



## » TECHNICAL BULLETIN

# ColorMatrix™ Joule™ RHB Fast Reheat Dispersions Handling and Usage

ColorMatrix™ Joule™ dispersion fast reheat products are intended for use in PET (bottle polymer) production processes in the manufacturing of CSD 0.82IV reheat polymers and are used successfully throughout the world on all types of PET production technologies. On occasion, Joule RHB products can also be used in bottle polymer destined for water applications, but this usage decision depends on the application tolerance to color which must be determined via marketing specialists prior to any trials.

The proprietary ColorMatrix technology has been shown to deliver superior energy saving at bottle blowing whilst at the same time imparting an attractive light blue-shaded color to the preforms (and bottles) without contributing to bottle haze.

Joule RHB products can also be especially useful in enabling thick walled or complex bottle structures to be successfully blown; improving the material distribution through a more even heat uptake throughout the polymer matrix has been proven to be beneficial in solving or easing many common blowing processing issues.

Joule RHB products have also been found to have a synergistic and beneficial processing effect with use of rPET, not only in masking the color during recycling but also in enabling high levels of rPET to be successfully incorporated in preforms.

Joule additive is available as a 10% concentrated dispersion, made up solely of 10% active component with 90% PET grade mono ethylene glycol (MEG). This has been determined as the preferred concentration that can be achieved in our production process. The product is not stabilized during the manufacturing process and over time will separate so on receipt an initial re-homogenation process must be followed. The additive is not soluble in MEG, but is very thermally heat stable and at the low ppm addition levels commonly used has no measurable impact on the polymer process other than that coming from the blue tint introduced into the polymer. At manufacturing the product has been milled and dispersed. The maximum particle size is generally less than 10 microns, and the shelf-life is quoted as 180 days.

Joule RHB additive is available in a small number of varying package types and weights. Due to the thin viscosity and mobile nature of the product, consideration should be given to packaging and the need for complete product integrity throughout the distribution chain.

In order to achieve optimum polymer quality when using Joule RHB additive, it is important to observe the following conditions:

- It should be prepared, stored and dosed on its own and not in combination with any other additives. This simplifies the process concerns during trials and subsequent normal stable running conditions, enables optimization of levels per application/polymer type if required and should achieve proper downstream product performance.
- It should be dosed into late esterification/early polymerisation stage and not at paste mix. This is important because it should prevent any undesirable product agglomeration (which would produce sub-standard reheat performance).
- Re-establishment of the toner package will be required to achieve proper resin color. At the recommended use levels in CSD (carbonated soft drinks) applications (around 5ppm), the blue toner is not required and a reduced

amount of the red toner may be desirable (in some cases red toner can also be eliminated; this depends on the inherent color of the resin and so cannot be specified here).

- Other additives, such as Phosphoric Acid (which is typically used as a thermal stabilizer) can be used in conjunction with Joule RHB additive and may be dosed at the same point if process constraints dictate, but only when using a separate lance to that used for the reheat additive.

In most circumstances, ColorMatrix technical personnel and facilities can be used to advise on the 'starter' recipe configuration ahead of any trial with Joule RHB additive and also post-trial to determine the performance of fast reheat polymer in comparison to a known standard or a desired competitive performance level. It is normal for process improvement to be required for the toner package and/or reheat additive level during normal operating conditions.

**For further advice on how to use ColorMatrix Joule fast reheat dispersion products, and for details of their regulatory status and any other queries, please contact your local ColorMatrix sales representative or visit our website at [www.avient.com](http://www.avient.com)**

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