

ARP 006 2009

SOUTH AFRICAN STANDARD

Recommended practice

**A GUIDE TO HEALTH HAZARDS
AND PERSONAL PROTECTION IN
THE PAINT INDUSTRY.**

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A GUIDE TO HEALTH HAZARDS AND PERSONAL PROTECTION IN THE PAINT INDUSTRY

1 Scope

1.1 This recommended practice describes a system for the immediate recognition, by any worker/employee, of the health hazard potential of any given substance to which he may be exposed and simultaneously the type of personal protection needed should the potential exposure level to that substance require it. It provides paint manufacturers with a means of facilitating compliance with the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) Hazardous Chemical Substances Regulations, 1995.

1.2 The system can be used successfully for those operations that employ a large number of substances where the workers may be directly exposed to the substances. The system is not a substitute for SANS 10228 and 10229 for the transport of dangerous goods by road, the International maritime dangerous goods code (IMDG Code) for the transport of dangerous goods by sea, or for the International Civil Aviation Organization (ICAO) Technical instructions for the transport of dangerous goods by air, or for any other statutory requirement. In the case of any incident involving direct contact with chemical substances such as in a spill the OHS Act is applicable.

1.3 The system is specifically designed for workers in batch processing operations where workers may be repeatedly exposed to a variety of substances for different periods of time at different levels.

1.4 The system is not intended for the retail sectors or small-user sectors where a more graphic and simpler system that does not require training or expert knowledge would be more appropriate. This should be covered by warnings on the labels. Suitable information in this regard is to be found in SANS 10265.

1.5 The system presupposes that every effort will be made to contain any dangerous properties of any substance by mechanical means, and personal protection will only be needed for sporadic exposures potentially above a safe working level.

2 References

Occupational Health and Safety Act, 1993 (Act No. 85 of 1993). Hazardous Chemical Substances Regulations, 1995

SANS 10265:1999 (SABS 0265:1999) The classification and labelling of dangerous substances and preparations for sale and handling

GREAT BRITAIN. HEALTH AND SAFETY COMMISSION. Authorised and approved list: information approved for the classification, packaging and labelling of dangerous substances for supply and conveyance by road. London: HMSO, latest edition.

GREAT BRITAIN. HEALTH AND SAFETY COMMISSION. Health and safety: the classification, packaging and labelling of dangerous substances regulations, 1984. Statutory instruments: No. 1247 of 1994. London: HMSO.

3 Definition

For the purposes of this recommended practice, the following definition applies:

hazardous substance: Any substance (whether or not it is a preparation or other mixture of two or more substances) that, when handled or used in the form in which it is supplied, creates a risk to the health or safety of any person.

4 Health hazard ratings (HHR) of substances

4.1 Substances are divided into four groups, which indicate the categories of health hazard ratings in accordance with the potential for causing bodily harm.

4.1.1 Group 4 - Minimal hazard

Minimally hazardous substances are substances that are reasonably safe under all normal conditions of use. No residual effect is to be expected from accidental exposure even if no treatment is applied.

4.1.2 Group 3 - Slight hazard

Slightly hazardous substances are substances that require some safeguards but are otherwise safe under normal conditions of use. Minor residual effect(s) could result from accidental exposure if no treatment is applied.

4.1.3 Group 2 - Moderate hazard

Moderately hazardous substances are substances that are to be handled with caution and careful regard for personal protection. Minor residual effect(s) could result despite prompt treatment, and cumulative / chronic effects are possible.

NOTE - Substances with potential for chronic effects should be considered either for this group or for group 1.

4.1.4 Group 1 - Serious hazard

Seriously hazardous substances are substances that are to be treated with extreme caution, and either have to be handled with specialized equipment or personal protection has to be worn, or both.

Major residual effect(s) could result despite prompt treatment, and severe chronic effects are possible.

4.2 The health hazard ratings given in 4.1 apply to substances at ambient conditions, unless otherwise stated. Any variations caused by process conditions such as elevated temperature shall be given due consideration.

5 Personal protection

5.1 General

5.1.1 Determination of type of personal protection equipment

The type of personal protection equipment (PPE) required when substances are being handled at levels potentially in excess of their exposure limits or in excess of any other safe working levels is determined by a consideration of the route(s) of attack, the physical nature of the substance, the limitations of protective equipment and the degree of containment achieved. Once the route of entry or point of effect of the hazardous substance has been identified (such as skin contact, inhalation, eye contact or ingestion or any combination of these), and once the physical state of the substance is known, the best way of protecting the worker/employee can be decided upon. When this has been done, a letter code is assigned to each substance indicating the appropriate items of PPE required to protect the worker/employee from any potentially dangerous properties. In cases of multiple hazards involving variously rated substances, the equipment issued shall comply with a 'worst possible' exposure requirement.

5.1.2 Recommendations for personal protection equipment

The PPE manufacturer shall be consulted for recommendations as to equipment considered suitable for use in specific health hazard categories or circumstances or both.

Any PPE used shall, wherever possible, comply with standards laid down by a competent authority.

Where respiratory equipment, is required by the OHS Act, it shall be of a type or shall conform to a standard approved by the Chief Inspector.

In this context, caution shall be exercised to ensure that any personal protection issued is indeed suitable for the particular substance for which it is required. Substances for which there are any special PPE requirements or limitations will be rated as group 1 or group 2 (see 4.1.3 and 4.1.4).

PPE is rated into nine categories, as given in 5.2, according to the risk factor of substances and the PPE requirements.

5.2 Personal protection equipment categories

5.2.1 Category A - Harmless substances

Risk - Minor

PPE - Dictated by physical rather than toxicological factors

5.2.2 Category B - Dust hazards

Risk - Dust inhalation

PPE - Gloves, dust mask

5.2.3 Category C - Eye and skin irritants

Risk - Eye or skin irritation due to splashes

PPE - Gloves, eye protection

5.2.4 Category D - Toxic substances

Risk - Acute and chronic systemic effects

PPE - Gloves, eye protection, dust mask

5.2.5 Category E - Toxic vapours

Risk - Acute and chronic systemic effects

PPE - Gloves, eye protection, respirator.

5.2.6 Category F - Chemical burn potential

Risk - Eye or skin damage (or both) due to corrosive action

PPE - Gloves, eye protection, boots, apron

5.2.7 Category G - Aggressive substances

Risk - General damage due to corrosive action and vapour inhalation

PPE - Gloves, eye protection, boots, apron, respirator

5.2.8 Category J - Highly aggressive substances

Risk - Any form of exposure

PPE - Gloves, boots, apron, eye protection, air-supplied respirator

5.2.9 Category K - Substances where special considerations apply

This category includes those few substances where the utmost care has to be exercised when they are being handled. Workers/employees shall be trained in the wearing and use of personal protective equipment, and the equipment shall be checked regularly by the supervisor to ensure that it is both adequate for the job and in first-rate condition. Consideration shall also be given to the protection of other workers/employees in the close vicinity and to the standby precautionary measures needed in case of spillage or any undesirable occurrences.

Note Respirator choice must cater for dust and aerosol problems for normal use and due consideration must be given to using the correct cartridges & dust filters - a safety officer's responsibility.

6 Coding of health hazard rating

The health hazard rating number (determined using clause 4) and the PPE category letter (determined using 5.2) of a substance are combined and separated by the letter "H" (to give a distinctive character).

The code so formed gives the health hazard rating of the substance.

For example, 4HA, 4HB, 3HB, 3HE, 2HE, 2HF, 1HG, 1HK.

NOTE - There are no categories H and I in the personal protection classification because of risk of confusion of 'H' and the number '1' referred to above.

7 Wall charts

Wall charts showing the interpretation of these ratings must be displayed in strategic places in the factory, stores or laboratories. These charts allow the worker to make an immediate interpretation of the ratings and thereby ensure that he can immediately be aware of the degree of hazard and the type of protection required when the substances involved are being handled.

An example of a completed wall chart is given in annex C.

8 Allocation of health hazard ratings

8.1 The user under terms of the OHS Act is required to have in his possession original copies of Safety Data Sheets (MSDS) for **all** substances used in the workplace. The information should be found in sections 2, 8, 15. Section 2 indicates any hazardous substances present in a mixture.

Section 8 will give exposure levels for single substances. Section 15 will contain pertinent information on all hazardous properties in the form of iconic warnings, risk and safety phrases.

This information can be used to classify any substance in the SAPMA rating system.

Reference should also be made to any relevant regulations e.g. lead, asbestos and respiratory equipment, or any which may be promulgated in the future.

See appendix 2 for guidelines to allocating ratings using the relative MSDS information.

8.2 Allocation by supplier. Responsible suppliers will assess and quote the SAPMA rating on their documentation and packaging but it must be remembered that the final responsibility rests with the user and he should ensure himself that the allocation is correct.

Material Safety Data Sheets must be compiled in accordance with the existing regulations as given in the OHS Act, and/or ISO 11014-1 For an example See annex A.

9 Communication and interpretation of ratings on the shop floor.

All formulation sheets, batch cards and other documents used in the areas where substances may be handled or where contact is possible in any way, shall show the ratings so that a pre-warning is possible. The operator, by reading this information and consulting the wall charts, can then take the proper precautions.

The first page of the MSDS can be used as a Hazardous Substances Record for use on the shop floor.

10 Display of health hazard identification labels

10.1 Identification and labelling

10.1.1 Size and quality of labels

It is recommended that the size of the labels conform to the following sizes:

Volume 500 L and over	A5 (148 mm x 210 mm)
Volume 50 L and up to but excluding 500 L	A6 (105 mm x 148 mm)
Volume 3 L and up to but excluding 50 L	A7 (74 mm x 105 mm)
Volume 1 L and up to but excluding 3 L	A8 (52 mm x 74 mm)
Volume under 1 L	A9 (37 mm x 52 mm)

The label and its adhesive should be of a suitable quality. Inks must be resistant to external weather.

10.1.2 Identification of health hazard rating code

Each separate container shall be identified with a health hazard rating code. Any container not so marked shall be regarded as being of maximum hazard until the correct status is ascertained.

10.1.3 Labelling of outer wrapping

In the case of shrink-wrapped pallets and any combinations of smaller packages within-an outer cover, only the outer wrapping need be suitably labelled. However, once this combined package is broken down, all individual packages shall then be labelled.

10.1.4 Bulk containers

Bulk containers used for storage within the factory, and at its outlets, and all joints and access points in pipelines used for internal movement of substances shall be marked with the hazard rating.

10.1.5 Provisional containers

Provisional containers used for movement or transfer of substances from bulk storage shall carry a suitable label.

10.1.6 Removal of HHR labels

HHR labels shall not be removed from a container until the container has been cleaned. In the case of certain designated highly toxic substances, containers may, in terms of existing regulations, have to be destroyed.

Four examples of HHR labels are given in annex B.

10.4 Responsibility of employer

Each employer shall be responsible for arranging training, for display boards, for having records available appertaining to substances handled by workers/employees under his responsibility and for making all other suitable arrangements.

All supervisory staff shall be fully trained in the background to this system and also in the selection and use of personal protection equipment. All workers/employees shall have the system fully explained to them before being required to handle any substance.

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ANNEX A
EXAMPLE OF A MATERIAL SAFETY DATA SHEET

Name : LACQUER THINNERS Code : ECO A Date Issued : 7/7/2006

Page 1 of 9



SOUTH AFRICAN PAINT MANUFACTURERS
MATERIAL SAFETY DATA SHEET

P.O.Box 751605, GARDENVIEW . JOHANNESBURG 2047
Tel. (011) 465 2503 Fax (011) 456 2502 EMAIL sapma@sapma.org.za.

(Example of a typical compliant MSDS)

(The first page may be used as a Hazardous substances Record)

Name : LACQUER THINNERS Code : ECO A Date Issued : 7/7/2006



Flammable



Harmful



SECTION 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION

Name : LAQUER THINNERS Code : ECO A Date Issued : 7/7/2006

Chemical class : PAINT PRODUCT

CAS no. : Not applicable EC no. : Not applicable EC Label : Not applicable
UN No. : 1263 EAC : 127 Hazchem : 3[Y]E Kemler : 30 SAPMA : 2-H-E
In emergency contact SAPMA 011-4552503

SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS

EC Classification : F Xn R63,11,48/20,65,36/38,66,67 S02,13,16,26,43,51,62

HAZARDOUS AND/OR OTHER RELEVANT COMPONENTS

TOLUENE >20%
[CAS #: 000108-88-3] [E.C. #: 601-021-00-3]
EEC Labels : F Xn OEL 188mg/m³ OEL 50ppm STOEL 560mg/m³ STOEL 150ppm RL+ S

ETHYL ACETATE >20%
[CAS #: 000141-78-6] [E.C. #: 607-022-00-5]
EEC Labels : F Xi OEL 1400mg/m³ OEL 400.ppm RL

n-BUTYL ACETATE :%
[CAS #: 000123-86-4] [E.C. #: 607-025-00-1]
EEC Labels : OEL 710.mg/m³ OEL 150.ppm STOEL 950mg/m³ STOEL 200ppm RL

(CL/RL = Controlled/Recommended level 'S' = Skin annotation)

SECTION 3. HAZARDS IDENTIFICATION

SAPMA Health Rating : 2-MODERATE - Temporary or minor injury possible even if treatment given

Inhalation : HARMFUL. Excessive exposure to this material must be avoided.

Skin : Highly irritating. Risk of dermatitis. May be absorbed through intact skin.

Eyes : Irritating.

Ingestion : Harmful. May cause lung damage if swallowed.

MAY INDUCE EFFECTS ON REPRODUCTION/FERTILITY CAT 3. (EC/CHIP3)

May have short-term environmental effects. Contain, monitor & remove.

SECTION 4. FIRST AID MEASURES

Inhalation : Move to fresh air. In case of discomfort seek medical attention.

Skin : Drench with water. Remove contaminated clothing. Use a skin cleaner. In severe cases refer to Doctor.

Eyes : Rinse immediately with plenty of water. Seek medical advice.

Ingestion : DO NOT INDUCE VOMITING. Get immediate medical attention.

SECTION 5. FIRE FIGHTING MEASURES

Highly flammable with toxic fumes.

Containers can burst in a fire. Can form explosive vapour/air mixture. Static discharge hazard!

Foam. Dry powder. Fog to cool and control. Do NOT use water jets.

Cool containers in case of fire.

SECTION 6. ACCIDENTAL RELEASE MEASURES - SEE ALSO SECTIONS 5, 8, 13

Contain & collect. Keep out of drains and sewers

SECTION 7. HANDLING AND STORAGE

Store separately from any reactive substances - oxidisers in particular.

No open flames. No smoking. No sparks.

Keep containers cool. Avoid free fall of liquid - use earthing.

Subject to local bylaws

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

SAPMA Rating : 2-H-E PPE : Respirator and Eye protection
 Inhalation : In case of insufficient ventilation, use suitable respiratory protection.
 Skin : AVOID CONTACT. Use impervious gloves, apron and boots.
 Eyes : Use face shield or goggles. Avoid direct contact.
 Ingestion : Observe the rules of hygiene. Wash before eating or drinking.
 OEL Type : Mixture- Mixture - See Section 2 Skin annotation

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

Chemical class : PAINT PRODUCT Description : Liquid Smell : Pungent
 SG : <1.0 pH : Not applicable Boil. pt (°C) : >35 FlashPoint (°C) : <23 (derived)
 Very slightly soluble in water Soluble in oil

SECTION 10. STABILITY AND REACTIVITY

Stable under normal conditions I No reaction with fire-fighting water
 Prone to ignite by static

SECTION 11. TOXICOLOGICAL INFORMATION

MAY INDUCE EFFECTS ON REPRODUCTION/FERTILITY CAT 3. (EC/CHIP3)
 LD50 Oral: >500 mg (derived)

SECTION 12. ECOLOGICAL INFORMATION

May have short-term environmental effects. Contain, monitor & remove.

SECTION 13. DISPOSAL INFORMATION

Hazardous. Use reputable waste disposal contractors. Destroy used containers.

SECTION 14. TRANSPORT INFORMATION

UN No. : 1263 : PAINT PRODUCT Packing group : II IMO Class : 3.2 EAC : 127 Hazchem : 3[Y]E Kemler : 30

**SECTION 15. REGULATORY INFORMATION**

EC no. : Not applicable EC Label : Not applicable Contains : TOLUENE,ETHYL ACETATE
 EC Classification : F Xn R63,11,48/20,65,36/38,66,67 S02,13,16,26,43A,51,62
 R63 - Possible risk of harm to the unborn child.
 R11 - Highly Flammable
 R48/20 - Harmful: danger of serious damage to health by prolonged exposure through inhalation
 R65 - Harmful: May cause lung damage if swallowed.
 R36/38 - Irritating to eyes and skin
 R66 - Repeated exposure may cause skin drying or cracking
 R67 - Vapours may cause drowsiness and dizziness.
 S2 - Keep out of reach of children. (Retail sales items)
 S13 - Keep away from food, drink and animal feeding stuffs
 S16 - Keep away from sources of ignition - No smoking
 S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
 S43 - In case of fire, use water fog, foam or powder - Do not use water jets!
 S51 - Use only in well ventilated areas
 S62 - If swallowed, do not induce vomiting : seek medical advice immediately and show this container or label.

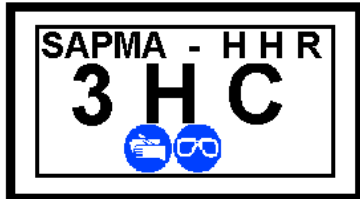
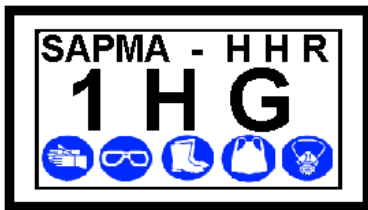
**SECTION 16. OTHER INFORMATION**

POSSIBILITY OF SYSTEMIC EFFECTS - REPRODUCTIVE TOXICITY POTENTIAL.
 IN CASE OF ANY DISCOMFORT ALWAYS SEEK MEDICAL ADVICE.
 ALERT WORKERS TO THIS HAZARD POTENTIAL AND ENSURE PRECAUTIONS ARE TAKEN.

This MSDS conforms with General Administrative Regulations of 6 Sept.1996 (ISO-11014/ANSIZ400.1.1996)
 OELs derived from OHS Act Regulations for Dangerous Chemical Substances of 25 Aug.1995 (EH-42)
 SAPMA Rating - South African Paint Manufacturers Association Guide to Health Hazards (SABS ARP 006:1991)

All information is given in good faith but without guarantee in respect of accuracy.
 No responsibility is accepted for errors or omissions or the consequences thereof.
 (Date of issue : 7/7/2006 Date of analysis : 7/7/2006)

ANNEX B
EXAMPLES OF LABELS



ANNEX C

SOUTH AFRICAN PAINT MANUFACTURERS GUIDE TO HEALTH HAZARDS AND PERSONAL PROTECTION IN THE PAINT INDUSTRY							
MINIMAL	SLIGHT	MODERATE	SERIOUS				
4	3	2	1				
PERSONAL PROTECTION GUIDE							
	HANDS	EYES	FOOT	APRON	DUST	RESPIRATOR	AIR-FED HOOD
H A	NO SPECIFIC HAZARD						
H B							
H C							
H D							
H E							
H F							
H G							
H J							
H K	REFER TO SUPERVISOR						

GUIDE TO ALLOCATING HEALTH HAZARD RATINGS

The SAPMA does not publish a list of chemicals with their ratings, and users are expected to classify them themselves. This generally requires someone versed in the subject. As a help to those using the scheme the following guidelines based upon the "CHIP"¹ classifications and the OHS Act OELs are suggested². It is up to the person classifying to make a final choice. Note that when a chemical has an OEL or contains a substance with an OEL, then the workplace could need to be monitored.

All Material Safety Data Sheets should conform to the OHS Act³. This means that they should contain the "CHIP" information as well as the OELs. In accordance with the OHS Act, the supplier should provide MSDSs.

Note that these do not cover transport requirements as this uses a different logic.

HEALTH RATING

EC RATING

"T" (TOXIC)
OEL with "Control Limit" CL
"Xn" (HARMFUL) OR "Xi" (IRRITANT)
STOEL only (Recommended Level)
Presence of above items (<Action %age)
OEL only (Recommended Level)
Only classified as "Nuisance Particulate"
CORROSIVE "C"
CORROSIVE "C" + OEL
TOXIC "T" & CORROSIVE "C"
TOXIC "T" & CORROSIVE "C" & OEL

SAPMA RATING

1H
1H *
2H **
2H
3H
3H
3H
2HF ***
2HG ***
1HF/J/K ***
1HG/J/K ***

* "Control Limit" is used by OHS Act. EC now uses term "Maximum Exposure Level" (MEL) i.e. carcinogens & the like will also be "Toxic" and so call for "1H" category.

** Under certain conditions (e.g. minor component of a preparation) a 3H could be used for "Xi IRRITANT".

- "R" (Phrases are a guide to the final choice.)

***"R" Phrases are a guide to the final choice. If the chemical involved could affect other workers or, alternatively, the hazard is so high that a worker should not be alone, use "K". This serves as a warning to both the worker and the supervisor.

PPE REQUIREMENT

OEL or EC CLASS

NONE
OEL
OEL & A "SKIN" RATING.
R20 (INHALATION)

PPE LETTER

"C" (RESPIRATOR NOT NORMALLY REQUIRED))
"E" (RESPIRATOR OPTION)
"F" OR "G". DEPENDING ON VOLATILITY
"2HE"

Use "R" & "S" Phrases for guidance.

This is a guide to the Hazard *i.e.* the potential to cause harm. The risk depends upon the circumstances at the time of use and so is the responsibility of the employer.

The management cannot change the HAZARD - but they can minimise the RISK!

¹ "CHIP" CHEMICALS (HAZARD INFORMATION & PACKAGING FOR SUPPLY) REGULATIONS.- UK Regulations which conform to the EC Requirements.

² OELs derived from OHS Act Regulations for Dangerous Chemical Substances dated 25 August 1995

³ OHS Act General Administrative Regulations dated 6 Sept. 1996. (ISO-11014/ANSIZ400.1.1996)