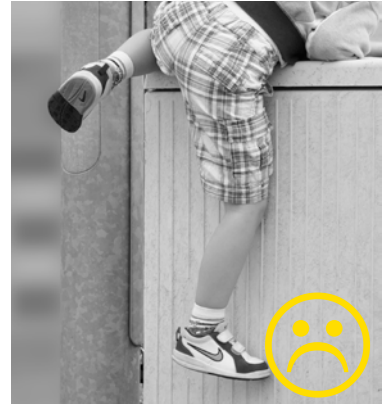


New by GSAB:

Powder In-Mould Coating



- Resistance to UV radiation and harsh environmental conditions
- Prolongs the life of cabinets
- Provides an aesthetic clean, smooth appearance
- High-quality surfaces facilitating easy cleaning (graffiti, stickers)
- Excellent coating properties like high surface hardness, scratch resistance and adhesion
- Fire retardant properties

We implement ideas!



GSAB Elektrotechnik GmbH
Lindenstraße 23
D-99718 Greußen
Germany

Telefon: + 49 3636 76140
Telefax: + 49 3636 761430
vertrieb@gsab.de
www.gsab.de

Important Announcement!

GSAB solves permanently a big quality problem with cable distribution columns in the public traffic sector (light signal arrangements and road lighting cabinets, telecom distributors, etc.). Almost everyone knows the gray cabinets at the roadside or at intersections. The fiber glass reinforced polyester cabinets tend to efflorescence after a few years. Although these do not influence the electric insulating performance or mechanical stability. Location, solar irradiation and atmospheric exposure influence the discharge of glass fibers (especially in the roof area) which can lead to skin irritation. Graffiti on the cabinets also represent a problem.

GSAB provides on the „efa“ the first cable distributor with a “powder in-mold” coating. What happened?

GfK (SMC) cabinet parts are manufactured in a hot press method with great pressure at about 140 ° C. A negatively charged colored powder is added into the hot press process and this colored powder is a non-separable chemical compound.

The result is a very smooth, scratch-resistant surface where it is very easy to remove graffiti´s. The UV-resistance is five times better than before (20 years and more). Discharging of any glass fibers is no longer possible.





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Material properties of SMC

Weather resistance:



GSAB cable distribution cabinet
made with SMC-technology



rusty cable distribution cabinet
made of metal sheets (not SMC)

The weather resistance of materials used for cable distribution cabinets, is crucial. A proper use must be ensured even under adverse conditions over a longer period. The long and extensive experience with SMC helps GSAB for all developments. Cable distribution cabinets are made in Germany for 30 years now from SMC. It should be noted that most cabinets without painting for outdoor use are.

UV light, rain, wind and temperature changes do not have any negative influence to the functionality. While metal cabinets rust after a certain time, SMC cabinets only show slight yellowing and very low abrasion on the surface after a long time. An investigation on a cable distribution cabinet after 21 years outdoor exposure yielded the following characteristics:

Test	New part	Part after 21 years *)
flexural strength [N/mm²]	189	175
Flexural modulus [N/mm²]	11.700	10.600
Deflection at break [%]	2,1	2,1
Tensile strength [N/mm²]	102	89
Tensile E-modulus [N/mm²]	12.900	12.100
Tensile elongation at break [%]	1,1	1,0
impact [KJ/m²]	72	62

What are the main influences that occur in a natural weathering and the consequences these have for the enclosure:

Sunlight:

Sunlight is composed of a wide range of electromagnetic waves. UV light as electromagnetic waves are referred to a wavelength of 280 nm. This energy radiation is mainly responsible for the aging of the components. The surface of unpainted SMC cable distribution cabinets turn yellow by the radiation something that resin rich surface is attacked something. This attack takes place at the outer 50 - 100 microns. A deeper damage to the structure, such as in polycarbonate does not arise. In this material, the radiation penetrates deeply into the material and leads to major changes in the structure, which results in a deterioration of the mechanical and electrical properties by themselves. This is also the reason why all cable boxes have to be painted polycarbonate for outdoor use.



Rain:

Rain in different intensities and cycles and tau lead to diffusion of water into the surface. This is due to the external 50 - 100µm limited, which are adversely affected by UV light. A change in the properties of SMC cabinets could not be determined.

Temperature changes:

The temperature range in which cable boxes are used, extends from - 50 ° C to +150 ° C in Scandinavia in tropical and Mediterranean areas in sunlight. This shows its strength as thermoset SMC. The microstructure of the material is not altered by these temperature effects. The mechanical and electrical properties remain almost unchanged. PC unlike brittle at low temperatures, in the upper temperature range occur first softening appearance. Only SMC guaranteed as molding material over the entire temperature range consistent, reliable functioning.

Chemical resistance:

The resistance of the cabinets to chemicals is a necessity of everyday use entails. Many cable distribution cabinets are used in the vicinity of roads or facilities and serve as for the accommodation of electronic controls for lights or machines. The following list provides an overview of resistance to the behavior of SMC compared to frequent environments at room temperature.

Organic materials	resistant	inorganic materials	resistant
hot bitumen	YES	hydrochloric acid (upto 10%)	YES
gazoline	YES	phosphoric acid (upto 10%)	YES
diesel oil	YES	phosphoric acid (upto 85 %)	YES
kerosene	YES	sulfuric acid (upto 10 %)	YES
epoxy	YES	sulfuric acid (37,5 %ig) battery acid	YES
petroleum	YES	nitric acid (10 %ig)	YES
fatty acid	YES	caustic soda (dilute)	NO
glycerol	YES	potassium hydroxide (dilute)	NO
heating oil	YES	seawater	YES
turpentine	YES		
carbon tetrachloride	NO		

We can summarize that SMC resistant to most common materials. When using in outdoors or in corrosive atmospheres in most cases there is nothing to prevent. SMC is resistant to a variety of materials, which are not listed here. In assessing the resistance it is a precise knowledge of the facts as Temperature, concentration, movement, etc. is required, that a large number of variations exist.

Thermoplastics materials also reveal a certain disadvantage, specifically in organic media has acted very cautiously. In addition, in polycarbonate KVS problems were found during the operation due to insufficient urine resistance.



GSAB quality assurance

The production of GSAB housings for cable distribution cabinets and wall-mounted cabinets are made in hot presses with SMC (sheet molding compound), as described above. According to DIN 16913 5 SMC types are standardized. The GSAB SMC formulation is tailored to excellent electrical properties and high surface quality. By a corresponding color powder admixture with max. saturation ratio we arrive at a press pressure of 1000 tons (is established within one second), absolutely weatherproof surface. Our records of weathering in different locations (coastal, mountains, mountain region) showed for the first five years of use barely visible surface weathering. Our standard color mixing corresponds RAL 7035. The housing can be painted in any color, of course.



Modern press technology

Bottom: pressed part after pressing process
Housing for 88S1700



The commitment to quality

The commitment to quality is an integral part of our corporate philosophy. The fulfillment of customer requirements, the social benefits and economic success are the basis for our actions. We achieve this by creating efficient processes and a modern, evolving corporate culture is promoted in the ownership and the quality awareness of all employees.

As a responsible manufacturer of the electrical industry, the commitment to continual improvement in our operations and consistent monitoring of process safety is a matter of course.

Person responsible for the quality management:

October 2012

Mr. Chris Vonnoe
Quality Manager



GSAB
ELEKTROTECHNIK GMBH
GSAB GmbH

Lindenstrasse 23, D-99718 Greussen, Germany

Tel.: 0049-151-121-84-340

Email: ch.vonnoe@gsab.de

www.gsab.de