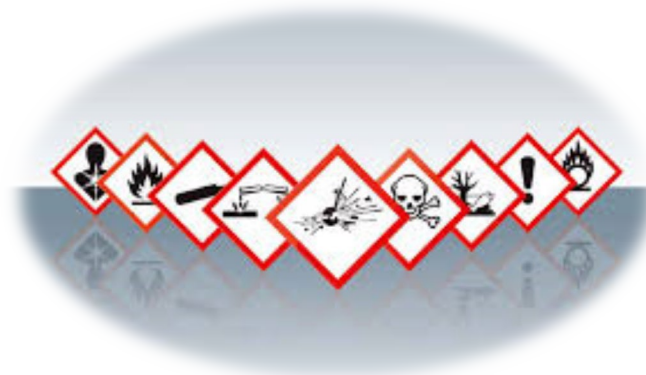


Introduction into Safety Training



What are hazardous substances and mixtures ?

- Hazardous substances are substances, preparations or products with hazardous properties.
- They can cause acute or chronic damage to human health, be flammable, explosive or hazardous to the environment.
- Hazardous substances include not only chemicals, but also wood dust, gasoline, diesel, welding fumes, ozone, anaesthetic gases, cigarette smoke, and even water under certain circumstances.
- Substances are chemical elements and chemical compounds that occur naturally or are manufactured. Preparations are mixtures, blends or solutions consisting of two or more substances.



What are hazardous substances and mixtures ?

Hazard characteristics describe the hazards posed by the substance or preparation.

A distinction is made between:

- Physical-chemical hazards
- Hazards to human health
- Hazards for the environment



What are hazardous substances and mixtures ?

Physical-chemical hazards classes according CLP

1. Explosive substances/mixtures and articles containing explosive substances
2. Flammable gases (including chemically unstable gases)
3. Aerosols
4. Oxidizing gases
5. Gases under pressure
6. Flammable liquids
7. Flammable solids
8. Self-reactive substances and mixtures
9. Pyrophoric liquids category 1
10. Pyrophoric solids
11. Self-heating substances and mixtures
12. Substances and mixtures which, in contact with water, emit flammable gases
13. Oxidizing liquids
14. Oxidizing solids
15. Organic peroxides
16. Corrosive to metals



What are hazardous substances and mixtures ?

Hazards for human health

1. Acute toxicity
2. Skin corrosion/irritation
3. Serious eye damage/eye irritation
4. Respiratory sensitization/skin sensitization
5. Germ cell mutagenicity
6. Carcinogenicity
7. Reproductive toxicity
8. Specific target organ toxicity (single exposure)
9. Specific target organ toxicity (repeated exposure)
10. Aspiration hazard



What are hazardous substances and mixtures ?

Dangers for the environment

- Harmful to the aquatic environment
- Damaging the ozone layer



How are hazardous substances & mixtures labelled ?

- The hazard pictograms are red-edged squares with a black symbol on a white background.
- Each pictogram is assigned a designation and a code, e.g. GHS02 for the pictogram "Flame"
- One pictogram can apply to several hazard classes.



How are hazardous substances & mixtures labelled ?

Before substances and preparations are placed on the market, they must be classified by the manufacturer.

The classification is carried out in order to identify the hazardous properties which may present a danger during normal handling.

Knowledge of the hazardous properties is a prerequisite for safe handling of hazardous substances.

Non-classified substances that prove to be harmful to health in operational practice are also to be regarded as hazardous substances.

Hazardous substances and preparations that are to be classified according to the Hazardous Substances Ordinance must be labelled.

Hazardous substance labelling is intended to warn of hazards and provide instructions for safe handling and thus provide initial essential information.

The labelling must not contain any trivializing statements, such as "non-harmful" or "non-toxic".

How are hazardous substances and mixtures labelled ?

Product Identification

Signal word

Supplier

Other information

Mustergemisch
enthält: Stoff A, Stoff B



GEFAHR

Verursacht schwere Augenschäden. Kann bei Einatmen Allergie, asthmaartige Symptome oder Atembeschwerden verursachen. Kann Metalle korrodieren. Verursacht Hautreizungen. Sehr giftig für Wasserorganismen. Schädlich für Wasserorganismen, Langzeitwirkung.

Nur im Originalbehälter aufbewahren. Nach Handhabung Hände gründlich waschen. Augenschutz tragen. Einatmen von Dampf vermeiden. Bei unzureichender Belüftung Atemschutz tragen. Freisetzung in die Umwelt vermeiden. Ausgetretene Mengen zur Vermeidung von Materialschäden aufnehmen. Ausgetretene Mengenauffangen.
 BEI BERÜHRUNG MIT DER HAUT: Mit reichlich Wasser und Seife waschen. Gezielte Behandlung (siehe Erste-Hilfe-Anleitung auf diesem Kennzeichnungsschild). Bei Hautreizung: Ärztlichen Rat einholen/ärztliche Hilfe hinzuziehen. Kontaminierte Kleidung ausziehen und vor erneutem Tragen waschen.
 BEI BERÜHRUNG MIT DEN AUGEN: Einige Minuten lang vorsichtig mit Wasser ausspülen. Evtl. vorhandene Kontaktlinsen entfernen, sofern leicht möglich. Weiter ausspülen. Sofort GIFTINFORMATIONSZENTRUM oder Arzt anrufen.
 BEI EINATMEN: Bei Atembeschwerden an die frische Luft bringen und in einer Position ruhigstellen, die das Atmen erleichtert. Bei Symptomen der Atemwege: GIFTINFORMATIONSZENTRUM oder Arzt anrufen. Ausgetretene Mengen zur Vermeidung von Materialschäden aufnehmen. In korrosionsfestem Behälter mit korrosionsfester Auskleidung lagern. Inhalt/Behälter der Problemabfallentsorgung zuführen
Musterfirma · Musterstrasse 1 · D 12345 Musterstadt · Tel: +49 (0)1234 56789
Inhalt: 5 Liter

Wiederholter Kontakt kann zu spröder und rissiger Haut führen.

Hazards pictograms

Hazard sentences

Safety measures

Nominal quantity

Where can hazardous substances be present ?

The occurrence of hazardous substances is cross-sectoral and very diverse.

The following examples are intended to underpin this.

Gases:

Ammonia as a coolant in refrigeration systems, chlorine or ozone in water treatment, carbon dioxide and nitrogen oxides in combustion processes, methane as a decay product of organic materials.

Fumes and dusts:

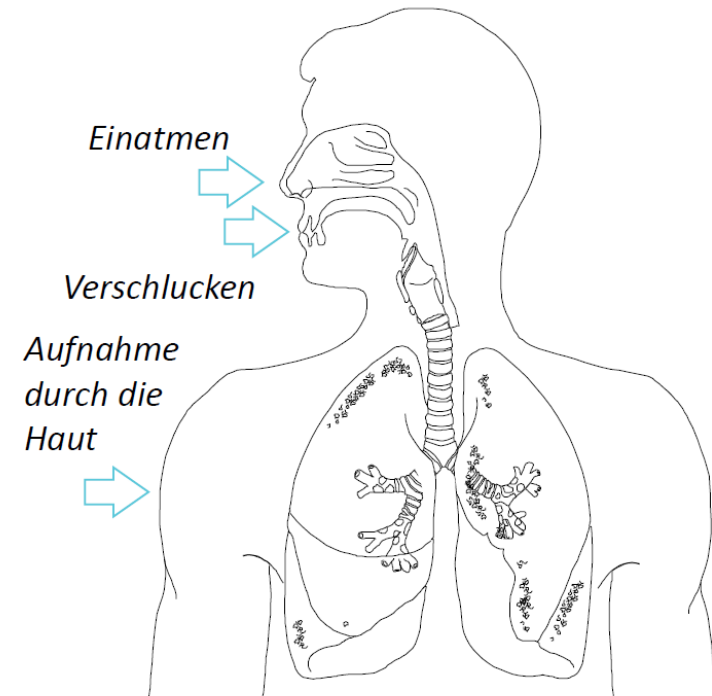
soldering and welding fumes, wood and metal dusts from grinding work, quartz dusts from the use of quartz flour, artificial mineral fibres in insulating materials, toner powder/toner dust from copiers.



How can I be exposed to hazardous substances ?

Hazardous substances can enter the human body in several ways.

- **Inhalation** (gases, vapours, dusts, aerosols)
- **Ingestion** (dusts, liquids)
- **Absorption through the skin** (dusts, liquids)



How do hazardous substances work ?

Contact with the eyes is particularly dangerous.

Solid hazardous substances act mechanically on the eye and also react with the tear fluid. Gases, vapours, mists and fumes damage the mucous membranes of the eyes. Liquid hazardous substances, especially acids, alkalis and solvents, can cause severe injuries. These injuries range from corneal clouding to blindness.

Ingestion of hazardous substances leads to disruption of biochemical processes in the organism. This can lead to irritation, inflammation, organ dysfunction, or death. Ingestion of hazardous substances can also cause allergies, genetic damage or tumours. Highly concentrated single doses can lead to acute poisoning.

Chronic poisoning is formed by exposure to constantly repeated low concentrations.

When handling flammable and explosive substances and in the event of a resulting fire may also cause burns to the body.

Risk Assessment

Within the framework of a risk assessment as part of the assessment of working conditions the employer must determine whether the employees perform activities involving hazardous substances or whether hazardous substances may be generated or released during activities.

If this is the case, he must assess all the resulting hazards to the health and safety of the employees.

		Wahrscheinlichkeit des Wirksamwerdens der Gefährdung			
		Sehr gering	Gering	Mittel	Hoch
Mögliche Schadensschwere	Leichte Verletzungen und Erkrankungen	😊	😊	😐	😐
	Mittelschwere Verletzungen und Erkrankungen	😊	😐	😐	😞
	Schwere Verletzungen und Erkrankungen	😐	😐	😞	😞
	Möglicher Tod, Katastrophe	😐	😞	😞	😞

Risk Assessment

The following must be clarified before working with a hazardous substance

- Can the hazardous substance be replaced by a less hazardous one?
- What hazards may be associated with this substance?
- What must generally be observed with regard to occupational health and safety, environmental protection, and fire and explosion protection?
- With which substances may this hazardous substance not be stored together?
- What substances can be released when this hazardous substance is used in the workplace?
- How must this hazardous substance be disposed of?
- Has this hazardous substance been included in the hazardous substance register?
- Have operating instructions been prepared?

How to deal with hazardous substances ?

Even the best technical and organizational protection cannot help if every individual does not comply with the handling regulations.

Therefore, the following principles are intended as a guide to safe handling of hazardous substances:

- Memorize hazard symbols on the label (marking) and the hazards they designate.
- Consider what the consequences of handling the hazardous substance may be for your particular case.
- Follow the safety advice given on the label.
- Take special care with unlabelled substances.
- The best protection against health hazards caused by hazardous substances is to avoid handling them.

Personal protective equipment (PPE)

Personal protective equipment is always required when technical and organizational measures do not provide adequate protection against hazardous substances.

Important protective equipment is:

- Eye protection when handling substances such as acids.
- Respiratory protection when handling gases, vapours or dusts in concentrations that are harmful to health.
- Protective gloves and clothing in case of possible skin contact.
- Safety shoes to prevent foot injuries.



Operation manual

- An operating manual must be prepared for each hazardous substance.
- Employees who handle hazardous substances must be instructed about existing hazards and protective measures on the basis of the operating instructions.
- The instructions must be carried out at least once a year.
- The content and time of the instruction must be recorded in writing and confirmed by the signature of the instructed person.
- The records of the instructions given must be kept for at least two years.

Betrieb:	Betriebsanweisung gem. §14 GefStoffV	Datum: Unterschrift:
Arbeitsbereich:	Arbeitsplatz/Tätigkeit:	
GEFAHRSTOFFBEZEICHNUNG		
Säuren und Laugen		
GEFAHREN FÜR MENSCH UND UMWELT		
		<ul style="list-style-type: none"> • Verursacht Reizungen und schwere Verätzungen bei Berührung mit Haut, Augen und Schleimhäuten • Heftige Reaktionen bei Verwendung von Säuren mit Laugen und beim Verdünnen mit Wasser möglich • Flüssigkeiten können wassergefährdend sein; Wassergefährdungsklasse beachten
Gefahr		
SCHUTZMAßNAHMEN UND VERHALTENSREGELN		
		<ul style="list-style-type: none"> • Auf Gefahrenbezeichnung und Gefahrensymbole achten • Am Arbeitsplatz nicht rauchen, essen oder trinken • Keine Lebensmittel am Arbeitsplatz aufbewahren • Für ausreichende Belüftung beim Einsatz sorgen; Dämpfe nicht einatmen; ggf. Atemschutzmaske mit geeignetem Filter tragen • Vor der Arbeitsaufnahme und nach der Arbeit Hände mit Wasser und Hautreinigungsmittel waschen; geeignetes Hautschutzmittel auftragen • Schutzhandschuhe mit langen Stulpen tragen • Vollschutzbrille oder Gesichtsschutzschirm tragen • Schutzstiefel tragen (keine Lederschuhe) • Nur vorgesehene säure- oder laugenfeste Behälter benutzen • Beim Verdünnen erst Wasser, dann Säure/Laugen zugeben • Zum Entleeren oder Umfüllen Fasspumpe verwenden • Unnötiges Verdunsten beim Um- und Abfüllen vermeiden • Nach dem Um- und Abfüllen Gefäße mit entsprechender Gefahrstoffkennzeichnung versehen
		
VERHALTEN IM GEFAHRFALL		
		<ul style="list-style-type: none"> • Im Brandfall: Feuerwehr alarmieren; mit vorgesehenen Feuerlöschmitteln löschen • Bei Leckagen: Säuren und Laugen mit geeigneten Bindemitteln aufnehmen
ERSTE HILFE		
		<ul style="list-style-type: none"> • Hautkontakt: Mit Wasser und Seife abwaschen; verunreinigte Kleidung ausziehen • Einatmen von Staub/Dämpfen: Bei Beschwerden Betroffenen an die frische Luft bringen, ggf. hinlegen • Verschlucken: Viel Wasser trinken; keine Milch; kein Alkohol; Erbrechen vermeiden; sofort Arzt aufsuchen • Augenkontakt: Mehrere Minuten mit viel Wasser spülen; Lidspalt offen halten; Kontaktlinsen entfernen; Augenarzt hinzuziehen
Notruf: - 112		
SACHGERECHTE ENTSORGUNG		
		<ul style="list-style-type: none"> • Sammlung in geeigneten, dicht schließenden und ordnungsgemäß gekennzeichneten Behältern • Zur Entsorgung an einen Entsorgungsbetrieb übergeben

Operation manual – data hazardous properties

The substance data are entered in the "Hazardous substance designation" field.

The information from the safety data sheet is usually origin from the SDS. The substance name, preparation name or the trade name of the product is entered as the designation.

Here you find to the form of use and the corresponding designation at the workplace.

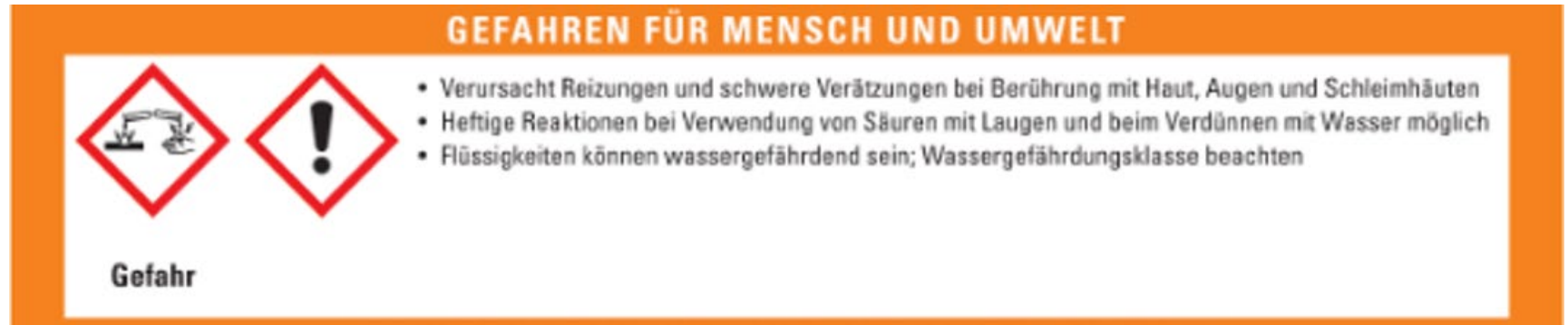
If several designations apply to a hazardous substance or a hazardous preparation, the additional names can be listed below as synonyms.

The hazardous substance or preparation may be briefly described in terms of shape, color, and odor to avoid gross confusion with other hazardous substances when handled.

Dangerous substances and preparations that are classified and registered with the appropriate bodies have different codes (index, EEC, CAS no.) for clear identification.

These numberings can also be adopted in the operating instructions.

Operating manual – risk for human and environment



The hazards to man and the environment are to be represented by the hazard symbols and the corresponding designations.

In addition, the hazards which emanate from the substance or the preparation. Classified substances or preparations are already assigned certain hazards are already assigned to classified substances or preparations and (H-phrases). The formulations of these notes are to be found in operating instructions and, if necessary, are to be adapted to the specific situation. Symptoms and types of possible illnesses should also be addressed.

Operational manual – protective measures

Necessary protective measures are represented by safety instructions.

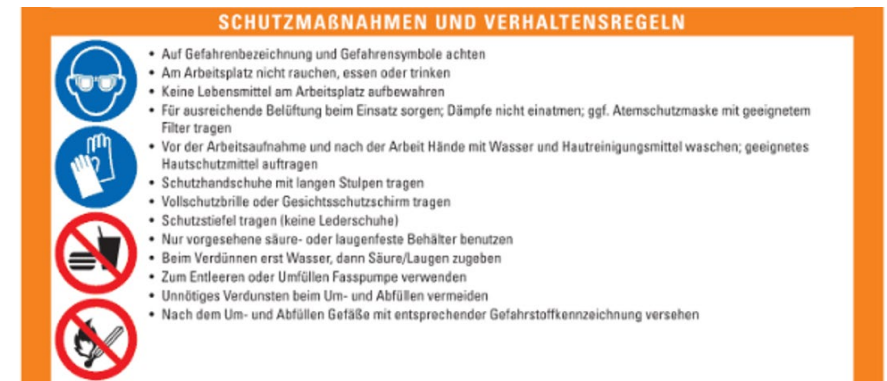
The measures (prohibitions, restrictions, requirements) are given in detail.

Technical and organizational protective measures are measures for the intended use and condition of technical protective systems.

Personal protective measures are generally aimed at the use of suitable personal protective equipment.

The personal protective equipment to be used must be precisely specified.

Occupational hygiene measures are all those rules of conduct that can be that can contribute to safety when handling hazardous substances through the personal behaviour of the employee.



Operational manual – hazardous situations

VERHALTEN IM GEFAHRFALL



- Im Brandfall: Feuerwehr alarmieren; mit vorgesehenen Feuerlöschmitteln löschen
- Bei Leckagen: Säuren und Laugen mit geeigneten Bindemitteln aufnehmen

For hazardous situations, e.g. leaks, fires, explosions, unusual increases in pressure and temperature, the necessary protective measures and rules of conduct must be indicated.

Emergency numbers and contact persons (e.g. environmental protection officer) should be mentioned.

Operational manual – first aid

ERSTE HILFE



- Hautkontakt: Mit Wasser und Seife abwaschen; verunreinigte Kleidung ausziehen
- Einatmen von Staub/Dämpfen: Bei Beschwerden Betroffenen an die frische Luft bringen, ggf. hinlegen
- Verschlucken: Viel Wasser trinken; keine Milch; kein Alkohol; Erbrechen vermeiden; sofort Arzt aufsuchen
- Augenkontakt: Mehrere Minuten mit viel Wasser spülen; Lidspalt offen halten; Kontaktlinsen entfernen; Augenarzt hinzuziehen

Notruf: - 112

In this section first aid measures are to be described, differentiated according to skin contact, eye contact, inhalation and in case of ingestion.

The information should be limited to the essentials that can and must be provided at the specific workplace/area.

It must be stated in which cases a physician must be consulted and which instructions must be given to him.

Operational manual – waste treatment

Indicate whether and which special protective measures must be observed during disposal and which personal protective equipment must be worn.

SACHGERECHTE ENTSORGUNG



- Sammlung in geeigneten, dicht schließenden und ordnungsgemäß gekennzeichneten Behältern
- Zur Entsorgung an einen Entsorgungsfachbetrieb übergeben

Safety Data Sheet

A safety data sheet must be provided to the customer if the substance or mixture meets the criteria for classification as hazardous.

It contains information on the labelling, hazards, handling, storage, transport, disposal and safe working conditions of a particular chemical substance/mixture.

A safety data sheet on paper or in electronic form must be transmitted by the manufacturer/supplier to the customer at the latest with the delivery and must be archived by the customer for 10 years.

Sicherheitsdatenblatt				
gemäß Verordnung (EG) Nr. 1907/2006 (REACH), geändert mit 2015/830/EU				
				
Aceton ≥99,5 %, zur Synthese				
Artikelnummer: 5025				
Version: 4.0 de				
Ersetzt Fassung vom: 28.06.2018				
Version: (3)				
Datum der Erstellung: 13.10.2015 Überarbeitet am: 21.08.2019				
ABSCHNITT 1: Bezeichnung des Stoffs beziehungsweise des Gemischs und des Unternehmens				
1.1 Produktidentifikator				
Bezeichnung des Stoffs	Aceton			
Artikelnummer	5025			
Registrierungsnummer (REACH)	01-2119471330-49-xxxx			
Index-Nr.	606-001-00-8			
EG-Nummer	200-662-2			
CAS-Nummer	67-64-1			
1.2 Relevante identifizierte Verwendungen des Stoffs oder Gemischs und Verwendungen, von denen abgeraten wird				
Identifizierte Verwendungen:	Laborchemikalie Labor- und Analysezwecke Formulierung (Mischen) von Zubereitungen und/oder Umverpackung (außer Legierungen) industrielle Verwendungen gewerbliche Verwendungen Zwischenprodukt			
1.3 Einzelheiten zum Lieferanten, der das Sicherheitsdatenblatt bereitstellt				
Carl Roth GmbH + Co KG Schoemperlenstr. 3-5 D-76185 Karlsruhe Deutschland				
Telefon: +49 (0) 721 - 56 06 0				
Telefax: +49 (0) 721 - 56 06 149				
e-Mail: sicherheit@carlroth.de				
Webseite: www.carlroth.de				
Sachkundige Person, die für das Sicherheitsdatenblatt zuständig ist				: Abteilung Arbeitssicherheit
e-Mail (sachkundige Person)				: sicherheit@carlroth.de
1.4 Notrufnummer				
Name	Straße	Postleitzahl/Ort	Telefon	Webseite
Giftzentrale München	Ismaninger Str. 22	81675 München	+49(0)89 19240	http://www.toxinfo.med.tum.de/inhalt/giftnotruf-muenchen

Storage of hazardous substances

- Storage or staging (24-hour limit).
- Limitation of storage quantities at the workplace to the daily or shift requirements.
- Selection of suitable storage rooms (collection facilities, floor condition, etc.).
- Prohibition of storage and staging in corridors, stairwells and escape and rescue routes.
- Storage only in closed containers/packaging (original containers or labelled containers).



Storage of hazardous substances

- Ensure that different storage classes are stored together.
- Select suitable storage form (cabinets, shelves).
- Restrict access to qualified personnel.
- Provide a collection facility.
- Food containers must not be used for storing hazardous substances.
- Meet special requirements for the storage facility (alarm plans, fire department plans, escape and rescue plans, ventilation, etc.).



What to do in emergency situations ?

"In order to protect the health and safety of employees in the event of operational incidents, accidents or emergencies, the employer shall determine in a timely manner the emergency measures to be taken when such an event occurs.

This includes providing adequate first aid facilities and conducting safety drills at regular intervals."



What to do in emergency situations ?

- Keep calm
- Those who act in a considered manner reach their destination in the right way
- Dial emergency call
- Report an accident
 - What happened?
 - Where did it happen?
 - How many people are injured?
 - Who is reporting?
- You can see further measures from the emergency and alarm plan.



Six rules for your safety

- Memorize the hazard symbols designed for your safety and the hazards they designate.
- Use the information of all hazard statements and safety advices on the packaging for your protection.
- Consider the consequences that may result from the hazard statements, e.g., "Causes severe eye irritation."
- Follow the measures recommended in the safety instructions exactly, e.g. "Wear protective gloves!".
- Always remain suspicious and vigilant, even if a package is not labelled.
- Embrace the principle: Caution is not cowardice and recklessness is not courage.



Safety Training & Instruction

Please ask your sales
or technical contact at
Flint Group
for further information
and support

