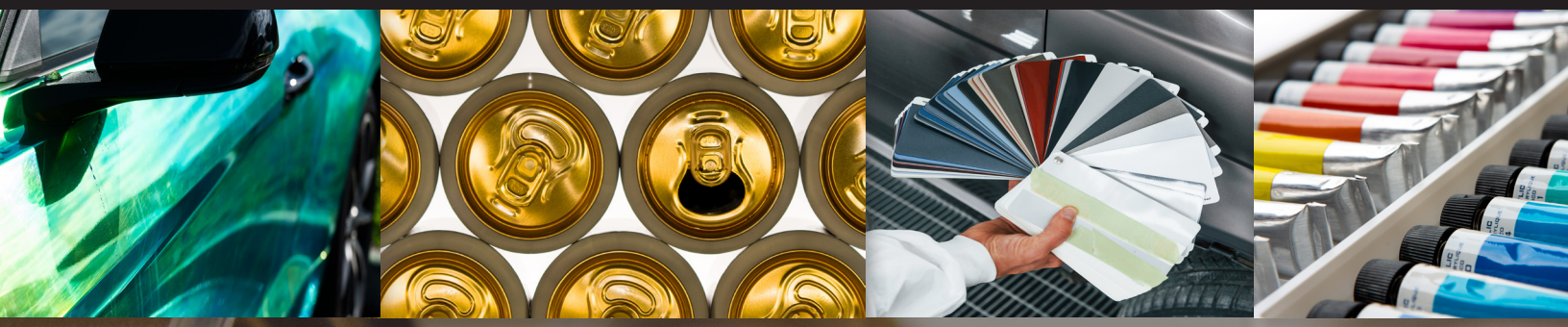
Quaker Color™

Chip Dispersions



QUAKER COLOR™ **Chip Dispersions**

Quaker Color specializes in the manufacture of solid pigment dispersions (SPDs), also known as "Chips." Our solid pigment dispersions are produced in a 2-roll mill process and provide outstanding color performance. The SPDs come in multiple resin systems. They are formulated to be made soluble or "cut" into the solvent/resin system of choice to produce a fully functional liquid pigment dispersion on demand. SPDs or Chips offer superior optical color transparency as compared to typical liquid milled pigment dispersions.

- **High pigment concentration**
- **Wide choice of chemistries**
- **Maximum color development**
- **Superior transparency**
- **Ease of use, liquid dispersion on demand**
- **Excellent stability (indefinite shelf life)**
- **No milling necessary, low dust**

Sustainablity

Quaker Color takes environmental responsibility seriously, choosing action and investment over just mere words. Our production is powered by 100% renewable energy thanks to a full array of solar panels on the roof of our 215,000 square foot facility in Quakertown, PA. (see figure 1).

In addition, our CHP (Combined Heat & Power) system came online in 2024 (see figure 2). It supplies us with the process steam we need for our production and generates electricity as a by-product that gets sold back to the local borough at a discounted rate.

Quaker Color also has invested in upgrading systems for reducing water consumption, wash solvent distillation, and facility-wide LED lighting.

Figure 1

Figure 2

Volatiles

The QUAKER COLOR chip dispersions are supplied in solid chip form; they need to be dissolved in a solvent before use. Chip dispersions are "zero"-VOC as supplied: all VOCs are flashed off in the manufacturing process.

Solubility

QUAKER COLOR chip dispersions should be dissolved in a solvent or blend of solvents before use. Please see table 1 below to find which solvents are recommended.

Quaker Color is happy to discuss making special chip cuts of chip dispersions in an appropriate choice of solvent if the customer lacks equipment to dissolve the chips.

Use

The chip is usually predispersed at 15-25% in solvents before it is added to the final product. Mixing time depends on the type of solvent used and how it is mixed. It will be anywhere from one to five hours. We recommend using a Cowles blade. Dissolving goes faster if the temperature is raised (through mixing) to above 100° F, 120° F for CAB and Vinyl chips. Elevated sustained temperatures above 140° F can negatively influence the pigment and should be avoided. Waterborne chips should be dissolved in a 3:1 mixture of water and 30% ammonia. For more information, please refer to our Chip-Cut Technical Bulletin.

Solid Pigment Dispersions - "Chips"		Solvents						
Series	Binder description	Ketones	Esters	Glycol ethers	Aromatic hydrocarbons	Aliphatic hydrocarbons	Alcohols	Water
1 Series	Vinyl Chloride	●	●	–	–	–	–	–
2 Series	UMOH and UMCH	●	●	–	○	–	–	–
3 Series	Solid Epoxy	●	●	●	–	–	–	–
4 Series	Solvent Thermoplastic Acrylic, Styrene Allyl Alcohol	●	●	●	●	–	○	–
4P Series	Acrylic Polyol	●	●	●	●	–	○	–
5 Series	Water Soluble Acrylic	–	–	–	–	–	–	●
6 Series	Cellulose Acetate Butyrate (CAB)	●	●	●	●	–	○	–
7 Series	Polyvinyl Butyral (PVB)	●	●	●	–	–	●	–
9 Series	Saturated Polyester	●	●	●	–	–	–	–
QD Series	Quick dissolving solid pigment dispersions for multiple solvent-based systems	●	○	○	●	–	●	–

● *Soluble in most solvents of this chemistry*
○ *Can be used as a cosolvent*
— *Insoluble*

Table 1

QUAKER COLOR™ **Chip Dispersions**

Compatibility

QUAKER COLOR chip dispersions are resin-based dispersions. Table 2 shows which resins the chip dispersions are compatible with.

QUAKER COLOR 5 Series is based on a water-soluble acrylic. The dispersions are compatible with all waterborne coating systems once they have been solubilized in water. They were developed for applications that require outstanding transparency such as wood stains and glass coatings.

Series:	**1**	**2**	**3**	**4**	**4P**	**6**	**7**	**9**	**QD**
Application	Vinyl Chloride	UMOH and UMCH	Solid Epoxy	Solvent Thermoplastic Acrylic, Styrene Allyl Alcohol	Acrylic Polyol	Cellulose Acetate Butyrate (CAB)	Polyvinyl Butyral (PVB)	Saturated Polyester	Quick Dissolving Aldehyde Ketone Resin
Alkyds	●	●	–	–	–	–	–	○	●
Acrylics	●	●	–	●	●	●	●	–	●
Polyurethanes	●	●	○	–	–	●	–	–	●
Epoxy	●	●	●	–	–	–	●	–	●
Vinyl	●	●	–	●	●	●	–	–	○
Cellulosic	–	–	–	●	●	–	–	–	●
Chlorinated Rubber	–	–	–	●	●	–	–	–	○
Silicones	–	–	–	●	●	–	–	–	–
Polyester	–	–	–	–	–	○	–	●	●
UV Monomer	–	–	–	●	●	●	–	–	–
Phenolic Resin	–	–	–	–	–	–	●	–	○

● *Soluble in most solvents of this chemistry*
○ *Can be used as a cosolvent*
— *Insoluble*

Table 2

Applications

QUAKER COLOR Chip dispersions can be used in a wide variety of applications once they are dissolved in a solvent of choice. Table 3 gives a general idea of the applications each chip series can be used in. Please contact us with specific questions about an application.

Series:	1	2	3	4	4P	5	6	7	9	QD
Application	Vinyl Chloride	UMOH and UMCH	Solid Epoxy	Solvent Thermoplastic Acrylic, Styrene Allyl Alcohol	Acrylic Polyol	Water Soluble Acrylic	Cellulose Acetate Butyrate (CAB)	Polyvinyl Butyral (PVB)	Saturated Polyester	Aldehyde Resin
Metal Packaging Coatings	●	●	●	–	–	–	–	–	●	–
Aerospace Coatings	–	–	●	●	●	–	○	○	○	●
OEM Industrial Coatings	–	–	●	●	●	○	●	○	●	●
Automotive Coatings	–	–	○	●	●	●	●	–	●	○
Appliance Finishes	–	–	●	●	●	○	○	●	●	●
Furniture Finishes	○	○	●	●	●	○	●	–	–	●
Industrial Maintenance Coatings	●	●	●	●	●	●	●	●	●	●
Agricultiral Finishes	–	–	○	●	●	–	○	●	●	●
Automotive Refinish Coatings	–	–	○	●	●	–	●	●	●	○
Marine Coatings	●	●	●	●	●	–	●	●	●	●
Aerosol Paints	○	○	–	●	●	–	○	–	○	●
Plastic Coatings	–	–	–	–	–	○	●	–	–	–
Rubber Coatings	○	○	–	–	–	–	●	–	–	–
Wood Coatings	○	○	○	●	●	○	●	○	–	●
Glass Coatings	–	–	–	○	●	●	●	●	–	○
Coil coatings	●	●	●	○	○	–	○	–	●	–
UV Coatings	–	–	–	–	–	–	●	–	–	–
Floor Coatings	–	–	○	●	●	○	–	–	–	○
Gravure Inks	●	●	–	–	–	●	–	●	○	–
Graphic Films	–	–	–	●	●	–	●	●	–	–
Caulking	–	–	–	○	○	○	–	○	–	○
Adhesives	–	–	●	●	●	○	●	●	○	○
Concrete Finishes	–	–	○	●	●	●	–	–	–	○

● *Soluble in most solvents of this chemistry*
○ *Can be used as a cosolvent*
— *Insoluble*

Table 3

QUAKER COLOR™ **Chip Dispersions**

Description	P.I. Number	pigmentation [%]									Light Fastness			Chemical fastness							
		1 Series	2 Series	3 Series	4 Series	5 Series	6 Series	7 Series	9 Series	QD Series	Masstone	Tint	Temperature Resistance [0C]	Acid	Alkaline	Butanol	Butyl Glycol	Butyl Acetate	MEK	Mineral Spirits	Xylene
Yellow #5	FD&C	50		35							1	1									
Yellow #6	FD&C	35									1	1									
Phthalo Blue	PB 15:1		50		50		44				8	7-8	200	5	5	4-5	4-5	4-5	4-5	5	4
Phthalo Blue	PB 15:2			45					50		8	7-8	200	5	5	4-5	4-5	4-5	4-5	5	4
Phthalo Blue	PB 15:3		46		50						8	7-8	200	5	5	4-5	4-5	4-5	4-5	5	5
Phthalo Blue	PB 15:4		50	40	49			50		35	8	7-8	200	5	5	4-5	4-5	4-5	4-5	5	5
Indanthrone Blue	PB 60				50						8	8	200	5	5	5	5	5	5	5	5
Carbon Black	PBk 7					50		50	25	35	8	8	200	5	5	5	5	5	5	5	5
Conductive Carbon Black	PBk 7					35					8	8	200	5	5	5	5	5	5	5	5
High-Jet Carbon Black	PBk 7			20	25	25	25			15	8	8	200	5	5	5	5	5	5	5	5
Lamp Black	PBk 7					45					8	8	200	5	5	5	5	5	5	5	5
Masstone Carbon Black	PBk 7					45					8	8	200	5	5	5	5	5	5	5	5
Tinting Black	PBk 7		45	25	40	45	20			55	8	8	200	5	5	5	5	5	5	5	5
Benzimidazolone Brown	PBr 25						42				8	7-8	200	5	5	4-5	4		3-4	4-5	4-5
Burnt Sienna	PBr 7				50						8	7-8	200	5	5	5	5	5	5	5	5
Burnt Umber	PBr 7				50					40	8	7-8	200	5	5	5	5	5	5	5	5
Phthalo Green (YS)	PG 36			35	50		20				8	7-8	200	5	5	5	4-5	5	5	5	5
Phthalo Green (BS)	PG 7		40	33	50		44			35	8	7-8	200	5	5	5	4	5	5	5	5
Dianisidine Orange	PO 16							50			4-5	2-3	140	5	5	3-4	4	4	3	4	3
Diarylide Orange	PO 34			40							6-7	5-6	200	5	5	5	4-5	4	3-4	4-5	3
Organic Orange	PO 43				50						5-6	7	200	5	5	5	4-5	4-5	4-5	5	4-5
Benzimidazolone Orange	PO 64			50							8	5-6	200	5	4	5	5	4-5	4	4	5
Transparent Red Iron Oxide	PR 101		30	40	50		40			40	8	7-8	200	5	5	5	5	5	5	5	5
Red Oxide	PR 101									55	8	7-8	200	5	5	5	5	5	5	5	5
Quinacridone Magenta	PR 122			50	50					35	8	7-8	200	5	5	4-5	4-5	4-5	4-5	5	5
Naphthol Carmine Red	PR 146		35	50				50			6-7	4-5	180	5	5	4-5	4-5	4	4	5	4
Naphthol Red	PR 170		51					50		45	5-6	4-5	160	5	5	4	4	4	3	5	4-5
Benzimidazolone Carmine	PR 176		50				44				7	6	200	5	5	4-5	4-5	4-5	4-5	5	5
Anthraquinone Red	PR 177				50						8	8	200	5	5	5	5	5	4	5	5
Perylene Red	PR 178			50							8	7	200	5	5	4-5	4-5	4-5	4-5	4	4-5
Perylene Maroon	PR 179				45		44				8	7-8	200	5	5	5	5	5	5	5	5
Naphthol Red	PR 2				50						5	3	140	5	5	3-4	4	3	1-2	3-4	2-3
Quindacridone Magenta	PR 202						40				8	7-8	200	5	5	4-5	4-5	4-5	4-5	5	5
Perylene Red	PR 224						44				8	7-8	200	5	5	5	5	5	5	5	5
DPP Red	PR 254									48	8	7-8	200	5	5	4-5	4-5	5	4-5	5	5
DPP Rubine	PR 264						40				8	7-8	300	5	5	5	5	5	5	5	5
Red Lake C	PR 53:1								48		3	2	200	3	2	3-4	3-4	4	2	4	4
Lithol Rubine	PR 57:1			46	50				35		6	4	180	4	4	4-5	4	4-5	4-5	5	4-5
Quinacridone Violet (BS)	PV 19		35	40	50		40		50	35	7-8	7	200	5	5	4-5	4	5	5	5	5
Quinacridone Violet (RS)	PV 19				50						7-8	7-8	200	5	5	5	4	5	5	5	5
Carbazole Violet	PV 23				50		20			35	8	7-8	160	5	5	5	4-5	5	4	5	4-5
Perylene Violet	PV 29						40				8	7	180	5	4	4	5	5	5	5	5
Methyl Violet	PV 3								35		5	3-4	150	5	5	4	4	4	4	4	4
Titanium Dioxide	PW 6				80		75			75	8	8	200	5	5	5	5	5	5	5	5
Isoindolinone Yellow	PY 110						40				7	6-7	180	5	4	4-5	4	4-5	4-5	5	4-5
Quinophthalone Yellow	PY 138									36	8	7-8	200	5	5	5	5	5	5	5	5
Benzimidazolone Yellow	PY 151			55				50		35	7-8	7	200	5	3-4	4-5	4	4-5	4-5	5	4-5
Benzimidazolone Yellow	PY 175				50						8	7-8	180	5	5	4-5	4	4-5	3-4	5	5
Transparant Yellow Oxide	PY 42			35	50				40	50	7-8	7-8	180	5	5	5	5	5	5	5	5
Yellow Iron Oxide	PY 42	65								50	7-8	7-8	180	5	5	5	5	5	5	5	5
Arylide Yellow (GS)	PY 74									40	7-8	5-6	140	5	5	3-4	3-4	3	3	4	2-3
Diarylide Yellow	PY 83			40	50				50		7	5-6	180	4-5	5	4-5	4-5	4-5	3-4	5	3-4

Lightfastness is on a scale from 1-8 with 1 being worst and 8 being best
Chemical fastness is on a scale from 1-5 with 1 worst and 5 best
** VOC is based on calculations. Traces of VOC might be present in "Zero"- VOC dispersions*

Table 4

FD&C
Yellow #5

FD&C
Yellow #6

PB 15:1
Phthalo Blue

PB 15:2
Phthalo Blue (RS)

PB 15:3
Phthalo Blue (GS)

PB 15:4
Phthalo Blue

PB 60
Indanthrone Blue

PBk 7
Tinting Black

PBk 7
Jet Black

PBk 7
Carbon Black

PBk 7
Conductive
Carbon Black

PBk 7
Masstone
Carbon Black

PBk 7
Lamp Black

PBr 25
Benzimidazolone
Brown

PR 101:1
Burnt Sienna

PBr 7
Burnt Umber

PG 36
Phthalo Green (YS)

PG 7
Phthalo Green

PO 16
Dianisidine
Orange

PO 34
Diarylide Orange

PO 43
Organic Orange

PO 64
Benzimidazolone
Orange

PR 101
Trans Red Oxide

PR 101
Red oxide

PR 122
Quindo Magenta

PR 146
Naphthol Red (BS)

PR 170
Naphthol Red

PR 126
Benzimidazolone
Carmine)

PR 177
Anthraquinone Red

PR 178
Perylene Red

PR179
Perylene Maroon

PR 2
Naphthol Red

PR 202
Quindacridone
Magenta

PR 224
Perylene Red

PR 254
DPP Red

PR 264
DPP Rubine

PR 53:1
Red Lake C

PR 57:1
Lithol Rubine

PV 19
Quinacridone
Violet (BS)

PV19
Quinacridone Violet
(RS)

PV 23
Carbazole Violet

PV 29
Perylene Violet

PV 3
Methyl Violet

PW 6
Titanium Dioxide

PY 110
Isoindolinone
Yellow

PY 138
Quinophthalone
Yellow

PY 151
Benzimidazolone
Yellow (GS)

PY 175
Benzimidazolone
Yellow

PY 42
Yellow Iron Oxide

PY 42
Transparent
Yellow Oxide

PY 74
Arylide Yellow (GS)

PY 83
Diarylide Yellow (GS)

Quaker Color

For more information on our products and services please contact

inquiries@quakercolor.com
or Sales and Customer Service: (215) 536-3520

Web Site:
quakercolor.com

ISO 9001/2015 and ISO 14001/2015 Certified

Quaker Color manufactures all its products under carefully controlled conditions to meet rigid specifications. The values given in this publication are typical values intended as guidelines for the use of the products, they are not specifications. It is the user's responsibility to thoroughly test the product in their particular application to determine its performance, efficacy and safety. Should you require the actual specifications currently enforced on specific products contact your Quaker Color representative for the appropriate information.