Chemical Information Sheet
Version 2.0 | March 2021

DYES: ACID, BASIC, DIRECT, SOLVENT

Other Names	Restricted/forbidden dyes, substantive dyes, and many trade names for each specific dye are possible

CAS Number	Substance
3761-53-3	C.I. Acid Red 26
569-61-9	C.I. Basic Red 9
548-62-9	C.I. Basic Violet 3

List continued in "Additional Information"

May Be Found In

- Animal based fibers (wool, alpaca, silk, etc.)
- Plant based fibers (cotton, linen, hemp, etc.)
- Synthetic fibers (nylon, acrylic, others)
- Polymer applications (solvent dyes)

Acid, Basic, Direct and Solvent Dyes represent a broad class of organic dyestuffs used to dye natural and synthetic fibers.

Uses in the Supply Chain

Dyes in this class are widely used in a variety of fiber and material types.

Acid dyes are water-soluble anionic dyes mainly used on fibers such as wool, silk, and nylon.

Basic dyes are water-soluble cationic dyes mainly used on acrylic fibers.

Direct dyes are used on natural fibers such as cotton, linen, cellulose and in special treatments such as dip dyes.

Solvent dyes are dyes which are soluble in organic solvents and can be used on natural and synthetic fibers.[1] Navy Blue Dye is a specific dye mixture used to dye leather and textiles.[2]

Why Certain Acid, Basic, Direct and Solvent Dyes are Restricted

- Legislation in major markets around the world restricts the presence of some of these dyes.
- The dyes listed exhibit a variety of toxicity concerns, either inherent to the dye itself or caused by the dye breaking down into a more hazardous substance.
- Toxicity of the list of dyes includes suspected carcinogens, mutagens or reproductive toxicants, aquatic toxicity, and/or skin contact hazards.
- Navy Blue Dye has been restricted due to multiple concerns, including being very toxic to aquatic life with long lasting effects and potential for skin sensitization.
- Chemical hazard information for many chemicals can be found at the following external databases:
  - GESTIS Substance Database: Here (external link)
  - US National Library of Medicine: Here (external link)
  - US OSHA Occupational Chemical Database: Here (external link)

Sourcing Compliant Materials from Your Suppliers

- Contact your suppliers and explain that you require their manufactured materials to be compliant with the current AFIRM RSL limits.[3]
- Require suppliers to submit a confirmation of material compliance or a test report from a third-party laboratory.
- When materials are received, consider performing risk-based testing to ensure the current AFIRM RSL limits are met.
- Share this information sheet with your material suppliers so they have full visibility and understand your sourcing requirements.

Sourcing Compliant Formulations from Your Chemical Suppliers

- For all formulations, request SDS documentation that meets current GHS requirements.
- Contact your suppliers and explain that you require formulations to be compliant with the current ZDHC MRSL limits whenever applicable.[4]
- Discuss with your chemical supplier whether any safer alternatives are available that are suitable substitutes for your production needs.
- Prior to procuring any formulation, the chemical properties must be reviewed to ensure that proper protective equipment, chemical storage facilities, facility engineering controls, and associated treatment/disposal facilities are appropriate for the chemical(s).
- Review your list of dye recipes and ensure that these restricted dyestuffs are not called out for use in any color systems.

Safer Alternatives

There are many alternatives to these colorants on the market since none of the dyes in this document are considered irreplaceable.

Reputable manufacturers can point you towards more sustainable alternatives that do not contain any of the dyes listed in this document. Any chosen alternative must comply with the ZDHC MRSL formulation limits whenever applicable and AFIRM RSL limits for manufactured materials.

Additional Information

Visit ECHA's Candidate List of substances of very high concern to view dossiers for many restricted substances, including dyes https://echa.europa.eu/candidate-list-table.

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

CAS Number	Substance
569-64-2 **2437-29-8** **10309-95-2**	C.I. Basic Green 4
632-99-5	C.I. Basic Violet 14
2580-56-5	C.I. Basic Blue 26 (with Michler's Ketone > 0.1%)
1937-37-7	C.I. Direct Black 38
2602-46-2	C.I. Direct Blue 6
573-58-0	C.I. Direct Red 28
16071-86-6	C.I. Direct Brown 95
60-11-7	4-Dimethylaminoazobenzene (C.I. Solvent Yellow 2)
6786-83-0	C.I. Solvent Blue 4
561-41-1	4,4'-bis(dimethylamino)-4''-(methylamino) trityl alcohol (C.I. Solvent Violet 8)
118685-33-9	Navy Blue: Component 1: C39H23ClCrN7O12S.2Na
Not allocated	Navy Blue: Component 2: C46H30CrN10O20S2.3Na

References

[1] Vigo, T.L. Textile Processing and Properties: Preparation, Dyeing, Finishing and Performance, Elsevier Science, BV, 2002.

[2] European Union Commission Directive 2003/3/EC, 01/06/2003. Substance added to Annex I to Directive 76/769/EEC https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32003L0003 .

[3] Apparel and Footwear International RSL Management Group Restricted Substances List (AFIRM RSL) http://afirm-group.com/afirm-rsl/

[4] ZDHC Manufacturing Restricted Substances List (ZDHC MRSL) https://www.roadmaptozero.com/mrsl_online/