Correcting Resin Separation in IRS2012 Low Density Potting Compound

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Why the resin separates

IRS2012 potting compound has a specific gravity of 0.6, making it lighter than water and valuable for applications where weight is a concern. IRS2012 is filled with lightweight materials (resin side only) to give it these low density properties. In 'filled' compounds, such as IRS3071, the fillers are heavy – typically, china clay and aluminium oxide - and over time can fall out of suspension from the resin. In IRS2012, this process is reversed whereby the resin falls out of the filler, sinking to the bottom of the container and leaving the low density filler at the top.

The process of separation in IRS2012 happens quickly compared to IRS3071. IRS2012 takes 24-48 hours to begin to separate, compared with weeks or even months for IRS3071.

This separation is easily reversible.

The lightweight filler can separate from the resin before mixing.

How to homogenise IRS 2012

The low density fillers will easily mix back into the resin; however, repeated mechanical homogenisation (e.g. stirrers, agitators, industrial mixers, etc.) is likely to have a detrimental effect. The low density filler is delicate and will begin to break down, resulting in a change of specific gravity back towards 1, and thus losing the benefit of being 'lightweight'. This could also have mix ratio implications.

Twinpack kneading

In twinpacks, separated filler can be reincorporated by hand-kneading the sachet, with no effect on density, at the point of application.

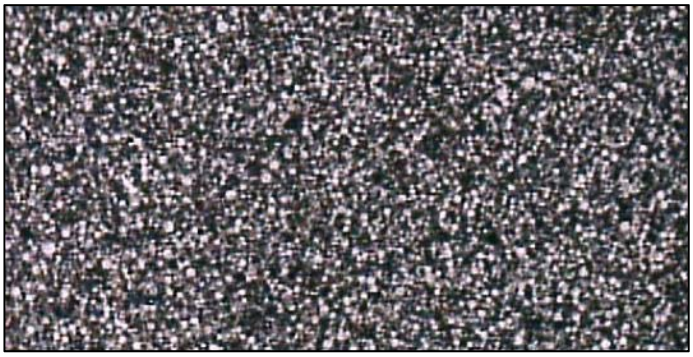
Metering and mixing dispensing

We would suggest that IRS2012 is not ideally suited for metering and mixing dispensing. While a meter-and-mix dispenser such as the preeflow eco-DUO is capable of handling the material delicately, unlikely to cause damage to the filler, the issue remains of transferring bulk resin in suspension to the eco-DUO for the reasons mentioned above.

Non-contact mixing

We have proved that the non-contact Thinky ARE-250 reincorporates filler and resin with zero impact on the density. For customers who use this approach, we are able to provide the resin in Thinky-friendly containers so that it can be mixed straight out of the box. The following shows IRS2012 after mixing with a Thinky ARE-250:

Cross section of cured material



Magnification shows filler dispersion (visible as white beads)

IRS 2012 Low Density, Lightweight Potting Compound

- Low density and light weight; contains advanced light weight fillers
- Black potting & encapsulation system
- Excellent electrical properties
- Good chemical resistance to solvents, oils, fuels, acids and bases
- Good mechanical properties
- Low cure shrinkage
- Has uses in radio frequency applications, RF transparent
- Available in easy-to-use twinpacks

Applications include: As a very low density, light weight epoxy resin system with excellent physical properties, IRS 2012 can be used in systems where weight is critical (e.g. auto sport, motor racing, aerospace). It also has good transparency to RF signals or radio signals.

THINKY ARE-250 Mixing and Degassing Machine

- Re-mixing of separated materials to prolong shelf life
- Remove voids and re-disperse filled materials packed in syringes
- No damage to material unlike the use of rollers, mixing blades or propellers
- No unit cleaning between batches eliminates non-productive work
- Simultaneous process of dispersion and degassing in one batch
- Process in seconds to minutes
- Process in your containers such as jar, barrel, cartridge, syringe or tube
- Non-invasive processing ends the risk of cross contamination between batches
- Vacuum-less processing, degassing and de-aeration

Applications include: Formulate and mix adhesives, sealants, moulding compounds, lubricants, slurries, coatings, inks, paints, abrasives, bio chemicals, cements, medical compounds, cosmetics/personal care materials, conductive pastes, or any other materials which are hard to mix, hard to degas, or hard to wet.

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