

# NEW EMERGENCY OXYGEN DEVICE RELIES ON MATERIALS EXPERTISE



Photos courtesy of the Rapid Oxygen Company

*PolyOne*

## CASE STUDY: POLYONE DISTRIBUTION



# COLLABORATION AND EXPERTISE HELP RAPID OXYGEN BRING NEW DEVICE TO LIFE

## THE CHALLENGE

Inspired to improve access to life-saving oxygen in a crisis, Rapid Oxygen began developing the R15 for use in public places during emergencies. Design goals? Deliver 100% humidified oxygen at 6 liters per minute in a non-explosive, portable, easy-to-use package that doesn't require a power source.

Rapid Oxygen founder Dr. Richard Imbruce envisioned the R15 as an alternative to high-pressure oxygen cylinders, oxygen concentrators, and liquid oxygen, all of which could be unsuitable for buildings and public spaces.

Imbruce faced a critical challenge, namely, containing the oxygen-producing chemical reaction. "We understood the technology, the chemistry and the marketplace, but we needed someone with healthcare expertise to help with material selection and problem solving," he adds.

## THE SOLUTION

Rapid Oxygen selected Smith & Wesson Precision Components' (SWPC) injection molding operations to mold components for the R15. SWPC, in turn, recommended its longtime supplier, PolyOne, as a source for the material selection expertise and guidance Rapid Oxygen needed.

PolyOne's team began working with Rapid Oxygen to understand critical requirements. Reactive ingredients needed to be separated until activation, at which point the chemical reaction had to be safely and properly managed. Materials also had to resist high temperatures while maintaining their shape. Moreover, the device housing and its components had to perform reliably and appeal to consumers from appearance and ease-of-use standpoints. Finally, the device had to pass all

of the requirements of a regulated medical device.

Backed by the wide range of material solutions in its distribution portfolio and its team's healthcare expertise, PolyOne was able to offer unbiased recommendations for materials that could safely handle the chemical reaction and meet needs for portability, light weight and user friendliness. Final material solutions for managing impact resistance, dimensional stability, high temperature tolerance, and chemical resistance included PC (polycarbonate), HDPE, PC/ABS, and color concentrate.

## THE IMPACT

In order to be successful, Rapid Oxygen needed more than materials. They needed a team of polymer selection experts to complement their innovation and device expertise. Early involvement and close collaboration with PolyOne Distribution allowed Rapid Oxygen to stay focused on the efficacy of the device while getting help with challenges such as design's effect on manufacturing, materials-related regulatory issues, manufacturing process efficiency, and supply chain continuity.

The collaborative approach allowed PolyOne to identify and suggest high-performing materials so that Rapid Oxygen could make an informed decision when it came to meeting the critical requirements of its life-saving device. Serving as a complete source for polymer materials, PolyOne was instrumental in helping Rapid Oxygen get the R15 emergency oxygen delivery device successfully to market.

**Need help with material selection, manufacturing support or global supply chain assistance? We're here to help. +1.866.POLYONE (+1.866.765.9663) or [www.polyonedistribution.com](http://www.polyonedistribution.com)**