



# LLOYD INSULATIONS CHOOSES HONEYWELL'S ENOVATE® 245fa FOR BPCL PIPELINE

Over 5.5 km. of pipelines carrying Black Oil were successfully insulated through the spray foam application.

## THE OPPORTUNITY

At the Bharat Petroleum Corporation Ltd. (BPCL) facilities in Mumbai, 5.5 kilometers of pipelines carrying Black Oil fuel required insulation with an appropriate technology that would maintain their flow at a steady temperature. This insulation solution was required to be not only technologically superior, but also cost-effective and long-lasting.

## THE SOLUTION

Lloyd Insulations (India) Ltd., a pioneer in spray foam applications in India, executed this project using the "In-situ Pour Method" using a spray foam blend that was formulated by Expanded Polymer Systems, a leading systems house in India. After several stages of testing and evaluation, it was concluded that Honeywell's Enovate 245fa would be the ideal choice of blowing agent to formulate this spray foam blend. Through this formulation, the customer met all the criteria mandated by Engineers India Ltd. (EIL) and successfully implemented the project.

*"It was a tough set of parameters from Engineers India Ltd. that we had to meet. We were able to meet each one of their requirements without any deviations whatsoever. These specifications were all met by the Enovate 245fa system that was formulated by Expanded Polymer Systems for us."*

*N Srinivas, Mentor, Lloyd Insulations (India) Ltd.*

**Honeywell**

## NEED OF THE HOUR – TEMPERATURE CONTROL

BPCL is an oil and gas major in India, with its two large refineries located at Mumbai and Kochi. Black Oil from BCPL flows through several kilometers of pipeline running from shore to ship. Due to its flammable properties, it was crucial to ensure that its flow is maintained at a steady temperature across the pipelines. This called for durable and large scale state-of-the-art insulation technology to protect the pipelines. The task of insulating these pipelines was contracted to Lloyd Insulations in Mumbai. Experts in the field of spray foam applications, Lloyd accepted the challenge of executing this giant insulation project and began the search for an appropriate blowing agent for the spray foam blend to be formulated by Expanded Polymer Systems.

With a stringent set of criteria to meet from EIL on one hand, and the need to choose a blowing agent that is both HCFC-free and cost-effective on the other, Lloyd Insulations found the solution in Honeywell's Enovate 245fa blowing agent. It is an environmentally preferable and nonflammable replacement for HCFC-141b.

*“The formulation of polyol was the main criteria, which is CFC-free and HCFC-free. We had to meet various parameters from EIL. This was the main challenge and we could achieve it while formulating our chemicals.”*

*Sukumar Guin, Sr. General Manager, Lloyd Insulations (India) Ltd.*



## HONEYWELL ENOVATE 245fa BLOWING AGENT (HFC-245fa)

Enovate 245fa is a proven replacement for HCFC-141b and other hydrofluorocarbon and nonfluorocarbon blowing agents in rigid polyurethane foam.

- Non-ozone-depleting
- Nonflammable
- Thermal properties equivalent to HCFC-141b (sometimes referred to as R-141b)
- Better dimensional stability
- Improved compressive strength properties

## THE IDEAL BLEND

For the successful implementation of the spray foam application, choosing the right blowing agent to formulate the foaming blend was critical, as this would determine several factors such as the rate of the reaction during application, the rate at which the foam rises, its density upon rising, foam durability and strength, among others. With the global phase-out of HCFC-141b underway, the challenge was to use a blowing agent that not only met the performance requirements, but was better for the environment. After several stages of testing and research at Expanded Polymer Systems, it was determined that Enovate 245fa would be the ideal choice for the spray foam formulation under consideration.



*“Enovate 245fa is a very popular brand name. I think Honeywell was the first to come out with Enovate 245fa as a solution to replace R-141b.”*

*Mukesh Bhuta, Managing Director,  
Expanded Polymer Systems*

## ROBUST PROTECTION THAT DELIVERS AND LASTS

Back at BPCL, with the ideal spray foam blend in place, the pipelines were prepared to receive the insulation and protect the Black Oil flowing through the pipelines for years to come. To implement the In-situ Pour Method, Lloyd Insulations performed a series of steps to ready the pipelines. The pipelines were first covered externally with aluminum sheets that were secured in place by rigid foam blocks. The foaming blend was then injected into small holes drilled on these sheets and given enough time to rise. A quality officer then conducted a hammer test to identify any hollow gaps and ensure that the foam had risen uniformly. This process was repeated across the entire stretch of pipeline, creating a robust and durable layer of insulation for the fuel to flow through hassle-free.

Lloyd Insulations successfully completed the spray foam application at BPCL Mumbai in 33 days across the pipeline spanning 5.5 kilometers in length and 24 inches in diameter. Over 200 workers on-site and a large team of supervisory and planning staff played an instrumental role in driving the project across the finish line. The end customer, as well as Lloyd Insulations, are happy with their choice of Honeywell's Enovate 245fa for the foaming blend, as well as the final result.



*"With foaming, we have gone first with Freon, then R-141b which was CFC-free, and now the replacement blowing agent, Enovate 245fa. My technicians are very comfortable with it.*

*Sabi Martin, General Manager,  
Lloyd Insulations (India) Ltd.*

*"For BPCL Kochi, the conditions were even more stringent because the pipelines are running underground and are subject to much higher load and vulnerability to moisture. I'm happy to say that each one of the parameters as specified by Engineers India Limited have been met by the system that we used."*

*N Srinivas*



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