



Dyes - Disperse

Other Names: See Below

CAS Number	Substance
2475-45-8	C.I. Disperse blue 1
2475-46-9	C.I. Disperse blue 3
3179-90-6	C.I. Disperse blue 7

List continued in "Additional Information"

May Be Found In:

- Dyed synthetic textiles

Disperse dyes are a class of water insoluble dyes, resulting from a missing ionizing group. This makes them preferable for dyeing polyester yarns and fabrics. In the dye bath they form a dispersion, which is the reason for their name. Disperse dyes penetrate synthetic fibres and are held in place by physical forces without forming chemical bonds.

Uses in the Supply Chain

Within apparel and footwear supply chains, disperse dyes are often found in the dyeing process of synthetic textiles, including polyester, acetate, and polyamide.

In general, disperse dyes can be divided into five types. These are: E-type, with good levelling properties; SE-type, with general levelling properties and good colour fastness; S-type, with high colour fastness to sublimation; P-type, used for anti-discharge printing; and RD-type, used for rapid dyeing of polyester fibres. They are used to dye in two ways; the high temperature and pressure method, and a hot melt method.

Why Dyes - Disperse are Restricted

- Legislation in major markets around the world restricts the presence of allergenic disperse dyes in final products.
- The main sources of exposure to restricted disperse dyes identified for both consumers and workers are dermal absorption.
- The restricted disperse dyes are suspected of causing allergic reactions.
- Some disperse dyes may cleave to form carcinogenic amines.¹
- Chemical hazard information for many chemicals can be found in the following external databases:
 - GESTIS Substance Database: [http://gestis-en.itrust.de/nxt/gateway.dll/gestis_en/000000.xml?f=templates\\$fn=default.htm\\$vid=gestiseng;sdbeng\\$3.0](http://gestis-en.itrust.de/nxt/gateway.dll/gestis_en/000000.xml?f=templates$fn=default.htm$vid=gestiseng;sdbeng$3.0)
 - US National Library of Medicine: <https://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB>
 - USA EPA Occupational Chemical Database: <https://www.osha.gov/chemicaldata/index.html>

Sourcing Compliant Materials from Your Suppliers

- Explain that you require materials to be compliant with current AFIRM RSL limits.²
- Request suppliers to submit a confirmation of material compliance and/or a test report from a third-party laboratory. When materials are received, consider performing random, risk-based testing to ensure current AFIRM RSL limits are met.
- Share this guidance sheet with your material suppliers. Using the guidance in the next section, instruct them to work with their chemical suppliers to source chemical formulations that comply with these requirements. If needed, highlight the existence of harmful substances in materials via chemical management trainings from the ZDHC Academy, existing guidelines, and laws. This especially includes synthetic textiles and their blends.
- Make sure all your suppliers have a solid chemical management system in place.

Sourcing Compliant Formulations from Your Chemical Formulators

- Explain to chemicals suppliers that you require chemical formulations to comply with current ZDHC MRSL limits.
 - Search for formulations on the ZDHC Gateway Chemical Module. If your preferred formulations are not listed, encourage providers to register their formulations.
 - Ask for a ZDHC ChemCheck report.
- For all formulations, request SDS documentation to ensure none of the CAS Numbers above are listed as ingredients.
- Discuss with your chemical formulators what safer alternatives are available that are suitable substitutes for your production needs.

Safer Alternatives

Various dye substitutions are available that can achieve full colour ranges for synthetic textiles and may be suitable for your production needs. Digital printing techniques might also be considered, alongside other innovative digital technologies. In general, any chosen alternative must be ZDHC MRSL compliant whenever applicable.

Additional Information

Continued list of CAS Numbers and substance names from first page:

CAS Number	Substance
3860-63-7	C.I. Disperse Blue 26
12222-75-2	C.I. Disperse Blue 35
12222-97-8	C.I. Disperse Blue 102
12223-01-7	C.I. Disperse Blue 106
61951-51-7	C.I. Disperse Blue 124
23355-64-8	C.I. Disperse Brown 1
2581-69-3	C.I. Disperse Orange 1
730-40-5	C.I. Disperse Orange 3
82-28-0	C.I. Disperse Orange 11
85136-74-9	C.I. Disperse Orange 149
2872-52-8	C.I. Disperse Red 1
2872-48-2	C.I. Disperse Red 11
3179-89-3	C.I. Disperse Red 17
61968-47-6	C.I. Disperse Red 151
119-15-3	C.I. Disperse Yellow 1
2832-40-8	C.I. Disperse Yellow 3
6300-37-4	C.I. Disperse Yellow 7
6373-73-5	C.I. Disperse Yellow 9
12223-33-5/ 13301-61-6/ 51811-42-8	C.I. Disperse Orange 37/76/59
85136-74-9	C.I. Disperse Orange 149
6250-23-3	C.I. Disperse Yellow 23
12236-29-2	C.I. Disperse Yellow 39
54824-37-2	C.I. Disperse Yellow 49
56524-77-7	C.I. Disperse Blue 35

References

1 Hohenstein Institute & Textile Exchange. (2017). Chemical Snapshots – Disperse Dyes. Revision 0.2. Retrieved March 17, 2017.

2 Restricted Substances List (Publication). (2017, February 13). Apparel and Footwear International RSL Management Group. Retrieved <http://afirm-group.com/afirm-rsl/>.

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