

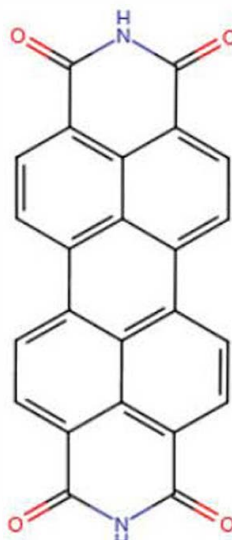


**Final Risk Evaluation for
C.I. Pigment Violet 29
(Anthra[2,1,9-def:6,5,10-d'e'f']diisoquinoline-
1,3,8,10(2H,9H)-tetrone)**

Supplemental File:

Information Received from Manufacturing Stakeholders

CASRN: 81-33-4



January 2021

This supplemental file is a compilation of information received by EPA from the domestic manufacturing (including importing) and industry stakeholders for C.I. Pigment Violet 29 (CASRN 81-33-4). Any information provided and incorporated in the C.I. Pigment Violet 29's risk evaluation by these stakeholders can be found in this supplemental file. Types of information include email correspondences, SDS sheets, and questionnaires about practices. There is no information claimed as Confidential Business Information. The only redactions are the contact information for the stakeholders. The communications received include:

- Occupational exposure and engineering information received from sole U.S. manufacturer, Sun Chemical Corporation, for C.I. Pigment Violet 29 and incorporated into the Problem Formulation and Draft Risk Evaluation
- Environmental release information received from the sole U.S. manufacturer Sun Chemical for C.I. Pigment Violet 29 and incorporated into Problem Formulation and Draft Risk Evaluation
- Information received after publication of the Draft Risk Evaluation in response to public comments and TSCA Scientific Advisory Committee on Chemicals (SACC) including:
- Initial information received from Sun Chemical in response to EPA's request for additional data characterizing the environmental releases, occupational exposure and engineering processes for C.I. Pigment Violet 29
- Information received from Sun Chemical Corporation in response to clarification about environmental releases of C.I. Pigment Violet 29
- C.I. Pigment Violet 29 particle size data received from Sun Chemical Corporation and the Color Pigments Manufacturers Association
- Information received from BASF in response to EPA's request for additional data characterizing the environmental releases, occupational exposure and engineering processes for C.I. Pigment Violet 29
- Information received from Sun Chemical in response to EPA's request for additional data characterizing the manufacturing processes and downstream processes for C.I. Pigment Violet 29
- SDS for C.I. Pigment Violet 29– BASF (importer) (BASF SDS 4081884)
- SDS for C.I. Pigment Violet 29 Commercial Product – Sun Chemical Corporation
- SDS for C.I. Pigment Violet 29 Non-Commercial Product (dry) – Sun Chemical Corporation
- SDS for C.I. Pigment Violet 29– TCI America (importer)

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Part 1 Information received from Sun Chemical Corporation for C.I. Pigment Violet 29 and incorporated into the Draft Risk Evaluation

Occupational exposure and engineering information received from sole U.S. manufacturer, Sun Chemical Corporation, for C.I. Pigment Violet 29 and incorporated into the Problem Formulation and Draft Risk Evaluation

Jewett, Freeborn

From: Mott, Robert [REDACTED]
Sent: Monday, September 25, 2017 11:41 AM
To: Muneer, Alie
Subject: RE: Exposure questions

Dear Alie,

In Chart 2-2, my understanding of the meaning of emissions applies to volatile materials. Since this pigment is not volatile, I don't think the pathways are relevant.

On the same chart, I don't believe oral contact is relevant, as eating is not allowed in the production and laboratory work areas.

Dermal exposure is handled as a nuisance dust and employees in production and laboratory areas where long sleeves and are provided gloves.

Inhalation testing has shown exposure was ~0.5mg/m3 over an 12 hour work shift.

On chart 2-4 POTW, underground injection, and Incinerators are not relevant release pathways for manufacturing. A separate chart should be considered for processors.

Hope this helps.

Maybe we can discuss further r late this afternoon if needed.

Best regards,

Dr. Robert C. Mott

Manager, Global Regulatory

Sun Chemical Corporation

1506 Bushy Park Rd., Bldg. B11-3

Goose Creek, SC 29445

Tel. [REDACTED]

Cell [REDACTED]

Fax: [REDACTED]

e-mail: [REDACTED]

<http://www.sunchemical.com/>

From: Muneer, Alie [REDACTED]
Sent: Monday, September 25, 2017 8:31 AM
To: Mott, Robert [REDACTED]
Subject: RE: Exposure questions

Hello Robert: Do you plan to send the materials today? Safe travels. Alie

 **Alie Muneer**


U.S. Environmental Protection Agency | [Office of Pollution Prevention & Toxics, Risk Assessment Division, Assessment Branch 2](#) | 1201 Constitution Ave., NW, [REDACTED] | Washington, DC 20004 | [REDACTED]
[REDACTED] | Office hours: M-F, 8am to 4:30pm ET

From: Muneer, Alie
Sent: Friday, September 22, 2017 4:56 PM
To: 'Mott, Robert' [REDACTED]
Cc: Todd, Jason [REDACTED]; Hasan, Jafrul [REDACTED]
Subject: RE: Exposure questions

One last question:

Any algal shading for PV29?


Thanks, Alie

 **Alie Muneer**
U.S. Environmental Protection Agency | Office of Pollution Prevention & Toxics, Risk Assessment Division, Assessment Branch 2 | 1201 Constitution Ave., NW, WJC East Bldg., [REDACTED] | Washington, DC 20004 | [REDACTED]
[REDACTED] | Office hours: M-F, 8am to 4:30pm ET

From: Muneer, Alie
Sent: Friday, September 22, 2017 4:52 PM
To: 'Mott, Robert' [REDACTED]
Cc: Todd, Jason [REDACTED]; Hasan, Jafrul [REDACTED]
Subject: RE: Exposure questions

Per our phone conversation, the following weblink contains the NPDES permit info:
https://cfpub.epa.gov/dmr/facility_detail.cfm?fac=SC0003441&yr=2017

Thanks, Alie

 **Alie Muneer**
U.S. Environmental Protection Agency | Office of Pollution Prevention & Toxics, Risk Assessment Division, Assessment Branch 2 | 1201 Constitution Ave., NW, [REDACTED] | Washington, DC 20004 | [REDACTED]
[REDACTED] | Office hours: M-F, 8am to 4:30pm ET

From: Muneer, Alie
Sent: Friday, September 22, 2017 4:26 PM
To: 'Mott, Robert' [REDACTED]
Cc: Todd, Jason [REDACTED]; Hasan, Jafrul [REDACTED]
Subject: Exposure questions

Hello Robert Mott:

We have a few questions relating to exposure:

1. Do you have any information related to release of PV29 to Cooper River? In the absence of this data and using TSS as a surrogate, what percent of PV29 is a part of TSS?
2. What are the days of release to surface water for PV29?
3. Do you have any additional information on PV29 air release for occupational exposure and environmental exposure?

Jason Todd/Exposure Assessor may contact you to follow-up via email or may call you.

Thanks, Alie

 **Alie Muneer**

**U.S. Environmental Protection Agency | Office of Pollution Prevention & Toxics, Risk Assessment Division, Assessment
Branch 2 | 1201 Constitution Ave., NW, [REDACTED] | Washington, DC 20004 | [REDACTED] |
[REDACTED] | Office hours: M-F, 8am to 4:30pm ET**

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Environmental release information received from the sole U.S. manufacturer Sun Chemical for C.I.Pigment Violet 29 and incorporated into Problem Formulation and Draft Risk Evaluation

Jewett, Freeborn

From: Mott, Robert <[REDACTED]>
Sent: Tuesday, December 5, 2017 9:53 AM
To: Muneer, Alie; Todd, Jason
Subject: RE: Exposure questions

Dear Alie,

Here is the modified calculation. I've rearranged the lines and added additional comments which hopefully improve the transparency.

pigment processed per year	12,500,000
per day	34,247
average handling loss	1.5%
pigment handling losses per day	514
Violet 29 per year	500,000
average production Violet 29 per day	1,370
average loss of Violet 29 loss to WWTP per day	21
Limit for Sludge to river from WWTP per day	1,049
WWTP sludge per day dry	28,000
% V29 in sludge per day	0.07%
V29 per day to the river	0.77

Please let me know if there are further questions.

Best regard,

Dr. Robert C. Mott

Manager, Global Regulatory

Sun Chemical Corporation

1506 Bushy Park Rd., Bldg. B11-3

Goose Creek, SC 29445

Tel. [REDACTED]

Cell [REDACTED]

Fax: [REDACTED]

e-mail: [REDACTED]

<http://www.sunchemical.com/>

From: Muneer, Alie [REDACTED]
Sent: Monday, December 4, 2017 1:26 PM
To: Mott, Robert [REDACTED] Todd, Jason [REDACTED]
Subject: RE: Exposure questions

Sounds great, thanks.

 Alie Muneer

U.S. Environmental Protection Agency | Office of Pollution Prevention & Toxics, Risk Assessment Division, Assessment Branch 2 | 1201 Constitution Ave., NW, WJC East Bldg., [REDACTED] | Washington, DC 20004 | [REDACTED]
[REDACTED] | Office hours: M-F, 8am to 4:30pm ET

From: Mott, Robert [REDACTED]
Sent: Monday, December 04, 2017 1:22 PM
To: Muneer, Alie [REDACTED] Todd, Jason [REDACTED]
Subject: Re: Exposure questions

Dear Alie,
I'm running late getting to my Hotel. I'll call your office when I'm settled into my room.
Best regards,
RCM

Sent from my iPhone

On Dec 1, 2017, at 4:16 PM, Mott, Robert [REDACTED] wrote:

Dear Alie,
I'm sorry, I thought we had already resolved that.
I'm not with my notes right now, could I send a note this evening and then we could discuss it Monday around 1:30PM if needed?
Best regards,
Dr. Robert C. Mott
Manager, Global Regulatory
Sun Chemical Corporation
1506 Bushy Park Rd., Bldg. B11-3
Goose Creek, SC 29445
Tel. [REDACTED]
Cell [REDACTED]
Fax: [REDACTED]
e-mail: [REDACTED]
<http://www.sunchemical.com/>

From: Muneer, Alie [REDACTED]
Sent: Friday, December 1, 2017 4:12 PM
To: Todd, Jason [REDACTED] Mott, Robert [REDACTED]
Subject: RE: Exposure questions

Hello Robert Mott: Can you pls explain the 0.6 lbs/day PV29 calculation? Thanks, Alie

<image002.jpg> Alie Muneer
U.S. Environmental Protection Agency | Office of Pollution Prevention & Toxics, Risk Assessment Division,
Assessment Branch 2 | 1201 Constitution Ave., NW, WJC East Bldg., [REDACTED] | Washington
DC 20004 | [REDACTED] Office hours: M-F, 8am to 4:30pm ET

From: Todd, Jason
Sent: Friday, October 06, 2017 9:14 AM
To: Mott, Robert [REDACTED] Muneer, Alie [REDACTED]
Cc: Hasan, Jafrul [REDACTED]
Subject: RE: Exposure questions

Dr. Mott,

I am in the office today. Feel free to call at your convenience, as I'll be at my desk most of the day. If easier, I'm happy to set up a set time as well. Thanks!

Best,
Jason

Jason Todd, Ph.D. [REDACTED]
Risk Assessment Div. / OPPT / USEPA
1200 Pennsylvania Ave., NW / Washington, DC 20460

From: Mott, Robert [REDACTED]
Sent: Thursday, October 05, 2017 4:54 PM
To: Todd, Jason [REDACTED]; Muneer, Alie [REDACTED]
Cc: Hasan, Jafrul [REDACTED]
Subject: RE: Exposure questions
Importance: High

Dear Todd,
I just came across your message in the wrong folder.
Are you available tomorrow morning to discuss your questions?

Best regards,
Dr. Robert C. Mott
Manager, Global Regulatory
Sun Chemical Corporation
1506 Bushy Park Rd., Bldg. B11-3
Goose Creek, SC 29445
Tel. [REDACTED]
Cell [REDACTED]
Fax: [REDACTED]
e-mail: [REDACTED]
<http://www.sunchemical.com/>

From: Todd, Jason [REDACTED]
Sent: Monday, September 25, 2017 2:02 PM
To: Mott, Robert [REDACTED]; Muneer, Alie [REDACTED]
Cc: Hasan, Jafrul [REDACTED]
Subject: RE: Exposure questions

Dr. Mott, thank you very much for the information. This is helpful. I am just trying to follow your math in how you get to that 0.6 lb/day value of PV29 and I can't seem to figure out how you're getting to that number.

Your 1,049 lb/d value equates with the reported max allowable load between 2011-2013 on the DMR report of 382,885 lbs/yr (=max allowable load/365) [see table below for data compiled from DMR]. It appears the facility's max allowable load has actually increased since 2014 to a little over 454,000 lbs/yr for 2014-2016 (or ~1246 lbs/d for 2016 numbers). I also see how you're getting that slipping number of 4% (1,049 lbs/d is ~4% of 28,000 lbs/d).

If I'm understanding your written description and you look at the actual reported releases to the river (e.g. 2016: 173,277 lbs/yr or 475 lbs/d) gets you to that 1-2% number (e.g. 475 lbs/d is 1.7% of 28,000 lbs/d) you reference I believe. But I don't see what you used to get to 0.6 lbs/d of PV29. Can you explain how you got to that number? It's probably obvious, but I'm just not seeing the numbers used to arrive at that result. And if we use your given 0.6 lbs/d PV29 released to the river, then that'd equate to ~219 lbs/yr or 0.13% of all TSS releases in 2016 (219 lbs/ 173,277 lbs). Does that seem in line with expectations or logical?

Maybe, since you've now had a chance to look at actual numbers, it would be helpful to state things more equivocally:

1. What I am interested in is what percentage of that reported release of 173,277 lbs/yr of TSS in 2016 is likely composed of PV29? It appears on your previous email and from what I show above that it's a low amount (e.g. <1%), but I'd want verification and clarification from you. Even ballpark percentage numbers would be useful (e.g. <10%?, <5%?, <1%?).
2. The monitoring data is based on a monthly sampling so the facility is obviously producing TSS throughout the year, but do you have a feel for the number of days you're releasing PV29 to the river or producing PV29 over the course of the year? For instance, is PV29 made and released throughout the year or is it made and released over a finite number of days. At the most extreme ends of the spectrum, a company could release all of a chemical to the environment in a single day (high-end) or release it continuously over the entire year (e.g. 365 days, low-end). Again best estimates are useful, if unable to give a specific number of days.

And finally, if there are concerns about sharing of this type of information due to CBI concerns, there are ways such information can be shared to shield that information from our end. Feel free to reach out via phone or email. Thanks and look forward to hearing from you.

Best,
Jason

Reported releases of TSS from DMR:

Table 1. Sun Chemical Bushy Park facility (NPDES: SC0003441) reported annual load release, maximum allowable load, and percent of maximum allowable load released for total suspended solids

Reporting Year	Total Annual Load		Maximum Allowable Load		Percent of Maximum Allowable Load Released
	lbs/yr	kg/yr	lbs/yr	kg/yr	%
2016	173,277	78,597	454,927	206,351	38.1
2015	111,137	50,411	454,589	206,198	24.4
2014	137,401	62,324	454,589	206,198	30.2
2013	102,256	46,383	382,885	173,674	26.7
2012	108,382	49,161	382,885	173,674	28.3
2011	68,385	31,019	382,885	173,674	17.9
2010	96,975	43,987	299,665	135,926	32.4

*The DMR lists annual loads in lbs/yr, but use in EPA model requires kg/yr. Showing both here to ease comparison

Jason Todd, Ph.D / [REDACTED]
Risk Assessment Div. / OPPT / USEPA
1200 Pennsylvania Ave., NW / Washington, DC 20460

From: Mott, Robert [REDACTED]
Sent: Monday, September 25, 2017 11:08 AM
To: Muneer, Alie [REDACTED]
Cc: Todd, Jason [REDACTED]; Hasan, Jafrul [REDACTED]
Subject: RE: Exposure questions

Dear Alie,
In my looking at this question I found the attached link which on first blush surprised me.
<https://echo.epa.gov/effluent-charts#SC0003441/00530> . Upon reflection the 1,049lb/day average for TSS is actually readily understood.

1. Our WWTP generates ~28,000lbs of sludge per day (dry weight), so this is >4% "slipping" through the filter. This is somewhat higher than we experience in the manufacturing of our pigments, where the standard yield loss is 1-2% for the ~12 million pounds processed. I think this is due to our being more careful operating filter presses that isolate pigments than those which are basically capturing biomass. The isolated bio mass is transported to a licensed lined land fill.
2. It seems that the TSS going to the river is 90-95+% bio solids. This leads to PV29 being ~0.6lb/day of a material with a very low aquatic solubility 10µg/L.
3. Our engineering controls capture ~15% (15K pounds per year) of the lost material in our bag houses. This material is then disposed of in a licensed lined line fill. It is estimated that the capture efficiency of our baghouse is >99%. PV29 would be ~4% of this dust handled.

I hope this helps.

Best regards,
Dr. Robert C. Mott
Manager, Global Regulatory
Sun Chemical Corporation
1506 Bushy Park Rd., Bldg. B11-3
Goose Creek, SC 29445
Tel. [REDACTED]
Cell [REDACTED]
Fax: [REDACTED]
e-mail: [REDACTED]
<http://www.sunchemical.com/>

From: Muneer, Alie [REDACTED]
Sent: Friday, September 22, 2017 4:26 PM
To: Mott, Robert [REDACTED]
Cc: Todd, Jason [REDACTED]; Hasan, Jafrul [REDACTED]
Subject: Exposure questions

Hello Robert Mott:

We have a few questions relating to exposure:

1. Do you have any information related to release of PV29 to Cooper River? In the absence of this data and using TSS as a surrogate, what percent of PV29 is a part of TSS?
2. What are the days of release to surface water for PV29?
3. Do you have any additional information on PV29 air release for occupational exposure and environmental exposure?

Jason Todd/Exposure Assessor may contact you to follow-up via email or may call you.

Thanks, Alie

<image004.jpg> Alie Muneer
U.S. Environmental Protection Agency | Office of Pollution Prevention & Toxics, Risk Assessment Division,
Assessment Branch 2 | 1201 Constitution Ave., NW, WJC East Bldg., [REDACTED] | Washington,
DC 20004 | [REDACTED] | Office hours: M-F, 8am to 4:30pm ET

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Part II Information received after publication of the Draft Risk Evaluation in response to public comments and TSCA Scientific Advisory Committee on Chemicals (SACC) recommendations

Initial information received from Sun Chemical in response to EPA's request for additional data characterizing the environmental releases, occupational exposure and engineering processes for C.I. Pigment Violet 29

From: [Blaufuss, Hannah](#)
To: [David Wawer](#)
Cc: [Robert Mott](#); [Earl Seibert](#); [Passe, Loraine](#); [Hasan, Jafrul](#); [Jewett, Freeborn](#)
Subject: EPA Information Request - PV29
Date: Tuesday, October 15, 2019 3:52:03 PM
Attachments: [Mott 2017a_full.pdf](#)
Importance: High

Dear David Wawer,

As you are aware, EPA has received public and SACC peer reviewer comments on the draft C.I. Pigment Violet 29 (PV29) Risk Evaluation. Our team is reviewing and addressing the comments we have received. Some of the comments question the robustness of the point estimates of worker exposure numbers that Dr. Robert Mott provided in an email to the agency on September 25, 2017 (see attached pdf) and surface water release data. In order to address the concerns of the public, improve the utility of the information already provided by Sun Chemical, and strengthen the risk conclusions of the final risk evaluation, we are reaching out to you to supplement the numbers with the following information.

Individual workplace air monitoring and site environmental release sample measurements (from email) including the following for each sample:

1. Sample results including what was measured (e.g., How were the measured values calculated? do the measurements represent total dust or specific PV29? Is dust particle size available?)
2. The duration of sampling (e.g., sample start and stop times)
3. Date(s), frequency, and number of samples taken during each sampling event
4. Identify if the sample is personal breathing zone or area measurement.
5. Physical location of measurement device if area monitoring (include a description of the work area and the monitored location)
6. Worker activity performed during sampling if personal monitoring device is used (include information on personal protective equipment)
7. Ambient conditions during sampling (temperature, humidity)
8. Information on any Industrial Hygiene program and/or Chemical Safety Plan
9. Information on the analytical method (e.g., method, detection limit, and equipment as appropriate)

In addition, the following would be useful to refine and contextualize the estimates of occupational and environmental exposure at the Bushy Park site presented in the draft Risk Evaluation:

1. Specifics on personal protective equipment used for each activity and quantified effectiveness
2. Engineering controls used for each activity and quantified effectiveness
3. OSHA incident reports
4. Details about on-site wastewater treatment and any off-site PV29 related waste disposal. Included in those details would be any quantitative estimates of off-site disposal and measures of water releases of PV29 relative to the overall manufactured volume with anticipated days of release. Any releases not subject to wastewater treatment should also be included
5. Estimate of the number of workers handling PV29 at the Bushy Park site, the days/year each worker performs a specified activity and the details about shift length at the site

6. Number of workers who are not involved in the manufacturing and use of PV29 but could be exposed because they work in the vicinity of those workers working with the chemical directly

The Agency is not asking for Sun Chemical to create the data, perform monitoring or submit workers personally identifiable information. The Agency is only asking Sun Chemical to provide information that is currently in its possession or control. Please respond with a confirmation of receipt within three business days and provide an estimate of the amount of time Sun Chemical will need to fulfil this request. We look forward to your response.

Thank you,

Hannah Blaufuss, MHS

Environmental Protection Specialist

U.S. EPA Office of Pollution Prevention and Toxics

Chemical Control Division

Phone: (202) 564-5614

 **Please do not print this email unless absolutely necessary** 

ENCLOSURE 1 – EPA request for additional information in response to SACC peer reviewer and including public comments on the draft C.I. Pigment Violet 29 (PV29) Risk Evaluation

Individual workplace air monitoring and site environmental release sample

measurements (from email) including the following for each sample (**questions 1-9**):

1. Sample results including what was measured (e.g., How were the measured values calculated? do the measurements represent total dust or specific PV29? Is dust particle size available?)

The Industrial Hygiene survey included employee exposure to total dust associated with routine production activities in order to evaluate compliance with applicable OSHA Permissible Exposure Limits (PELs) found in 29 CFR Subpart Z and including current ACGIH Threshold Limit Values (TLVs) for "particulates not otherwise regulated". Total Dust Exposure was assessed for four employees working in buildings (B11) and (C82) as product operators. All employees assessed were found to have exposures below the current OSHA PEL (15mg/m³) and ACGIH TLV (10mg/m³). These findings indicate that corrective actions were not necessary for compliance with the OSHA PELs beyond maintaining existing engineering controls and proper work practices. A summary of the results can be found in Table 1 (below). Particle size distribution data is not currently available.

Table 1: Dust Exposure

Employee/ Work Area	Sample Number	Employee Exposure (mg/m ³)	OSHA PEL (15mg/m ³) exceeded (YES/NO)	ACGIH TLV (10mg/m ³) exceeded (YES/NO)
Production Operator (B11)	14-0941902	1.2	NO	NO
Production Operator (B11)	14-0941898	0.40	NO	NO
Production Operator (B11)	14-0941902* 14-0941898*	0.72*	NO	NO
Production Operator (C82)	14-0941899	0.67	NO	NO
Production Operator (B11)	14-0941900	0.57	NO	NO
Production Operator (C82)	14-0941904	0.22	NO	NO

*Calculated value from two separate samples collected over the shift

2. The duration of sampling (e.g., sample start and stop times)

Samples were taken over a 12-hour duration (on average) based on a normal production shift.

3. **Date(s), frequency, and number of samples taken during each sampling event**

The Industrial Hygiene survey was performed at the Sun Chemicals facility in Goose Creek, South Carolina on June 18, 2014. The total number of individual samples taken are listed below along with values recorded for each sampling event.

Total Dust			
Sample ID	Air Volume (liter)	Total (mg)	Conc. (mg/m3)
14-0941902	175.5	0.21	1.2
14-0941900	826.8	0.47	0.57
14-0941899	852.6	0.57	0.67
14-0941904	854.1	0.19	0.22
14-0941898	266.5	0.11	0.4

4. **Identify if the sample is personal breathing zone or area measurement.**

All personal samples were collected from the employee's personal breathing zone (PBZ).

5. **Physical location of measurement device, if area monitoring (include a description of the work area and the monitored location)**

Personal breathing zone (PBZ) samples for total dust from the elevation 70 blender product operator in building (C82), the miscellaneous pack-out product operator in building (C82), the de-lumper product operator in building (B11), and the BM3 charge product operator in building (B11) in areas where PV29 is handled.

6. **Worker activity performed during sampling if personal monitoring device is used (include information on personal protective equipment)**

Worker activity performed during personal sampling associated with building (C82) included charging big bags to the blenders on level 70 and packing out on level 14, while activity associated with building (B11) included charging big bags to the blender and charging trayed material to the delumper.

7. **Ambient conditions during sampling (temperature, humidity)**

Sample were taken throughout the day on June 18, 2014 with the temperature ranging from 70-84F and relative humidity ranging from 74-85%.

8. Information on any Industrial Hygiene program and/or Chemical Safety Plan

The site Industrial Hygiene plan consists of a series of standard programs, procedures, and/or administrative controls including PPE, respiratory protection, hearing conservation, hazard communication, and various site safety processes.

9. Information on the analytical method (e.g., method, detection limit, and equipment as appropriate)

Sample collection and analysis was performed in accordance with the National Institute for Occupational Safety and Health (NIOSH) Manual of Analytical Methods (NMAM) and OSHA Analytical Methods. Samples were submitted to an AIHA accredited laboratory. Personal samples for total dust were collected utilizing pre-weighed PVC cassettes. The samples were collected by utilizing a battery powered personal pump calibrated before and after use with a TSI 4100 primary calibrator. The samples were analyzed utilizing the NIOSH 0500 method having a working range between 1 to 20 mg/m³ for a 100-L air sample.

ENCLOSURE 2 – EPA request for additional information in response to SACC peer reviewer and including public comments on the draft C.I. Pigment Violet 29 (PV29) Risk Evaluation

In addition, the following would be useful to refine and contextualize the estimates of occupational and environmental exposure at the Bushy Park site presented in the draft Risk Evaluation: **(questions 1-6):**

1. Specifics on personal protective equipment used for each activity and quantified effectiveness

Personal protective equipment (PPE) requirements in both buildings (C82) and (B11) where pigment dust (including PV29) is present would be Safety Glasses, Nitrile Gloves, Tyvek Coveralls, 3M 8511 Paper Dust Mask (95% efficiency) as specified in the detailed work instructions. Minimum PPE requirements for site-wide production areas include long-sleeve shirt, long-pants, steeled-toed safety shoes, safety glasses, and hard hat.

2. Engineering controls used for each activity and quantified effectiveness

Wet Scrubbers and Dust collectors are the two main engineering control devices covering the production of PV29 presscake and dry pigment in buildings (B11) and (C82). Air pollution control devices include process area packed bed scrubber systems with approximately 95% PM removal efficiency, tray drying area wet scrubber systems with approximately 80% PM removal efficiency, and various delumping, blending and packout dust collectors with over 99.9% PM removal efficiency.

3. OSHA incident reports

None related to PV29 exposure.

4. Details about on-site wastewater treatment and any off-site PV29 related waste disposal. Included in those details would be any quantitative estimates of off-site disposal and measures of water releases of PV29 relative to the overall manufactured volume with anticipated days of release. Any releases not subject to wastewater treatment should also be included.

The Bushy Park facility manages industrial wastewater discharge compliance through an NPDES permit to discharge into the Cooper River. Any other off-site

releases of PV29 would relate to industrial waste disposal. Worst-case estimates for the total amount of PV29 released from the facility through both wastewater and including off-site waste disposal would be a maximum of 7,500 lbs/day. It is estimated that only 300 lbs/yr are released resulting from wastewater discharge. The balance of off-site releases would result from the disposal of industrial wastewater sludge and including dust collector filter waste.

5. **Estimate of the number of workers handling PV29 at the Bushy Park site, the days/year each worker performs a specified activity and the details about shift length at the site**

Estimates of the number of workers handling PV29 at the Bushy Park site are approximately 22 employees working four different 12-hour shifts, 24 hours per day, 362 days per year. Facility-wide annual production of PV29 is estimated to constitute 3% of the total finished-goods production at the facility.

6. **Number of workers who are not involved in the manufacturing and use of PV29 but could be exposed because they work in the vicinity of those workers working with the chemical directly**

There are approximately 56 additional employees who would have very limited workplace exposure to PV 29 dust.

Information received from Sun Chemical Corporation in response to clarification about environmental releases of C.I. Pigment Violet 2929

From: [David Wawer](#)
 To: [Blaufuss, Hannah](#)
 Cc: [Tatiana Latcheva](#); [Seibert, Earl](#); [Passe, Loraine](#); [Hasan, Jafrul](#); [Jewett, Freeborn](#); [Robert Mott](#)
 Subject: RE: PV 29 Worker exposure/safety information: Sun Chemical, Bushy Park
 Date: Tuesday, November 5, 2019 3:05:55 PM
 Attachments: [image001.png](#)
[image002.png](#)
[image003.jpg](#)

Dear Hannah,

Upon further research by Sun Chemical, the information below should address the question presented by EPA on November 4, 2019.

Please feel free to contact me if there are any final questions.

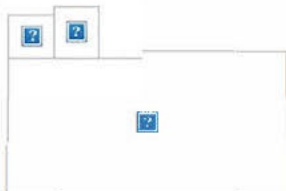
Dave

Bushy Park, worst-case estimate of Violet 29 wastewater losses			
	Parameters	Est. value	Comments
A	Total Violet 29 pounds handled per year	500,000 lbs	"Pounds handled" includes some "double counting" of Violet 29 production to account for losses along each step in the batch process.
B	Average handling losses of Violet 29	1.5%	Typical yield loss estimate for products manufactured at the facility (based on operational experience). Overall yield loss estimate 1.5% to WWTP.
C	Average loss of Violet 29 to WWTP per year	7,500 lbs	(A*B)/100
D	Average loss of Violet 29 to WWTP per day	21 lbs	(C/360 days)
E	Total WWTP sludge per day	28,000 lbs	
F	Average percent of Violet 29 in WWTP sludge per day	0.075%	(D/E)*100
G	WWTP permit limit for TSS to the river per day	1,049 lbs	(daily avg < 450 lbs/day)
H	Average loss of Violet 29 to the river per day	0.79 lbs	(F*G)/100
I	Worst case estimated loss of Violet 29 to the river per year	~300 lbs	
J	Worst case estimated loss of Violet 29 to the landfill	7,200 lbs	Difference of loss to WWTP and loss to river.

David Wawer, Executive Director
 Color Pigments Manufacturers Association, Inc.



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From: Blaufuss, Hannah <Blaufuss.Hannah@epa.gov>
 Sent: Monday, November 4, 2019 12:28 PM
 To: David Wawer, [Redacted]; Seibert, Earl [Redacted]; Passe, Loraine <Passe.Loraine@epa.gov>; Hasan, Jafrul <Hasan.Jafrul@epa.gov>; Jewett, Freeborn <Jewett.Freeborn@epa.gov>; Robert Mott [Redacted]
 Subject: RE: PV 29 Worker exposure/safety information: Sun Chemical, Bushy Park

Hello Dave,

Thank you again for the responses. It was nice to see you at the Sun Chemical site visit. Thank you for your part in setting up the learning opportunity for myself and EPA colleagues.

We had one specific PV29 question as a follow-up to the environmental release and exposure information you sent us. Within Q4 in Enclosure 2, the following is stated:

“Worst-case estimates for the total amount of PV29 released from the facility through both wastewater and including off-site waste disposal would be a maximum of 7,500 lbs/day yr. It is estimated that only 300 lbs/yr are released resulting from wastewater discharge. The balance of off-site releases would result from the disposal of industrial wastewater sludge and including dust collector filter waste.”

EPA Comment: It'd be useful to clarify how 7,500 lbs/yr and 300 lbs/yr were derived. The assumptions, calculations, and processes used to arrive at these numbers would help the Agency better understand the context and create transparency for this information. Please let me know if you have any questions about our comment.

Thank you,

Hannah Blaufuss, MHS

Environmental Protection Specialist
U.S. EPA Office of Pollution Prevention and Toxics
Chemical Control Division
Phone: (202) 564-5614

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From: David Wawer [REDACTED]
Sent: Friday, October 25, 2019 2:24 PM
To: Blaufuss, Hannah <Blaufuss.Hannah@epa.gov>
Cc: Tatiana Letcheva [REDACTED]; Seibert, Earl [REDACTED]
Subject: RE: PV 29 Worker exposure/safety information: Sun Chemical, Bushy Park

Dear Hannah,

One minor correction I was just made aware of. In the answer to question #4 (wastewater discharge), the paragraph should read 7500 lbs/year. The initial information provided to me had a typo, stating 7500 lbs/day.

Dave

From: Blaufuss, Hannah <Blaufuss.Hannah@epa.gov>
Sent: Friday, October 25, 2019 1:20 PM
To: David Wawer [REDACTED]
Cc: Tatiana Letcheva [REDACTED]; Seibert, Earl [REDACTED]
Subject: RE: PV 29 Worker exposure/safety information: Sun Chemical, Bushy Park

Hello Dave,

Thank you for the response. I will forward the information to our risk evaluation team. Always a pleasure working with you. Give my thanks to Sun Chemical.

Thank you,

Hannah Blaufuss, MHS

Environmental Protection Specialist
U.S. EPA Office of Pollution Prevention and Toxics
Chemical Control Division
Phone: (202) 564-5614

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From: David Wawer [REDACTED]
Sent: Friday, October 25, 2019 12:51 PM
To: Blaufuss, Hannah <Blaufuss.Hannah@epa.gov>

Cc: Tatiana Letcheva [REDACTED] Seibert, Earl [REDACTED]

Subject: PV 29 Worker exposure/safety information: Sun Chemical, Bushy Park

Good afternoon Hannah,

Attached for your review and use is information about worker exposure/worker safety from the Sun Chemical manufacturing site in Charleston, SC. Plant officials reviewed recent questions posed by you and your PV29 technical team to CPMA, as part of EPA's review of SACC comments and development of the final risk evaluation document for PV 29, and identified relevant information in response to the specific questions. I believe the attached information will further assist the Agency in its efforts to finalize the PV 29 risk evaluation process.

Glad to respond to any follow-up questions.

Dave

David Wawer, Executive Director
Color Pigments Manufacturers Association, Inc.

[REDACTED]
[REDACTED]
[REDACTED]

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C.I. Pigment Violet 29 particle size data received from Sun Chemical Corporation and the Color Pigments Manufacturers Association

From: [David Wawer](#)
To: [Blaufuss, Hannah](#)
Cc: [Tatiana Letcheva](#); [Seibert, Earl](#); [Passe, Loraine](#); [Hasan, Jafrul](#); [Jewett, Freeborn](#); [Robert Mott](#)
Subject: Particle Size Question
Date: Thursday, November 7, 2019 4:24:10 PM
Attachments: [image001.png](#)
[image002.png](#)
[image003.jpg](#)
[TEM 229-4050 Std. TM12548.pdf](#)

Dear Hannah,

Please see the information below, provided to CPMA by Sun Chemical. Hope this meets your needs.

Dave

-
PARTICLE SIZE DATA

PSD by sedimentation method, mean weight diameter D_w is 53nm. Median weight diameter D_{50} is 43nm

Sample ID	D_w ¹	D_1	D_{10}	D_{30}	D_{50}	D_{70}	D_{90}	D_{95}	D_{99}
229-4050 Std. SB-40502	53	20	27	35	43	54	80	101	192

¹: Data are obtained by DCP method and are based on weight/volume in the unit of nm

TEM attached (above)

David Wawer, Executive Director
Color Pigments Manufacturers Association, Inc.

[Redacted]
[Redacted]
[Redacted]
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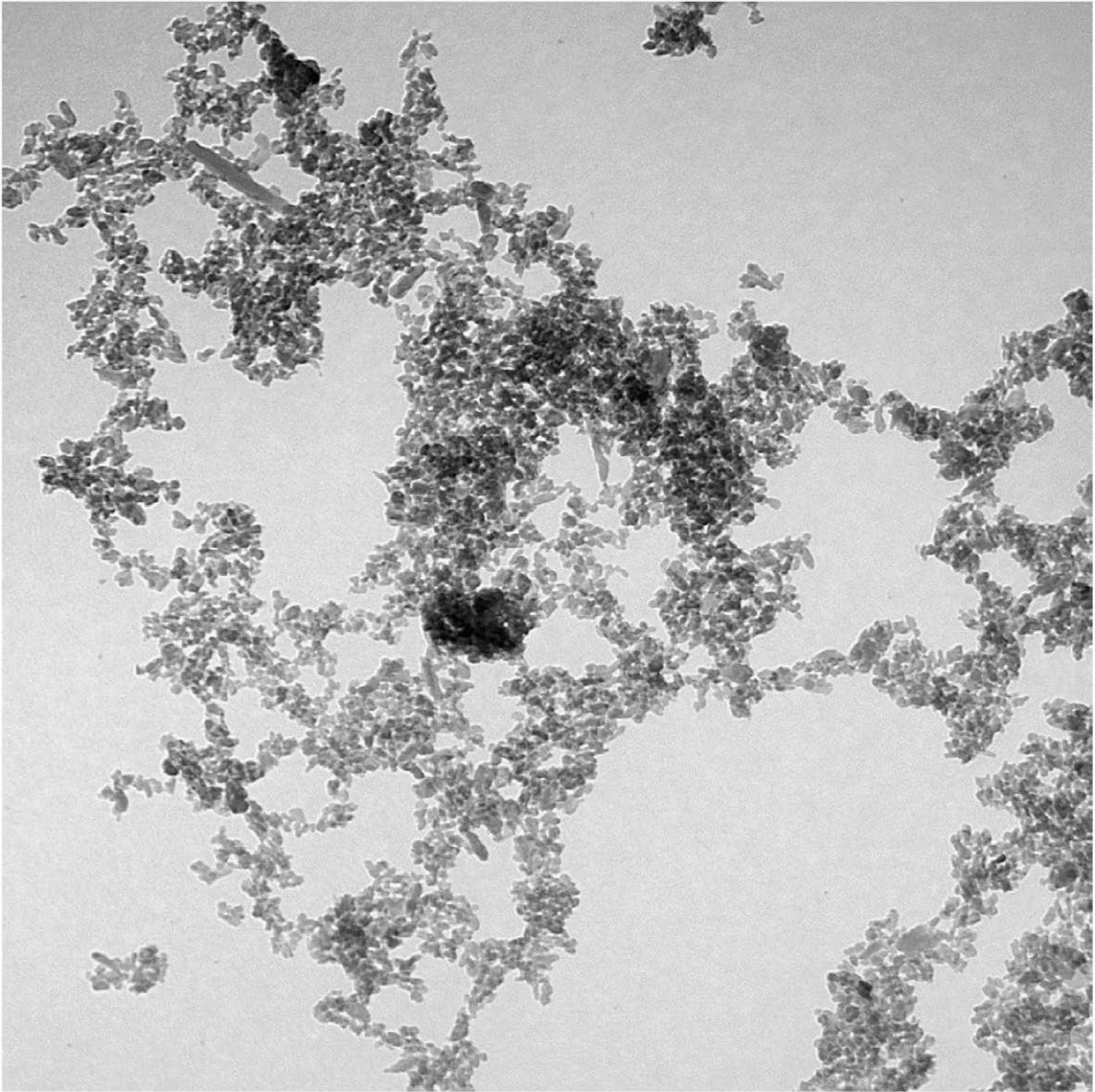
From: Blaufuss, Hannah <Blaufuss.Hannah@epa.gov>
Sent: Tuesday, November 5, 2019 3:33 PM
To: David Wawer [Redacted]
Cc: Tatiana Letcheva [Redacted]; Seibert, Earl [Redacted]; Passe, Loraine <Passe.Loraine@epa.gov>; Hasan, Jafrul <Hasan.Jafrul@epa.gov>; Jewett, Freeborn <Jewett.Freeborn@epa.gov>; Robert Mott [Redacted]
Subject: RE: PV 29 Worker exposure/safety information: Sun Chemical, Bushy Park

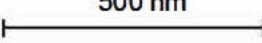
Thank you Dave,

The Agency appreciates your response and will include the provided information in the final C.I. Pigment Violet 29 risk evaluation. In regards to the workplace air monitoring, do you have information on the particle size of the dust? If you had a particle size range and distribution for the dust collected that would be ideal for characterizing the total dust. We are grateful for any information you can provide.

Thank you,

Hannah Blaufuss, MHS
Environmental Protection Specialist
U.S. EPA Office of Pollution Prevention and Toxics



SunChemical Colors Group Bushy Park Technology	Sample Identification		Acceleration Voltage: 80 KV Date: 5/20/2010 Operator: J. Stello
	TM12548 229-4050 SB40502 1 minute Ultrasonic @ 300W		Magnification 70000x 500 nm
Analytical Technology Performance Pigment	ID05075		

From: [Blaufuss, Hannah](#)
To: [Jewett, Freeborn](#)
Cc: [Passe, Loraine](#); [Hasan, Jafrul](#)
Subject: FW: Answer to previous question: Micron or nanometer
Date: Tuesday, November 19, 2019 8:28:08 AM
Attachments: [image001.png](#)
[image002.png](#)
[image003.jpg](#)
[image006.png](#)
[image007.png](#)

Hello Garrett,

Below is a clarification of particle size for PV29 from CPMA. Please share with appropriate staff. Let me know if you have any questions.

Thank you,

Hannah Blaufuss, MHS

Environmental Protection Specialist
U.S. EPA Office of Pollution Prevention and Toxics
Chemical Control Division
Phone: (202) 564-5614

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From: David Wawer [REDACTED]
Sent: Monday, November 18, 2019 3:26 PM
To: Blaufuss, Hannah <Blaufuss.Hannah@epa.gov>
Cc: Tatiana Letcheva [REDACTED]
Subject: Answer to previous question: Micron or nanometer

Good afternoon Hannah,

I'm providing revised plant site information re: worker exposure testing data. This replaces the information sent in an earlier email and clarifies the question you asked about particle size measurement. Please share with appropriate EPA technical colleagues.

Dave

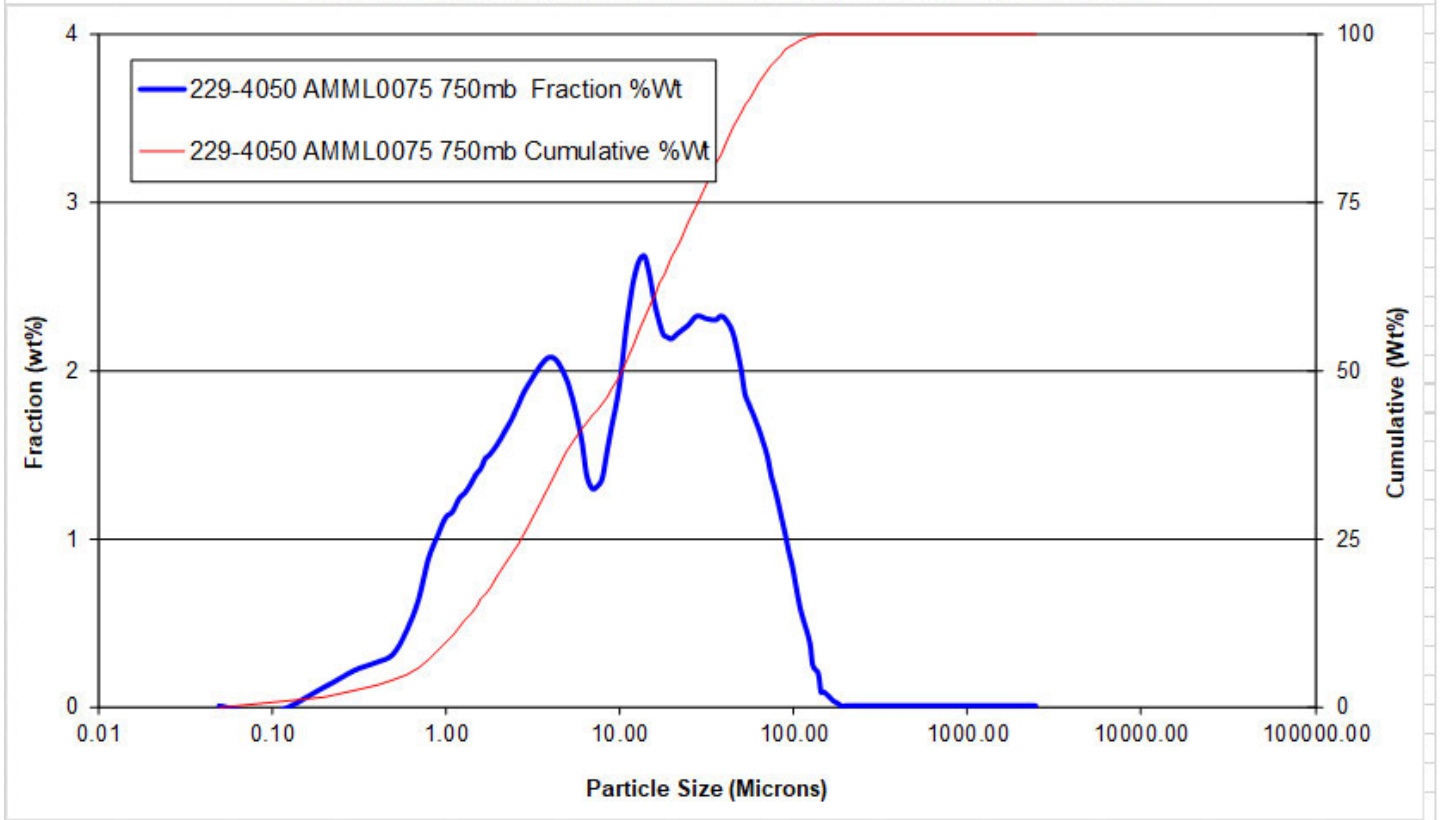
This information is based on the actual particle size and is representative of the respirable dust observed in the workplace monitoring use and exposure testing data previously provided to EPA.

The mean diameter of the agglomerates is 20.0 microns and the median is 10.4 microns. The air pressure for dispersing the powder was 750 millibars.

Sample ID	D _{mean} (m)	D ₁₀ (m)	D ₅₀ (m)	D ₉₀ (m)	D ₉₉ (m)
229-4050 AMML0075 750 mb	20.0	1.04	10.4	54.4	109

Sample	Surface Area (m ² /g)	True Density (g/cc)
229-4050	79	1.69

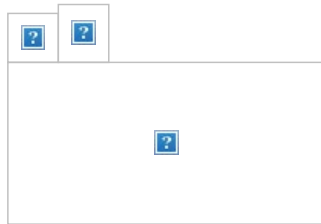
Particle Size Distribution Curve of 229-4050 AMML0075



David Wawer, Executive Director
Color Pigments Manufacturers Association, Inc.

[Redacted contact information]

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From: [Blaufuss, Hannah](#)
To: [David Wawer](#)
Cc: [Tatiana Letcheva](#); [Seibert, Earl](#); [Passe, Loraine](#); [Hasan, Jafrul](#); [Jewett, Freeborn](#); [Robert Mott](#)
Subject: RE: EPA Request for PV29 Solubility Tests
Date: Monday, December 9, 2019 3:33:00 PM

Hello Dave,

I would like to schedule a meeting/call with you this week about the particle size of PV29. Also how is it going with the protocol development for the solubility studies? Please let me know your availability this week. Look forward to talking with you.

Thank you,

Hannah Blaufuss, MHS

Environmental Protection Specialist

U.S. EPA Office of Pollution Prevention and Toxics

Chemical Control Division

Phone: (202) 564-5614

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Particle Size Measurements for CI Pigment Violet 29

Two sets of particle size measurement have been supplied through CPMA to the Agency. Both of these samples were analyzed by Sun Chemical Corporation in the Particle Physics Laboratory located at 1506 Bushy Park Road.

The sample in the first set was identified as BP40502, this sample was analyzed by test methods intended to measure the primary particles as would be observed by typical customers manufacturing automotive paint.

1. Transmission Electron Microscopy – Instrument used Zeiss EM-109T TEM (Transmission Electron Microscope). The sample was ultrasonically dispersed (Branson 1200 Ultrasonic Bath or equivalent) in 80/20 Ethanol (Reagent Alcohol)/Water for one mixture and loaded onto 3mm 200 mesh carbon coated copper grids with Formvar resin (EMS Cat. # FCF200-CU-50) which was then dried. The sample was measured using an impact energy of 80 KV at magnification level of 30,000X (magnification knob number 11) engaged for the image taking, which gives a 70000X magnification on objects. The field of view is selected to show a well dispersed field of crystals. The TEM picture shows the calibration bar.
2. Disc Centrifuge – Instrument used a Brookhaven DCP. The received pigment powder sample is first thoroughly mixed with Nuospense W-28 (Disperse Ayd W-28) in a ratio of 1 to 2 (0.5g pigment sample based on dry color to 1.0g Nuospense W-28). The resulting paste was then mullied on a Hoover Automatic Muller (Model M5) for 4x50 revolutions, the paste was manually re-mixed and re-spread after each of the first three 50-revolution cycles. A pre-dispersion was made by mixing 0.2g of the mullied paste in 20mL of deionized (DI) water ($\leq 0.2\mu\text{m}$) using a glass rod with sonication in an ultrasonic bath (Branson 1200 Ultrasonic Bath or equivalent) for at least two more minutes in the ultrasonic bath until completely dispersed. The resulting pre-dispersion was sonicated at 300W for 2 minutes using a ultrasonic horn (a Branson Digital Sonifier 450 or equivalent). After cooling down, the dispersion was mixed with 5mL of methanol prior to injection to the DCP analyzer. The measurement was performed on a Brookhaven BI-DCP Particle Sizer using a DI water/MeOH gradient spin fluid.

The second sample was identified as AMML0075, this sample was analyzed as received in the laboratory without preparation. The method of analysis was selected to show the particles expected on the manufacturing floor for respirable dust.

This test was done on Cilas 1190LD laser diffraction instrument using standard dry mode. The sample as received (in dry powder state) was charged into the instrument directly.

Measurement conditions are indicated on the report (Averaged from three individual measurement. Driving with a pressure of 750 mb compressed air and feeding with 52 Hz and 53% power level to maintain a proper signal level of 7%-8% Obscuration).

Dr. Robert C. Mott

Mott Consulting LLC

December 20, 2019

From: [Blaufuss, Hannah](#)
To: [David Wawer](#)
Cc: [Tatiana Letcheva](#); [Hasan, Jafrul](#); [Passe, Loraine](#)
Subject: RE: Background Information on particle size data submitted to EPA in 2019
Date: Tuesday, January 28, 2020 12:53:00 PM
Attachments: [image001.png](#)
[image002.png](#)

Hello Dave,

Yes, we agree the study plan is a higher priority.

Thank you,

Hannah Blaufuss, MHS

Environmental Protection Specialist
U.S. EPA Office of Pollution Prevention and Toxics
Chemical Control Division
Phone: (202) 564-5614

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From: David Wawer [REDACTED]
Sent: Tuesday, January 28, 2020 12:50 PM
To: Blaufuss, Hannah <Blaufuss.Hannah@epa.gov>
Cc: Tatiana Letcheva [REDACTED]; Hasan, Jafrul <Hasan.Jafrul@epa.gov>; Passe, Loraine <Passe.Loraine@epa.gov>
Subject: RE: Background Information on particle size data submitted to EPA in 2019

Good afternoon Hannah,

We're researching the questions, and will get back to you in a few days. First priority is submitting revised test method protocol information, as requested in the 01/24/2020 email.

Dave

David Wawer, Executive Director
Color Pigments Manufacturers Association, Inc.

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

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From: Blaufuss, Hannah <Blaufuss.Hannah@epa.gov>
Sent: Tuesday, January 28, 2020 11:43 AM
To: David Wawer [REDACTED]
Cc: Tatiana Letcheva [REDACTED]; Hasan, Jafrul <Hasan.Jafrul@epa.gov>; Passe, Loraine <Passe.Loraine@epa.gov>
Subject: RE: Background Information on particle size data submitted to EPA in 2019

Hello Dave,

Our staff had three additional clarification questions for you and Sun Chemical regarding particle size.

1. Are nanometer-sized PV29 particles produced and present at the Sun Chemical manufacturing facility and if so, under what conditions of use and associated activities?
2. Do workers at Sun Chemical handle dry chemical containing PV29 with particle diameters in the nanometer range? This was not adequately explained in the attached clarification.
3. Are the nanometer-sized particles expected to occur outside of a solvent or medium?

Thank you,

Hannah Blaufuss, MHS

Environmental Protection Specialist

U.S. EPA Office of Pollution Prevention and Toxics

Chemical Control Division

Phone: (202) 564-5614

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From: David Wawer [REDACTED]
Sent: Monday, January 6, 2020 2:57 PM
To: Blaufuss, Hannah <Blaufuss.Hannah@epa.gov>; Hasan, Jafrul <Hasan.Jafrul@epa.gov>
Cc: Tatiana Letcheva [REDACTED]
Subject: Background Information on particle size data submitted to EPA in 2019

Dear Hannah,

Welcome to 2020. We're back in the office today to begin the new year. We look forward to final conclusion to the PV 29 evaluation process in 2020.

Attached for your review is the explanation of the two distinct data sets submitted to EPA last year. In addition, we're providing a document that describes technical information for respirators used by Sun Chemical.

By January 6th: Sun Chemical will provide EPA with clarifications of the emails sent from CPMA to EPA on November 7th and November 19th regarding particle size. Sun will also provide EPA with PPE information used at the Sun Chemical Bushy Park site, i.e., type of masks used during manufacturing, processing and handling PV29.

Dave

David Wawer, Executive Director
Color Pigments Manufacturers Association, Inc.

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

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Information received from BASF in response to EPA's request for additional data characterizing the environmental releases, occupational exposure and engineering processes for C.I. Pigment Violet 29

This memorandum presents draft sample questions based on information in the memorandum and preliminary research conducted while supporting preparation of the PV29 Scope Document.

Note that the primary domestic manufacturing company (Sun Chemical) provided information in the memorandum pertaining to some of the draft questions. However, other companies that manufacture or import PV29 below the CDR reporting threshold did not provide information pertaining to their facilities (e.g. BASF). The questions have been developed based on information that may be needed from all importers and manufacturers. Questions that have been answered by Sun Chemical in the memorandum are identified when appropriate.

We welcome the opportunity for additional questions as this project moves along.

GENERAL QUESTIONS PERTAINING TO EXPOSURE

[BASF Corporation, including Colors & Effects, does not manufacture or process Pigment Violet 29 (PV29) in the US and so has no information responsive to Questions 1-5.]

1. Please provide details of any industrial hygiene program at your facility.
2. Please provide available area and personal monitoring data of PV29 for workers directly handling PV29 or active in the work area where PV29 is manufactured or handled (or unloaded, transferred, or loaded into containers) including a description of the test methodology.
3. Please provide available area and personal monitoring data for total particulates for workers directly handling PV29 or active in the work area where PV29 is manufactured or handled (or unloaded, transferred, or loaded into containers) including a description of the test methodology.
4. Do workers wear any Personal Protective Equipment? If so, please describe it and indicate which set/subset of workers are required to use it.
5. Please provide available monitoring data where PV29 containing mist maybe generated. Include a description of the test methodology, the estimated number of workers possibly exposed to the mist, the duration of exposure and description of worker activity.

GENERAL QUESTIONS PERTAINING TO RELEASES

[BASF Corporation, including Colors & Effects, does not manufacture or process Pigment Violet 29 (PV29) in the US and so has no information responsive to Questions 6-14.]

Please describe the process for equipment cleaning, including (but not limited to):

- a. What solvent is used (or is it aqueous cleaning)?

- b. What is the frequency of cleaning (e.g., each batch (and how many batches per year), each campaign (and what defines a campaign), once per month, once per year)?

How is the cleaning solution Please describe engineering controls (if applicable) to minimize fugitive dust or mist containing PV29 from:

- a. Process operations.
- b. Unloading, transfer, and loading operations.

Sun Chemical provided a general summary of this information for all operations at their site: *“Dust handling systems are in place where the dried powder is added or discharged from equipment and the dust is captured in baghouses. The resulting dust and bags are handled as contaminated industrial waste and sent to a licensed industrial waste handler for disposal.”*

6. How is collected fugitive dust disposed?

Sun Chemical provided a general summary of this information for all operations at their site (see above).

7. Are there ventilation systems associated with indoor areas? If so, are there associated air pollution control devices (please describe)?

Sun Chemical provided a general summary of this information for all operations at their site (see above).

8. How are floor sweepings from process areas disposed?

9. Is any process wastewater generated? If so, please describe.

Sun Chemical provided this information for all operations at their site: *“Wastewaters associated with the manufacturing site are handled in a hard piped, state-of-the-art, above ground biological wastewater treatment system. The resulting process wastewater is discharged to the Cooper River under a NPDES permit. The biological sludge is sent to a licensed industrial waste handler.”*

10. How is process wastewater disposed?

Sun Chemical provided a general summary of this information for all operations at their site (see above).

11. Describe releases from processing/use not covered above:

- a. sources of release
- b. estimated amount
- c. frequency of release

- d. disposal media (surface water, landfill etc.)
12. Are there any PV29 monitoring data in landfills, sediment, surface water, effluent, biosolids, leachate, soil, and/or air available for review?
13. Are there any known concentrations of PV29 in consumer products (e.g., watercolors, artistic color, rubber and plastic)? List specific rubber and plastic products containing PV29.

QUESTIONS RELATED TO IMPORT OF PV29

(These questions are primarily directed at the importer for volumes below the CDR reporting threshold.)

14. Please provide the volume of PV29 imported on a yearly basis.
[The quantity of PV 29 imported to the US by BASF Corporation, including BASF C&E, is <25,000 lbs/yr.]
15. Please indicate the concentration of PV29 in the imported material.
[The concentration of the imported industrial pigment product is 80% to 90% PV29. The concentration of the imported tint paste is <25% PV29. The concentration of paint/coating is <3% PV29. The primary function of this pigment is to tint the color of a paint and would generally be formulated at levels <1% but can be as high as 3%.]
16. Please indicate the physical state of the imported material.
[The industrial pigment is imported as a powder. The tint paste/paint/coating products are imported as a liquid.]
17. Please indicate the type of import container(s) PV29 is received in.
[Typical packaging for the industrial pigment product is two 15 kg multi-layered paper bags packaged in a plastic bag lined carboard box. Typical packaging for paint/coating products include steel IBC totes (ranging 200 to 528 gallons), steel drums (45 to 55 gallons), as well as, 1- and 5-gallon containers (metal and plastic).]
18. Please describe how import containers are emptied and cleaned.
[Coatings containing PV29 are used on OEM Automotive Customer Paint Lines. For coatings supplied in totes, once a tote is empty according to the Resource Conservation and Recovery Act (RCRA), the RCRA-empty totes are sent to a tote cleaning facility in the US to be cleaned and the tote is reused. The wash solution is handled according to RCRA regulations as well.]
19. Please indicate how empty import containers are disposed.
[Imported paint/coatings products containing PV29 are used on OEM Automotive Customer Paint Lines in the US. BASF Corporaton does not Manufacture or process PV29 in the US]

20. Please describe the expected use(s) and quantity for each use at the import and/or customer site (e.g., direct sale without repackaging, repackaging for direct resale, formulated on site into another product/mixture for sale, consumed as a reactant for manufacture of another pigment).

[Imported paint/coatings product are directly sold without repackaging in the US for use on OEM Automotive Customer Paint Lines and some imported paint/coatings products are stored in warehouses in the US and then exported. Imported tint pastes are stored in warehouses in the US and then exported]

QUESTIONS RELATED TO DOMESTIC MANUFACTURING (AND IMPORT) OF PV29

[BASF Corporation, including Colors & Effects, does not manufacture or process Pigment Violet 29 (PV29) in the US.]

(These questions are directed at any manufacturing or importing company(ies); recognizing Sun Chemical has provided some of this information for their site in the CPMA letter, therefore Sun has already provided answers to some questions as noted below.)

21. Please indicate the volume used on site and characterize the on-site use or uses, identifying the volume for each on-site use (e.g., direct sale after manufacture without repackaging, formulated on site into another product/mixture for sale, consumed as a site-limited intermediate for manufacture of another pigment).

22. Please indicate the final concentration of PV29 in any product generated from on-site use that is sent off site.

23. Please indicate the volume sent off site for domestic use vs. the volume exported.

24. Please describe unloading, transfer, and loading operations, as applicable:

- a. from import containers, for on-site use(s) or for repackaging and sale/transfer off site;
- b. from manufacturing equipment (e.g. reactors) to temporary storage containers;
- c. from manufacturing equipment or temporary storage containers to containers that will be shipped off site; and,
- d. associated with repackaging operations.

25. Please indicate the number of workers associated with manufacturing processes.

26. Please indicate the number of workers associated with unloading, transfer, and loading operations as described above.

Information received from Sun Chemical in response to EPA's request for additional data characterizing the manufacturing processes and downstream processes for C.I. Pigment Violet 29

From: Seibert, Earl [REDACTED]
Sent: Wednesday, September 2, 2020 4:52 PM
To: Blaufuss, Hannah <Blaufuss.Hannah@epa.gov>
Cc: Lloyd, Tyler <Lloyd.Tyler@epa.gov>; Menasche, Claudia <Menasche.Claudia@epa.gov>; Kendrick, Robert [REDACTED]; David Wawer [REDACTED]; Seibert, Earl
Subject: FW: PV29 Processors

Dear Ms Blaufuss,

Please find attached, the following information relating to the Pigment Violet 29 (PV29) risk assessment in response to questions raised by EPA during our teleconference held yesterday September 1st, 2020.

Regarding the characteristics of containers leaving the facility, there are two primary packaging configurations employed at the facility. The predominant packaging configuration includes the use of a 20kg Kraft paper bag, which is placed into a corrugated cardboard box. A total of ten (10) boxes are then placed on a single pallet and shrink-wrapped in preparation for shipment. The less frequent packaging configuration involves the use of a single 300kg bulk bag (supersac) which is placed into a large corrugated box with lid (gaylord) and placed on a pallet. This gaylord typically does not require the use of shrink wrap.

With regards to the estimated 90% of PV29 used as an intermediate chemical at the Bushy Park facility, all "intermediate use" would take place on site. That said, the production of PV29 is the starting point for the synthesis of all other perylene pigments at the facility. Other perylenes produced at the facility may contain an estimated 0-5% residual PV29 in the finished pigment. The remaining 10% of the finished Pigment Violet 29, which is not further processed or used as an intermediate, is sold into the Plastics and Coatings (P&C) industries.

In response to your question relating to downstream customer use and exposure involving PV29, we have the following comments for your consideration. Although we may have a general sense of customer use and exposure relating to PV29 and the P&C industries, we currently do not have a detailed understanding that we would be comfortable sharing with EPA. Additional time would be needed for Sun Chemical's Sales and Marketing team to identify customer contacts in the P&C Industries who may be able to provide more detailed information. Due to the complexity of what is being asked by EPA, Sun Chemical's management team would need to have further internal discussions before making any decisions regarding the aforementioned. It is highly likely that customers in the P&C industry are not fully aware of the intricate details of the PV 29 risk evaluation. In addition, there is concern over uncertainty as to the sensitive nature of the request and where this information request may end up. The technical details (PPE used, paint manufacturing processes), if answered without prepping from Sun (and CPMA), could raise major concerns with our customer base. The P&C folks are already nervous about PCB's in their products (Washington State Safer Products Report), as well as the lead paint legacy. It is our preference that Sun Chemical work directly with any paints/coatings customer to obtain the information desired by EPA.

Earl Seibert
Regulatory Affairs Manager
Sun Chemical Performance Pigments



working for you.

From: Blaufuss, Hannah <Blaufuss.Hannah@epa.gov>
Sent: Thursday, August 27, 2020 2:02 PM
To: Seibert, Earl [REDACTED]
Cc: Lloyd, Tyler <Lloyd.Tyler@epa.gov>; Menasche, Claudia <Menasche.Claudia@epa.gov>; Kendrick, Robert [REDACTED] David Wawer [REDACTED]
Subject: [External]RE: PV29 Processors

Hello Earl,

We are looking to talk directly to Sun Chemical's customers on how they process the PV29 product. Are you available to talk this afternoon or tomorrow morning?

Thank you,

Hannah Blaufuss

Environmental Protection Specialist
U.S. EPA Office of Pollution Prevention and Toxics
Chemical Control Division
Phone: (202) 564-5614

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From: Seibert, Earl [REDACTED]
Sent: Tuesday, August 25, 2020 7:03 PM
To: Blaufuss, Hannah <Blaufuss.Hannah@epa.gov>
Cc: Lloyd, Tyler <Lloyd.Tyler@epa.gov>; Menasche, Claudia <Menasche.Claudia@epa.gov>; Kendrick, Robert [REDACTED] David Wawer [REDACTED] Seibert, Earl [REDACTED]
Subject: RE: PV29 Processors

Hello Hannah,

Thank you for thinking of Sun Chemical as a potential resource for questions related to paints & coatings manufacturing. I'm not certain we can assist directly because we are talking about technical processes for a totally different industry. Could we schedule a brief WebEx discussion with you and your colleagues in the next several days to help clarify what you're seeking to achieve? I've copied Dave Wawer at CPMA because he may also be able to shed some light on the topics raised in your email.

I look forward to hearing from you soon.

Thank you,

Earl Seibert
Regulatory Affairs Manager
Sun Chemical Performance Pigments

[REDACTED]

working for you.

From: Blaufuss, Hannah <Blaufuss.Hannah@epa.gov>

Sent: Monday, August 24, 2020 12:59 PM

To: Seibert, Earl [REDACTED]

Cc: Lloyd, Tyler [REDACTED]; Menasche, Claudia [REDACTED]

Subject: [External]PV29 Processors

Hello Mr. Seibert,

We are getting closer to completing the risk evaluation and we are checking our assumptions. Could you put us in contact with your paint and plastic/rubber customers for PV29? We would like to check with them on some assumptions as we evaluate conditions of use downstream from manufacturing. The nature of our questions are regarding their processing activities, PPE used and the physical state of PV29 that they handle. Please let us know if this would be something that you could help us with.

Also I will be out of the office from September 7-11, so if you have any questions for the Agency during that time please contact my colleagues Tyler Lloyd and Claudia Menasche (cc'd above).

Thank you,

Hannah Blaufuss

Environmental Protection Specialist

U.S. EPA Office of Pollution Prevention and Toxics

Chemical Control Division

Phone: (202) 564 5614

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From: [REDACTED]
To: [Parsons, Doug](#); [Wolf, Joel](#)
Cc: [Blaufuss, Hannah](#); [Menasche, Claudia](#); [Kramek, Niva](#); [REDACTED]
Subject: RE: PV29 Processors
Date: Wednesday, September 16, 2020 4:10:58 PM
Attachments: [PV29 Questions for Users and Processors -\(Plastics Aggregate data\).pdf](#)

Dear Mr. Parsons,

As agreed in our Sept 3, 2020 meeting with EPA , please find attached the risk evaluation questionnaire provided by EPA, which includes aggregate information for Pigment Violet 29 (PV29) as it relates to downstream customer use and exposure for the Plastics industry.

We still working to aggregate the industry response for Coatings and will submit the information as soon as possible.

Please let me know if you have any questions.

Earl Seibert
Regulatory Affairs Manager
Sun Chemical Performance Pigments

[REDACTED]

-
working for you.

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Questions on Downstream Uses of C.I. Pigment Violet 29 (PV29)

Purpose: As the agency continues working on the final risk evaluation for PV29, we are interested in information from people that process PV29 for plastics and paint manufacturing to better understand exposures. During conference calls over the last week, Sun Chemical Corporation confirmed their intent to seek downstream processing information on PV29. Sun Chemical Corporation requested the types of information that could inform the risk evaluation and requested EPA provide some written questions. The questions are below. Compiling and submitting this data is entirely voluntary. The specific questions are:

1. When the processor receives PV29, what physical state and what concentration?
 - a. **100% Dry pigment**
2. What type of processing is done to PV29 as it is incorporated into plastics and paints after the companies received PV29 from Sun Chemical Corporation? Or What type of processing is done after receiving PV29 from Sun Chemical Corporation in order to incorporate the pigment to plastics and paints?
 - a. **Pigments including PV29 are weighed and dry blended with polymers and other additives. This preparation is then extruded into pellets to make single pigment dispersions and custom colors primarily for Fiber.**
3. How is PV29 handled by those incorporating the pigment into plastics and paints? Is it a manual operation requiring an intervention of a worker, or a more automatic operation?
 - a. **Typically, PV29 bags are manually opened and added to a vessel for weighing. This blend is then extruded via a continuous and closed process involving encapsulation into pellets. Dust collection and PPE are required in the weigh up area where a potential for exposure to dust exists. Typical PPE includes Tyvek coverings, goggles, and dust masks.**
4. Description of how exposures from PV29 are managed during processing/use, including how bags are opened, how they are emptied, how any dust is controlled, what PPE, ventilation, or engineering controls are common during processing activities at your site.
 - a. **Controls are in place to manage dust via a dust collection system and including PPE. Dust collection systems and PPE are required in the weigh up area where a potential for exposure to dust exists. Pigment bags are manually opened in the presence of a dust collection system and PPE is required according to the SDS at minimum.**
5. Are there any personal or area air monitoring data available that could be shared with EPA to better estimate exposures to workers of the downstream processors and users?
 - a. **Not currently**
6. How long does it take to incorporate PV29 into the plastics and paints? Are workers exposed to PV29 during the entire processes?

- a. Workers are only exposed during the short weigh up and transfer process of a couple minutes. Extruder time depends on batch size and equipment size, but can take up to 30 minutes for the entire process.**
7. Are inhalation exposures only possible at certain times, for example at the beginning of the batching processing, or are there inhalation exposures to PV 29 in multiple phases of the processing, or are workers continuously exposed to PV29?
 - a. Potential for a small amount of inhalation exposure exists mainly during the weigh up, transfer and/or blending processes. The mixer and extrusion process are closed systems and have fume collection.**
8. What is the expected exposure time of workers to PV29, for example, is it one day a month, several days a month, or only a few hours a month?
 - a. A few minutes/ per month up to one day/ per month**
9. How much PV29 do you use/handle per day and how many days of the year?
 - a. A few tons may be used in one day, but only 6 to 12 days/ per year typically. Small amounts of PV29 are used compared to other pigments and only in select formulas.**
10. Do processors test PV29 product they receive for particle size? Is this information provided in the product description by Sun Chemical?
 - a. Pressure testing (FPV) is typically done on the concentrate after encapsulation. Particle size data is typically not included in the testing as no dry analyses is conducted.**
11. Is PV29 milled additionally after receiving it from Sun Chemical?
 - a. No. PV29 is weighed blended and extruded.**
12. What end products incorporate PV29? Describe the products containing PV29 leaving your facility (physical state, concentration of PV29)?
Are any of these potentially marketed to children?
 - a. All PV29 used in nylon fiber at low pigment content (< 0.5%) predominantly in carpet fiber/ commercial flooring applications**
 - b. Children are not targeted as the primary application is nylon fiber**
13. Can you estimate the number of processors for each of those end products?
 - a. A total of 3-10 processors**

Blaufuss, Hannah

From: Seibert, Earl <[REDACTED]>
Sent: Tuesday, October 27, 2020 3:32 PM
To: Blaufuss, Hannah
Cc: Menasche, Claudia; Kramek, Niva; David Wawer; Parsons, Doug; Kendrick, Robert; Wolf, Joel; Seibert, Earl
Subject: RE: PV29 Processors, Plastics & Coatings Industries (follow up response)
Attachments: PV29 Plastics Industry Follow up response 10-27-2020.pdf; PV29 Coatings Industry Follow-up response 10-27-2020.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Dear Ms. Blaufuss,

Please find attached , a follow up summary of the feedback received from both the Plastics and Coatings industries in response to questions posed by EPA on October 5,2020.

Please me know if you have any additional questions.

Earl Seibert
Regulatory Affairs Manager

Sun Chemical Performance Pigments



working for you.

From: Blaufuss, Hannah <Blaufuss.Hannah@epa.gov>
Sent: Monday, October 5, 2020 7:47 AM
To: Seibert, [REDACTED]
Cc: Menasche, Claudia <Menasche.Claudia@epa.gov>; Kramek, Niva <kramek.niva@epa.gov>; David Wawer <[REDACTED]>; Parsons, Doug <Parsons.Douglas@epa.gov>; Kendrick, Robert <[REDACTED]>; Wolf, Joel <Wolf.Joel@epa.gov>
Subject: [External]RE: PV29 Processors

Hello Mr. Seibert,

Thank you for submitting the responses from the coatings industry. The Agency had a couple follow-up questions regarding the specific coating responses and some pertaining to the plastics sector as well.

- It was not clear if these responses were your general understanding about the coatings industry or if these responses were directly from one of your downstream clients in the coatings industry. Could you confirm where the responses came from?
- If there is any more robust information for how answers are known would be helpful, specifically questions 1, 6, 8 and 9.

- If there is any more information on the details in question 4 like type of respirator and engineer controls, that would also be helpful.
- Question 4: (for both coating and plastics) Provide an estimate for the number of workers
- For coatings: Provide the number of workers handling bags and workers involved in mixing and milling operation per site.
- For plastics: Provide an estimated number of workers handling bags containing PV29 and handling pellets containing PV29 per site.
- Question 12: (for coatings only) Please estimate the PV29 concentration in the base coat used in the automotive industry if possible.
- Question 13: (for both coating and plastics) Please clarify if the response to this question refers to Sun Chemical's direct customers (processors) or the commercial/industrial end users.
- For coatings: Provide the number of direct customers (processors – coating manufacturers) and the associated number of potential end users (automotive customers).
- For plastics: Provide the number of direct customers (processors –compounders producing pellets) and associated number of carpet fiber / commercial flooring manufacturers.

Thank you,

Hannah Blaufuss

Environmental Protection Specialist

U.S. EPA Office of Pollution Prevention and Toxics

Chemical Control Division

Phone: (202) 564-5614

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Coatings Industry Follow up response 10-27-2020

Please find attached , a follow up summary of the feedback received from the Coatings industry in response to questions posed by EPA on October 5,2020.

Question 1: Can you explain why the concentration of pigment is only 80%? Is the pigment being sent to an offsite processor to be “mixed” with another material/liquid? Could it be a typo? [The pigment powder, as received from the supplier, is a mixture of about 80% PV29 and 20% barium sulfate.](#)

Question 4: Is there any more information that can be provided on dust mask type or engineering controls? [PPE and engineering controls are consistent with industry standards for exposure and control of workplace dust.](#)

Question 4: Provide the number of workers handling PV29 bags versus workers involved in mixing and milling operation per site. [One worker handles bags, one worker is assigned to mix and, one person is assigned to mill.](#)

Question 8: Can any more detailed information be provided regarding the expected exposure time to the worker. In other words, how much time per day / per worker on average is there exposure to PV29 dust? Is the exposure time distributed somewhat evenly over the course of the month? Year? [One worker for 30 minutes, 30 days per year](#)

Question 9: Similar to Question 8 clarification, is there any more detail on how much PV29 do you use/handle per day and how many days of the year? [220-280 pounds per day, 30 days a year](#)

Question 12: Are you able to provide a concentration range for the PV29 in the base coatings used in the automotive industry which leave the facility. [Less than 0.01% to 6%](#)

Question 13: Are you able to provide the number of potential end users (automotive customers). [No](#)

Plastics Industry Follow up response 10-27-2020

Please find attached , a follow up summary of the feedback received from the Plastics industry in response to questions posed by EPA on October 5,2020.

Question 4 (Plastics): Is there any more information that can be provided on dust mask type or engineering controls. Customers reported to have dust collection at the point of bag opening & weigh up consistent with industry standards. Employees handling the product use PPE as specified in the SDS. In general, all customers have stated that their PPE and Engineering controls are consistent with industry standards for exposure and control of workplace dust.

(Plastics only): Provide an estimated number of workers handling PV29 bags versus those handling pellets containing PV29 per site. Please define what is meant by “pellet”.

This varied slightly, but would be similar from one location to the next. One or two employees weigh up the dry blend while one or two employees manage an extruder or several extruders used to make pellets . Pellets consist of an extruded concentrate of pigment, additives, and resin, which are inherently non-dusting.

Question 6 (Plastics): What percentage of the dry pigment used in the plastics industry is supplied in PE bags where there is no real exposure to PV29 dust.

The majority of PV 29 is supplied in non-inclusion paper bags.

Question 8 (Plastics): Can any more detailed information be provided regarding the expected exposure time to the worker. In other words, how much time per day / per worker on average is there exposure to PV29 dust? Is the exposure time distributed somewhat evenly over the course of the month? Year? All customers reported a few to several minutes of exposure time on the days they were making PV 29 blends. This would only include one worker or two, at the most. Use is not evenly distributed over the year but demand driven. The time and exposure to PV29 is minimal as compared to other pigment types.

Question 9 (Plastics): : Similar to Question 8 clarification, is there any more detail on how much PV29 do you use/handle per day and how many days of the year? The estimated worst case range of usage spread across the total customer base is estimated to be between 10-780 lbs/day typically not exceeding 6-12 days per year.

Question 13: (Plastics only): Are you able to provide the associated number of carpet fiber / commercial flooring manufacturers. Based on customers surveyed, a total range of 3-10 processors are involved per individual customer. Each customer predominantly supplies into the carpet fiber/ commercial flooring markets.

From: [REDACTED]
Cc: [Parsons, Doug](#); [Wolf, Joel](#)
[Blaufuss, Hannah](#); [Menasche, Claudia](#); [Kramek, Niva](#); [REDACTED]
Subject: RE: PV29 Processors
Date: Friday, September 25, 2020 6:50:26 AM
Attachments: [PV29 Questions for Users and Processors-\(Coatings Aggregate data\).pdf](#)

Dear Mr. Parsons,

As agreed in our Sept 3, 2020 meeting with EPA , please find attached the risk evaluation questionnaire provided by EPA, which includes aggregate information for Pigment Violet 29 (PV29) as it relates to downstream customer use and exposure for the Coatings industry.

This should conclude the data collection process for both the Plastics and Coatings industries.

Please let me know if you have any questions.

Earl Seibert
Regulatory Affairs Manager
Sun Chemical Performance Pigments



-
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Questions on Downstream Uses of C.I. Pigment Violet 29 (PV29)

Coatings Industry Responses (in bold text)

9-21-2020

Purpose: As the agency continues working on the final risk evaluation for PV29, we are interested in information from people that process PV29 for plastics and paint manufacturing to better understand exposures. During conference calls over the last week, Sun Chemical Corporation confirmed their intent to seek downstream processing information on PV29. Sun Chemical Corporation requested the types of information that could inform the risk evaluation and requested EPA provide some written questions. The questions are below. Compiling and submitting this data is entirely voluntary. The specific questions are:

1. When the processor receives PV29, what physical state and what concentration? **Dry pigment powder with concentration of approximately 80%.**
2. What type of processing is done to PV29 as it is incorporated into plastics and paints after the companies received PV29 from Sun Chemical Corporation? Or What type of processing is done after receiving PV29 from Sun Chemical Corporation in order to incorporate the pigment to plastics and paints? **Mixing and milling into tint paste.**
3. How is PV29 handled by those incorporating the pigment into plastics and paints? **Manual additions of product bags.** Is it a manual operation requiring an intervention of a worker, or a more automatic operation? **Yes.**
4. Description of how exposures from PV29 are managed during processing/use, including how bags are opened, how they are emptied, how any dust is controlled, what PPE, ventilation, or engineering controls are common during processing activities at your site. **The bags are opened and lifted manually and material is dumped into the mixer. Local exhaust ventilation is used. There are mechanical exhaust fans with low level vents, a dust collection unit, and a supply air unit. PPE worn during batch additions are typically protective clothing, respirator, and chemical resistant gloves.**
5. Are there any personal or area air monitoring data available that could be shared with EPA to better estimate exposures to workers of the downstream processors and users? **Not at this time, although total particulate results historically have been less than the action level for facilities with the greatest use of powder-like materials.**
6. How long does it take to incorporate PV29 into the plastics and paints? **Less than 30 minutes.** Are workers exposed to PV29 during the entire processes? **Exposure is limited to the 30 minute task.**

7. Are inhalation exposures only possible at certain times, for example at the beginning of the batching processing, or are there inhalation exposures to PV 29 in multiple phases of the processing, or are workers continuously exposed to PV29? **Only the beginning of the process, opening of bags, addition, and bag disposal.**

8. What is the expected exposure time of workers to PV29, for example, is it one day a month, several days a month, or only a few hours a month? **A few hours a month**

9. How much PV29 do you use/handle per day and how many days of the year? **On average, an average of about 7-8 [44 pound] bags are added per batch. Less than 200 [44 pound] bags are processed per year.**

10. Do processors test PV29 product they receive for particle size? **No.** Is this information provided in the product description by Sun Chemical? **No**

11. Is PV29 milled additionally after receiving it from Sun Chemical? **Yes, into tint paste**

12. What end products incorporate PV29? Describe the products containing PV29 leaving your facility? (physical state, concentration of PV29) **PV29 containing intermediates are added to a wide variety of liquid colored basecoats for the automotive industry.**

a. Are any of these potentially marketed to children? **No**

13. Can you estimate the number of processors for each of those end products? **1 processor**

Part III. SDSs for C.I. Pigment Violet 29

SDS for C.I. Pigment Violet 29- BASF (importer) (BASF SDS 4081884)

General Properties

Chemical Structure	Perylene Red
Colour Index Part I	P.V. 29
Colour Index Part II	71129
CAS Number	81-33-4
Physical Form	Powder
Colour Shade	Red Violet

Preparations

Luprofil™ Violet 50-1105 C 4
Palamid™ Violet 50-1105

(Other) preparations can be made on special request.

Colouristical Properties Org.

Hue Grade in PVC 1/3 SD	334
Chroma in PVC 1/3 SD	35
Red. Ratio in PVC 1/3 SD	17.1

Hue Grade in PVC 1/9 SD	330
Chroma in PVC 1/9 SD	29
Red. Ratio in PVC 1/9 SD	45.7

Hue Grade in PE-LD 1/3 SD	327
Chroma in PE-LD 1/3 SD	25.6
Red. Ratio PE-LD 1/3 SD	6.2

Hue Grade in PE-LD 1/9 SD	325
Chroma in PE-LD 1/9 SD	22.9
Red. Ratio in PE-LD 1/9 SD	18.6

Ease of Dispersion	20
--------------------	----

Physical Properties

Density	1.6	g/cm ³
Bulk Density	0.23	g/cm ³
Index of pH	4-5	
Conductivity	215	μS/cm
Specific Surface	78	m ² /g

Fastness properties

Heat stability	300	°C
Light fastness	8	
Weather fastness		
Migration fastness	5	
Infl. on warping of PE-HD	Distinct	

Fastness to chemicals:

HCl conc.	>6	Months
HCl 10%	>6	Months
H2SO4 conc.	>6	Months
H2SO4 10%	>6	Months
HNO3 conc.	Instable	
HNO3 10%	>6	Months
NaOH conc.	>6	Months
Na2CO3 sat.	>6	Months

Criteria for the fastness to chemicals was a possible colour change of the coloured plastic material during the storage in the test medium.

Recommendations for applications

PVC-p	Suitable
PVC-u	Suitable
PUR	Suitable
LD-PE	Suitable
HD-PE	Suitable
PP	Suitable
PS	Suitable
SB	Suitable
SAN	Suitable
ABS/ASA	UCC
PMMA	Suitable
PC	UCC
PA	UCC
PETP	UCC
CA/CAB	Suitable
UP	Suitable

UCC: Under certain conditions

Recommendations for food applications

BgVV	Suitable
FDA	UnderApp.
France	Not suitable

UCC: Under certain conditions

Product Specification - PALIOGEN® REDVIOLET K 5011**PROPERTIES**

Pigment type:	Perylene red
Colour Index:	Pigment Violet 29
Application:	Colourant for plastics
Physical form:	Powder
Storage:	practically unlimited shelf life
Food packaging:	approved according to "Empfehlung IX des BgVV".

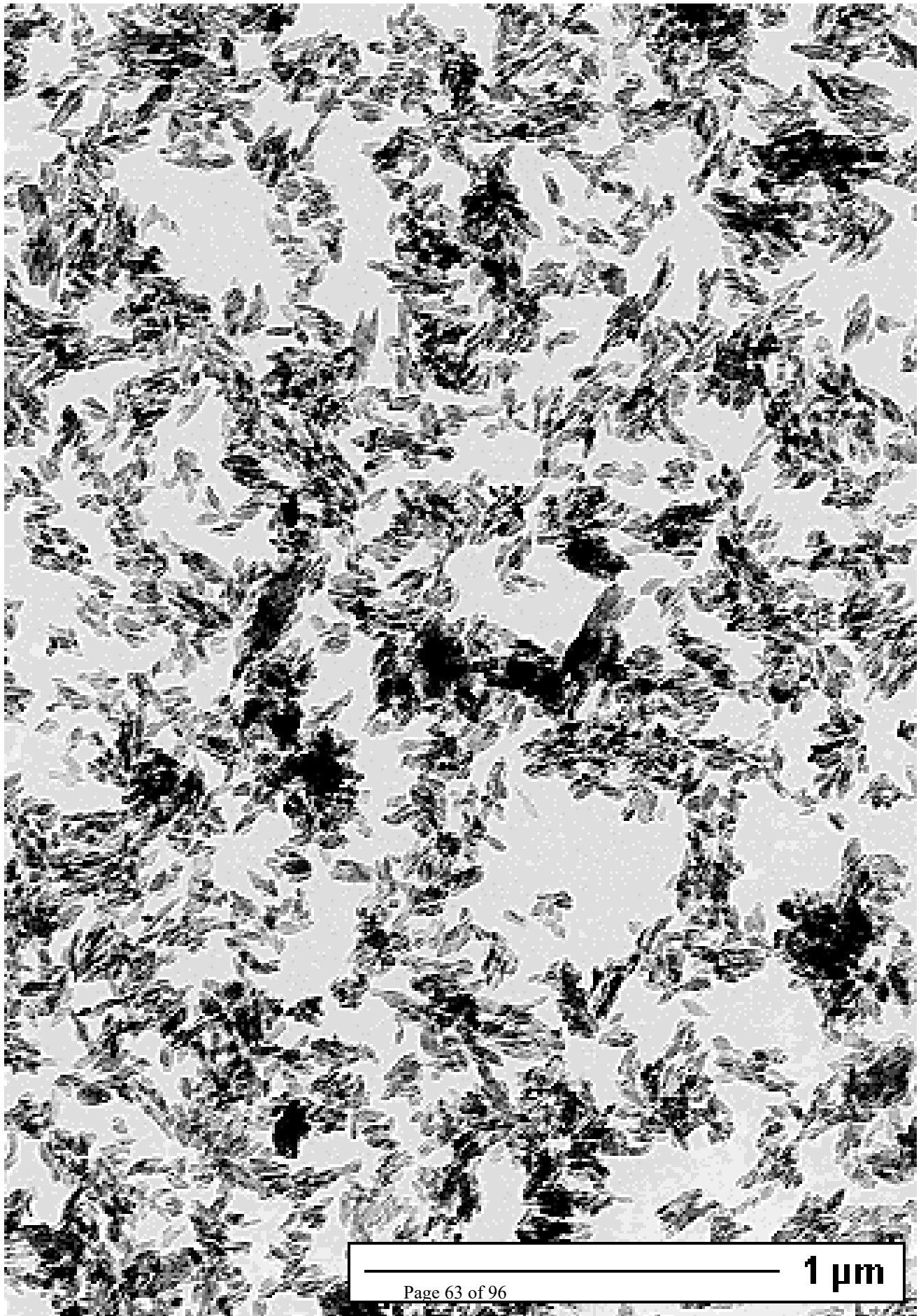
SPECIFICATION

Colour tolerances:	$dH^* \pm 0.7$; $dC^* \pm 0.7$; $dL^* \pm 0.7$; $dE^* \leq 1.0$; $da^* \pm 0.7$; $db^* \pm 0.7$
Strength equivalence:	$100 \pm 5 \%$
Test method:	BASF test method 11.3.1

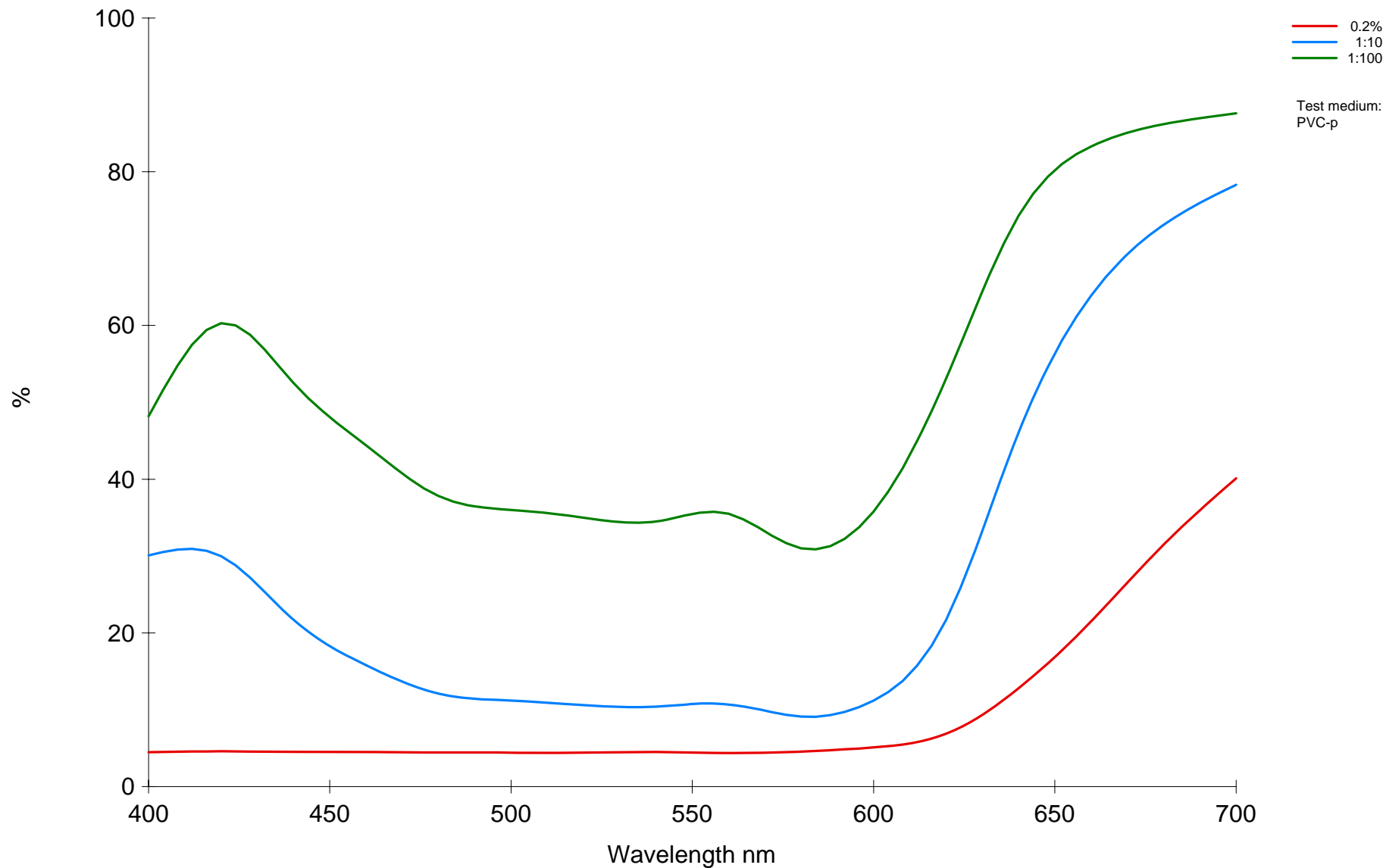
Please note:

The above data will be warranted by us. These data, however, as well as the properties of any product samples do not imply any legally binding assurance of certain properties or of suitability for a specific purpose so that any liability for damages cannot be derived therefrom.

Microscopy - PALIOGEN® REDVIOLET K 5011

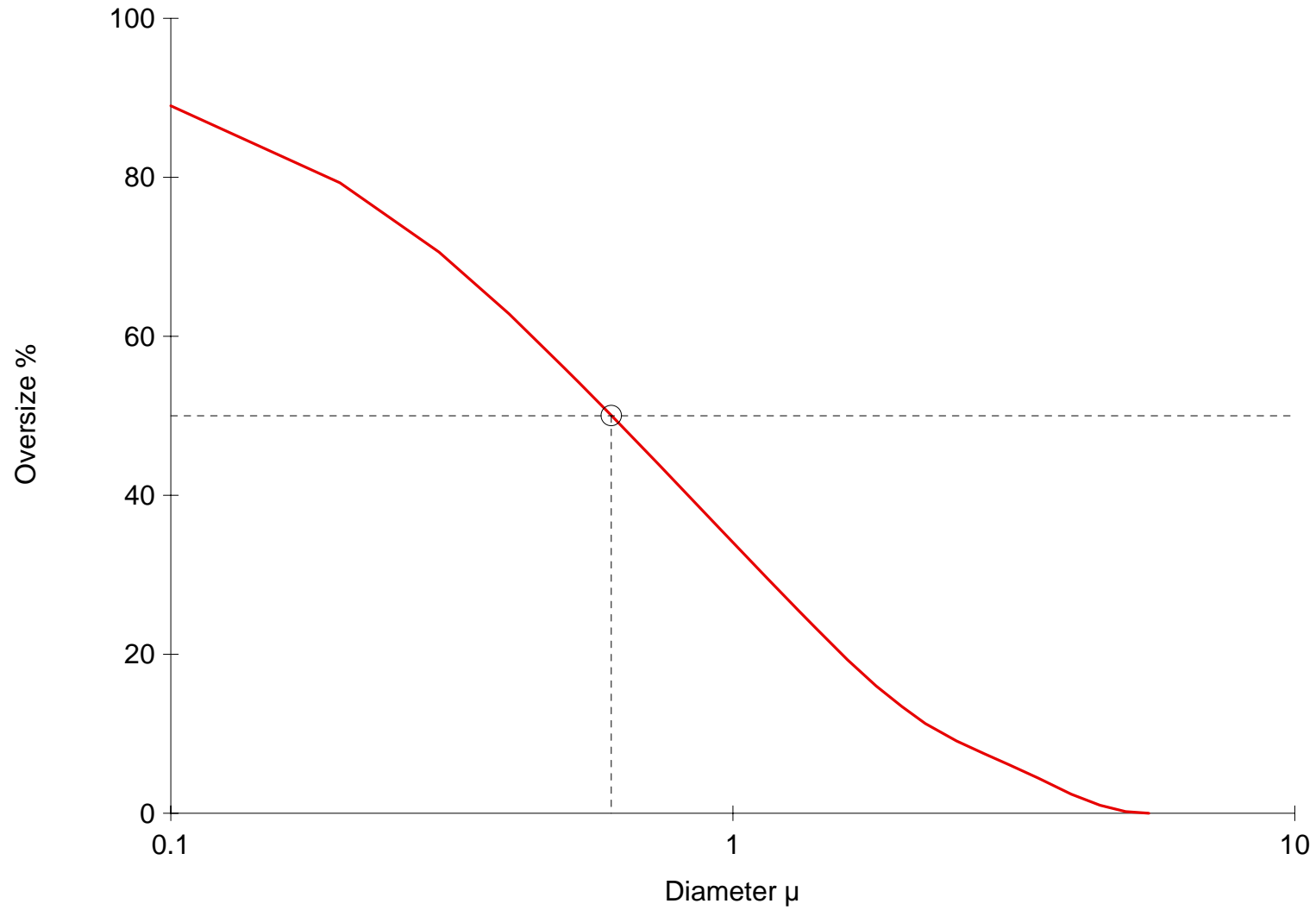


Reflection Curve PALIOGEN® REDVIOLET K 5011



Note: The program stores curve points (see table). The diagram shows approximations.

Particle Size Distribution
PALIOGEN® REDVIOLET K 5011

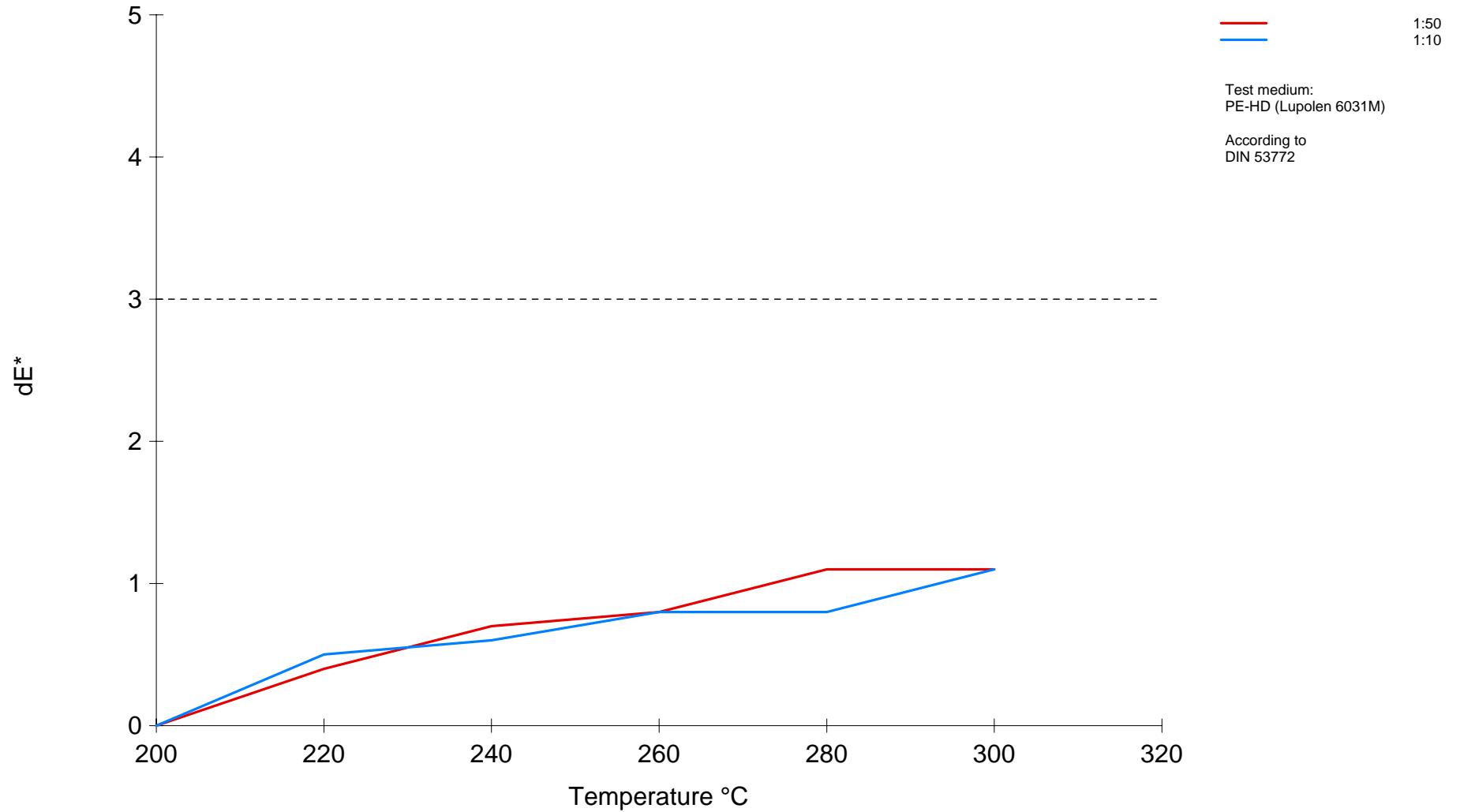


Susp. Fluid: H2O
Disp. Agent: Tetronic
Mixer Time: 60 s
Median Size: 0.608 μ

CILAS

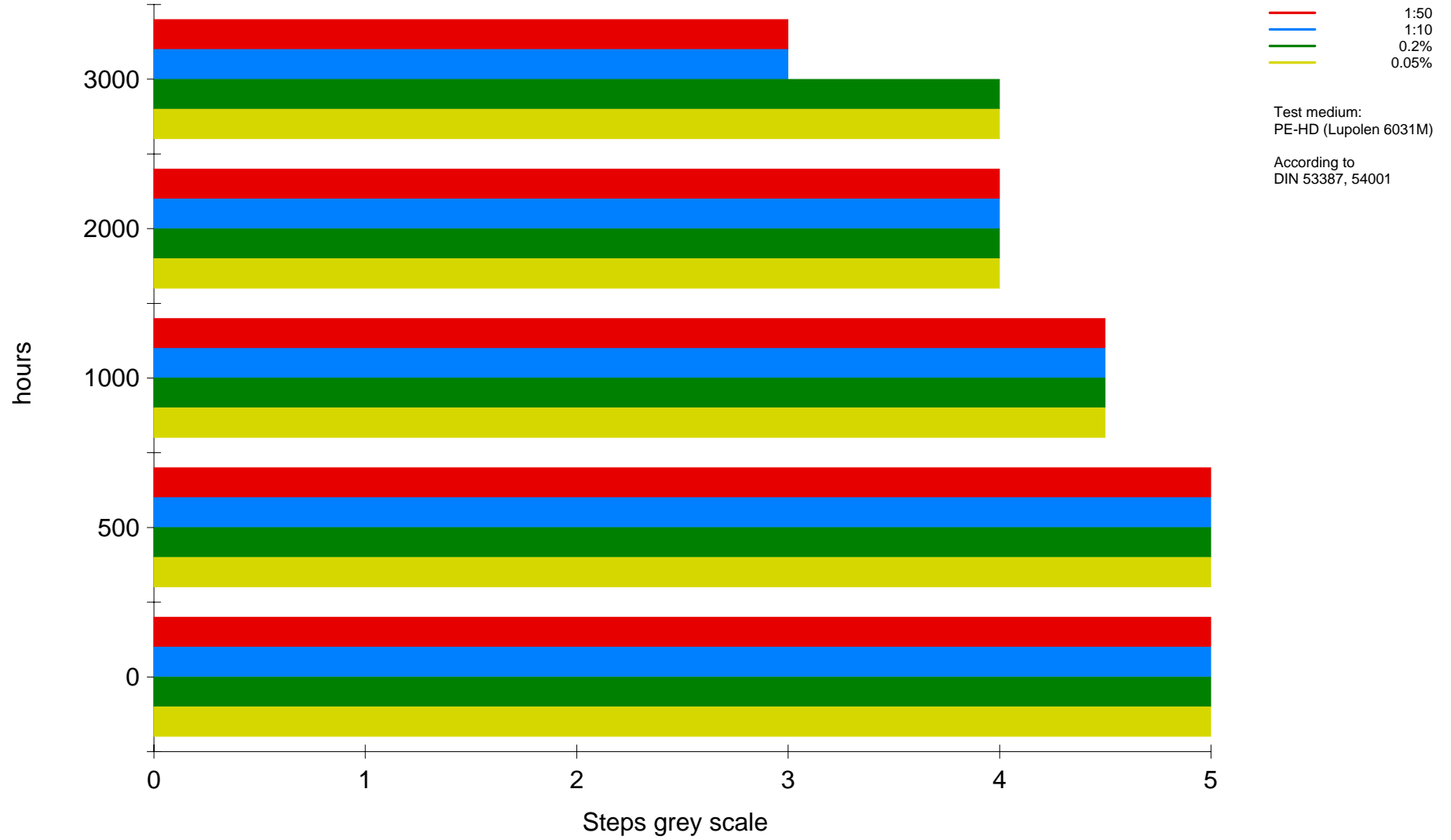
Note: The program stores curve points (see table). The diagram shows approximations.

Heat Stability PALIOGEN® REDVIOLET K 5011



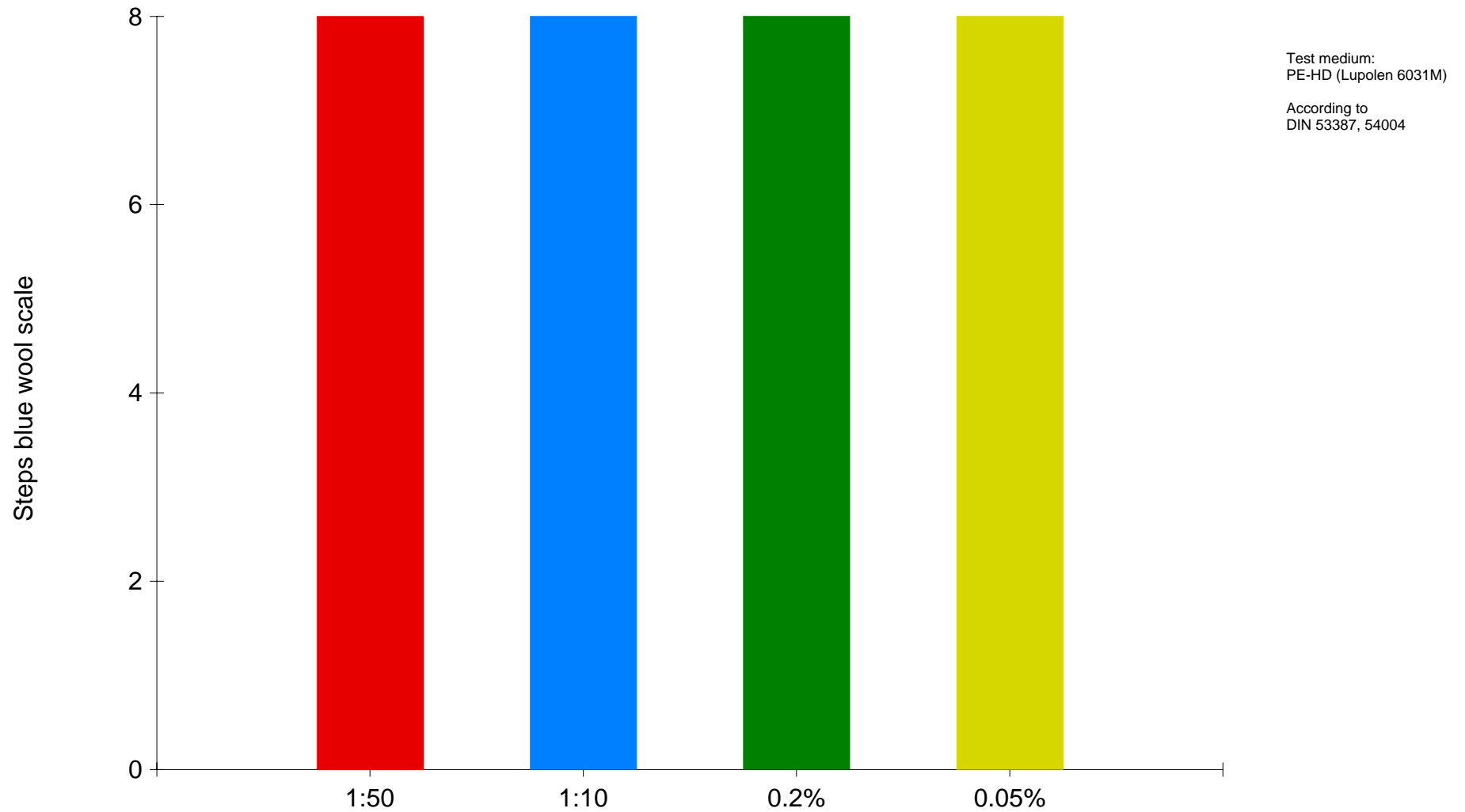
Note: The program stores curve points (see table). The diagram shows approximations.

Weather fastness
PALIOGEN® REDVIOLET K 5011



All data is subject to the producer's disclaimer
LUCOLOR 2.0 - BASF Colourants for Plastics (Oct.1998) - Printed: 8/24/99

Light fastness
PALIOGEN® REDVIOLET K 5011





Product Safety Datasheet **BASF**

Name of product	PALIOGEN® Red K 3580								
C.I. No. / Name CAS No. / EINECS No.	71 137 / C.I. Pigment Red 149, Perylene Red 4948-15-6 / 225-590-9								
Name of product	PALIOGEN® Red K 3911 HD								
C.I. No. / Name CAS No. / EINECS No.	71 155 / C.I. Pigment Red 178, Perylene Red 3049-71-6 / 221-264-5								
Name of product	PALIOGEN® Red K 4180								
C.I. No. / Name CAS No. / EINECS No.	71 130 / C.I. Pigment Red 179, Perylene Red 5521-31-3 / 226-866-1								
Name of product	PALIOGEN® Red Violet K 5011								
C.I. No. / Name CAS No. / EINECS No.	71 129 / C.I. Pigment Violet 29, Perylene Red 81-33-4 / 201-344-6								
Chemical nature	The listed PALIOGEN® types, also known as perylene pigments, are derivatives of perylenetetracarboxylic anhydride. Originally used as vat dyes, it is only since 1950 that they have found application as pigments for colouring plastics and high-grade industrial paints.								
Toxicology	Perylene pigments do not exhibit acute oral toxicity in animal trials, nor do they irritate the skin and mucous membranes. A 28-day (subacute) feeding trial carried out with a perylene pigment did not show any adverse toxicological results.								
Ecology	Because of their poor solubility in water, perylene pigments are nontoxic to aquatic organisms and are not an environmental hazard. An 8-week bioaccumulation study with a perylene pigment on fish showed that the pigment does not accumulate in the organism.								
Labelling	The above listed products are not dangerous substances in the sense of the German Ordinance on Dangerous Substances or of corresponding EU regulations.								
Classification as dangerous goods	The products are not classified as hazardous under transport regulations.								
Heavy metal content	PALIOGEN® pigments do not contain any lead, cadmium, chromium(VI) and mercury compounds in their formulations. The sum of the total contents of these elements, according to tests on standard samples, is less than 100 mg/kg. It is thus below the limit in the EU packaging directives and the American CONEG model. <table><tr><td>Antimony</td><td>< 20 mg/kg</td><td>Chromium</td><td>< 50 mg/kg</td></tr><tr><td>Arsenic</td><td>< 20 mg/kg</td><td>Selenium</td><td>< 20 mg/kg</td></tr></table>	Antimony	< 20 mg/kg	Chromium	< 50 mg/kg	Arsenic	< 20 mg/kg	Selenium	< 20 mg/kg
Antimony	< 20 mg/kg	Chromium	< 50 mg/kg						
Arsenic	< 20 mg/kg	Selenium	< 20 mg/kg						

Lead	< 20 mg/kg	Mercury	< 20 mg/kg
Cadmium	< 30 mg/kg	Zinc	< 20 mg/kg
		Prim. aromatic amines	< 100 mg/kg

The metal levels quoted are based on the detection limit of the analytical determination method used (X-ray fluorescence spectroscopy). The actual levels may lie well below these values.

Halogen content

PALIOGEN® pigments do not contain organically combined halogens.

Food legislation

According to tests on standard samples (Type 8081) the listed **PALIOGEN®** pigments conform to the demands on purity in the following food legislation (see also "Heavy metal content"):

Europe:	Resolution AP (89)
Germany:	BgVV Empfehlung IX., 190. Mitteilung vom 1.6.1994
France:	Brochure No. 1227. Red K 4180 and Redviolet K 5011

are

	not listed in the French Positive List.
Italy:	Decreto Ministeriale dated 21.3.1973
Spain:	Resolución del 4.11.82 de la Subsecretaría de Sanidad
USA:	C.I. Pigment Red 179 ist listed in the FDA-Positive List (21.CFR, § 178.3297). The other PALIOGEN® pigments

are

in approval. Current use only on evidence of "non

migration".

Toys

According to tests on standard samples (Type 8082), the listed **PALIOGEN®** pigments conform to the demands on purity in the European standard on toys, i.e. EN 71, Part 3.

Registration status

The components of the products are listed in the chemical inventories of the following countries: EU (EINECS), USA (TSCA), Canada (DSL), Japan (MITI), Australia (AICS), Korea (ECL), Philippines (PICCS, Final Version 1995), and Switzerland (BAGT No. 612200, Class free).

Other legislation on chemicals

The products do not fall under the provisions of the agreement on chemical weapons and do not contain any substances that are mentioned in the German Ordinance on the Prohibition of Certain Chemicals (ChemVerbotsV). They are produced without using substances that destroy ozone (Montreal Agreement - Ozone Depleting Substances).

TA Luft

Para 3.1.3 - Total dust (Germany)

MAK value

The general threshold value for dust, i.e. 6 mg/m³, must be observed. (Proposal of the MAK commission for the alveolar passing dust fraction, i.e. 1.5 mg/m³, is not yet valid) (Germany)

Water hazard class

WGK 1 (slightly water hazardous according to German legislation - KBwS - group classification organic colours)

Further information can be found in our Material Safety Data Sheets and Technical Information Bulletins. The Product Safety Department in our Organic Pigments Division will gladly reply to your queries and can be reached under the following address:

BASF AG

[Redacted]
[Redacted]

Dr Oberlinner
Mrs Paymal
Mr Schwanse

[Redacted]
[Redacted]
[Redacted]

Fax: [Redacted]

The information submitted in this publication is based on our current knowledge and experience. It is the responsibility of those to whom we supply our products to ensure that any proprietary rights and existing laws and legislation are observed.

SDS for C.I. Pigment Violet 29 Commercial Product – Sun Chemical Corporation

SAFETY DATA SHEET

Section 1. Identification

Product code : 2294050
GHS product identifier : PERRINDO® VIOLET 29
Trade name : PERRINDO® VIOLET 29

Relevant identified uses of the substance or mixture and uses advised against

Identified uses

Colorant; Printing ink related material; Printing ink.

Manufacturer / Distributor : Sun Chemical Corporation
 5020 Spring Grove Avenue
 Cincinnati, OH 45232-1999
 Phone: +1 (513) 681-5950

Emergency telephone number (with hours of operation) : +1 (800) 424-9300 (U.S.) (24 hours)
 +1 (703) 527-3887 (International) (24 hours)

Other information : +1 708 236 3798

Section 2. Hazards identification

OSHA/HCS status : While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.

Classification of the substance or mixture : Not classified.

GHS label elements

Signal word : No signal word.

Hazard statements : No known significant effects or critical hazards.

Precautionary statements

Prevention : Not applicable.

Response : Not applicable.

Storage : Not applicable.

Disposal : Not applicable.

Hazards not otherwise classified : Fine dust clouds may form explosive mixtures with air. Handling and/or processing of this material may generate a dust which can cause mechanical irritation of the eyes, skin, nose and throat.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

CAS number/other identifiers

Ingredient name	CAS number	%
Barium Resinate	68188-14-7	5 - 10

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

Section 3. Composition/information on ingredients

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

- | | |
|---------------------|---|
| Eye contact | : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs. |
| Inhalation | : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. |
| Skin contact | : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. |
| Ingestion | : Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur. |

Most important symptoms/effects, acute and delayed

Potential acute health effects

- | | |
|---------------------|--|
| Eye contact | : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the eyes. |
| Inhalation | : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs. |
| Skin contact | : No known significant effects or critical hazards. |
| Ingestion | : No known significant effects or critical hazards. |

Indication of immediate medical attention and special treatment needed, if necessary

- | | |
|-----------------------------------|---|
| Notes to physician | : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. |
| Specific treatments | : No specific treatment. |
| Protection of first-aiders | : No action shall be taken involving any personal risk or without suitable training. |

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

- | | |
|---------------------------------------|--|
| Suitable extinguishing media | : Use dry chemical, CO ₂ , water spray (fog) or foam. |
| Unsuitable extinguishing media | : Do not use water jet. |

Specific hazards arising from the chemical : No specific fire or explosion hazard.

- | | |
|---|--|
| Hazardous thermal decomposition products | : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
sulfur oxides
metal oxide/oxides |
|---|--|

Section 5. Fire-fighting measures

- Special protective actions for fire-fighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing dust. Put on appropriate personal protective equipment.
- For emergency responders** : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

- Small spill** : Move containers from spill area. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labeled waste container. Avoid creating dusty conditions and prevent wind dispersal. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Avoid breathing dust.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
- Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

None.

- Appropriate engineering controls** : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Section 8. Exposure controls/personal protection

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eyeface protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields. If operating conditions cause high dust concentrations to be produced, use dust goggles.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : In case of inadequate ventilation wear respiratory protection. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Use a properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary.

Section 9. Physical and chemical properties

Appearance

Physical state : Solid. [Powder.]

Color : Violet.

Odor : Odorless.

Odor threshold : Not applicable.

pH : Not tested

Melting point : Not available.

Boiling point : Not available.

Flash point : Not applicable.

VOC % (w/w) : 0

Evaporation rate : Not tested

Flammability (solid, gas) : Not available.

Lower and upper explosive (flammable) limits : Not tested

Vapor pressure : Not available.

Vapor density : Not tested

Relative density : 1.76

Solubility : Insoluble in the following materials: cold water and hot water.

Partition coefficient: n-octanol/water : Not applicable.

Section 9. Physical and chemical properties

Auto-ignition temperature : Not applicable.

Decomposition temperature : Not applicable.

Viscosity : Not tested

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : No specific data.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Conclusion/Summary : No known significant effects or critical hazards.

Irritation/Corrosion

Conclusion/Summary

Skin : No known significant effects or critical hazards.

Eyes : No known significant effects or critical hazards.

Respiratory : No known significant effects or critical hazards.

Sensitization

Conclusion/Summary

Skin : No known significant effects or critical hazards.

Respiratory : No known significant effects or critical hazards.

Mutagenicity

Conclusion/Summary : No known significant effects or critical hazards.

Carcinogenicity

Conclusion/Summary : No known significant effects or critical hazards.

Reproductive toxicity

Conclusion/Summary : No known significant effects or critical hazards.

Teratogenicity

Conclusion/Summary : No known significant effects or critical hazards.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Section 11. Toxicological information

Information on the likely routes of exposure : Not available.

Potential acute health effects

- Eye contact** : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the eyes.
- Inhalation** : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs.
- Skin contact** : No known significant effects or critical hazards.
- Ingestion** : No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

- Eye contact** : Adverse symptoms may include the following:
irritation
redness
- Inhalation** : Adverse symptoms may include the following:
respiratory tract irritation
coughing
- Skin contact** : No specific data.
- Ingestion** : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.

Long term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.

Potential chronic health effects

- General** : Repeated or prolonged inhalation of dust may lead to chronic respiratory irritation.
- Carcinogenicity** : No known significant effects or critical hazards.
- Mutagenicity** : No known significant effects or critical hazards.
- Teratogenicity** : No known significant effects or critical hazards.
- Developmental effects** : No known significant effects or critical hazards.
- Fertility effects** : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	7142.9 mg/kg
Inhalation (dusts and mists)	21.43 mg/l

Section 12. Ecological information

Toxicity

Not available.

Persistence and degradability

Not available.

Bioaccumulative potential

Not available.

Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	Mexico Classification	IMDG	IATA
UN number	Not regulated.	Not regulated.	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-	-	-
Transport hazard class(es)	-	-	-	-	-
Packing group	-	-	-	-	-
Environmental hazards	No.	No.	No.	No.	No.
Additional information	-	-	-	-	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Section 15. Regulatory information

TSCA 8(b) inventory : Listed

U.S. Federal regulations :

SARA 313

	Product name	CAS number	%
Supplier notification	Barium Compounds	68188-14-7	7

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

Toxics in Packaging (CONEG) : In compliance.

Canada inventory : All components are listed or exempted.

International regulations

International lists :

- Australia inventory (AICS):** All components are listed or exempted.
- China inventory (IECSC):** All components are listed or exempted.
- Japan inventory (ENCS):** All components are listed or exempted.
- Korea inventory:** All components are listed or exempted.
- Malaysia Inventory (EHS Register):** Not determined.
- New Zealand Inventory of Chemicals (NZIoC):** All components are listed or exempted.
- Philippines inventory (PICCS):** All components are listed or exempted.
- Taiwan Chemical Substances Inventory (TCSI):** All components are listed or exempted.
- Turkey inventory:** Not determined.
- Europe Inventory:** Please contact your supplier to get the information.

Section 16. Other information

National Fire Protection Association (U.S.A.)



Reprinted with permission from NFPA 704-2001, Identification of the Hazards of Materials for Emergency Response Copyright ©1997, National Fire Protection Association, Quincy, MA 02269. This reprinted material is not the complete and official position of the National Fire Protection Association, on the referenced subject which is represented only by the standard in its entirety.

Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

History

Date of issue/Date of revision : 1/13/2017

Date of previous issue : 12/3/2016

Version : 6

Key to abbreviations

: ATE = Acute Toxicity Estimate
 BCF = Bioconcentration Factor
 GHS = Globally Harmonized System of Classification and Labelling of Chemicals
 IATA = International Air Transport Association
 IBC = Intermediate Bulk Container
 IMDG = International Maritime Dangerous Goods
 LogPow = logarithm of the octanol/water partition coefficient
 MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
 UN = United Nations

Section 16. Other information

References : Not available.

Indicates information that has changed from previously issued version.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

2294050

SDS for C.I. Pigment Violet 29 Non-Commercial Product (dry) – Sun Chemical Corporation

SAFETY DATA SHEET

Section 1. Identification

Product code : VIOLET 29
GHS product identifier : C. I. Pigment Violet 29

Relevant identified uses of the substance or mixture and uses advised against

Identified uses

Colorant

Manufacturer / Distributor : Sun Chemical Corporation
 5020 Spring Grove Avenue
 Cincinnati, OH 45232-1999
 Phone: +1 (513) 681-5950

Emergency telephone number (with hours of operation) : +1 (800) 424-9300 (U.S.) (24 hours)
 +1 (703) 527-3887 (International) (24 hours)

Other information : +1 708 236 3798

Section 2. Hazards identification

OSHA/HCS status : While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this MSDS contains valuable information critical to the safe handling and proper use of the product. This MSDS should be retained and available for employees and other users of this product.

Classification of the substance or mixture : Not classified.

GHS label elements

Signal word : No signal word.

Hazard statements : No known significant effects or critical hazards.

Precautionary statements

General : Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

Prevention : Not applicable.

Response : Not applicable.

Storage : Not applicable.

Disposal : Not applicable.

Hazards not otherwise classified : Fine dust clouds may form explosive mixtures with air. Handling and/or processing of this material may generate a dust which can cause mechanical irritation of the eyes, skin, nose and throat.

Section 3. Composition/information on ingredients

Substance/mixture : Substance

CAS number/other identifiers

Ingredient name	CAS number	%
anthra[2,1,9-def:6,5,10-d'e'f]diisoquinoline-1,3,8,10(2h,9h)-tetrone	81-33-4	100

Section 3. Composition/information on ingredients

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

- | | |
|---------------------|---|
| Eye contact | : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs. |
| Inhalation | : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. |
| Skin contact | : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. |
| Ingestion | : Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur. |

Most important symptoms/effects, acute and delayed

Potential acute health effects

- | | |
|---------------------|---|
| Eye contact | : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the eyes. |
| Inhalation | : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure. |
| Skin contact | : No known significant effects or critical hazards. |
| Ingestion | : No known significant effects or critical hazards. |

Indication of immediate medical attention and special treatment needed, if necessary

- | | |
|-----------------------------------|---|
| Notes to physician | : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. |
| Specific treatments | : No specific treatment. |
| Protection of first-aiders | : No action shall be taken involving any personal risk or without suitable training. |

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

- | | |
|---------------------------------------|---|
| Suitable extinguishing media | : Use an extinguishing agent suitable for the surrounding fire. |
| Unsuitable extinguishing media | : None known. |

Specific hazards arising from the chemical : No specific fire or explosion hazard.

- | | |
|---|---|
| Hazardous thermal decomposition products | : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides |
|---|---|

Section 5. Fire-fighting measures

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing dust. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Move containers from spill area. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.

Large spill : Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labeled waste container. Avoid creating dusty conditions and prevent wind dispersal. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Avoid breathing dust.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

None.

Appropriate engineering controls : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Section 8. Exposure controls/personal protection

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields. If operating conditions cause high dust concentrations to be produced, use dust goggles.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : In case of inadequate ventilation wear respiratory protection. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Use a properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary.

Section 9. Physical and chemical properties

Appearance

Physical state : Solid.

Color : Violet.

Odor : Characteristic.

Odor threshold : Not applicable.

pH : Not tested

Melting point : Not available.

Boiling point : Not available.

Flash point : Not applicable.

VOC % (w/w) : 0%

Evaporation rate : Not tested

Flammability (solid, gas) : Not available.

Lower and upper explosive (flammable) limits : Not tested

Vapor pressure : Not available.

Vapor density : Not tested

Density : Not tested

Solubility : Not tested

Partition coefficient: n-octanol/water : Not applicable.

Auto-ignition temperature : Not applicable.

Section 9. Physical and chemical properties

Decomposition temperature : Not applicable.

Viscosity : Not tested

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : No specific data.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Conclusion/Summary : No known significant effects or critical hazards.

Irritation/Corrosion

Conclusion/Summary

Skin : No known significant effects or critical hazards.

Eyes : No known significant effects or critical hazards.

Respiratory : No known significant effects or critical hazards.

Sensitization

Conclusion/Summary

Skin : No known significant effects or critical hazards.

Respiratory : No known significant effects or critical hazards.

Mutagenicity

Conclusion/Summary : No known significant effects or critical hazards.

Carcinogenicity

Conclusion/Summary : No known significant effects or critical hazards.

Reproductive toxicity

Conclusion/Summary :

Teratogenicity

Conclusion/Summary : No known significant effects or critical hazards.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Section 11. Toxicological information

Potential acute health effects

- Eye contact** : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the eyes.
- Inhalation** : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
- Skin contact** : No known significant effects or critical hazards.
- Ingestion** : No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

- Eye contact** : Adverse symptoms may include the following:
irritation
redness
- Inhalation** : Adverse symptoms may include the following:
respiratory tract irritation
coughing
- Skin contact** : No specific data.
- Ingestion** : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.

Long term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.

Potential chronic health effects

- General** : Repeated or prolonged inhalation of dust may lead to chronic respiratory irritation.
- Carcinogenicity** : No known significant effects or critical hazards.
- Mutagenicity** : No known significant effects or critical hazards.
- Teratogenicity** : No known significant effects or critical hazards.
- Developmental effects** : No known significant effects or critical hazards.
- Fertility effects** : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Not available.

Persistence and degradability

Bioaccumulative potential

Not available.

Section 12. Ecological information

Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	Mexico Classification	IMDG	IATA
UN number					
UN proper shipping name					
Transport hazard class(es)	Not regulated.	Not regulated.	Not regulated.	Not regulated.	Not regulated.
Packing group	-	-	-	-	-
Environmental hazards	No.	No.	No.	No.	No.
Additional information	-	-	-	-	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Section 15. Regulatory information

TSCA 8(b) inventory : Listed

U.S. Federal regulations :

SARA 313

	Product name	CAS number	%
Supplier notification	None identified.		

Toxics in Packaging (CONEG) : In compliance.

Canada inventory : All components are listed or exempted.

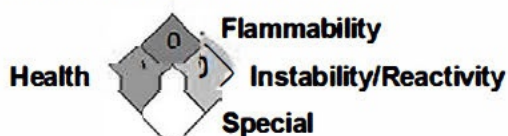
International regulations

Section 15. Regulatory information

- International lists**
- **Australia inventory (AICS):** All components are listed or exempted.
 - **China inventory (IECSC):** All components are listed or exempted.
 - **Japan inventory:** All components are listed or exempted.
 - **Korea inventory:** All components are listed or exempted.
 - **Malaysia Inventory (EHS Register):** Not determined.
 - **New Zealand Inventory of Chemicals (NZIoC):** All components are listed or exempted.
 - **Philippines inventory (PICCS):** All components are listed or exempted.
 - **Taiwan Chemical Substances Inventory (TCSI):** All components are listed or exempted.
 - **Europe Inventory:** Please contact your supplier to get the information.

Section 16. Other information

National Fire Protection Association (U.S.A.)



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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

History

- Date of issue/Date of revision** : 5/28/2015
- Date of previous issue** : 5/28/2015
- Version** : 1.01
- Key to abbreviations**
- ATE = Acute Toxicity Estimate
 - BCF = Bioconcentration Factor
 - GHS = Globally Harmonized System of Classification and Labeling of Chemicals
 - IATA = International Air Transport Association
 - IBC = Intermediate Bulk Container
 - IMDG = International Maritime Dangerous Goods
 - LogPow = logarithm of the octanol/water partition coefficient
 - MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
 - UN = United Nations

References

- Not available.

Indicates information that has changed from previously issued version.

Notice to reader.

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

VIOLET 29

SDS for C.I. Pigment Violet 29– TCI America (importer)



TCI AMERICA

SAFETY DATA SHEET

Revision number: 4
Revision date: 02/18/2017

1. IDENTIFICATION

Product name: 3,4,9,10-Perylenetetracarboxylic Diimide
Product code: P0984

Product use: For laboratory research purposes.
Restrictions on use: Not for drug or household use.

Company:
TCI America
9211 N. Harborside Street
Portland, OR 97203 U.S.A.
Telephone:
+1-800-423-8616 / +1-503-283-1681
Fax:
+1-888-520-1075 / +1-503-283-1987
e-mail:
sales-US@TCIchemicals.com
www.TCIchemicals.com

Emergency telephone number:
Chemical Emergencies:
TCI America (8:00am - 5:00pm) PST
+1-503-286-7624
Transportation Emergencies:
Chemtrec 24-Hour
+1-800-424-9300 (U.S.A.)
+1-703-527-3887 (International)
Responsible department:
TCI America
Environmental Health Safety and Security
+1- 503-286-7624

2. HAZARD(S) IDENTIFICATION

OSHA Haz Com: CFR 1910.1200: Not classifiable

Signal word: None

Hazard Statement(s): None

Pictogram(s) or Symbol(s): None

Precautionary Statement(s): None

Supplementary Information: While this material is not classified as hazardous under OSHA, this SDS contains valuable information critical to safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance/Mixture: Substance
Components: 3,4,9,10-Perylenetetracarboxylic Diimide
Percent: >95.0%(N)
CAS Number: 81-33-4
Molecular Weight: 390.35
Chemical Formula: C₂₄H₁₀N₂O₄

4. FIRST-AID MEASURES

Inhalation: Move victim to fresh air. Call emergency medical service. Give artificial respiration if victim is not breathing. Administer oxygen if breathing is difficult. Keep victim warm and quiet. Treat symptomatically and supportively. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

Skin contact: Remove and isolate contaminated clothing and shoes. In case of contact with substance, immediately flush skin with running water for at least 20 minutes. Treat symptomatically and supportively. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

4. FIRST-AID MEASURES

Eye contact:	Move victim to fresh air. Check for and remove any contact lenses. In case of contact with substance, immediately flush eyes with running water for at least 20 minutes. Keep victim warm and quiet. Treat symptomatically and supportively. Effects of exposure to substance may be delayed. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
Ingestion:	If a person vomits place them in the recovery position so that vomit will not reenter the mouth and throat. Rinse mouth. Keep victim warm and quiet. Loosen tight clothing such as a collar, tie, belt or waistband. If swallowed, seek medical advice immediately and show the container or label. Treat symptomatically and supportively. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves. Effects of exposure (ingestion) to substance may be delayed.
Symptoms/effects:	
Acute:	No data available
Delayed:	No data available
Immediate medical attention:	If breathing has stopped, perform artificial respiration. Use first aid treatment according to the nature of the injury. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media: Dry chemical, CO₂, water spray, or alcohol-resistant foam. Consult with local fire authorities before attempting large scale fire fighting operations.

Specific hazards arising from the chemical

Hazardous combustion products: These products include: Carbon oxides Nitrogen oxides
Other specific hazards: Closed containers may explode from heat of a fire.

Special precautions for fire-fighters:

Not available

Special protective equipment for fire-fighters:

Structural fire fighters' protective clothing provides limited protection in fire situations ONLY; it may not be effective in spill situations.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Do not touch damaged containers or spilled material unless wearing appropriate protective clothing (Section 8).
Personal protective equipment: Wear protective clothing, gloves and eye protection.
Emergency procedures: In case of a spill and/or a leak, always shut off any sources of ignition, ventilate the area, and exercise caution.

Methods and materials for containment and cleaning up:

Dike far ahead of liquid spill for later disposal.

Environmental precautions:

Prevent entry into sewers, basements or confined areas.

7. HANDLING AND STORAGE

Precautions for safe handling: Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for preventive fire protection. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.
Conditions for safe storage: Keep container tightly closed in a dry and well-ventilated place.
Storage incompatibilities: Store away from oxidizing agents

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure limits: No data available

Appropriate engineering controls:

Good general ventilation should be sufficient to control airborne levels. Eyewash fountains should be provided in areas where there is any possibility that workers could be exposed to the substance. Follow safe industrial engineering/laboratory practices when handling any chemical.

Personal protective equipment

Respiratory protection: Dust respirator. Be sure to use a MSHA/NIOSH approved respirator or equivalent.
Hand protection: Wear protective gloves.
Eye protection: Safety glasses.
Skin and body protection: Lab coat.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state (20°C):	Solid		
Form:	Crystal - Powder		
Color:	Deep yellow red - Black		
Odor:	No data available		
Odor threshold:	No data available		
Melting point/freezing point:	No data available	pH:	No data available
Boiling point/range:	No data available	Vapor pressure:	No data available
Decomposition temperature:	No data available	Vapor density:	No data available
Relative density:	No data available	Dynamic Viscosity:	No data available
Kinematic Viscosity:	No data available		
Partition coefficient: n-octanol/water (log P_{ow})	No data available	Evaporation rate: (Butyl Acetate = 1)	No data available
Flash point:	No data available	Autoignition temperature:	No data available
Flammability (solid, gas):	No data available	Flammability or explosive limits:	
		Lower:	No data available
		Upper:	No data available
Solubility(ies):			
Water:	Insoluble		

10. STABILITY AND REACTIVITY

Reactivity:	Not Available.
Chemical Stability:	Stable under recommended storage conditions. (See Section 7)
Possibility of Hazardous Reactions:	No hazardous reactivity has been reported.
Conditions to avoid:	Avoid excessive heat and light.
Incompatible materials:	Oxidizing agents
Hazardous Decomposition Products:	No data available

11. TOXICOLOGICAL INFORMATION

Acute Toxicity:
No data available

Skin corrosion/irritation:
No data available

Serious eye damage/irritation:
No data available

Respiratory or skin sensitization:
No data available

Germ cell mutagenicity:
No data available

Carcinogenicity:
No data available

IARC: No data available

NTP: No data available

OSHA: No data available

Reproductive toxicity:
No data available

Routes of Exposure: Inhalation, Eye contact, Ingestion.

Symptoms related to exposure:

No specific information is available in our data base regarding the toxic effects of this material for humans. However, exposure to any chemical should be kept to a minimum. Always follow safe industrial hygiene practices and wear proper protective equipment when handling this compound.

Potential Health Effects:

No specific information available; skin and eye contact may result in irritation. May be harmful if inhaled or ingested.

Target organ(s): No data available

12. ECOLOGICAL INFORMATION**Ecotoxicity**

Fish: No data available
Crustacea: No data available
Algae: No data available

Persistence and degradability: No data available
Bioaccumulative potential (BCF): No data available
Mobility in soil: No data available
Partition coefficient: No data available
n-octanol/water (log P_{ow}):
Soil adsorption (K_{oc}): No data available
Henry's Law: No data available
constant (PaM³/mol)

13. DISPOSAL CONSIDERATIONS

Disposal of product: Recycle or process if possible. It is the generator's responsibility to comply with Federal, State and Local rules and regulations. You may be able to dissolve or mix material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber system. This section is intended to provide assistance but does not replace these laws, nor does compliance in accordance with this section ensure regulatory compliance according to the law. US EPA guidelines for Identification and Listing of Hazardous Waste are listed in 40 CFR Parts 261.

Disposal of container: Dispose of as unused product.

Other considerations: Observe all federal, state and local regulations when disposing of the substance.

14. TRANSPORT INFORMATION

DOT (US) Non-hazardous for transportation.

IATA Non-hazardous for transportation.

IMDG Non-hazardous for transportation.

15. REGULATORY INFORMATION**Toxic Substance Control Act (TSCA 8b.):**

This product is ON the EPA Toxic Substances Control Act (TSCA) inventory.

US Federal Regulations**CERCLA Hazardous substance and Reportable Quantity:**

SARA 313: Not Listed
SARA 302: Not Listed

State Regulations**State Right-to-Know**

Massachusetts Not Listed
New Jersey Not Listed
Pennsylvania Not Listed
California Proposition 65: Not Listed

Other Information**NFPA Rating:**

Health: 0
Flammability: 0
Instability: 0

HMIS Classification:

Health: 0
Flammability: 0
Physical: 0

15. REGULATORY INFORMATION**International Inventories**

WHMIS hazard class:	No data available.
Canada: DSL	On DSL
EC-No:	201-344-6

16. OTHER INFORMATION**Revision date:** 02/18/2017**Revision number:** 4

TCI chemicals are for research purposes only and are NOT intended for use as drugs, food additives, households, or pesticides. The information herein is believed to be correct, but does not claim to be all inclusive and should be used only as a guide. Neither the above named supplier nor any of its affiliates or subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All chemical reagents must be handled with the recognition that their chemical, physiological, toxicological, and hazardous properties have not been fully investigated or determined. All chemical reagents should be handled only by individuals who are familiar with their potential hazards and who have been fully trained in proper safety, laboratory, and chemical handling procedures. Although certain hazards are described herein, we can not guarantee that these are the only hazards which exist. Our SDS are based only on data available at the time of shipping and are subject to change without notice as new information is obtained. Avoid long storage periods since the product is subject to degradation with age and may become more dangerous or hazardous. It is the responsibility of the user to request updated SDS for products that are stored for extended periods. Disposal of unused product must be undertaken by qualified personnel who are knowledgeable in all applicable regulations and follow all pertinent safety precautions including the use of appropriate protective equipment (e.g. protective goggles, protective clothing, breathing equipment, face mask, fume hood). For proper handling and disposal, always comply with federal, state and local regulations.