



Dow Fuel Marking Solutions

Fuel Marker Demonstrates Success in United Kingdom & Ireland

Governments Report Progress in Fight Against Fuel Laundering

ACCUTRACE™ Fuel Marker

April 2018

Innovative Response to Evolving Crime

Fuel fraud, which costs governments globally around \$100 billion annually¹ occurs when criminals launder tax exempt or rebated fuels and sell them for road use in vehicles. Criminals remove the dyes that differentiate these fuels in order to avoid taxes that generate necessary revenue for governments. Fuel launderers often use the illicitly gained profits to fund organized crime including drugs and human trafficking². To overcome weaknesses in existing markers in order of fight back against these criminal operations, HM Revenue & Customs (HMRC) of the United Kingdom and the Exchequer of Ireland formed a joint committee to review available technologies. After an independent review, they selected and implemented the ACCUTRACE™ S10 fuel marker, developed by The Dow Chemical Company, in April 2015.

Marker Offers Numerous Advantages

Though invisible to the naked eye and extremely covert to those who don't know what to look for in a lab, this novel chemistry can be detected quickly



Photo of roadside fuel marker testing, courtesy of HM Revenue & Customs

using portable gas chromatography systems. Highly robust and resistant to known chemical and physical laundering techniques, the molecular marker stubbornly maintains a unique fingerprint in the fuel, alerting authorities to its intended use. Naturally free from sulfur, fluorine, bromine, chlorine and other hazardous chemical elements, ACCUTRACE™ fuel markers come compatible with existing dyes and markers already in use, adding an extra layer of protection for revenue authorities looking to tackle crime. Based on the same chemical elements as the fuel itself, it does not add any known ozone-depleting additives. It does not present the dioxin-emitting or corrosive properties of halocarbons nor the health risks associated with some metals.

In the first two years since the introduction of the new marker, HMRC and other law enforcement agencies found no evidence that fraudsters had laundered the marker. All the evidence indicated that the marker was being effective in helping drive down fuel laundering.⁸

Early Review Indicates Success

A twenty four month review³ presented to the UK Parliament, demonstrates the full impact of the marker's implementation, and reports that hazardous waste dumping associated with fuel laundering has been dramatically reduced in the United Kingdom. The ACCUTRACE™ fuel marker, hailed as a "game changer"⁴ in the war on laundered diesel, has supported the collapse of the fraudulent fuels market in Ireland, generating for the Irish Exchequer a revenue windfall estimated at €300 million credited to the marker's implementation⁵. Former IRA gang members even hired chemists⁶ to attempt to remove the marker; thus far, however, they have produced "no evidence of successful removal through known laundering techniques, with criminal gangs even admitting to Irish media⁷ the futility of their efforts thus far." As the UK and Ireland continue to see positive results, other governments should consider implementing ACCUTRACE fuel marking technology to join in the fight against this costly and environmentally hazardous crime.

Did you know that in the first several months of implementation, the combination of the ACCUTRACE™ S10 fuel marker and the preexisting marker enabled 1,299 detections of laundered fuel? Without the presence of the ACCUTRACE marker, as many as 7% of these may have gone undiscovered due to removal techniques that had affected the existing marker without removing the new ACCUTRACE marker.⁸

1 "How Chemistry Is Helping Defeat Fuel Fraud," Alex Scott, Chemical & Engineering News (Feb 1, 2016)
2 "New device helps put down a marker against fuel pirates," Cate McCurry, Belfast Telegraph (Feb 19, 2016)
3 HM Revenue & Customs report from December 2017: Combatting Fuel Duty Fraud - Evaluation of the Accutrace Fuel Marker
4 "New fuel marker hailed as 'game changer' in war against laundered diesel," Seamus Enright, The Anglo-Celt (Jan 7, 2016)
5 "Blitz on laundering a boost to Dail's coffers," Tom Brady, Belfast Telegraph (Dec 26, 2015)
6 "Scientists working for ex-IRA men in south Armagh unable to crack new diesel marker," Jim Cusack, Belfast Telegraph (May 19, 2015)
7 "Fuel gangs hire foreign scientist to 'wash' diesel," Debbie McCann, The Irish Mail on Sunday (July 26, 2015)
8 "Combatting Fuel Duty Fraud - Evaluation of the Accutrace S10 Fuel Marker," HMRC, Library of the House (Oct 2015)

24 Month Fuel Marking Program Review (HMRC, Dec 2017)

	2013 /14*	2014 /15*	2015 /16*	2016 /17 *
Number of laundering plants in operation in Northern Ireland**	38	27	12	6
Fuel laundering waste incidents reported in Northern Ireland	152	103	72	25
Fuel laundering waste tons collected in Northern Ireland	1237	510	297	148

* Study compares same periods of 12 months beginning in April each year, as fuel marker was implemented April 1, 2015

** Data supported by intelligence gathered by HMRC

Laundering capacity decreased from 5,544 m³/week in 2013/14 to 352 m³/week in 2016/17, representing a 93,7% reduction across the whole of the United Kingdom. This information indicates that the presence of the fuel marker has had a significant effect in deterring fuel laundering operations allowing 88% volume reduction of associated hazardous waste from 2013/14 to 2016/17.

⁹ "Organised Crime - Oral Answers to Questions - House of Commons," Theresa Villiers, Chemical & Engineering News (Mar 2, 2016)

¹⁰ "Ford highlights new marker testing in fight against diesel laundering," Department of Justice (Feb 18, 2016)

"The review suggests that the marker is having a **very positive effect.**"

- Theresa Villiers⁹

Secretary of State, Northern Ireland

"The new marker, which was introduced last year, has significantly improved HMRC's capability of detecting this laundered fuel. This is a **huge step forward** against tackling this type of crime."

- David Ford¹⁰

Justice Minister, Northern Ireland

"Since the launch of the new marker we have seen a **significant reduction** in the detection of laundering plants and dumping of waste material associated with laundering activities."

- Pat Curtis¹⁰

National Oils Lead Investigator, HMRC

Product Stewardship

Dow has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with Dow products - from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Customer Notice

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to ensure that Dow products are not used in ways for which they are not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support. Dow product literature, including safety data sheets, should be consulted prior to use of Dow products. Current safety data sheets are available from Dow.

The Dow Chemical Company

US

Toll Free 800-447-4369

Toll Call 989-832-1542

International

Europe / Middle East + 800 36 94 63 67

Italy + 800 783 825

Asia/Pacific + 800-7776-7776

China Only 400-889-0789

Latin America +55-11-5184-8722

dowfuelmarkers.com

NOTE: Any photographs of end-use applications in this document represent potential end-use applications but do not necessarily represent current commercial applications, nor do they represent an endorsement by Dow of the actual products. Further, these photographs are for illustration purposes only and do not reflect either an endorsement or sponsorship of any other manufacturer for a specific potential end-use product or application, or for Dow, or specific products manufactured by Dow.

NOTICE: No freedom from infringement of any patent owned by Dow or others is to be inferred. Because use conditions and applicable laws may differ from one location to another and may change with time, Customer is responsible for determining whether products and the information in this document are appropriate for Customer's use and for ensuring that Customer's workplace and disposal practices are in compliance with applicable laws and other government enactments. The product shown in this literature may not be available for sale and/or available in all geographies where Dow is represented. The claims made may not have been approved for use in all countries. Dow assumes no obligation or liability for the information in this document. References to "Dow" or the "Company" mean the Dow legal entity selling the products to Customer unless otherwise expressly noted. NO WARRANTIES ARE GIVEN; ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED.

© TMTrademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow

319-01 113-0418 CDP