

Comunicación de Peligros- Módulo 4

Peligros Especiales
para Trabajadores
de Compañías que
Fabrican y/o Suplen
Acero Estructural

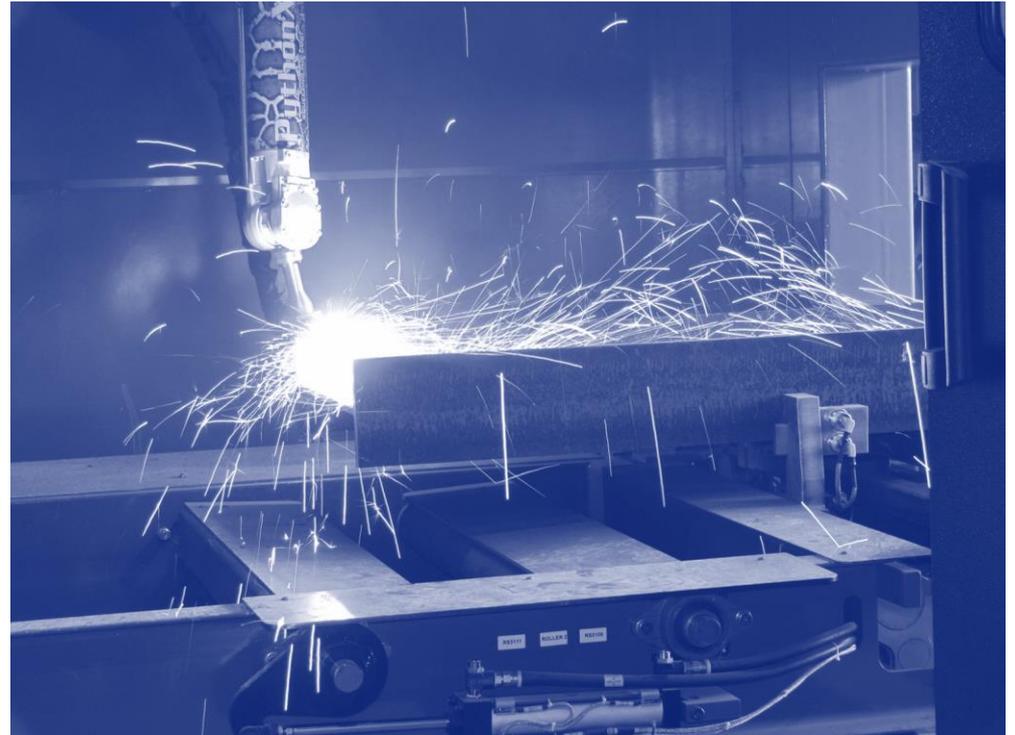


Photo from Douglas Steel Fabricating Corporation

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Información de la subvención de OSHA

Este material fue producido con el número de subvención SH-26316-SH4 por la Administración de Salud y Seguridad Ocupacional (OSHA por sus siglas en inglés) del Departamento del Trabajo de los Estados Unidos. Esto no necesariamente refleja la visión o las políticas del Departamento del Trabajo de los Estados Unidos, ni hace mención de marcas comerciales, productos comerciales u organizaciones implicando el endoso por parte del Gobierno de los Estados Unidos.

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Desarrollo del Programa

Este programa fue desarrollado por profesores y estudiantes de la Escuela de Planificación, Diseño y Construcción de *Michigan State University* en colaboración con el Comité de Seguridad del Instituto Americano de Construcción en Acero (AISC por sus siglas en inglés) y la Universidad de Puerto Rico en Mayagüez.

Diciembre de 2014

MICHIGAN STATE
UNIVERSITY



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Resultados de Aprendizajes: Los participantes deberán ser capaces de:

- Demostrar comprensión de la información que se encuentra en los *Safety Data Sheet (SDS)*
- Demostrar comprensión de cómo navegar en el *SDS* para localizar información
- Demostrar comprensión de "pictogramas"
- Demostrar comprensión de los requerimientos para los contenedores secundarios

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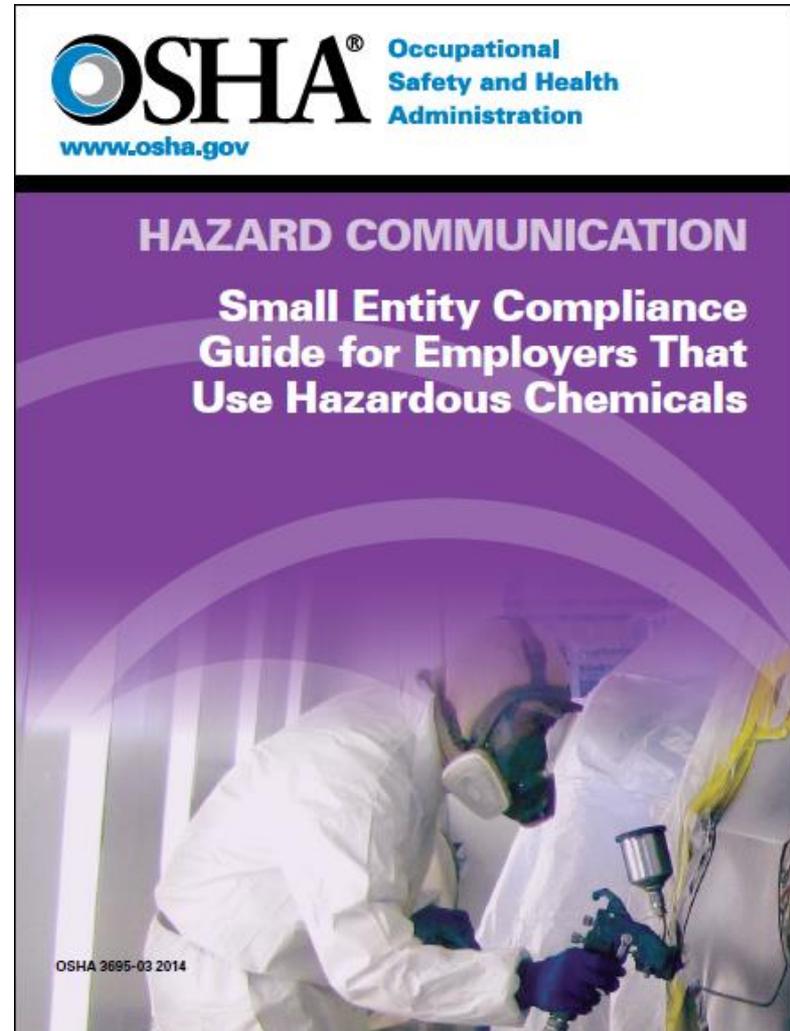
Visión general del Contenido

- ❑ Comunicación de Riesgos y el *Globally Harmonized System* (GHS)
- ❑ ¿Qué es el GHS?
- ❑ Vista general de los cambios en la Norma de Comunicación de Riesgos (*HazCom*)
 - ❑ Requerimientos de etiqueta
 - ❑ Hojas de Datos de Seguridad, *Safety Data Sheet* (SDS) formato - 16 secciones
 - ❑ Pictogramas
 - ❑ Los contenedores secundarios

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OSHA publica una guía útil para las pequeñas entidades en la comunicación de peligros

OSHA 3695-03 2014



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Requerimientos en la comunicación de peligros

- ❑ "HCS de OSHA, 29 CFR 1910.1200, se ocupa de las necesidades de información de los empleadores y trabajadores con respecto a los productos químicos."
OSHA 3695-03 2014
- ❑ "(b) (2) Esta sección se aplica a cualquier producto químico que se sabe que está presente en el lugar de trabajo, de tal manera que los empleados pueden estar expuestos bajo condiciones normales de uso o en una emergencia previsible." *29 CFR 1910.1200*

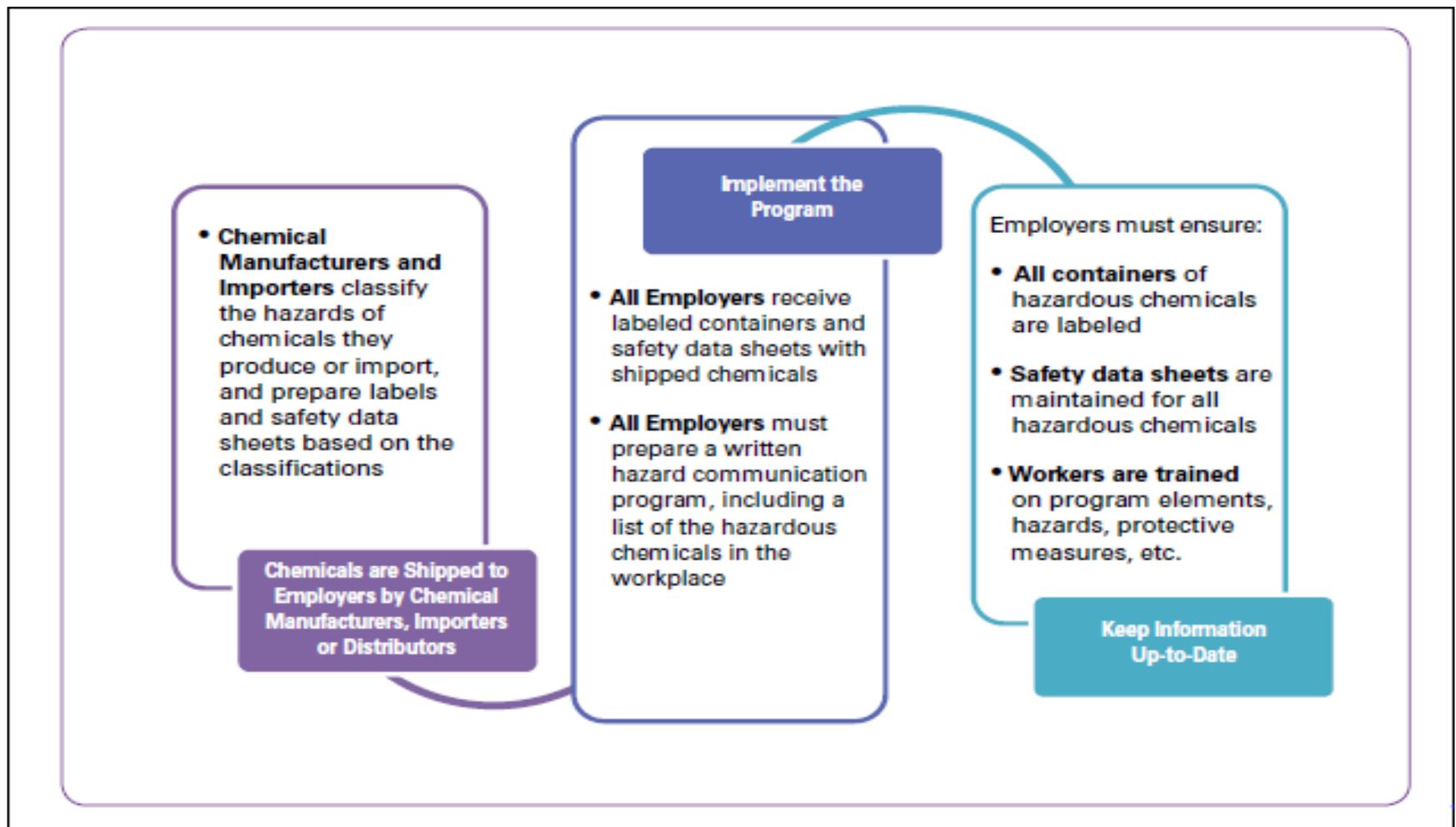
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¿Que es GHS?

- ❑ *The Globally Harmonized System of Classification and Labeling of Chemicals*
- ❑ Un sistema para la normalización y armonización de la clasificación y etiquetado de productos químicos.
 - ❑ Definiendo los peligros a la salud física y el ambientales por químicos
 - ❑ Creando procesos de clasificación, que se utilizan en los datos disponibles sobre los químicos, para la comparación con los criterios de los peligros definidos
 - ❑ Comunicando sobre información de peligros, así como las medidas de protección en las etiquetas y hojas de datos de seguridad (SDS por sus siglas en Ingles)

Source: [Hazard Communication and the Globally Harmonized System \(GHS\) for Fabricators and Erectors Webinar](http://www.aisc.org/content.aspx?id=35368):
<http://www.aisc.org/content.aspx?id=35368>

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Información y Capacitación del Empleado:

HazCom 1994

“Derecho a Saber”

- ❑ Los empleados necesitan saber la información sobre los productos químicos que están disponibles y cómo obtienen la información sobre los peligros involucrados

HazCom 2012

“Derecho a Comprender”

- ❑ Los empleados necesitan comprender e identificar los peligros relacionados con los productos químicos por un pictograma y la lectura de la etiqueta del producto

Source: Hazard Communication and the Globally Harmonized System (GHS) for Fabricators and Erectors Webinar:
<http://www.aisc.org/content.aspx?id=35368>

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HazCom 2012- Información y Capacitación del Empleado:

- Aclarar que las etiquetas de los contenedores enviados y las etiquetas en el lugar de trabajo deben ser explicados, así como el formato SDS
- Los trabajadores deben ser entrenados sobre las nueva etiqueta y los formatos SDS antes de todas las disposiciones de las reglas que aplican.
- Los empleadores están obligados a capacitar a los nuevos empleados en la relación con los nuevos elementos en las etiquetas y el formato de las hoja de datos de seguridad del 1 de diciembre de 2013

Source: Hazard Communication and the Globally Harmonized System (GHS) for Fabricators and Erectors Webinar:
<http://www.aisc.org/content.aspx?id=35368>

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Detalles de capacitación:

- Elementos de etiqueta
- Adiestrar a los empleados sobre el tipo de información que el empleado esperaría ver en las nuevas etiquetas
- ¿Cómo podrían utilizar esa información?
- Identificador del producto, las palabra de advertencia, indicaciones de peligro (s), pictograma (s), comunicado de precauciones (s), nombre, dirección y número de teléfono de la parte responsable

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Detalles de capacitación – continuación:

- Comprensión general de cómo los elementos interactúan
- Por ejemplo - explican que hay 2 palabras de advertencia:
 - Peligro “**DANGER**” significa mayor gravedad de peligro dentro de una clase de peligro
 - Advertencia “**WARNING**” es para peligros de menor gravedad
- Formato de la Hoja de Datos de Seguridad
- Capacitar a los empleados en formato de 16 secciones normalizados y el tipo de información que encontraría en las distintas secciones.

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Contenido

- ❑ “Safety Data Sheet” (en vez de “Material Safety Data Sheet”) usa un formato de 16-section.

Etiquetas

- Hay varios elementos del etiquetado:
 - Símbolos llamados "Pictogramas"
 - Palabra de advertencia
 - Indicaciones de peligro
 - Indicaciones de precaución
 - Identificación del Producto
 - Proveedor / Identificación del Manufacturero

SAMPLE LABEL	
PRODUCT IDENTIFIER CODE _____ Product Name _____	HAZARD PICTOGRAMS 
SUPPLIER IDENTIFICATION Company Name _____ Street Address _____ City _____ State _____ Postal Code _____ Country _____ Emergency Phone Number _____	SIGNAL WORD Danger
PRECAUTIONARY STATEMENTS Keep container tightly closed. Store in cool, well ventilated place that is locked. Keep away from heat/sparks/open flame. No smoking. Only use non-sparking tools. Use explosion-proof electrical equipment. Take precautionary measure against static discharge. Ground and bond container and receiving equipment. Do not breathe vapors. Wear Protective gloves. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Dispose of in accordance with local, regional, national, international regulations as specified.	HAZARD STATEMENT Highly flammable liquid and vapor. May cause liver and kidney damage.
In Case of Fire: use dry chemical (BC) or Carbon dioxide (CO ₂) fire extinguisher to extinguish.	SUPPLEMENTAL INFORMATION Directions for use _____ _____ _____ Fill weight: _____ Lot Number _____ Gross weight: _____ Fill Date: _____ Expiration Date: _____
First Aid If exposed call Poison Center. If on skin (on hair): Take off immediately any contaminated clothing. Rinse skin with water.	

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Peligros y Pictogramas HCS

<p>Health Hazard</p>  <ul style="list-style-type: none"> • Carcinogen • Mutagenicity • Reproductive Toxicity • Respiratory Sensitizer • Target Organ Toxicity • Aspiration Toxicity 	<p>Flame</p>  <ul style="list-style-type: none"> • Flammables • Pyrophorics • Self-Heating • Emits Flammable Gas • Self-Reactives • Organic Peroxides 	<p>Exclamation Mark</p>  <ul style="list-style-type: none"> • Irritant (skin and eye) • Skin Sensitizer • Acute Toxicity (harmful) • Narcotic Effects • Respiratory Tract Irritant • Hazardous to Ozone Layer (Non-Mandatory)
<p>Gas Cylinder</p>  <ul style="list-style-type: none"> • Gases Under Pressure 	<p>Corrosion</p>  <ul style="list-style-type: none"> • Skin Corrosion/ Burns • Eye Damage • Corrosive to Metals 	<p>Exploding Bomb</p>  <ul style="list-style-type: none"> • Explosives • Self-Reactives • Organic Peroxides
<p>Flame Over Circle</p>  <ul style="list-style-type: none"> • Oxidizers 	<p>Environment (Non-Mandatory)</p>  <ul style="list-style-type: none"> • Aquatic Toxicity 	<p>Skull and Crossbones</p>  <ul style="list-style-type: none"> • Acute Toxicity (fatal or toxic)

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Bordes rojos

- Bordes rojos son requeridos
- Bordes rojos incrementan la comprensibilidad



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Etiquetas: Pictogramas Peligros a la salud*



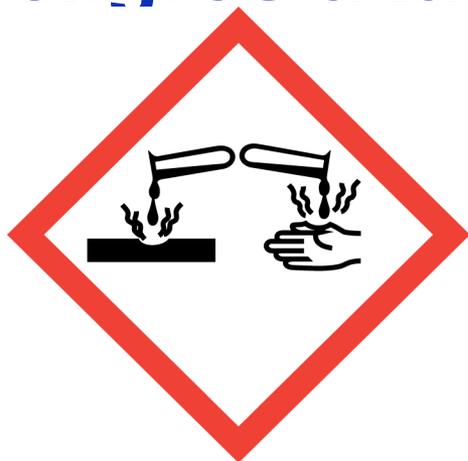
Toxicidad aguda (severa)



Toxicidad aguda (menos grave):
Irritante
Sensibilizador dérmico (piel)
Toxicidad aguda (nociva)
Efectos narcóticos
Irritación del tracto respiratorio

Comunicación de Peligros- Módulo 4

Etiquetas: Pictogramas Peligros a la salud*



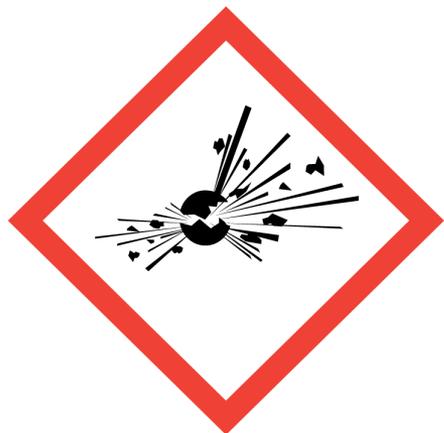
Corrosivo a la piel
Lesiones oculares graves /
irritación de ojo
Corrosión de metales



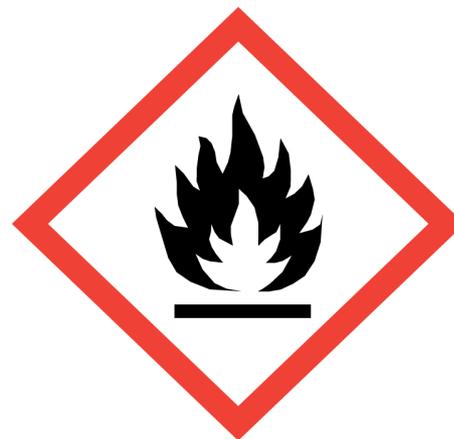
Carcinógeno
Sensibilizador respiratorio
Toxicidad para la reproducción
Toxicidad en órganos
Mutagenicidad
Peligro de aspiración

Comunicación de Peligros- Módulo 4

Etiquetas: Pictogramas Peligros a la salud*



Explosivos
Auto-reactivos
Peróxidos orgánicos



Inflamables
Auto-reactivos
Pirofóricos
Auto-calentamiento
Emite gases inflamables
Peróxidos orgánicos

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Etiquetas: Pictogramas – Peligros Físicos*



Corrosivo al metal



Gases bajo presión



Oxidante

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Etiqueta: Palabra de advertencia*

- ❑ Estas son palabras que se usan para indicar la gravedad del peligro y alerta a los empleados de la potencialidad del mismo
- ❑ Sólo dos palabras de advertencia aparecerán:
 - ❑ “**DANGER**” (mayor gravedad de peligro)
 - ❑ “**WARNING**” (menor gravedad de peligro)
- ❑ No todas las etiquetas tendrán una palabra de advertencia
- ❑ Algunos productos químicos no son lo suficientemente peligrosos para requerir una palabra de advertencia en la etiqueta

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Etiquetas: Indicación de Peligro*

- Hay indicaciones de peligro específicos que deben aparecer en la etiqueta en base a la clasificación de peligro químico

- Ejemplos:
 - Líquidos y vapores inflamables
 - Causa irritación de la piel
 - Puede causar cáncer

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Etiqueta: Consejos de Precaución*

- Los consejos de precaución describen las medidas recomendadas que se deben tomar para proteger contra exposiciones peligrosas, almacenamiento inadecuado o manejo de una sustancia química

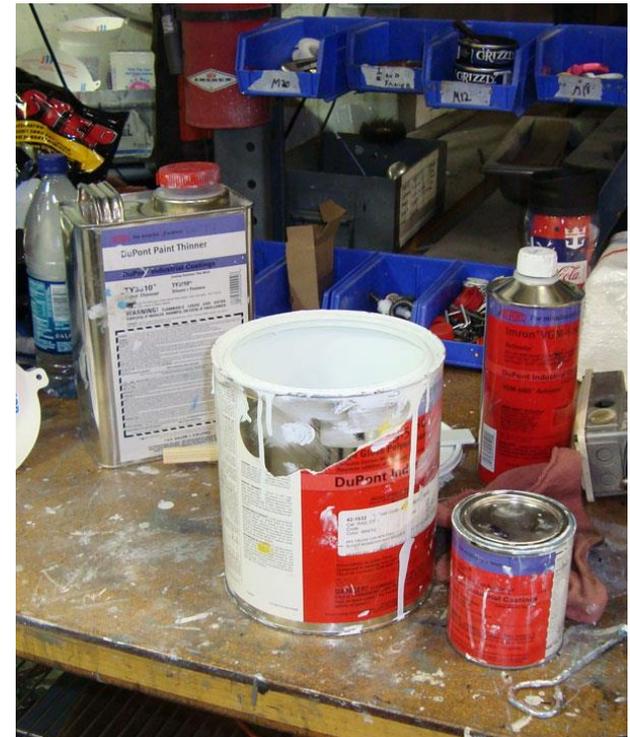
- Ejemplos:
 - Usar protección respiratoria
 - Lavarse con agua y jabón
 - Almacenar en un lugar con buena ventilación

- No necesariamente es un mandato para que los empleados lo sigan

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Etiqueta: Otra Información*

- Otra información que puede incluirse en la etiqueta:
- Estado físico
- Color
- Peligros que no fueron clasificados de otra manera
- Pasos a seguir ante una exposición
- Almacenamiento y eliminación
- Prevención de peligros y emergencia
- Instrucciones de respuesta



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*Modified from <https://www.osha.gov/dsg/hazcom/ghs.html>

Source: Hazard Communication and the Globally Harmonized System (GHS) for Fabricators and Erectors Webinar: <http://www.aisc.org/content.aspx?id=35368>

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Ejemplo de Etiqueta:

New style Label (GHS)

Xyz... Chemical

WARNING
Flammable Liquid and vapor
Harmful if swallowed
May cause damage to organs (liver)
May cause damage to organs through prolonged or repeated exposure (heart)
Suspected of damaging fertility

Keep away from heat, sparks, open flames and hot surfaces - No smoking. Do not breathe vapors. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use protective equipment as required. Wear protective gloves and eye protection. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Keep container tightly closed. Ground container and receiving equipment. Use explosion-proof electrical, ventilating, lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Store locked up in a well ventilated place. Keep cool. Dispose of contents and container in accordance with local, state and federal regulations.

First Aid:
If swallowed: Call a doctor if you feel unwell. Rinse mouth.
If on skin or hair: Remove immediately all contaminated clothing. Rinse skin with water.
If exposed or if you feel unwell: call a doctor.

Fire:
In case of fire: Use water spray foam, dry chemical or carbon dioxide (CO₂) for extinction

GHS Company, 123 Global Drive, Cincinnati, OH telephone (800) 555-8888

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Etiquetas: Contenedores Secundarios*

- ❑ Todavía se permiten los sistemas de etiquetado secundario
- ❑ Debe ser consistente con la norma revisada de HazCom
- ❑ No debe haber contradicciones en las advertencias o pictogramas de peligro
- ❑ Puede utilizar materiales escritos (por ejemplo, señales, carteles, etc.) en lugar de la colocación de etiquetas a los contenedores individuales de procesos estacionarios
- ❑ Empleador puede utilizar etiquetas compatibles al *Globally Harmonized System* (GHS) (igual al enviado)

HMIS Label



NFPA Label



Source: Hazard Communication and the Globally Harmonized System (GHS) for Fabricators and Erectors Webinar:
<http://www.aisc.org/content.aspx?id=35368>

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Etiquetado en el lugar de trabajo*

- ❑ En la actualidad el *Hazard Communication Standard* (HCS) permite que los empleadores utilizar sistemas de etiquetado específicos del lugar de trabajo, siempre y cuando proporcionen la información requerida
- ❑ Sin embargo, puede ser necesario actualizar el sistemas de etiquetado del lugar de trabajo para asegurarse que la información es consistente con las nuevas clasificaciones
- ❑ De los sistema de *National Fire Protection Association* (NFPA)/ *Hazardous Materials Identification System* (HMIS) *

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Ejemplo de Etiqueta:

New style Label (GHS)

Xyz... Chemical

WARNING
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Harmful if swallowed
May cause damage to organs (liver)
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In case of fire: Use water spray foam, dry chemical or carbon dioxide (CO₂) for extinction

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Etiqueta: Identificación



Source: Hazard Communication and the Globally Harmonized System (GHS) for Fabricators and Erectors Webinar:
<http://www.aisc.org/content.aspx?id=35368>

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Hojas de Datos de Seguridad - HazCom 2012

- Safety Data Sheets establece las 16-secciones a título fijo dando un orden a la información y estableciendo que información se provee bajo cada título
- Secciones 12 a 15 no son obligatorias

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16-Section Safety Data Sheet

1. Identificación de la sustancia o mezcla y su proveedor
2. Identificación de los peligros
3. Composición / información sobre los componentes de la sustancia / mezcla
4. Primeros auxilios
5. Medidas de lucha contra los incendios
6. Medidas para atender liberación o vertido accidental
7. Manejo y almacenamiento
8. Controles de exposición / protección personal
9. Propiedades físicas y químicas
10. Estabilidad y reactividad
11. Toxicológica
12. Información ecológica (no obligatorio)
13. Consideraciones sobre la eliminación (no obligatorio)
14. Información relacionada al transporte (no obligatorio)
15. Información reglamentaria (no obligatorio)
16. Otra información, incluyendo la información sobre la preparación y actualización del SDS

[Hazard Communication and the Globally Harmonized System \(GHS\) for Fabricators and Erectors](#)

Webinar: <http://www.aisc.org/content.aspx?id=35368> 33



SAFETY DATA SHEET

This Safety Data Sheet complies with Regulation (EC) No 1907/2006, ISO 11014-1 and ANSI Z400.1

Page:1(4)
SDS number:1080/02
Date:2009-03-11
Product:OK Flux 10.61

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: OK Flux 10.61
Application: Arc Welding
Classification(s): EN 760: SA FB 1 65 DC
Supplier: ESAB AB, Box 8004, 402 77 Göteborg, Sweden. sds.esab@esab.se
Telephone no.: +46 31 509000
Web site: www.esab.com

2. HAZARDS IDENTIFICATION

Emergency Overview: Granules in varying colours. This product is normally not considered hazardous as shipped. Gloves should be worn when handling to prevent contaminating hands with product dust.

This product contains quartz, but normally not in an inhalable fraction. Quartz can cause silicosis and may cause cancer. Avoid eye contact or inhalation of dust from the product. Skin contact is normally no hazard but should be avoided to prevent possible allergic reactions. Persons with a pacemaker should not go near welding or cutting operations until they have consulted their doctor and obtained information from the manufacturer of the device.

When this product is used in a welding process, the most important hazards are welding fumes, heat, radiation and electric shock.

Fumes: Welding fumes are normally not a hazard with submerged arc welding, unless the arc burns through the flux bedding. Use enough flux to avoid burn-through. Overexposure to welding fumes may result in symptoms like metal fume fever, dizziness, nausea, dryness or irritation of the nose, throat or eyes. Chronic overexposure to welding fumes may affect pulmonary function. Overexposure to manganese and manganese compounds above safe exposure limits can cause irreversible damage to the central nervous system, including the brain, symptoms of which may include slurred speech, lethargy, tremor, muscular weakness, psychological disturbances and spastic gait.

Heat: Spatter and melting metal can cause burn injuries and start fires.

Radiation: Arc rays can severely damage eyes or skin.

Electricity: Electric shock can kill.

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is an agglomeration of calcined minerals.

Flux Ingredients	Weight %	CAS#	EINECS#	Hazard class. ¹	IARC ²	NTP ³	OSHA List ⁴
Aluminum oxide	10-15	1344-28-1	215-691-6	No	-	-	-
Aluminum silicate	2-5	12141-46-7	235-253-8	No	-	-	-
Fluorides	20-30	7789-75-5	232-188-7	No	-	-	-
Iron oxide	2-5	1309-37-1	215-168-2	No	-	-	-
Magnesium oxide	30-40	1309-48-4	215-171-9	No	-	-	-
Manganese	<1	7439-96-5	231-105-1	No	-	-	-
Quartz	5-10	14808-60-7	238-878-4	T; R45	1	K	-
Silicates	2-5	1344-09-8	215-687-4	No	-	-	-

(1) Hazard Classification according to European Council Directive 67/548/EEC, for R-phrases see Section 16.

(2) Evaluation according to the International Agency for Research on Cancer. 1-Carcinogenic to humans. 2A-Probably carcinogenic to humans. 2B-Possibly carcinogenic to humans.

(3) Classification according to the 11th Report on Carcinogens, published by the US National Toxicology Program. K- Known to be a Human Carcinogen. S- Suspect Carcinogen.

(4) Carcinogen listing according to OSHA, Occupational Safety & Health Administration (USA)

4. FIRST AID MEASURES

Inhalation: If breathing has stopped, perform artificial respiration and obtain medical assistance immediately! If breathing is difficult, provide fresh air and call physician.

Eye contact: For radiation burns due to arc flash, see physician. To remove dusts or fumes flush with water for at least fifteen minutes. If irritation persists, obtain medical assistance.

Skin contact: For skin burns from arc radiation, promptly flush with cold water. Get medical attention for burns or irritations that persist. To remove dust or particles wash with mild soap and water.

Electric shock: Disconnect and turn off the power. Use a nonconductive material to pull victim away from contact with live parts or wires. If not breathing, begin artificial respiration, preferably mouth-to-mouth. If no detectable pulse, begin Cardio Pulmonary Resuscitation (CPR). Immediately call a physician.

General: Move to fresh air and call for medical aid.



SAFETY DATA SHEET

This Safety Data Sheet complies with Regulation (EC) No 1907/2006, ISO 11014-1 and ANSI Z400.1

Page:2(4)
SDS number:1080/02
Date:2009-03-11
Product:OK Flux 10.61

5. FIRE FIGHTING MEASURES

No specific recommendations for welding consumables. Welding arcs and sparks can ignite combustible and flammable materials. Use the extinguishing media recommended for the burning materials and fire situation. Wear self-contained breathing apparatus as fumes or vapors may be harmful.

6. ACCIDENTAL RELEASE MEASURES

Solid objects may be picked up and placed into a container. Liquids or pastes should be scooped up and placed into a container. Wear proper protective equipment while handling these materials. Do not discard as refuse.

Personal precautions: refer to section 8.

Environmental precautions: refer to section 13.

7. HANDLING AND STORAGE

Handling: Handle with care to avoid stings and cuts. Wear gloves when handling welding consumables. Avoid exposure to dust. Do not ingest. Some individuals can develop an allergic reaction to certain materials. Retain all warning and identity labels.

Storage: Keep separate from chemical substances like acids and strong bases, which could cause chemical reactions.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Avoid exposure to welding fumes, radiation, spatter, electric shock, heated materials and dust.

Engineering measures: Ensure sufficient ventilation, local exhaust, or both, to keep welding fumes and gases from breathing zone and general area. Keep working place and protective clothing clean and dry. Train welders to avoid contact with live electrical parts and insulate conductive parts. Check condition of protective clothing and equipment on a regular basis.

Personal protective equipment: Use respirator or air supplied respirator when welding or brazing in a confined space, or where local exhaust or ventilation is not sufficient to keep exposure values within safe limits. Use special care when welding painted or coated steels since hazardous substances from the coating may be emitted. Wear hand, head, eyes, ear and body protection like welders gloves, helmet or face shield with filter lens, safety boots, apron, arm and shoulder protection. Keep protective clothing clean and dry.

Use industrial hygiene monitoring equipment to ensure that exposure does not exceed applicable national exposure limits. The following limits can be used as guidance. Unless

noted, all values are for 8 hour time weighted averages (TWA). For information about welding fume analysis refer to Section 10.

Substance	CAS#	ACGIH TLV ¹ mg/m3	OSHA PEL ² mg/m3
Aluminum oxide	1344-28-1	1**	15*, 5**
Aluminum silicate	12141-46-7	1**	15*, 5**
Fluorides	7789-75-5	2,5(F)	2,5(F)
Iron oxide	1309-37-1	5**	10(f)
Magnesium oxide	1309-48-4	10***	15*
Manganese	7439-96-5	0,2	5(ceil)
Quartz	14808-60-7	0,025**	10mg/m3/(%SiO2+2)**
Silicates	1344-09-8	-	-

(1) Threshold Limit Values according to American Conference of Governmental Industrial Hygienists, 2008

(2) Permissible Exposure Limits according to the Occupational Safety & Health Administration (USA).

(3) *Total dust, **Respirable fraction, ***Inhalable fraction. (f) fume, (d) dust, (m) mist, (ceil) ceiling.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Granules, non-volatile with varying color

Melting point: >1000°C / >1800°F

10. STABILITY AND REACTIVITY

General: This product is only intended for normal welding purposes.

Stability: This product is stable under normal conditions.

Reactivity: Contact with chemical substances like acids or strong bases could cause generation of gas.

When this product is used in a welding process, hazardous decomposition products would include those from the volatilization, reaction or oxidation of the materials listed in section 3 and those from the base metal and coating.

Fumes are normally not generated in submerged arc welding, provided that a sufficient flux bedding is used to prevent the arc from burning through. If the arc burns through the flux bedding, reasonably expected fume constituents of this product would include fluorides and oxides of metals such as iron, manganese, magnesium, sodium, aluminum and silicon. Refer to applicable national exposure limits for fume compounds, including those exposure limits for fume compounds found in Section 8. Manganese has a low exposure limit, in some countries, that may be easily exceeded.

Reasonably expected gaseous products would include carbon oxides, nitrogen oxides and ozone. Air contaminants around the welding area can be affected by the welding process and influence the composition and quantity of fumes and gases produced.

Source: Hazard Communication and the Globally Harmonized System (GHS) for Fabricators and Erectors Webinar;

<http://www.aisc.org/content.aspx?id=35368>



SAFETY DATA SHEET

This Safety Data Sheet complies with Regulation (EC) No 1907/2006, ISO 11014-1 and ANSI Z400.1

Page:3(4)
SDS number:1080/02
Date:2009-03-11
Product:OK Flux 10.61

11. TOXICOLOGICAL INFORMATION

Inhalation of welding fumes and gases can be dangerous to your health. Classification of welding fumes is difficult because of varying base materials, coatings, air contamination and processes. The International Agency for Research on Cancer has classified welding fumes as possibly carcinogenic to humans (Group 2B).

Acute toxicity: Overexposure to welding fumes may result in symptoms like metal fume fever, dizziness, nausea, dryness or irritation of the nose, throat or eyes.

Chronic toxicity: Overexposure to welding fumes may affect pulmonary function. Overexposure to manganese and manganese compounds above safe exposure limits can cause irreversible damage to the central nervous system, including the brain, symptoms of which may include slurred speech, lethargy, tremor, muscular weakness, psychological disturbances and spastic gait. Inhalable quartz is a respiratory carcinogen however the process of welding converts crystalline quartz to the amorphous form which is not considered to be a carcinogen.

12. ECOLOGICAL INFORMATION

Welding consumables and materials could degrade/weather into components originating from the consumables or from the materials used in the welding process. Avoid exposure to conditions that could lead to accumulation in soils or groundwater.

13. DISPOSAL CONSIDERATIONS

Discard any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with federal and local regulations. Use recycling procedures if available.

USA RCRA: This product is not considered hazardous waste if discarded.

Residues from welding consumables and processes could degrade and accumulate in soils and groundwater.

14. TRANSPORT INFORMATION

No international regulations or restrictions are applicable.

15. REGULATORY INFORMATION

Read and understand the manufacturer's instructions, your employer's safety practices and the health and safety instructions on the label. Observe any federal and local regulations. Take precautions when welding and protect yourself and others.

WARNING: Welding fumes and gases are hazardous to your health and may damage lungs and other organs. Use adequate ventilation.

ELECTRIC SHOCK can kill.

ARC RAYS and SPARKS can injure eyes and burn skin.

Wear correct hand, head, eye and body protection.

Canada: WHMIS classification: Class D; Division 2, Subdivision A

Canadian Environmental Protection Act (CEPA): All constituents of this product are on the Domestic Substance List (DSL).

USA: Under the OSHA Hazard Communication Standard, this product is considered hazardous.

This product contains or produces a chemical known to the state of California to cause cancer and birth defects (or other reproductive harm). (California Health & Safety Code § 25249.5 et seq.) United States EPA Toxic Substance Control Act: All constituents of this product are on the TSCA inventory list or are excluded from listing.

CERCLA/SARA Title III

Reportable Quantities (RQs) and/or Threshold Planning Quantities (TPQs):

Ingredient name	RQ (lb)	TPQ (lb)
No ingredients listed in this section	-	-

Spills or releases resulting in the loss of any ingredient at or above its RQ require immediate notification to the National Response Center and to your Local Emergency Planning Committee.

Section 311 Hazard Class

As shipped: Immediate

In use: Immediate delayed

EPCRA/SARA Title III 313 Toxic Chemicals

The following metallic components are listed as SARA 313 "Toxic Chemicals" and potential subject to annual SARA 313 reporting. See Section 3 for weight percent.

Ingredient name	Disclosure threshold
Manganese	1.0% de minimis concentration

16. OTHER INFORMATION

This Safety Data Sheet has been revised due to modifications to several paragraphs and/or new format. This SDS supersedes... 1080/01.

Comunicación de Peligros- Módulo 4

Capacitación Suplementaria a los empleados *

Detalles del programa de comunicación de peligros específicos de la instalación:

- Ubicación y disponibilidad de los programas escritos y el SDS
- En el área de trabajo deben estar provistos los peligros físicos, peligros para la salud y los peligros no clasificados de productos químicos en el área de trabajo (HNOC Hazards not otherwise classified por sus siglas en Ingles)
- Lista de productos químicos, ubicación y el uso de productos químicos peligrosos
- Sistema de etiquetado de contenedores secundario
- Procedimientos específicos para proteger a los empleados de los peligros químicos
- Los métodos utilizados para detectar la presencia o la liberación de productos químicos peligrosos (alarmas de sensores, los olores, otros dispositivos de monitorización visual)

Comunicación de Peligros- Módulo 4

Pasos finales para completar la capacitación – Capacitación Complementaria (para ser provisto por el empleador)*

- Los empleadores deben proporcionar a los empleados los detalles del programa de comunicación de peligros específicos de la instalación:
 - Ubicación y disponibilidad de programa escrito y SDS
 - Información específica relacionada con los productos químicos en las instalaciones
 - Peligros Físicos
 - Peligros para la salud
 - Peligros que no están clasificados

Comunicación de Peligros- Módulo 4

Fechas vigentes y requisitos *

Effective Completion Date	Requirement(s)	Responsible Party
December 1, 2013	Train employees on the new label elements and SDS format	Employers
June 1, 2015	Compliance with all modified provisions of the final rule except:	Chemical manufacturers, importers, distributors, and employers
December 1, 2015	The distributor shall not ship containers labeled by the chemical manufacturer or importer unless it is a GHS label	Distributor
June 1, 2016	Update alternative workplace labeling and hazard communication program as necessary, and provide additional employee training for newly identified hazards [and affected vertical standard specific signage]	Employer
Transition Period: 10/2012 to the effective completion dates noted above	Comply with either 29 CFR 1910.1200 (this final standard), or the current standard, or both	Chemical manufacturers, importers, distributors, and employers

Source: Hazard Communication and the Globally Harmonized System (GHS) for Fabricators and Erectors Webinar:
<http://www.aisc.org/content.aspx?id=35368>

Comunicación de Peligros- Módulo 4

Otras Normas efectivas

- ❑ Normas de señalización están también afectadas

Comunicación de Peligros- Módulo 4

Normas de Salud

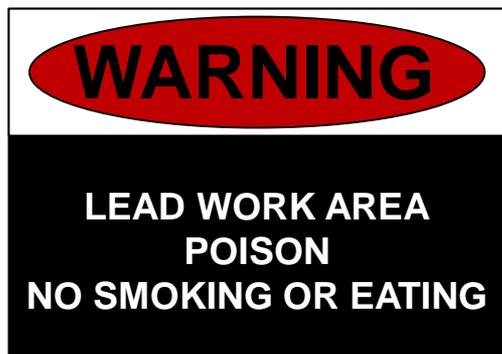
- ❑ Las normas específicas de sustancia generalmente son anteriores al *Hazard Communication Standard* (HCS), y no tienen un enfoque integrar para la comunicación de peligros.
- ❑ La regla final hace referencia al HazCom 2012 en cada norma para asegurar que tengan todas las protecciones de la regla.
- ❑ Las áreas reguladas por señalización tendrán que ser actualizadas para que reflejan el nuevo idioma
- ❑ Los empleadores tienen hasta el 1 de junio de 2016 para actualizar los letreros.

Comunicación de Peligros- Módulo 4

Otras normas afectadas- Requisitos de señalización

Asbestos
Carcinógenos
Cloruro de vinilo
Arsénico inorgánico
Plomo
Cromo (VI)
Benceno
Emisiones de hornos de coque

Acrilonitrilo
Oxido de Etileno
Formaldehído
Metilendianilina
1,3-Butadieno
Cloruro de metileno



Source: Hazard Communication and the Globally Harmonized System (GHS) for Fabricators and Erectors

Webinar: <http://www.aisc.org/content.aspx?id=35368>

Comunicación de Peligros- Módulo 4

¡Conozca dónde en su empresa se encuentra el SDSs y si esta accesible!

- Dónde están localizados específicamente?

Comunicación de Peligros- Módulo 4

Otros recursos

<https://www.osha.gov/dsg/hazcom/ghs.html>

OSHA Hazard Communication Globally Harmonized System (GHS)

OSHA QUICK CARD Hazard Communication Standard Pictogram

As of June 1, 2015, the Hazard Communication Standard (HCS) will require pictograms on labels to alert users of the chemical hazards to which they may be exposed. Each pictogram consists of a symbol on a white background framed within a red border and represents a distinct hazard. The pictogram on the label is determined by the chemical hazard classification.

HCS Pictograms and Hazards

<ul style="list-style-type: none"> • Carcinogen • Mutagenicity • Reproductive Toxicity • Respiratory Sensitizer • Target Organ Toxicity • Aspiration Toxicity 	<ul style="list-style-type: none"> • Flammable • Pyrophoric • Self Heating • Oxidizing (Flammable Gas) • Self Reactives • Organic Peroxides 	<ul style="list-style-type: none"> • Irritant (skin and eye) • Skin Sensitizer • Acute Toxicity (Inhalation) • Neurotoxic Effects • Respiratory Tract Irritant • Hazardous to Aquatic Life (Aquatic Toxicity)
<ul style="list-style-type: none"> • Gas Under Pressure 	<ul style="list-style-type: none"> • Skin Corrosion/Irritant • Eye Damage • Corrosive to Metals 	<ul style="list-style-type: none"> • Explosives • Self Reactives • Organic Peroxides
<ul style="list-style-type: none"> • Oxidizers 	<ul style="list-style-type: none"> • Aquatic Toxicity 	<ul style="list-style-type: none"> • Acute Toxicity (Inhalation)

For more information:
OSHA Occupational Safety and Health Administration
 U.S. Department of Labor
www.osha.gov (800) 321-OSHA (6742)

OSHA QUICK CARD Hazard Communication Standard Labels

OSHA has updated the requirements for labeling of hazardous chemicals under its Hazard Communication Standard (HCS). As of June 1, 2015, all labels will be required to have pictograms, a signal word, hazard and precautionary statements, the product identifier, and supplier identification. A sample revised HCS label, identifying the required label elements, is shown on the right. Supplemental information can also be provided on the label as needed.

For more information:
OSHA Occupational Safety and Health Administration
 (800) 321-OSHA (6742)
www.osha.gov

SAMPLE LABEL

Product Name: _____
 Product Identifier: _____

Supplier Identification: _____
 Supplier Name: _____
 Address: _____
 City: _____ State: _____ Zip: _____
 Emergency Phone Number: _____

Hazard Pictograms:

Signal Word: **Danger**

Hazard Statements: **Highly Flammable Liquid and vapor. May cause liver and kidney damage.**

Precautionary Statements: _____

Supplemental Information: _____

Additional Information: _____

OSHA 3092 (02/15)

OSHA DATOS RÁPIDOS Etiquetas para la norma sobre la comunicación de peligros

De acuerdo con su norma de comunicación de peligros (HCS) por sus siglas en inglés, la OSHA ha actualizado los requisitos para las etiquetas de los productos químicos peligrosos. A partir del 1° de junio de 2015, se exigirá que todas las etiquetas incluyan pictogramas, una palabra de advertencia, indicación de peligro, consejos de prudencia, identificación del proveedor y la identificación del proveedor. A la derecha se presenta la muestra de una etiqueta modificada de acuerdo con la HCS, que indica los elementos obligatorios. La etiqueta puede contener también información suplementaria según sea necesario.

Para más información:
OSHA Administración de Seguridad y Salud Ocupacional
 (800) 321-OSHA (6742)
www.osha.gov

ETIQUETA DE MUESTRA

Identificación del producto: _____
 Nombre del proveedor: _____

Identificación del proveedor: _____
 Nombre: _____
 Dirección: _____
 Ciudad: _____ Estado: _____ Código Postal: _____
 Teléfono de Emergencia: _____

Pictogramas de peligro:

Palabra de advertencia: **Peligro**

Indicaciones de peligro: **Extremadamente inflamable líquido y vapor. Puede causar daño a los riñones y al hígado.**

Consejos de prudencia: _____

Información suplementaria: _____

Información adicional: _____

OSHA 3092 (02/15)

OSHA DATOS RÁPIDOS Pictograma para la norma sobre la comunicación de peligros

A partir del 1° de junio de 2015, la norma de comunicación de peligros (HCS) por sus siglas en inglés exigirá pictogramas en las etiquetas para advertir a los usuarios de los peligros químicos a los que pueden estar expuestos. Cada pictograma representa un peligro definido y consiste en un símbolo sobre un fondo blanco enmarcado con un borde rojo. La clasificación del peligro químico determina el pictograma que muestra la etiqueta.

Pictogramas y peligros según la HCS

<ul style="list-style-type: none"> • Carcinógeno • Mutagenicidad • Toxicidad para la reproducción • Toxicidad específica de órganos diana • Peligro por aspiración 	<ul style="list-style-type: none"> • Inflamable • Piróforico • Calentamiento espontáneo • Reacción exotérmica • Peróxidos orgánicos 	<ul style="list-style-type: none"> • Irritante (para la piel) • Sensibilizador cutáneo • Toxicidad aguda (letal) • Efecto nocivo inmediato • Peligro para la capa de ozono (de algunos gases) • Peligro para la capa de ozono (de algunos líquidos) • Peróxidos orgánicos
<ul style="list-style-type: none"> • Gases a presión 	<ul style="list-style-type: none"> • Corrosión y quemaduras cutáneas • Lesión ocular • Corrosión para los metales 	<ul style="list-style-type: none"> • Explosivos • Reactivos espontáneamente • Inestabilidad química • Peróxidos orgánicos
<ul style="list-style-type: none"> • Oxidizantes 	<ul style="list-style-type: none"> • Toxicidad acuática 	<ul style="list-style-type: none"> • Toxicidad aguda (letal)

Para más información:
OSHA Administración de Seguridad y Salud Ocupacional
 Departamento de Trabajo de los EE. UU.
www.osha.gov (800) 321-OSHA (6742)



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Comunicación de Peligros- Módulo 4

**Ejercicio en clase-
actividades de aprendizaje**

**Parte A- Actividad en
Grupo-Vaya a un SDS
y localice información
clave**

**Parte B-Crear un
localizador de SDS para
su taller**



Photo from OSHA 3686-09 2010

Comunicación de Peligros- Módulo 4

Objetivos de Aprendizaje Grupal:

Los participantes deberán ser capaces de navegar en un SDS y localizar información clave.

Comunicación de Peligros- Módulo 4

Objetivos de Aprendizaje Grupal Parte A

En grupos de 4-5 navegarán en el SDS provisto y responderán a las preguntas acerca del producto

Comunicación de Peligros- Módulo 4

Actividad de Aprendizaje Grupal Parte B

Usted está informando a un compañero de trabajo donde se encuentran el SDS en su taller. En grupos de 4-5 discuta y describa el lugar donde sus SDS pueden ser encontrados en su taller.

¿Dónde se pueden encontrar? Cree un localizador de SDS para documentar su respuesta en la plantilla proporcionada

Comunicación de Peligros- Módulo 4

Materiales Proveidos para la Actividad

Parte A

Plantilla de Preguntas y Respuestas

Ejemplo de SDS

Parte B

Plantilla de Localizador de SDS

Comunicación de Peligros- Módulo 4

 AQUASOL 20/20 - p.1 of 4

MATERIAL SAFETY DATA SHEET

SECTION 1 – IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name: AQUASOL 20/20
Manufacturer's Product Code: 0237
Other Names: Water-soluble alkaline solvent/detergent
Major Recommended Uses: For the cleaning of grease, dirt, dust, oil, carbon, mildew and mould off steel, copper, brass, wood, plastic, cement and laminex.
Date of Issue: Feb 2010

Supplier's Details: Certilab
9 Ralph Street, Alexandria
Sydney NSW 2015
Telephone Number (Office Hours): (02) 9669 0262
Fax Number: (02) 9693 1562
Emergency Telephone Number: (02) 9214 0755

SECTION 2 – HAZARDS IDENTIFICATION

Hazard Classification: Not classified as Hazardous according to the criteria of NOHSC.
Dangerous Goods Class & Sub-risk: None allocated.
Poisons Schedule: None allocated.
Risk Phrases: None allocated.
Safety Phrases: Keep out of reach of children.

SECTION 3 – COMPOSITION/INFORMATION ON INGREDIENTS

<u>Ingredients</u>	<u>CAS No</u>	<u>Proportion</u>	<u>Synonyms</u>
Chemical Entity			
INGREDIENTS DETERMINED NOT TO BE HAZARDOUS			
		to 100%	

SECTION 4 – FIRST AID MEASURES

Skin: Remove contaminated clothing and flush affected skin and hair with running water. Seek medical attention if irritation develops and persists. Wash clothing and clean shoes before reuse.

Eye: Hold eyelids apart and flush the eye continuously with running water for at least 15-minutes. Take care not to rinse contaminated water into the non-affected eye. Seek medical attention if irritation develops or persists.

Inhalation: Typically not a hazard, but remove to fresh air and seek medical attention if respiratory irritation develops and persists or if breathing becomes difficult. Treat symptomatically. As it is not a volatile product, this is typically not a hazard.

Ingestion: If swallowed do not induce vomiting. Wash out mouth with water and then give plenty of water to drink. If vomiting occurs, give fluids again. Seek medical attention if discomfort develops and persists.

First Aid Facilities: An eye wash station and normal washroom facilities should be available.

Advice to Doctor: There is no specific antidote; treat the patient symptomatically.

Additional Information: Medical conditions aggravated by repeated or prolonged exposure are pre-existing respiratory and skin conditions such as asthma, emphysema and dermatitis. The primary route of entry is via absorption. The primary routes of exposure are skin and eye contact.

Sources Hazard Communication and the Globally Harmonized System (GHS) for Fabricators and Erectors

Webinar: <http://www.aisc.org/content.aspx?id=35368>

Comunicación de Peligros- Módulo 4

 AQUASOL 20/20 - p.2 of 4

SECTION 5 – FIRE FIGHTING MEASURES
AQUASOL 20/20 is non-flammable and not combustible.
Suitable Extinguishing Media: In the event of a fire, powder, foam, water spray and CO2 are the recommended extinguishing agents.

Special Protective Equipment and Precautions for Fire Fighters: Fire fighters should wear self-contained breathing apparatus and full protective gear. Extinguishing media should be chosen based on the nature of the surrounding fire.

Fire/Explosive Hazards: None. Use care as spills may be slippery.

Hazchem Code: None allocated.

SECTION 6 – ACCIDENTAL RELEASE MEASURES
Wear appropriate protective clothing. Floor may be slippery.

Methods and Materials for Containment and Clean Up: Contain spill. Clean up the spill with an inert absorbent material. Dispose of waste in a closed, labelled container in accordance with local, state and Commonwealth laws. Flush area with water to wash away residues.
Prevent large quantities of this material entering waterways, drains and sewers. If large quantities of this material enter the waterways contact the Environmental Protection Authority, or your local Waste Management Authority.

SECTION 7 – HANDLING AND STORAGE
Precautions for Safe Handling: Observe all precautions stated on the product label, and follow industry safety regulations. Repeated or prolonged skin exposure without protection should be prevented. Maintain high standards of personal hygiene - i.e. always wash hands prior to eating, drinking, smoking or using toilets.

Conditions for Safe Storage: Always store in a dry, cool, well-ventilated area. Store in the closed, original container. Store below 49°C.

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION
Exposure Standards: No exposure standard has been established for this material by the National Occupational Health and Safety Commission (NOHSC).

Engineering Controls: Natural ventilation/general exhaust is usually adequate, although local ventilation (drawing vapours/mists away from workers breathing zone) is recommended to control exposure from operations that generate excessive vapours or mists in poorly ventilated areas.

Personal Protective Equipment:
Eye/Face Protection: Wear goggles or safety glasses with side shields if the method of use presents the likelihood of eye contact. AS1336 and AS/NZS1337 should be consulted for information on eye protection.
Skin Protection: Rubber gloves should be worn when handling this product, especially for prolonged periods. Refer to AS/NZS 2161 for information on glove selection.
Respiratory Protection: Whilst not required in normal conditions of use, if engineering controls are not effective in controlling airborne exposure, then an approved respirator should be used. A respirator meeting the requirements outlined in AS/NZS 1715 and AS/NZS 1716 should be used.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES
Appearance: Fluorescent yellow/green, non-viscous, free-flowing liquid with a faint glycol odour.
pH (100%): 11.0 – 12.0

Source: Hazard Communication and the Globally Harmonized System (GHS) for Fabricators and Erectors

Webinar: <http://www.aisc.org/content.aspx?id=35368>

Comunicación de Peligros- Módulo 4

 AQUASOL 20/20 - p.3 of 4

Vapour Pressure: 17mm of Hg
Boiling Point: 99°C
Melting Point: Not applicable
Solubility in Water (g/L): Complete
Specific Gravity: 1.05 (water = 1)
Flashpoint: Not applicable
Flashpoint Method: P.M.C.C.
Flammability Limits: Not applicable.
% Volatiles by Volume: 95%
Evaporation rate: 0.1 (butyl acetate = 1)
Vapour density: 0.6 (air = 1)

SECTION 10 – STABILITY AND REACTIVITY
Stability: Stable under normal conditions.
Hazardous Polymerisation: Will not occur.
Conditions/Materials to Avoid: Avoid strong oxidising agents, strong acids and anodised aluminium. Can etch glass.
Hazardous Decomposition Products: Oxides of carbon and hydrogen gas (- particularly when in contact with reactive metals such as aluminium, chromium, magnesium, tin, zinc and alloys etc)

SECTION 11 – TOXICOLOGICAL INFORMATION
Health Effects:
Acute - Swallowed: May cause nausea, diarrhoea, and irritation of intestinal lining.
Acute - Eye: May cause irritation seen as tearing, redness and stinging.
Acute - Skin: May cause irritation seen as redness and itching.
Acute - Inhaled: Typically not a hazard, although inhalation of excessive vapours or mists may cause irritation seen as coughing and sneezing.
Chronic: Repeated or prolonged exposure to this material will result in skin irritation and dermatitis and aggravate existing respiratory disorders. Chronic eye exposure can lead to destruction of eye tissue.

Product Contains Chemicals Listed as Carcinogens by:
International Agency for the Research of Cancer (IARC): NO
Other: NO

SECTION 12 – ECOLOGICAL INFORMATION
Persistence/Degradability: The product is water-based and biodegradable. It readily dissociates in the environment. When used as directed, no adverse environmental effects are foreseen.
Mobility in Soil: The product is water-soluble and will readily dissolve in water into the soil. The product is non-volatile and will partition to the aqueous phase.

SECTION 13 – DISPOSAL CONSIDERATIONS
The packaging can be re-used after rinsing, or recycled or burnt. Dispose of in accordance with all Local, State and Federal regulations.

SECTION 14 – TRANSPORT INFORMATION
UN Number: None allocated.
UN Proper Shipping Name: -
Transport Hazard Class: None allocated. Not classified as a Dangerous Good, according to the

Source: Hazard Communication and the Globally Harmonized System (GHS) for Fabricators and Erectors

Webinar: <http://www.aisc.org/content.aspx?id=35368>

Comunicación de Peligros- Módulo 4



AQUASOL 20/20 - p.4 of 4

Australian Code for the Transport of Dangerous Goods by Road and Rail (6th Edition).
None allocated.

Packaging Group: None allocated.
Hazchem Code: None allocated.

SECTION 15 - REGULATORY INFORMATION
Poisons Schedule: None allocated.

SECTION 16 - OTHER INFORMATION
Initial copy of 16-header MSDS.

Since the user's working conditions are not known by the supplier, the information supplied on this safety data sheet is based on our current level of knowledge and on national and community regulations. The product must not be used for any purposes other than those specified in Section 1 without first obtaining written handling instructions. CERTILAB assumes no responsibility for personal injury or property damage caused by the use, storage, or disposal of the product in a manner not recommended on the product label. Users assume all risks associated with such non-recommended use, storage or disposal of the product.

It is at all times the responsibility of the user to take all necessary measures to comply with legal requirements and local regulations. The information given on this safety data sheet must be regarded as a description of the safety requirements relating to our product and not a guarantee of its properties.

Source: Hazard Communication and the Globally Harmonized System (GHS) for Fabricators and Erectors Webinar:
<http://www.aisc.org/content.aspx?id=35368>