

Potting compound goes under the sledge hammer at Tough Tracker

Tough Tracker was established to counter a problem in the scrap metal market – of not knowing where scrap bins (skips, etc.) are located if they get lost or stolen. Electronic tracking devices need to be both robust and with good battery life. The Tough Tracker solution was developed with a high tech composite casing (Formula 1 grade, stronger than steel) with a combination of a GPS satellite positioning system (the same GPS as used in spacecraft and aeronautics), quad band GSM transmitter with cell location function, anti-jamming technology and a 3-axis accelerometer for ultra-sensitive motion detection. The complete unit then needed to survive extremely aggressive testing exemplified by a two minute battering with a sledge hammer – brilliantly demonstrated on [Tough Trackers' website video](#).

Originally, a polyester potting compound was tried to protect the electronics, but its uneven cure lead to exothermic hot spots and shrinkage which caused component damage. Whilst inexpensive, the polyester was hard and not sufficiently shock proof, shattering under impact testing.

Developer James Bryan explained:

Tough Tracker is a new company – we are just two years old and had spent the first year in research and development, so we needed a can-do attitude at reasonable cost. When we started to look for something more resilient for our potting compound we found Intertronics by word of mouth recommendation and they have exactly met our needs.

Our Product Specialist Simon Gibbs listened to their requirements and suggested that [IRS 3071 Polyurethane Potting Compound](#) was evaluated. **IRS 3071** is a semi-rigid, room temperature curing polyurethane resin system specifically designed for the cost effective encapsulation of a variety of low to medium voltage electrical and electronic applications. The system is medium viscosity, flame

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retardant to UL94 V-0 at 6mm and has excellent adhesion to a wide range of substrates. **IRS 3071** is resistant to UV, water based cleaning chemicals, motor oil, lubricants and most dilute acids and alkalis.

The **[IRS 3071 Polyurethane Potting Compound](#)** is crucial to performance of the Tough Tracker and has been found to be waterproof, impact and thermally resistant, and easy to work with. Importantly, its electrical transmission characteristics allow the tracking signals, whilst its fire retardant specification also helps with fire proofing.

IRS 3071 works well in production, saving wastage of pcb's and enhancing performance in service. We also supplied a **[custom metering, mixing and dispensing machine](#)**, which ensures production efficiency and the consistency of performance essential to reliability of the Tough Tracker unit. Purchase of the machine allowed Tough Tracker to purchase bulk quantities of the potting compound, which led to material savings.

Application of the Tough Tracker technology has now expanded into security of farm machinery, vehicle trailers and perimeter gate alarms. They were recently a finalist in the prestigious *EIC Energy and Innovation Awards* for Best Asset Security Innovation – a significant tribute to their enthusiasm and use of advanced technologies to solve a simple low technology problem.

And for the future? Well, we understand field experience now calls for ballistic testing which is envisaged with a range of weapons from shotguns to 50 calibre rifle – we await the results with interest!

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