



Delivering Advanced Products. Quality Service. **Better Solutions.**

## **COMPANY & PRODUCT INFORMATION**

### **1. COMPANY OVERVIEW**

RCAI is a research based industrial supply company, providing products and services as a Total Solution to its customers throughout North America and worldwide. Headquartered in San Clemente, California, RCAI develops, manufactures and markets a range of environmentally friendly asphalt release agents, concrete form oils, cleaners, and non-stick industrial vehicle and equipment coatings for the oil sands and mining industries based on patented ALDEROX® formulation technology. RCAI's products asphalt release and concrete release agents are distributed exclusively by Applied Industrial Technologies throughout the United States, by Bearing & Transmission (a subsidiary of Applied) in Canada and by Applied Mexico, S.A. de C.V. in Mexico.

### **2. ALDEROX® ASA-12® - MINING**

RCAI pioneered the use of ASA-12® in the mining industry in 2006. Working with a major U.S. mining operation in the western U.S., RCAI was brought on-board to help solve the problems that the mine was experiencing with build-up in their underground haulage trucks. It was determined that by eliminating, or significantly reducing, the 'dead bed' or 'carry-back' issue, the ALDEROX® ASA-12® product would have a major beneficial effect on productivity and thus on the bottom line of the entire operation.

Build-up of materials in truck beds and on equipment is an issue at many mining operations worldwide. The Alderox® release agent is able to assist our mining clients by eliminating or greatly reducing this problem, thereby increasing productivity and reducing safety concerns related to removing build-up from truck beds and equipment.

Some of the benefits of utilizing Alderox® products in the mining industry include:

- The Alderox® product penetrates the metal of truck beds and equipment to create a non-stick film
- Coverage area of 800-1,000 square feet per gallon of product – only a very small amount is required per application
- Frequency of application will vary, typically it is one application before each 10 or 12 hour shift
- Prevents build-up of materials in the truck beds and on other equipment such as; skips, loaders, buckets, conveyors, crushing stations, chutes, etc.
- Significantly reduces the amount of clay and mud build-up on vehicle undercarriages
- Reduces the amount of down time required for truck and equipment cleaning
- Increases productivity through elimination of unusable space caused by materials build-up

- Reduces the likelihood of employee injury caused by cleaning of large truck beds and equipment
- The Alderox® product line is completely non-hazardous and non-toxic, perfect for use in confined areas, underground and in environmentally sensitive locations
- The Alderox® product line has no recorded negative effect on equipment or materials
- No mixing/dilution is required – our products are delivered ready to use
- Application systems, both hand-held and fully automated drive-under, are available for any application and any size haul truck at no cost to the customer

## **2.1 Customer Service**

RCAI is aligned with Applied Industrial Technologies in the United States, Canada and Mexico. One of the benefits of this partnership is that RCAI is able to provide a level of customer service unequalled in the industry. Not only are RCAI technicians available 24 hours per day, 7 days per week for customer service, RCAI is able to draw on the resources of Applied's 440 locations throughout North America. This guarantees that regardless of what the customer may need or where they need it, RCAI will provide it immediately.

## **2.2 Application Systems Provided at No Charge**

RCAI offers to all of its mining clients the use of automated and/or manual spray application systems at no charge for as long as the customer is utilizing the ALDEROX® product. The spray systems are specially designed and manufactured by RCAI's engineering team to always apply the correct amount of product, thereby eliminating overuse, ensuring maximum performance of the ASA-12® product and increasing productivity. Importantly, RCAI's application systems are built to withstand the harshest treatment without breakage or failure. Application systems are designed for any size truck bed and/or ore car and are provided with 100% back-up systems in order to ensure the customer is never without a means of application.

## **2.3 Savings**

RCAI will demonstrate the savings made possible through the use of ALDEROX® products to any customer with an on-site trial at no charge. Trials are typically 30-60 days in duration and the customer is provided with a detailed report of the products' performance and the savings/productivity increase realized through its use.

## **3. ALDEROX® ASA-12® - ASPHALT PAVING**

Development of ALDEROX® ASA-12® was undertaken by RCAI at the request of the Utah Department of Transportation (UDOT). UDOT was in need of an effective, economical and environmentally friendly asphalt release agent.

The Utah Department of Transportation conducted extensive tests using ASA-12® on their mix designs. ALDEROX® ASA-12® has successfully released the toughest mix designs across the country and worldwide. ASA-12® is the contractor's choice for sticky mix designs and high tempo jobs. The product has been thoroughly tested and proven effective on the following mix designs:

- Rubber • Polymer Modified Mix Designs • SMA (Stone Mastic Asphalt) • SBS (Styrene Butadiene Styrene) • SBA (Styrene Butadiene Amene) • Novachip and • Polymer Modified OGFC (Open-graded Friction Course)

In addition to the above mix designs ASA-12® has been thoroughly tested on CITGO's FLEX FR fuel resistant mix design and FLEX CR Interlayer Crack Relief products.

Regardless of which type of asphalt is used, ALDEROX® ASA-12® delivers superior results with minimal if any asphalt residue remaining on the truck beds or equipment. Unlike any other release agent available, ASA-12® delivers multiple truckloads (up to 3 additional truckloads) without re-application. Furthermore, ASA-12® removes residue left by previously used inferior release agents.

ALDEROX® ASA-12® is a completely non-hazardous, 100% biodegradable blend of various all-natural materials that creates a thin film on the surfaces of metal, allowing asphalt to slide easily from truck beds. ASA-12® is unique in the industry in that it is a Ready-to-Use product that requires zero dilution, is 100% biodegradable, non-hazardous and has recorded zero negative impacts to asphalt or equipment.

ALDEROX® ASA-12® and KR-7® are the only EcoLogo<sup>M</sup> Certified products in the world. In order to qualify for an EcoLogo<sup>M</sup> Certification the products were exhaustively tested to ensure they meet with the highest environmental standards put forth by Environment Canada. In addition to their high environmental classification, the Company went through a production and quality control audit similar to the ISO 9001 designation.

### **3.1 Automated Application Systems Provided at Free of Charge**

RCAI offers to all of its asphalt clients the use of automated spray application systems at no charge for as long as the customer is utilizing the Alderox® product. The spray systems are specially designed and built by RCAI's engineering team to apply the correct amount of product to each truck bed, thereby eliminating overuse, ensuring maximum performance of the ASA-12® product and increasing productivity.

### **3.2 Savings**

RCAI will demonstrate to any client with materials build-up problems that, with the use of the Alderox® products and spray systems, customers will decrease their cost per ton for release agent. In many cases, customers are paying a low price per gallon for release agent but a high cost per ton of asphalt hauled. In most cases, clients who had been using diesel fuel or a competitive release agent were actually paying a cost per ton of 7-10 cents. Using ASA-12® and RCAI's application system, the cost per ton for release agent dropped to 3 cents, even for customers hauling rubberized mix designs. RCAI will demonstrate these savings to any customer with an on-site trial of the Alderox® products at no charge.

## **4. ALDEROX® PAVER BLEND™**

ALDEROX® Paver Blend is a modified blend of the ASA-12® formulation designed for use by paving crews on equipment. The product is applied via a specialized spray system and prevents the adhesion of asphalt to equipment surfaces, thereby eliminating the need for constant cleaning. Use of the Paver Blend product also helps provide better smoothness of the paved surface by ensuring that no asphalt sticks to pneumatic rollers.

## **5. ALDEROX® DCR®**

ALDEROX® DCR® Slat Cleaner and Lubricant is a specially formulated release and lubricant designed to reduce life-cycle costs and maintenance issues resulting from poor performing drag chains. DCR® Slat Cleaner and Lubricant provides a lubricating action to reduce startup amps and eliminate spiking. Additionally, DCR® provides a releasing action to ensure highly polymerized mix designs do not build-up and cause shutdowns and operational delays that cost money and significantly reduce productivity. ALDEROX® DCR® will further provide a safe effective barrier should a plant stop with hot mix in the conveyor.

Welded steel chains are widely used in scraper and drag chain conveyors. The three most common ways a chain may fail are tensile, fatigue and wear. In a tensile failure, the chain is overloaded in tension until it is stretched so badly it will not function properly, or it is literally pulled apart. In a fatigue failure, the chain is loaded repeatedly in tension, at a load below the yield strength (the chain is not stretched), until microscopic cracks develop in the link plates or sidebars. These cracks continue to grow until the chain breaks. In a wear failure, material is removed by sliding, or sliding combined with abrasion or corrosion, until the chain will not function properly (will not fit the sprockets) or the chain breaks.

The issues with asphalt drag chain systems have revolved around asphalt stick and plant amperage and spikes on start-up and continued operation throughout the day. Plant volumes to date utilizing our product vary from a low of 1.5 gallons to a high of 5 gallons per day.

ALDEROX<sup>®</sup> DCR<sup>®</sup> Slat Cleaner and Lubricant is 100% biodegradable, completely non-hazardous, requires no dilution, is easy to apply, and has no negative impact on asphalt or equipment. DCR<sup>®</sup> Slat Cleaner and Lubricant is made of 100% natural ingredients with no synthetic polymers

## **6. ALDEROX<sup>®</sup> KR-7<sup>®</sup>**

ALDEROX<sup>®</sup> KR-7<sup>®</sup> was brought to market in response to the concrete industry's need for an effective, economical, and environmentally friendly release agent. KR-7<sup>®</sup> is applied as a clear coating to concrete molds/forms and allows concrete to be easily released from molds/forms.

ALDEROX<sup>®</sup> KR-7<sup>®</sup> is an extremely versatile product that has proven to be a superior concrete release agent, form oil and curing agent. Unlike other available concrete release agents and form oils, KR-7<sup>®</sup> provides superior results with; no recorded breakage, no discoloration, no residue left in molds and a better 'drop' rate. Forms treated with KR-7<sup>®</sup> have useful lives up to three times longer than those using competitors' release products. Forms using KR-7<sup>®</sup> did not need to be cleaned after each use, saving workers' time and thereby increasing productivity.

ALDEROX<sup>®</sup> KR-7<sup>®</sup> is 100% biodegradable, completely non-hazardous, requires no dilution, is easy to apply, and has no negative impact on concrete or equipment. KR-7<sup>®</sup> is made of 100% natural ingredients with no synthetic polymers. The raw materials used in KR-7<sup>®</sup> and the manufacturing/blending processes are proprietary and exclusive to RCAI.

## **7. ENVIRONMENT CANADA**

RCAI has partnered with Environment Canada to create national environmental standards for asphalt, concrete, and other industrial release agents.

In February of 2004, Environment Canada made the ALDEROX<sup>®</sup> ASA-12<sup>®</sup> formula the new national standard for asphalt release agents in Canada and later made ALDEROX<sup>®</sup> KR-7<sup>®</sup> the national standard for concrete release agents.

Before the introduction of ALDEROX<sup>®</sup> ASA-12<sup>®</sup> and KR-7<sup>®</sup> there were no national standards for asphalt or concrete release agents in Canada. The standards for the Environmental Choice Program's document, "Asphalt and Concrete Release Agents," were based on the product qualities and production processes of ALDEROX<sup>®</sup> ASA-12<sup>®</sup> and KR-7<sup>®</sup>. ALDEROX<sup>®</sup> ASA-12<sup>®</sup> and KR-7<sup>®</sup> successfully met these standards and RCAI has complied with the Environmental Choice Program's criteria regarding environmental permits, quality systems, quality records, and product recall.

With the Environment Canada approval, RCAI's ALDEROX<sup>®</sup> ASA-12<sup>®</sup> and KR-7<sup>®</sup> products join the select number of environmentally preferable products that hold the national symbol of excellence, the EcoLogo<sup>™</sup>.

## **8. INTERNATIONAL MERIT**

ALDEROX® ASA-12® has been the exclusive release agent system of choice for the prestigious Dublin Harbor Tunnel project in The Republic of Ireland. The system is utilized in all aspects of the paving process. Recently, The Lagan Group imported the country's first MTV (Materials Transfer Vehicle) specifically for the challenges it faced in performing the road building and paving for this project. The company uses the ALDEROX® product range exclusively on all equipment within the scope of the project.

RCAI, along with our Indian distributors, are currently lobbying the Indian Government to include the Alderox® products' attributes into the new Red Book, a paving governance manual used by all Indian Contractors. The Company has also meet with the leading personnel at both the Petroleum Conservation and Research Association and the Pollution Prevention directorate.

In 2007, ALDEROX® ASA-12® was featured in both Gold & Minerals Gazette, an Australian mining publication, and Canadian Mining Magazine, a Canadian mining publication.

## **9. NATIONAL RECOGNITION**

The RCAI group has provided strategic guidance and consulting for the worlds largest OEM's when they need expertise in utilizing release agents as it pertains to the asphalt industry.

RCAI has written and produced training programs specifically to help the contractor deal with release issues throughout the paving process. Including the National Pavement Expo in 2005.

In 2002, ALDEROX® ASA-12® was the featured release agent for the World of Asphalt in Nashville, TN. The product was used to provide a releasing action during the live pavement demonstration.

In 2007, ALDEROX® ASA-12® was featured in Mining Engineering, a U.S. publication of the Society for Mining, Metallurgy and Exploration, Inc., Gold & Minerals Gazette, an Australian mining publication, Canadian Mining Magazine and International Mining Magazine in the U.K.



## EPA Lab Certified Test Results for Alderox® ASA-12®

The concerns over the use of diesel fuel as a release agent or cleaner have been known for years. The liabilities associated with diesel are generally divided into two areas: Personal Impact (Safety) and Environmental Effects (Soil). No company wishes to have its employees exposed to the harmful characteristics of diesel (breathing fumes or skin/eye contact) nor does any company want to contribute to adding a contaminant to the soil and groundwater.

RCAI accepted the industry challenge of replacing diesel for use as a release agent/solvent/cleaner. Following extensive testing in the laboratory and field, *Alderox*® *ASA-12*® was developed. This product, which is designed for use as a release agent, is a blend of naturally occurring materials that work in concert to film metal or wood surfaces to inhibit adhesion. *Alderox*® *ASA-12*® is applied to surfaces using RCAI atomizing spray systems. Extremely small amounts of *Alderox*™ *ASA-12*® generally provide extended performance.

### Air and Soil Testing

RCAI addressed the safety and environmental issues by having *Alderox*® *ASA-12*® tested by an EPA Certified Laboratory. This independent testing included: VOCs (Volatile Organic Compounds) and Priority Pollutants with regard to soil contamination. Over 70 parameters were measured.

As per laboratory procedure, a sample of clean soil (results included) was injected with Diesel Fuel and a second sample was injected with *Alderox*® *ASA-12*®.

The test results of *Alderox*® *ASA-12*® vs. Diesel are included with this communication. As the reports are quite lengthy and detailed, we have included a Summary for your convenience. A full copy of the report is available upon request.

### **Alderox® ASA-12® vs. Diesel Comparison Data**

#### Soil Testing

Analyte	Soil	Soil + Diesel	Soil + Alderox® ASA 12®
MTBE	ND	ND	ND
Benzene	ND	ND	ND
Toluene	ND	4.46	ND
Ethylbenzene	ND	8.09	ND
Xylenes	ND	72.4	ND
Naphthalene	ND	4.09	ND

ND = Non Detected. Numerical results are expressed as mg/kg. Prep Method SW846 5030A. Analysis MetSW8021B.

### VOC Testing

Only items that were tested positive are provided in this table. Items not listed were Non Detectable. A complete list can be obtained by contacting **RCAI**.

<b>Analyte</b>	<b>Diesel</b>	<b>Alderox® ASA-12®</b>
<b>Benzene</b>	<b>5.13</b>	<b>ND</b>
<b>Sec-Butylbenzene</b>	<b>454</b>	<b>ND</b>
<b>Tert-Butylbenzene</b>	<b>58.3</b>	<b>ND</b>
<b>Ethylbenzene</b>	<b>199</b>	<b>ND</b>
<b>Isopropylbenzene</b>	<b>170</b>	<b>ND</b>
<b>p-Isopropyltoluene</b>	<b>421</b>	<b>ND</b>
<b>Naphthalene</b>	<b>1,390</b>	<b>ND</b>
<b>n-Propylbenzene</b>	<b>496</b>	<b>ND</b>
<b>Toluene</b>	<b>344</b>	<b>ND</b>
<b>1,2,4 – Trimethylbenzene</b>	<b>4,180</b>	<b>ND</b>
<b>1,3,5 – Trimethylbenzene</b>	<b>1,880</b>	<b>ND</b>
<b>O – xylene</b>	<b>708</b>	<b>ND</b>
<b>M,p – xylenes</b>	<b>2,240</b>	<b>ND</b>

Concentrations were measured in mg/l. Preparation Method SW846 5030A. Analysis Method SW846 8260B. 45 items were found to be Non Detectable.