



ColorMatrix™ Optica™ Global PRT Toner Dispersions Handling and Usage

ColorMatrix Optica Global PRT Red and Blue dispersion toners are intended for use primarily in PET bottle polymer production processes and, although they are suitable for all polyester manufacturing processes, are used successfully throughout the world on all types of PET production technologies.

The PRT product line facilitates precise toner coloration through superior dispersion, ease of handling and dosing when compared to traditional powders. They are designed to be used separately but at the same time to control b^* and a^* color producing maximum L^* color when used at very low dosing levels in the final product.

They are available solely as 15% concentrated dispersions, made up of 15% Optica toner component with 85% PET grade mono ethylene glycol (MEG). This has been determined as the optimum concentration that can be achieved in our production process. At this concentration, the product is quite stable over time and is paste-like in appearance. It is important to appreciate that the toner component is only very sparingly soluble in MEG, and so the products are both effectively particulate dispersions. The maximum particle size in both products is 30 microns.

It is not advisable to add either 15% dispersion product into the toner preparation tank directly. The paste will not disperse easily and is likely

to sink rapidly to the bottom of even well stirred vessels. This will generate a non-homogeneous dispersion, resulting in sub-standard coloration quality in the PET production process. Furthermore, process blockages and dosing interruptions may result from using such a poor quality feed material.

ColorMatrix strongly recommends diluting the 15% dispersion with MEG at ambient temperature to a suggested active concentration of approximately 5% or thereabouts. Provided this diluted dispersion is stirred or agitated to re-disperse immediately prior to addition into the vessel, it is now a simple matter of pouring the dispersion steadily and consistently over a period of at least 1 minute. The more dilute dispersion should be slowly added to the preparation vessel, which should contain a known large quantity of agitated MEG, again ideally held at ambient temperature.

ColorMatrix recommends the dispersions (irrespective of concentration level) remain at ambient temperature throughout the preparation and feeding process. The use of heat in an attempt to drive the toner into solution will result in a dispersion which is in a state of super saturation. Any small drop in temperature

experienced by this dispersion will result in the toner precipitating out of the liquid as agglomerated deposits. These deposits can attract further toner particles, thus potentially increasing in particle size over time. Having become highly agglomerated, these deposits will be very difficult to re-disperse.

Further dilution may be necessary depending on the toner preparation facilities (such as when using a smaller/secondary feed tank arrangement (as shown in the schematic on p.3)).

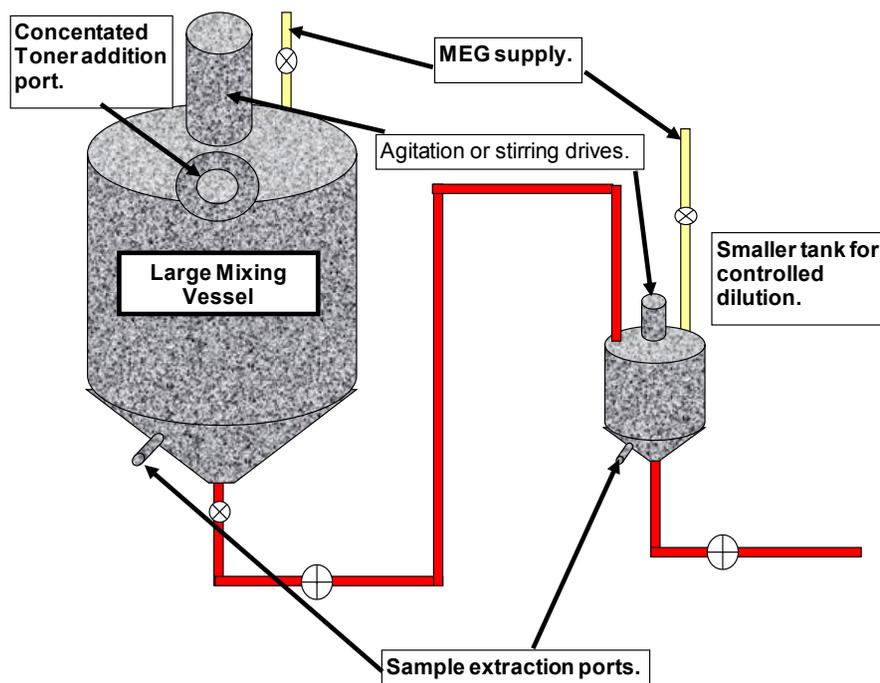
Toner make-up tanks should be placed conveniently close to the addition point in the PET production process and vessels, and pipework and ancillary equipment should be

sized according to good practice engineering principles and in accordance with desired batch make up frequencies (related to plant size and production throughput).

Consideration should be given to the desirability of using a filter mesh in the preparation set-up bearing in mind the stated particle size of the dispersion and the likelihood of particulate agglomeration if preparation guidelines are not observed.

It is usual to take samples for QC analysis from both the preparation and feed tank vessels to ascertain correct dilution strength and dispersion quality on a regular basis. ColorMatrix can supply QC test methods on request.

GENERIC SCHEMATIC FOR TONER PREPARATION



For further advice on how to use ColorMatrix Global PRT dispersion toners, and for details of their Regulatory status and any other queries, please contact your local ColorMatrix representative.

Information given in this document is provided by ColorMatrix free of charge and in good faith. It should not be taken as a guarantee of performance or as contractual fulfillment of obligation.

www.polyone.com

PolyOne[™]

Copyright © 2016, PolyOne Corporation. PolyOne makes no representations, guarantees, or warranties of any kind with respect to the information contained in this document about its accuracy, suitability for particular applications, or the results obtained or obtainable using the information. Some of the information arises from laboratory work with small-scale equipment which may not provide a reliable indication of performance or properties obtained or obtainable on larger-scale equipment. Values reported as "typical" or stated without a range do not state minimum or maximum properties; consult your sales representative for property ranges and min/max specifications. Processing conditions can cause material properties to shift from the values stated in the information. PolyOne makes no warranties or guarantees respecting suitability of either PolyOne's products or the information for your process or end-use application. You have the responsibility to conduct full-scale end-product performance testing to determine suitability in your application, and you assume all risk and liability arising from your use of the information and/or use or handling of any product. POLYONE MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, either with respect to the information or products reflected by the information. This literature shall NOT operate as permission, recommendation, or inducement to practice any patented invention without permission of the patent owner.