

# Technology Safety Data Sheet

## Ingersoll Rand Paving Breaker Model PB35AS8

### Section 1: Technology Identity

<b>Technology Name(s):</b>		<b>Emergency Contact:</b>	
Ingersoll Rand Paving Breaker Model PB35AS8		Phone: 908-238-7129	
<b>Manufacturer's Name and Address:</b>		<b>Information Contact:</b>	
Ingersoll-Rand Company Tool & Hoist Division Eastern Regional Office 1467 Route 31 South Annandale, NJ 08801 Phone: 908-238-7129, Fax: 908-238-7053 Website: <a href="http://www.irttools.com">http://www.irttools.com</a>		Phone: 908-238-7129	
<b>Date Prepared:</b>	December 2002	<b>Date Revised:</b>	Not yet revised.

### Section 2: Technology Pictures



Figure 1: Ingersoll Rand Paving Breaker Model PB35AS8 Breaking Borosilicate Glass.



Figure 2: Pointed Tip Steel Bit For Ingersoll Rand Paving Breaker Model PB35AS8.



Figure 3: Broad Tip Steel Bit For Ingersoll Rand Paving Breaker Model PB35AS8.

## Section 3: Technology Description

The Ingersoll Rand paving breaker model PB35AS8 is designed within a one-piece housing that eliminates side rods, springs, and backhead bolts, see Figure 1 Section 2. A built-in lubricator helps assure adequate lubrication of the grooved piston that distributes oil uniformly over the cylinder wall and a hardened alloy-steel cylinder further resists wear. The paving breaker incorporates a ball valve throttle that shuts off instantly when released, thus, providing responsive control. The Ingersoll Rand paving breaker model PB35AS8 uses a 3/4" National Pipe Thread (NPT) air supply inlet that incorporates a swivel air connection. A latch-type fronthead is foot-operated for rapid change out of the steel bits. Two steel bit designs, pointed tip and broad tip, were used during the assessment; see *Figure 2 and 3 Section 2*.

## Section 4: Safety Hazards

### Hazard Category:

(Adapted from Appendix A to MIL-STD-882D, February 10, 2000, Department of Defense Standard Practice for System Safety.)

- 4 - Could result in death or permanent total disability
- 3 - Could result in permanent partial disability or injuries or occupational illness that may result in hospitalization of at least three persons
- 2 - Could result in injury or occupational illness resulting in one or more lost work days
- 1 - Could result in injury or illness not resulting in a lost work day
- N/A - Is not applicable to this technology and poses no appreciable risk

### A. Buried Utilities, Drums, and Tanks

**Hazard Rating: N/A**

This hazard is not applicable to this technology.

### B. Chemical (Reactive, Corrosive, Pyrophoric, etc)

**Hazard Rating: N/A**

This hazard is not applicable to this technology.

### C. Confined Space

**Hazard Rating: N/A**

This hazard is not applicable to this technology.

### D. Electrical

**Hazard Rating: N/A**

This hazard is not applicable to this technology.

### E. Explosives

**Hazard Rating: N/A**

This hazard is not applicable to this technology.

<b>F. Fire Protection</b>	<b>Hazard Rating: N/A</b>
This hazard is not applicable to this technology.	
<b>G. Gas Cylinders</b>	<b>Hazard Rating: N/A</b>
This hazard is not applicable to this technology.	
<b>H. Ladders/Platforms</b>	<b>Hazard Rating: N/A</b>
This hazard is not applicable to this technology.	
<b>I. Lockout/Tagout</b>	<b>Hazard Rating: 1</b>
When servicing the paving breaker, such as for a bit change, safely purge air pressure and disconnect air hose to prevent accidental operation.	
<b>J. Mechanical Hazards</b>	<b>Hazard Rating: 2</b>
<p>The paving breaker has no guarding to prevent substrate ejection or protect the reciprocating bit. Due to the design of the paving breaker, a guard would likely make it more difficult to operate. Consequently, the operator and site personnel must wear appropriate personal protective equipment (PPE) to prevent injury. PPE should consist of: earplugs or earmuffs, depending on noise levels; safety glasses, face shield, steel-toed boots, leather gloves, and a respirator, depending on presence of airborne contaminants. If other operations warrant, a hardhat may also be required. The paving breaker should not be operated unless the paving breaker is in contact with a surface. The paving breaker should not be removed from a surface unless the reciprocating bit has come to a complete stop. The operator should not rest the paving breaker bit on or against any part of the body. The area around the paving breaker operation needs barricading and warning signs to prevent personal injury.</p>	
<b>K. Moving Vehicles</b>	<b>Hazard Rating: N/A</b>
This hazard is not applicable to this technology.	
<b>L. Overhead Hazards</b>	<b>Hazard Rating: N/A</b>
This hazard is not applicable to this technology.	
<b>M. Pressure Hazards</b>	<b>Hazard Rating: 2</b>
<p>The Ingersoll Rand Paving Breaker Model PB35AS8 operates with an air pressure of 90 pounds per square inch, which can pose risks to operators. Air hoses need to be inspected, tightened, and properly secured. Air hoses need safety straps at all connection fittings to prevent whipping in the event of a hose disconnection. Lockout/tagout of the air pressure source and controlled pressure release is necessary before any intended contact with or proximity to the air hose connections. The unintentional release of a pressurized hose could result in an uncontrolled whipping action that could cause severe injuries.</p>	

<b>N. Slips/Trips/Falls</b>	<b>Hazard Rating: 1</b>
Air hoses used to supply power to the Ingersoll Rand Paving Breaker Model PB35AS8 must be managed to prevent them from becoming tripping hazards. Locate air hoses in areas not prone to pedestrian foot traffic. Use air hoses of contrasting colors from the floors and walls.	
<b>O. Suspended Loads</b>	<b>Hazard Rating: N/A</b>
This hazard is not applicable to this technology.	
<b>P. Trenching/Excavation</b>	<b>Hazard Rating: N/A</b>
This hazard is not applicable to this technology.	
<b>Section 5: Health Hazards</b>	
<b>A. Inhalation</b>	<b>Hazard Rating: 2</b>
The Ingersoll Rand Paving Breaker Model PB35AS8 will generate generous amounts of dust during operation. The dust generated will contain any contaminants found on or within the surface undergoing breaking. Respiratory protection may be required to reduce the risk of exposure to surface contaminants. Air sampling is recommended to assess workplace exposures.	
<b>B. Skin Absorption</b>	<b>Hazard Rating: 1</b>
Contaminants in the surface undergoing breaking could contain heavy metals such as lead or chromium. If the skin becomes contaminated, the individual can easily transmit the metals into the mouth and digestive tract. Frequent hand washing before eating or drinking, and the use of personal protective equipment such as gloves will help guard against ingestion of the metals through skin contact. Personnel should also wash exposed body parts. Specific PPE may be required to protect against radionuclides.	
<b>C. Noise</b>	<b>Hazard Rating: 2</b>
The Ingersoll Rand Paving Breaker Model PB35AS8 produces excessive noise. Noise sampling results are not representative of actual noise levels produced due to the extremely short period of operation. Noise sample averages are less than observed operational levels. It was not possible to directly measure the Ingersoll Rand Paving Breaker Model PB35AS8 during its operation due to site configurations. Noise levels measured indicate operation of the Ingersoll Rand Paving Breaker Model PB35AS8 was 92 to 102 decibels. Noise levels should be expected to be similar to those of other paving breakers and intermittently exceed 102 decibels. The noise level from the Ingersoll Rand Paving Breaker Model PB35AS8 exceeded the Occupational Safety and Health Administration (OSHA) action level of 85 dBA and the OSHA Permissible Exposure Limit of 90 dBA. Operators of the Ingersoll Rand Paving Breaker Model PB35AS8 must wear hearing protection and possibly dual hearing protection depending on site conditions. Additional noise sampling is needed to further assess the Ingersoll Rand Paving Breaker Model PB35AS8 on a site-specific basis.	

<b>D. Heat Stress/Cold Stress</b>	<b>Hazard Rating: 1</b>
The technology does not produce a heat stress or cold stress hazard but ambient conditions need to be considered and monitored. PPE requirements for entering a work zone will increase the risk of heat stress hazards.	
<b>E. Ergonomics</b>	<b>Hazard Rating: 2</b>
The operator must hold, balance, and control the Ingersoll Rand Paving Breaker Model PB35AS8 in an awkward position during operation. The two handles on the paving breaker provide a place for a good grip during operation. The Ingersoll Rand Paving Breaker Model PB35AS8 weighs forty-three pounds. The heavy weight and vibration may discourage and prevent operators from using the paving breaker for long intervals. Stress on the operator is high. The operator, while adding forceful pressure, must control vibration of the paving breaker to break the substrate. The extreme vibration of the paving breaker will fatigue the operator quickly. When operating the paving breaker, use good body positioning to lesson muscle stress. Rotate operators frequently to decrease cumulative stress effects. A Fisk vacuum was used in conjunction with the paving breaker. When a vacuum hose is moved, use proper lifting techniques. Pulling on a vacuum hose will stress the lower back.	
<b>F. Ionizing Radiation</b>	<b>Hazard Rating: N/A</b>
This hazard is not applicable to this technology.	
<b>G. Non-ionizing Radiation</b>	<b>Hazard Rating: N/A</b>
This hazard is not applicable to this technology.	
<b>H. Biological Hazards</b>	<b>Hazard Rating: N/A</b>
This hazard is not applicable to this technology.	
<b>I. Other</b>	<b>Hazard Rating: 1</b>
Pieces of the surface material or substrate could become projectiles when operating the paving breaker. These pieces could rapidly eject and become a potential struck-by hazard. The area around the paving breaker operation needs barricading and labeling to prevent personal injury.	
<b>Section 6: Phase Analysis</b>	
<b>A. Construction/Start-up</b>	
Check paving breaker bit and assure secure attachment. Attach air hose sufficiently rated for expected pressures, as suggested by the manufacturer. Barricade operation area to prevent persons from entering inadvertently.	

## **B. Operation**

The area of Ingersoll Rand Paving Breaker Model PB35AS8 operation needs barricades and labels. Assure operator training on the Ingersoll Rand Paving Breaker Model PB35AS8, PPE, and substrate breaking techniques. Assure adequate workspace is free of tripping hazards. Operators need to prevent the air hose from becoming a tripping hazard on walking or working surfaces.

## **C. Maintenance (Emergency and Routine)**

Use lockout/tagout procedures when maintenance is performed on any system component.

## **D. Shutdown (Emergency and Routine)**

The Ingersoll Rand Paving Breaker Model PB35AS8 does not create any additional need for shutdown procedures.

## **E. Decontamination/Decommissioning**

Decontamination of the Ingersoll Rand Paving Breaker Model PB35AS8 should not require any more than washing off the surface of the paving breaker. It may not be possible to remove contamination from the internal piston or bit attachment area of the paving breaker. Disposal of the entire paving breaker may be necessary.

# **Section 7: Worker Protection Measures**

## **A. Exposure Monitoring**

Personnel need periodic monitoring for noise exposure. Assure proper hearing protection is in use, as needed. Air sampling is advised when operating the paving breaker on a coating or subsurface that contains or has the potential to contain a contaminant. The dust generated from operating the paving breaker, if not completely captured, has the potential to carry contaminants; therefore, personal and area air sampling is advised to assure operator protection.

## **B. Worker Training**

Personnel require specific training on the Ingersoll Rand Paving Breaker Model PB35AS8 operation and substrate breaking techniques. Additionally, training on proper PPE usage, hearing conservation, respiratory protection, and lockout/tagout is recommended.

## **C. Medical Surveillance**

Depending on the contaminant(s) present in the surface or substrate, airborne levels, and the need for respiratory protection and PPE, medical surveillance may be required by OSHA standards.

## **D. Engineering Controls**

Ventilation of the work area may be required if dust generated from operating the paving breaker is not sufficiently removed by the paving breaker vacuum attachment.

## E. Administrative Controls

Enforcement of proper PPE usage and air hose management is necessary to decrease likelihood of injury to site personnel. The extreme vibration of the paving breaker will fatigue the operator quickly. Rotate operators frequently to decrease cumulative stress effects.

## F. Personal Protective Equipment

PPE is required for use of the Ingersoll Rand Paving Breaker Model PB35AS8. Possible PPE consists of earplugs or earmuffs, depending on noise levels; safety glasses, face shield, steel-toed boots, leather gloves, and a respirator, depending on presence of airborne contaminants. If other operations warrant, a hardhat may also be required.

## Section 8: Emergency Preparedness

Emergency medical contact information should be posted within the work area in the event medical assistance is needed.

## Section 9: Comments, Lessons Learned, & Special Considerations

None.

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Copies of this Technology Safety Data Sheet and others developed by the Operating Engineers National Hazmat Program can be found on the internet at: [www.iuoeiettc.org](http://www.iuoeiettc.org).