impact resistant

From wind and weather to ball impacts: StoTherm Classic® withstands every challenge. Where people live and children play, balls will always fly – and frequently against a house wall.

For the facade to still look good after many "direct hits", the insulation system must be able to withstand a great deal. With StoTherm Classic®, home owners can make that possible.

Facade refurbishments take time and money. So it is even more annoying if the beautiful new facade starts to show signs of damage as soon as the children have played a boisterous football match.

Ball-impact resistance is an important aspect, particularly at schools and nursery schools, but also on normal residential facades. Apart from the strict requirements of ETAG 004, we have subjected StoTherm Classic® to an extra test: our facade structure had to withstand a total of 66 shots from handballs and hockey balls at a speed of 85 km/h.

The pleasing result: StoTherm Classic® passes this test even in its standard version – and without any damage whatsoever.

„A facade faces new challenges every day. It has to be able to tackle them for years."

Sébastan Garnier, Head of Research and Development, Sto SE & Co. KGaA

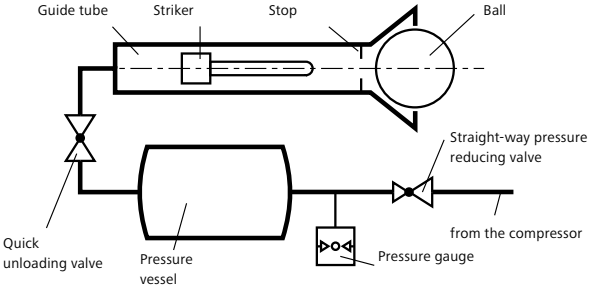
Procedure for the ball-impact resistance test
The facade structure is struck both with handballs and hockey balls from a distance of 1.5 m to 6 m using the ball shooting device described in the standard. The different balls bounce more than 60 times against the test body at a speed of 65 or 85 km/h from various angles. If there is any damage from the bombardment to the strength, function, or safety of the test object, then a further, second bombardment has to be carried out against this same position.

Photo right:
With StoTherm Classic® even the house wall can be used as a goal. The system is a tough performer. And can withstand any ball.

Test for ball-impact resistant in accordance with DIN 18032-3

Test criterion	Mechanical stress from balls that may not cause any significant changes to the surface of the wall
Practical example	Facades of schools, sports halls, and nursery schools; residential areas, especially those with a high number of children and/or an area suitable for playing games
Regulations	DIN 18032, Sports halls – Halls for gymnastics, games and multi-purpose use – Part 3: Testing of safety against ball throwing, publication 1997-04
Test result	In its standard version, StoTherm Classic® fully satisfies the requirements of the standard for the ball-impact resistance of walls

Ball shooting device in accordance with DIN 18032-3



Proven over the long term – best service for over 50 years

When people hear the name Sto, most think first of the yellow bucket. That is absolutely correct, but it's far from everything. Sto is more than paint and plaster – and more than thermal insulation. Sto is an internationally successful company with over 50 years of experience. Get to know us!

Sto is a specialist in innovative solutions and the right partner when it comes to preserving the value of old and new buildings. With its specialized subsidiaries and partners, Sto provides quick and competent solutions for individual problems worldwide.

Technical know-how, design competence, and international experience with proven systems: We set the highest standards in all areas, repeatedly take unconventional paths, and aim to be a pioneer in environmentally conscious and human-friendly living space design.

With Sto, you have a reliable partner by your side, from the first to the last phase of your project. We work with qualified craftsmen, assist you directly on your construction site, support you with detailed execution through our planning service, and ensure competent advice from our sales staff and distribution partners.

Worldwide our service employees and partners are always ready to assist you. So, make your property weatherproof – together with Sto.

- We offer tailored solutions for every requirement.
- Our premium system StoTherm Classic® is demonstrably better and stands for quality, safety, and durability.
- Worldwide service employees and distribution partners are at your service.
- Our specialists show you how to use materials and tools optimally.
- StoDesign develops professional color and material concepts for facades and interiors.

„Our customer relationships are not just business-oriented, but above all, personal."

Rolf Wohllaib, Head of Marketing Germany, SE & Co. KGaA

Photos below:
Our specialists in planning and execution are at your service for your needs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