<u>datacolor</u>

Using the Concentrate Scaling Function in

Match Pigment

In the coloration of plastics in industrial processes, it is common to use a material that contains a very high percentage of coloring material to be mixed with uncolored plastic resin in order to achieve the correct color, opacity and appearance of the finished product. This is commonly done in the molding, extrusion, etc. processes of making plastic parts.

This is done for economy and ease of handling. These highly loaded materials are called color concentrates and come in various forms. The colorants they contain are dispersed in a carrier (resins, liquids, waxes, etc.) and this insures the colorants themselves are fully developed to achieve maximum effect. It also allows the colorants to mix quickly and thoroughly with the uncolored resin to create the final product.

While the colorant level in the final plastic product is generally very low, concentrate colorant levels are by design very high. For example, the final plastic product may contain only a total of 0.7% mixed colorants (e.g., a red, yellow, black and white pigment mix to make a tan final color), the concentrate may have a target colorant loading that will allow it to be mixed with uncolored resin at a ratio of 25 part uncolored resin to 1 part color concentrate by weight.

While working in a laboratory, the color matcher may achieve the desired color for the color match using pure pigments and determine the final colorant loading to be that 0.7%. However, he also needs to scale up that loading to create the same formula for the concentrate which will be used at that 25:1 let down ratio.



There, click on the Industry tab:



Here you will place a check mark in the box next to Enable Concentrate Scaling. For the box labeled Express Concentration as: you will have 3 choices. Within the industry and across nations, which of these three expressions is used varies so all three are offered here. All 3 are normally expressions determined by weight.

Ratio Resin: Concentrate This is the ratio of uncolored resin to be mixed with the color concentrate, so if you express this as 25:1, you are saying you intend to mix 25 parts of uncolored resin with 1 part of color concentrate.

Percent of Resin (Concentrate/Resin) Here the above example would be 1 part concentrate divided by 25 parts uncolored resin, or 4%

Percent to Total (Concentrate/Resin + Concentrate) Again, using the same example, it would be 1 part concentrate divided by 25 parts uncolored resin plus the 1 part concentrate, 1 divided by 26, which would be 3.85%.

Once you have set these items up, you would exit Admin, exit Match Pigment and then restart Match Pigment in order to make this now active in Formula Central.

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				Trial As Is		55.28	-6.99	-14.64	16.23	244.48	1.10	
				Trial Corrected		55.24	-6.94	-14.18	15.79	243.94	1.11	
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4	Blue P	anel #24 1st Shot	- 📈 -	Trial As Is	DE*	DL*	Da×	Db*	DC*	DH*		
	_			D65/10	0.48	0.03	-0.05	-0.48	0.46	0.16	1.92	
9	Formu	la. 🔹	< <	A/10	0.96	-0.02	0.43	-0.86	0.49	0.82		
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				Trial Corrected	0.02	0.01	0.00	0.02	0.01	0.01	1.07	
				D65/10	0.02	-0.01	0.00	-0.02	-0.06	0.0	1.07	
				F11/10	1.76	-0.02	1.37	-0.32	0.00	1.60		
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In this example, the user has just completed asking for a reformulation correction. His trial sample (or "batch") uncorrected has a CIE DE* of 0.48 and the projected correction would bring that down to a DE* of 0.02. He has been working with a trial size determined by a resin weight of 454 grams and this reformulation correction also contains 454 grams of resin. This was the size determined by what he was working with in the laboratory but now he needs to prepare a 5000 gram sample of <u>color concentrate</u> to send 2270 grams (5 lbs.) to the customer and retain the remaining 160 grams for his use in the lab. He wants to make the let down ratio of the concentrate 25 : 1 so the customer can run a trial making as much as 125 lbs. of parts.

In the bottom left hand corner of that Formula Central screen is an icon that is turned off. Clicking on it will turn on color concentrate scaling and change the screen. So a new page is created which brings him back to point before the correction was calculated without color concentrate scaling.



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					A/10	0.68	-0.01	0.60	-0.33	-0.05	0.68	
					F11/10	1.75	-0.69	1.36	-0.86	0.20	1.59	
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To get the concentrate weight that we want, all we need do then is to swipe the Concentrate weight of 17.5843 grams in the correction output column, and replace it with 5000 grams and hit the Enter key:

Please note the rows that were added when concentrate scaling was turned on:

Carrier resin: this is the material that the colorants are going to be dispersed in to make a color concentrate (4092 grams).

User Supplied Resin: this the resin the end user will blend with the concentrate to make the final correctly colored plastics parts (125 kilograms or approx. 275 lbs.).

Concentrate: This of course is the amount of concentrate the formula will yield (5000 grams).