

Carefully designed and flexible

Closed operating surfaces with Super Key

In 2-K technology various materials are combined in a hard-soft compound. In a special process, the hard part (thermoplastic) and the soft part (silicone) are joined by means of chemical or positive bonding. As a rule, the silicone components are attached to the thermoplastic part by means of holding zones. However, in a new approach, the silicone specialist, starlim//sterner, have succeeded in encapsulating the thermoplastic keys and housings with injected silicone and linking them via a silicone membrane. The company has developed the so-called Super Key, which is multifunctional, has a sealed operating surface, and also offers extensive design and application possibilities.

Advantages for the strictest demands

In addition to physical advantages such as flat design, which brings space savings through a limited height, and low weight, the hygienic and haptic benefits are worthy of special note. The Super Key is dust-free, watertight, heat- and frost-resistant, parameters, which are essential for both the in- and outdoor areas. A sealed operating surface is provided by the solid bonding, which thus prevents the gathering of bacteria. Closed, cavity-free operating surfaces are needed wherever dust, dirt or liquids may not enter the switch from the outside, as is the case in the automotive sector and the medical, chemical and pharmaceutical industries. The smooth surface of the Super Key means that it is easy to clean and its softness provides the user with a pleasant sensation.

Homogeneous illumination

Another important lead is provided by homogeneous illumination. In sharp contrast to polycarbonate, which only scatters light rays on an isolated basis, silicone possesses the characteristic of particularly effective light dispersal. Thus the transparency of the product ensures uniform light distribution and reduces the number of LEDs required, which results in a cost saving.

Keys – characteristics with precision

Thermoplastic keys are integrated directly into the upper surface in order to furnish tactile feedback. The special production challenge in this regard related to the central placing of the keys in the application and their encapsulation in silicone. This was successfully achieved by means of self-adhesive material.

The silicone provides the Super Key with its pleasantly soft surface, although the hard keys ensure the retention of the resonance derived from pressing. As a result, one can immediately feel that a function is activated. This fixed integration means that further assembly phases can be saved. The product is flexible and durable having survived up to 200,000 switching cycles without any negative effects.

Individual operating surfaces from Silcos

As far as the surface characteristics are concerned, starlim//sterner entered into an alliance with Silcos GmbH, which specializes in the surface upgrading of silicone and plastic

components. The intention was that in addition to practical characteristics, such as dirt repellence and resistance to environmental influences and abrasion, the surface of the Super Key should demonstrate design effects.

Super Key can be equipped with a diversity of ergonomic aids and surface coatings. For example, in addition to abrasion-resistant painting, Silcos offers decorative effects such as gloss or matt finishes. Changing paints, which generate an iridescent flip-flop effect, a PVD chrome look and surface metallization all belong to Silcos' extensive range of surface solutions. And by means of PVD (Physical Vapour Deposition) differing plastics and even soft silicone are coated with genuine metal. This new and special process furnishes an unlimited range of possibilities with regard to the degree of gloss and colour. A day/night design can also be created by means of the backlighting of symbols, e.g. in switch applications. Partially transparent PVD coatings facilitate backlighting and the switch cover can be printed with symbols or be laser-inscribed. This is feasible on both paint and PVD, but impossible in the case of galvanization.

Finger guidance is generated by means of 3D contours, which allows blind operation. The external characteristics created by the fact that the keys can be designed in a convex, concave, round, angular or ribbed form, or with a leather-structure, allows easy orientation even without looking.

Multifaceted and precise applications

These optical and functional advantages mean that the areas of application are extremely diverse. The Super Key from starlim//sterner can be employed in the automotive, electrical, sanitation or household appliance industries, as well as in medical technology, and wherever the strictest hygiene, water and dust protection, heat and frost resistance are required. The product also continually opens up new possibilities for applications for remote operations and controls of all types in the leisure, sport and construction branch.

The future can come

Thomas Bruendl, the starlim//sterner CEO is convinced that: *"This virtually indestructible product is certain to attract increasing attention."* A fluorescent end product, the colour of which alters to match the surroundings, is no longer part of a future scenario as Super Key has already attained serial production maturity and can be employed immediately.

Visual material

Super Key The levels show the variable design possibilities provided by Super Key.

starlim//sterner facts

starlim//sterner is based in Upper Austria and London/Ontario (Canada) and numbers among the world's largest processors of liquid silicone in the injection moulding field. Technical, formed parts are produced for the automotive and life science branches, as well as for the sanitation/household and telecommunications sectors. The company assumes complete responsibility for development and production contracts, which extends from the product idea and design, to the creation of individual tools and fully automatic serial

production. Certification according to branch standards, global quality management and state-of-the-art production conditions (clean rooms) create the very best business preconditions.

Silcos facts

The owner-managed company Silcos, which is located in Pliezhausen, Baden-Württemberg/Germany, is a leading supplier of technical silicone products, silicone and thermoplastic coatings, as well as input systems. And with its innovative products and services, this specialist enterprise serves a variety of branches from the automotive industry to the medical technology area. Silcos is regarded as a pioneer in the serial production of decorative PVD coatings on formed, thermoplastic components and is the only manufacturer in Europe to dispose over redundant plants, which in plain language, means that maximum security of supply is guaranteed.

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