Technical Data Sheet
Allcosil No. 3

Introduction:

- A three-component system, easily applied.
- A tough, permanent release coating on any type of surface
- Does not travel across the mould surface, so can be used for treating only the troublesome part of the mould.
- Equal volumes of each component, when mixed together, provide the active ingredients in the required quantities and at a ready-to-use viscosity.
- The ready for use packaging and trouble free method of mixing means that **Allcosil No. 3** can be applied by process operators rather than by maintenance staff.
- The re-sealable packaging also means that any quantity from a thimbleful to a bucketful can be made up at a time.
- **Allcosil No. 3** is very economical.

Uses:

Allcosil No. 3, being a permanent, silicone mould release agent, has a very wide range of applications. Typical applications are:

- Compression moulds for rubber.
- Injection moulds for plastic and rubber articles
- Drying drums for non-woven fabric or carpet backing lines.
- Rollers on adhesive coating machines.
- Lips of extruder dies to prevent plucking or sticking of the extrudate.
- Internal surfaces of extruder dies to facilitate cleaning.
- Machinery parts to prevent temporary or permanent adhesion of material being processed which is sticky or adhesive, etc.

Typical Characteristics:

Composition	
Substance	**% by volume**
Silicone Gum	33.33
Catalyst A	33.33
Catalyst B (v2)	33.33

Release Properties:

Silicone mould release agents have a poor record of success with many plastics because of the way they interfere with subsequent printing, painting and adhesive operations.

Most silicone release agents are polysiloxane fluids presented in a variety of ways, such as grease, emulsion, solvent solution or spray. What remains on the treated surface is essentially liquid. In subsequent moulding operations, a portion of the liquid is lost at each contact. Because silicone oils have a very low surface energy, they quickly and easily flow across surfaces. What remains on the surface acts as a reservoir and more spreads outwards to renew areas from which the oil has been removed. This continues until a monomolecular layer is left. When this final layer is removed, the excellent release properties previously enjoyed by the treated surface are lost, and poor release again becomes normal. With repeated mouldings, this usually occurs after 6 or 7 mouldings.

Where a solid silicone film is put on the mould or roller surface and bonded to it, as when **Allcosil No. 3** is used, the release properties become permanent. They are only lost when the film is abraded away. With a tough, rubber film, this only happens slowly, with the result that the release properties are maintained on the treated surface for much longer periods of time than previously thought satisfactory.

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Surface properties of moulded articles:

The silicone oil transferred to the article being moulded behaves in just the same way as that remaining on the mould. It acts as a reservoir and the silicone oil spreads all over the surface of the article, giving it low surface energy properties. If that article is subsequently painted, hot foil printed, coated with adhesive, or receives some other surface treatment, the silicone on the surface can interfere with that treatment, and sooner or later cause the treatment to detach itself from the article. This is the cause of the bad history silicone release oils have in the plastics moulding and industrial painting industries. When the silicone film is permanent, as with **Allcosil No. 3,** there is NO transfer to the moulded surface, and consequently NO interference with subsequent treating operations. Nor is there transport across a mould surface, resulting in defects at the edge of the moulding, due to occlusion of mould release agent or build-up in corners. Consequently, the excellent release properties of silicone films, which can produce significantly improved performance and reliability of moulding and similar operations, can again be considered in a trouble-free context.

Application/ How to Use:

1. Clean the surface requiring release properties until it is free from contamination.

2. Measure out equal volumes of Catalyst A, Silicone Gum and Catalyst B, shaking Catalyst B to re-mix the solution, and stir them together in any suitable container. It is best first to measure out Catalyst A and then add the Silicone Gum, stir briefly until fully mixed, then add Catalyst B and stir briefly again until fully mixed. The same vessel can be used to measure out all three components. Pot life of the mixture is 6 hours. Throw away any mixture older than this, as it will not work properly. Re-seal the containers, without mixing the caps, after use.

3. Allow the solvent to evaporate completely. This should normally take less than 10 minutes, even in an unheated workshop. Application can be made to warm surfaces, but not to hot surfaces above 35° C. At higher temperatures the solvents boil off, causing bubbling and partial curing of coating, leading to poor film formation and reduced service life.

4. Apply the minimum quantity of the mixture to the surface by swabbing, painting, spraying etc. It readily wets out all types of surface, so one pass over the surface will give the required coverage. For adjustment of spraying viscosity, add up to 50% low boiling point hydrocarbon solvent.

   Since the solvents in **Allcosil No. 3** are flammable, it should be applied in a well-ventilated space, away from sparks and open flames.

Coverage:

When freshly prepared, coverage is 50ml per sq, metre. The cured film is about 3 microns thick. If necessary, apply a second coat when the first is dry.

Curing:

Heat the treated surface to a temperature between 80°C and 200°C for a minimum of 5 minutes. A longer time will have no detrimental effect. At the higher temperature, cure is effected in 15 or 20 seconds. Cure can also be effected at room temperature, and this typically takes 16 – 24 hours.

This treatment will leave a thin coating of release agent which cannot easily be removed, even by vigorous rubbing. The film formed is tough and rubbery and it is chemically bonded to the substrate, whether metallic or organic in nature.

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Method of heating:

The coating can be heated by any convenient method, such as steam or electrical heating in the mould or drying drum. Long wave infra-red heating is also a very suitable method of curing films on surfaces which cannot be heated by any other means. A radiator held 1 foot away from a dried film will cure it in 4 or 5 minutes, even though the film is on cold, unheated metal. Blown hot air can also be used.

It is important to ensure that the solvent has evaporated before curing heat is applied, otherwise poor film formation results.

Service Life:

The treated surface will need re-coating at intervals, depending upon the abrasiveness of the materials with which it comes into contact, and the manner of the contact. A small degree of slip across the surface will wear out the coating much more quickly than when materials are held in firm contact with it. Even materials soft to the touch can be quite abrasive if they contain fibres with sharp ends, or fine particles with hard edges which then rasp across the treated surface.

Because of the wide variation in abrasiveness and method of contact with the treated surface, it is not possible to predict the service life of **Allcosil No. 3**. However, general experience shows it to last several times longer than other coatings, a factor of 5 or 10 being quite common.

Surfaces previously coated for every moulding can now require treatment once per shift; those requiring treatment once per day can often be left a week between coatings and those requiring treatment once a week can last a month.

To fit in with a practical re-coating period, two coats are sometimes necessary. With care, and allowing proper drying between coats, a second coat can be applied without curing the first. Too vigorous or too early an application of the second coat will only result in the solvent re-dissolving the first coat, giving a thinner coating than expected.

A second coat will bond very satisfactorily to the first, and because of the tough, rubber nature of the film, will often give more than twice the life of a single coat.

Removal:

If used on moulds or rolls having a pattern, the material on the high spots will be worn away first. Re-treatment may slowly fill in the low spots, making definition of the pattern less clear. On a plain roll or flat mould, wear of the film may not be uniform across the surface, consequently action may be necessary to remove residual release agent before re-coating, to ensure a uniform surface. Several methods have been found satisfactory.

a) For plain surfaces – dry removal using 400 grade Wet & Dry paper.

b) For plain or patterned surfaces – soften the film with solvent type paint stripper and wipe clean with a rag or coarse paper. Preliminary roughening of the surface with 400 grade Wet & Dry papers speeds up this softening process.

c) To clean smaller articles or mixing containers, or surfaces which require special care – soaking, filling or swabbing with alcoholic caustic potash using propyl alcohol is effective, but hazardous if used carelessly.

d) Proprietary chemicals are available which dissolve the film, allowing complete removal. Choice depends on the material of the construction of the mould. We will be pleased to advise in individual cases

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Shelf Life:

Shelf life for all components of Allcosil No.3 is 12 months from date of purchase. Material is best kept in dark, dry conditions and not exposed to extremes of temperature.

Packaging:

A three-pack system, comprising Silicone Gum, Catalyst A and Catalyst B, the active ingredient of each pack being dissolved in hydrocarbon solvent.

Health & Safety:

Detailed advice on the Health & Safety aspects of this product is given in the individual product Safety Data Sheet (SDS), available upon request.

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