



DyStar 

Chemical Management

Meeting Customer Needs
While Protecting the Environment

Committed to Sustainability



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Why does Chemical Management need?

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- **Consumer Health**
- **Impact on Environment**
- **Occupational Health & Safety**







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Compliance



Legislation

- REACH;
- CPSIA;
- GB18401-2010;
- GB20814-2006;
- GB4287-2012.....

Ecolabels

- Standard 100 by Oeko-tex
- GOTS;
- Bluesign;
- EU label.....

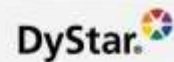
Retailers / Brands / Mills

- RSLs / MRSLs

From NGO or specific organisation

- Greenpeace
- Ipe
- PRTR
- ZDHC

Essential components for Chemical Management



Sales



Engineering



Purchasing



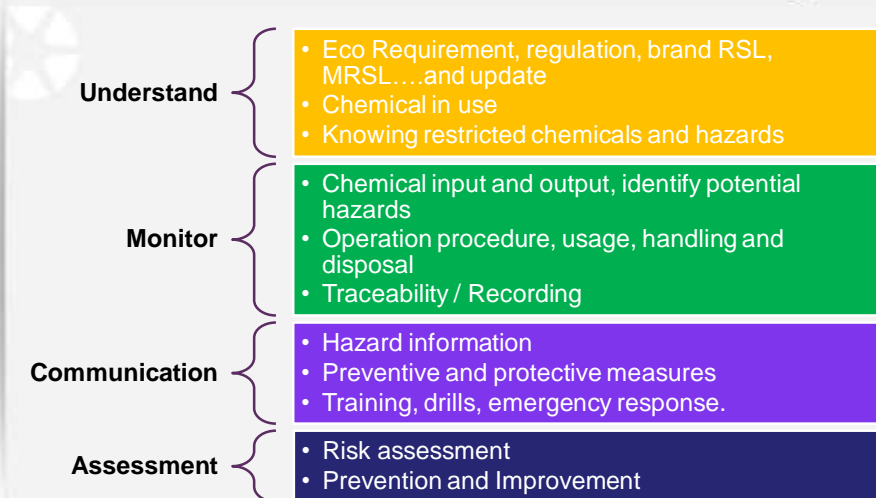
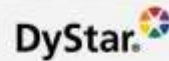
Quality Control



Production

All departments need to contribute on CMS

Essential components for Chemical Management



Information from chemical supplier - TDS



| | |
|---------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Function | For water repellent finishing of woven and knitted fabrics and yarns made of cotton and other cellulosic fibres, as well as blends with synthetic fibres, 100% PES, PA and PAN |
| Properties | <ul style="list-style-type: none"> PFC-free repellent agent very good water repellency rainproof finishing does not provide oil repellent effects fast to home laundering up to 60 °C pleasant handle on cellulosic fibres and blends, sometimes voluminous handle on synthetic fibres pad application is preferred, for exhaust application pre-trials to check the performance is recommended preferred yarn application is on bobbins approved by Bluesign |
| Pad application | |
| 100% cotton fabrics | |
| 200 - 300 g/l | Evo-Protec 903 |
| 200 - 300 g/l | Evo-Protec DMS |
| 50 - 100 g/l | Evo-Soft PES |
| Pick-up: 70 - 80 % | |
| Dry at 100 - 130 °C / cure at 140 - 170 °C / 40 - 30 s | |
| PES and blends | |
| 200 - 400 g/l | Evo-Protec 903 |
| 800 - 1200 g/l | Evo-Protec DMS |
| 50 - 100 g/l | Evo-Soft PES |
| Dry at 100 - 130 °C / cure at 140 - 170 °C / 40 - 30 s | |
| Fabrics made of PES and PA | |
| 800 - 1200 g/l | Evo-Protec DMS |
| 50 - 100 g/l | Evo-Soft PES |
| Dry at 100 - 130 °C / cure at 140 - 170 °C / 40 - 30 s | |

Information from chemical supplier - SDS



- Eco Requirement, regulation, brand RSL, MRSL....and update
- Chemical in use
- Knowing restricted chemicals and hazards

- Chemical input and output, identify potential hazards
- Operation procedure, usage, handling and disposal
- Traceability / Recording

- Hazard information
- Preventive and protective measures
- Training, drills, emergency response.

- Risk assessment
- Prevention and Improvement

- Section 1: Chemical Product and Company Identification
- Section 2: Hazard Identification
- Section 3: Composition, Information or Ingredients
- Section 4: First Aid Measures
- Section 5: Fire-Fighting Measures
- Section 6: Accidental Release Measures
- Section 7: Handling and Storage
- Section 8: Exposure Controls and Personal Protection
- Section 9: Physical and Chemical Properties
- Section 10: Stability and Reactivity
- Section 11: Toxicological Information
- Section 12: Ecological Information
- Section 13: Disposal Considerations
- Section 14: Transport Information
- Section 15: Regulatory Information
- Section 16: Other Information



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Hazards – GHS categories



- Physical hazard - 17 types
- Health hazard - 10 types
- Environmental hazard - 2 types

Phy1: Explosives
 Phy2: Flammable gases
 Phy3: Aerosols
 Phy4: Oxidising gases
 Phy5: Gas under pressure
 Phy6: Flammable liquids
 Phy7: Flammable solids
 Phy8: Self-reactive substances and mixtures.
 Phy9: Pyrophoric liquids
 Phy10: Pyrophoric solids
 Phy11: Self-heating substances and mixtures
 Phy12: Substances and mixtures which are in contact with water, emit flammable gas
 Phy13: Oxidising liquids
 Phy14: Oxidising solids
 Phy15: Organic peroxides
 Phy16: Corrosive to metals
 Phy 17: Desensitized explosives
 Health 1: Acute toxicity
 Health 2: Skin corrosion/irritation
 Health 3: Serious eye damage/irritation
 Health 4: Respiratory or skin sensitization
 Health 5: Germ cell mutagenicity
 Health 6: Carcinogenicity
 Health 7: Reproductive toxicity
 Health 8: Specific target organ toxicity- single exposure
 Health 9: Specific target organ toxicity-repeated exposure
 Health 10: Aspiration Hazard
 Env.1: Hazardous to the aquatic environment
 Env.2: Hazardous to the ozone layer



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Hazards



GHS pictograms

Environmental hazard



Gases under pressure



Corrosive



Severe health hazards



Explosive



Acute toxicity



Oxidising



Health hazards



Flammable



Hazard information



- Pictogram
- Hazard Statement
- Signal word
- Hazard Statement code
- Precautionary statement
- Precautionary statement code

AL6 Flammable liquids (see Chapter 2.6 for classification criteria)

| Hazard class | Hazard category | Pictogram | | Signal word | Hazard statement | Hazard statement code |
|-------------------|-----------------|-----------|------------------------------------|-------------|---------------------------------------|-----------------------|
| | | GHS | UN Global Regulations ¹ | | | |
| Flammable liquids | 1 | | | Danger | Extremely flammable liquid and vapour | H224 |
| | 2 | | | Danger | Highly flammable liquid and vapour | H225 |
| | 3 | | | Warning | Flammable liquid and vapour | H226 |
| | 4 | | | Warning | Combustible liquid | H227 |

¹ Under the ICF Recommendations on the Transport of Dangerous Goods, Global Regulations, the symbol, number and border line may be chosen in fixed hazard options. The background colour may not in both cases.

AL7 Flammable solids (see Chapter 2.7 for classification criteria)

| Hazard class | Hazard category | Pictogram | | Signal word | Hazard statement | Hazard statement code |
|------------------|-----------------|-----------|------------------------------------|-------------|------------------|-----------------------|
| | | GHS | UN Global Regulations ¹ | | | |
| Flammable solids | 1 | | | Danger | Flammable solid | H228 |
| | 2 | | | Warning | Flammable solid | H229 |


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SECTION 2 HAZARDS IDENTIFICATION

GHS Hazards

| | |
|--------------------------------------------------|---------------------|
| Flammable liquids | Category 2 |
| Serious eye damage | Category 1 |
| Specific target organ toxicity - single exposure | Category 3 (Hazard) |

LABEL ELEMENTS

Hazard symbols  6

Signal word 2 **Danger**

Hazard statements 3

- H225: Highly flammable liquid and vapour
- H318: Causes serious eye damage
- H336: May cause drowsiness or dizziness

Precautionary statements

Prevention 4

- P210: Keep away from heat/sparks/open flames/hot surfaces
- P233: Keep container tightly closed
- P240: Ground/ground container and separating equipment

SECTION 3 COMPOSITION/INFORMATION ON INGREDIENTS

Components

n-Propyl Alcohol

See Section 8 for Exposure Guidelines and Section 18 for Regulatory Classifications.

CAS-No. 71-23-8 **Weight Percent** 100.0

The Basic Parts of A GHS-Compliant Label

- 1 **n-Propyl Alcohol**
- 2 **DANGER**
- 3 **Hazard Symbols**
- 4 **Hazard Statements**
- 5 **Signal Word**

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Hazards mentioned in RSL/MRSL



Related to Health or Environmental

- **PBT** – persistent, bioaccumulative and toxic
- **vPvB** – very persistent and very bioaccumulative
- **CMR** – carcinogen, mutagen, or toxic for reproduction
- **ED** – Endocrine Disruptor

May/may not mentioned in MSDS which depends of the regulation and concentration

ZDHC MRSL



| CAS No. | Substance | Group A: Raw Material and Finished Product Supplier Guidance | Group B: Chemical Supplier Commercial Formulation Limit | Potential Uses in Apparel and Footwear Textile Processing | General Techniques for Analysing Chemicals |
|------------------------------------------------------------------------------------|---------------------------------|--------------------------------------------------------------|---------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| Alkylphenol (AP) and Alkylphenol Ethoxylates (APEOs): including all isomers | | | | | |
| 104-40-5, 11066-49-2, 25154-52-3, 84852-15-3 | Nonylphenol (NP), mixed isomers | No intentional use | 250 ppm | APEOs can be used as or found in: detergents, scouring agents, spinning oils, wetting agents, softeners, emulsifier/dispersing agents for dyes and prints, impregnating agents, degumming for silk production, dyes and pigment preparations, polyester padding and down/feather fillings | Liquid chromatography-Mass spectrometry (LC-MS), Gas chromatography-Mass spectrometry (GC-MS) |
| 140-66-9, 1806-26-4, 27193-28-8 | Octylphenol (OP), mixed isomers | | 250 ppm | | |
| 9002-93-1, 9036-19-5, 68987-90-6 | Octylphenol ethoxylates (OPEO) | | 500 ppm | | |
| 9016-45-9, 26027-38-3, 37205-87-1, 68412-54-4, 127087-87-0 | Nonylphenol ethoxylates (NPEO) | | 500 ppm | | |

Information from chemical supplier - Compliance?



Ref.: ZDHC MRSL 1.1 2015.docx

ZDHC MRSL Compliant Product List Towards Zero Discharge of Hazardous Chemicals

DyStar® has always been committed to the highest standards of product safety. Its econfidence® program is actively supporting the objective of removing hazardous chemicals from the textile and clothing supply chain.

Chapter 1 of the ZDHC Manufacturing Restricted Substance List (MRSL) addresses hazardous substances that could be present in the environment during manufacturing.

eliot®

Product List

compiled a list of globally marketed textile products of the Joint Roadmap Towards 7

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Create CIL



| Product name | Supplier name | Usage | TDS | SDS | Compliance letter | Hazard information | Concern substances | Updated on |
|--------------|---------------|-------|-----|-----|-------------------|--------------------|--------------------|------------|
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Most information can be found in appropriate TDS, SDS and compliance letter from chemical supplier.


Improvement of Chemical products

*Products:*

- Less Banned Cleavable arylamine in products
- Reactive Black without p-CA
- Reactive Black on Wool replace Chrome/ Mordant dye
- PFC free water repellent

Process:


- New products/process for saving resources


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PFC free Repellent

**Clothing, outdoor,
Technical textiles**

**PFC
free**


Evo Protect DWA
Cotton and blends, PES, PA,
Fabrics, nonwovens and yarns
Pad, exhaust application
bluesign approved





Evo Protect DRC
Cotton and blends,
fabrics and nonwovens
Pad, exhaust application
Focus on water column

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Levafix® ECO Range

A new range of reactive dyes
based on new chemistry and
free of p-CA
and other regulatory controlled amines

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Realan® Black MF – PV

A quantum leap in the dyeing of black on wool

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Imperon® Green Range



The eco-friendly pigment range

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Helping our Customers to Reduce Environmental Impact **DyStar**

DyStar Indigo Vat 40% Solution

- for strong positive impact on resource efficiency and much lower environmental impact



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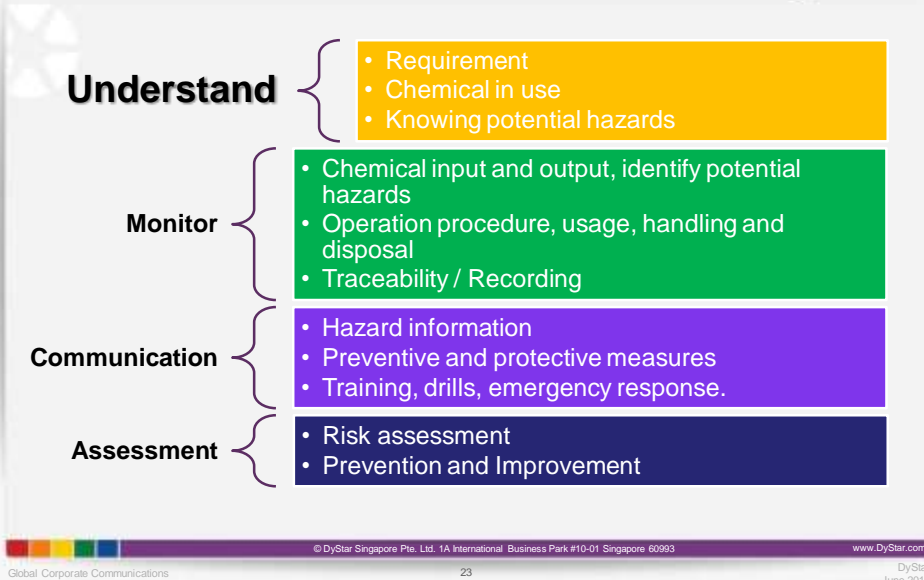
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Saving potential
with
Cadira™ Reactive

econfidence
from DyStar



Start CMS by



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