

Application Information

FASTEX® HBSM

For Zinc Diecasting & the Aluminum High Pressure Casting Industry

(When you Need to Keep Ejectors Cores & Cavities Clean)

FASTEX® HOT BONDING SURFACE MODIFIER FHBSM can:

- **Minimise friction and soldering**
- **Stop contamination of ejector surfaces**
- **Pre-treat and re-treat mould surfaces**
- **Compatible with all metallic surfaces**
- **Reduce maintenance costs**

Molding surfaces of zinc diecasting tools are always sensitive to soldering. The attraction between zinc and iron that is responsible for this phenomenon can only be overcome by a physical barrier. During sampling it is not feasible to protect core and cavity surfaces with a coating such as chromium nitride. Lubricants can also take time to condition and become effective as a barrier layer. **FASTEX® HBSM** on the other hand readily bonds to mold surfaces and at the same time creates an incompatible surface for zinc to attack during batch production.

For ongoing protection further treatments of **FASTEX® HBSM** are required following mold cleaning operations. Each new treatment is easy to apply, very cost effective and gives tools extended service life.

Surface treatments such as nitriding (or other N₂ enriching treatments) and titanium nitride coating (TiN), can beneficially minimize soldering and galling; however, these processes are both expensive and time consuming especially if it involves outside contracting services.

While costly surface treatments can be beneficial,

FASTEX® HBSM is a proprietary blended Surface Modifier Oil

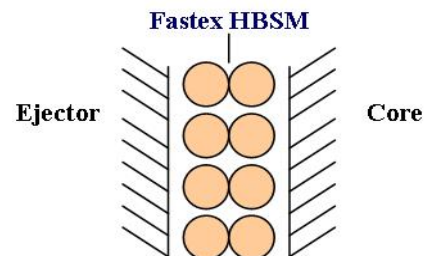
It provides a tenacious hardwearing surface to metals and provides extreme pressure, anti-wear and low friction benefits

remedial work on molds may require their removal. In some cases when completed, it may no longer be feasible to expose tool parts to further thermal treatments which may cause other problems or incur delays.

Some tooling materials are however incompatible with high temperature treatments anyway. Even when materials are compatible not all mold tools are surface treated. Generally this can lead to metal loss, galling, and scoring of pins and slides which affects quality and production downtime.

In all of these situations, the presence of **FASTEX® HBSM** helps to prevent the frictional stress found even in well lubricated tooling. **FASTEX® HBSM** requires neither high temperatures nor any special technique in its application. The treatment can be quickly completed. and repeated as and when necessary.

*The in-house treatment process offered by **FASTEX® HBSM** is a time-saving feature and a direct cost benefit.*



FASTEX® HBSM TECHNOLOGY

The unique surface engineering characteristics of ***FASTEX® HBSM*** are as follows:

- Highly cost effective
- Low bonding temperature 55°C (132°F)
- Simple in-house application process (wipe, spray or dip)
- Has no effect on dimensional tolerances
- Robust protection against soldering
- Used on all new and existing molds
- May improve the performance of existing CrN & TiN

FASTEX® HBSM will bond to clean metallic surfaces including traditional treatments that have been previously applied to enhance surface hardness and wear resistance.

Mold & Die Components can be treated in situ or in stripped down component form. The metal surface needs to be heated to at least 55°C (132°F). This can be done with a hot air blower, hot water, or in an oven. **Note:** Do not heat with a flame since it may contaminate the metal surface.

Once the minimum bonding temperature is reached ***FASTEX® HBSM*** can be applied by wiping, brushing or dipping and then allowed to air dry. **See application sheet.**

This microscopic surface provides a thermally resistant barrier. This barrier provides a strong repellent to whetting by molten alloy.

Overcoming Fouling:

The presence of excess lubricant and metal debris cause sticking problems with the moving parts of a mold. Regular applications of ***FASTEX® HBSM*** during service work has a compounding effect against friction and sticking by reducing the need for copious lubrication.

Mold Protection - Core Pins:

The foremost feature offered to the die caster is the ability for ***FASTEX® HBSM*** to be applied quickly on-site whenever it is required. The treatment of new core pins as they are manufactured is offered as a major benefit by a number of Al and Zn alloy casters. They do not have to wait for an offsite coating process which offers no extended life for the core pins.

Mold Protection - Fixed Half Sticking:

Protection against sticking of the casting to fixed half cores is occasionally aided by a die paste (type of grease).

The application frequency of this type of product is determined by the severity of sticking.

Excessive use can result in an accumulation known as “egg shell”. This tends to crack and flake off during lengthy production runs and can be detrimental to casting integrity and strength. ***FASTEX® HBSM*** applied to core pins at regular intervals and used as a die surface treatment can reduce or even eliminate the problem of sticking.

Die Cleaning:

Regular applications of lubricant and mold release agents create build up in dies. Removal of the debris is required at fairly frequent intervals. This situation tends to be more regular in aluminum casting than with zinc where very long runs may be achieved with minimum maintenance.

Aluminum casting dies treated with ***FASTEX® HBSM*** are reported to have less fouling. In one particular case, the die cleaning time was reduced by several hours and the reduced fouling of core pins by aluminum was found to extend production runs. The tool maintenance department passed the die through their caustic bath at the end of two full production runs and were able to run a third batch before the ***FASTEX® HBSM*** treated core pins failed. This compared with only one full production run when Chromium Nitrided core pins were used.

It was also reported by a zinc die caster that they encountered quality problems when manufacturing a complex casting because of deep ribs. Significant die spray had been needed to release the casting and this resulted in substantial component loss during an 8,000 shot production run due to the ribs becoming clogged. The decision was made to apply ***FASTEX® HBSM*** to the whole cavity area during polish maintenance and the mold put back into service. Subsequent runs delivered between 30,000 and 33,000 shots before rib definition loss was experienced.

Machining Operations

The machinability of both aluminum and zinc alloy is generally good. Cutting tools usually offer good productivity if the alloy is free machining or is hard enough to form a good tight chip; however, the clogging nature of zinc and the abrasive nature of high silicone Al alloys do present machining problems and these are addressed with cutting tools, drills, reamers, taps etc., hot bonded with ***FASTEX® HBSM***