



CRAFTMARK

PIPE MARKERS **▲** SINCE 1959

**ASME (ANSI) A13.1 2020
SCHEME FOR THE
IDENTIFICATION OF
PIPING SYSTEMS**

GLOBAL MECHANICAL IDENTIFICATION SOLUTIONS™



IDENTIFICATION, ENGINEERED TO LAST™



ASME (ANSI) A13.1 2020 SCHEME FOR THE IDENTIFICATION OF PIPING SYSTEMS

ASME (ANSI) STANDARD A13.1 is the benchmark for pipe marking and labeling in all commercial, industrial, institutional and public buildings. The standard remain unchanged for many years until the most recent revisions in 2007, 2015 and updated in 2020. Standard A13.1 specifies the size, color and placement of pipe markers as well as pronouncing the primary identification (legend and arrow) and the secondary identification (color) by which color designation are specified for various materials. This secondary identifier is where we see the change in 2007 adoption of the standard. In this new standard there are 6 standard color designations instead of the previous 4 color designations. Many legends which were previously green/white are now yellow/black so it's important to specify the correct colors. Another change is the addition of orange/black to designate toxic and corrosive fluids and brown/white to designate combustible fluids. The 2020 adoption of the standard goes even further asking for additional identifiers; "Contents shall be identified by legend with sufficient additional details such as temperature, pressure, etc., as are necessary to identify the hazard". In addition, the 2020 adoption allows for even further hazard identification and warnings by including a GHS-Global Harmonization System label or tape in addition to the regular pipe marker. "Where piping is connected to containers that are labeled in accordance with GHS requirements, a corresponding (GHS pictogram) label on piping may be provided".

- ✓ MEETS ASME (ANSI) STANDARD A13.1 2020 100%
- ✓ MEETS ASME (ANSI) LETTER SIZE STANDARD 100%
- ✓ MEETS ASME (ANSI) COLOR FIELD WIDTH STANDARD 100%

- ✓ MEETS ASME (ANSI) SAFETY COLORS RECOMMENDATION GUIDELINES 100%
- ✓ MEETS ASME (ANSI) GUIDELINES FOR ADDITIONAL LEGEND INFORMATION 100%
- ✓ MEETS ASME (ANSI) GUIDELINES FOR GHS PIPE LABELING 100%

ASME A13.1 -4.1 METHOD OF IDENTIFICATION

LEGEND



"This Standard considers a legend to be primary and explicit for identification of contents. Positive identification of the contents of a piping system shall be by lettered legend, giving name of the contents in full or abbreviated form. Legends shall use arrows to indicate direction of flow. Where flow can be in both directions, arrows in both directions shall be displayed. Contents shall be identified by a legend with sufficient additional details, such as temperature and pressure, as are necessary to identify the hazard".
"The applicable GHS pictogram may be included as part of the Legend. Where piping is connected to containers that are labeled in accordance with GHS requirements, a corresponding label on the piping may be provided. The corresponding label should contain at least the product name or identifier, the pictogram, the signal word, and the physical, health, and environmental hazard statement".

ASME A13.1 -4.1.1 ADDITIONAL MEANS OF IDENTIFICATION

"The applicable GHS pictogram may be included as part of the legend". "Where piping is connected to containers that are labeled in accordance with GHS requirements, a corresponding label on the piping may be provided. The corresponding label should contain at least the product name or identifier, the signal word, and the physical, health, and environmental hazard statement."



GHS 1
Exploding Bomb
• Explosives
• Self-Reactives
• Organic Peroxides



GHS 2
Flame
• Flammables
• Pyrophorics
• Self-Heating
• Emits Flammable Gas
• Self-Reactives



GHS 3
Flame Over Circle
• Oxidizers



GHS 4
Gas Cylinder
• Gases Under Pressure



GHS 5
Corrosion
• Skin Corrosion/ Burns
• Eye Damage
• Corrosive to Metals



GHS 6
Skull & Crossbones
• Acute Toxicity (fatal or toxic)



GHS 7
Exclamation Mark
• Irritant (skin & eye)
• Skin Sensitizer
• Acute Toxicity (harmful)
• Narcotic Effects
• Respiratory Tract Irritant
• Hazardous to Ozone Layer (Non-Mandatory)



GHS 8
Health Hazard
• Carcinogen
• Mutagenicity
• Reproductive Toxicity
• Respiratory Sensitizer
• Target Organ Toxicity
• Aspiration Toxicity



GHS 9
Environment (Non-Mandatory)
• Aquatic Toxicity

ASME A13.1 -4.2 COLOR



2020 ASME (ANSI) COLOR STANDARDS			
FLUID	BACKGROUND	TEXT	SAMPLE
SERVICE	COLOR	COLOR	PRINT
Fire quenching fluids	Safety red	White	Text
Toxic and corrosive fluids	Safety orange	Black	Text
Flammable and oxidizing fluids	Safety yellow	Black	Text
Combustible fluids	Safety brown	White	Text
Potable, cooling, boiler feed, other water	Safety green	White	Text
Compressed air	Safety blue	White	Text
To be defined by the user	Safety purple	White	Text
To be defined by the user	Safety white	Black	Text
To be defined by the user	Safety gray	White	Text
To be defined by the user	Safety black	White	Text

ASME A13.1 4.2 COLOR- “ Colors should be used to identify the characteristic hazards of the contents. Color should be displayed on, or contiguous to, the piping by any physical means, but its use shall be in combination with a legend. Color may be used in continuous, total length coverage or in intermittent displays. Colors preceded by the word “Safety” shall meet the requirements of ANSI/NEMA Z535.1.

DEFINITIONS OF FLUIDS & MATERIALS- *From the ASME/ANSI A13.1-2020 guidelines.*

FIRE QUENCHING: The material classification including water, foam, and carbon dioxide used in sprinkler systems and fire-fighting piping systems.

FLAMMABLE: the material classification for fluids that, under ambient or expected operating conditions, are a vapor or produce vapors that can be ignited and continue to burn in air. The term thus may apply, depending on service conditions, to fluids defined for other purposes as flammable or combustible.

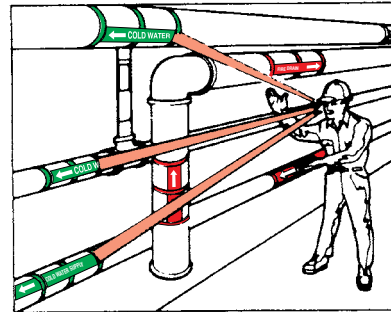
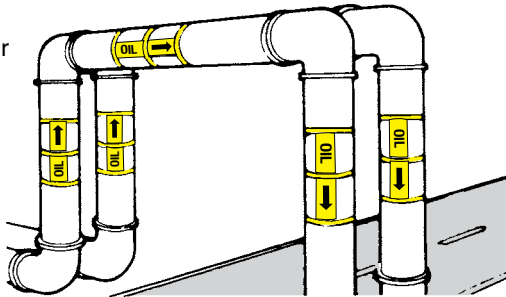
OXIDIZING: the material classification for fluids that may, generally by providing oxygen, cause or contribute to the combustion of other material more than air does.

COMBUSTIBLE: the material classification for fluids that can burn, but are not combustible.

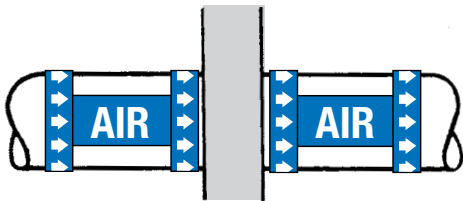
TOXIC AND CORROSIVE: the material classification for fluids that are toxic or corrosive, or that will produce toxic or corrosive substances when released.

ASME A13.1 -4.3 PLACEMENT

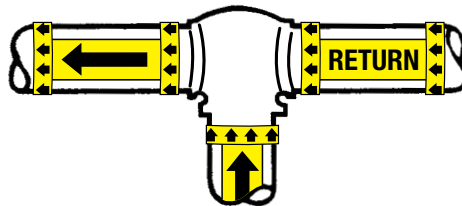
Where pipe lines pass over or under a road or waterway, apply a CRAFTMARK marker and arrow marker on both sides of road or waterway.



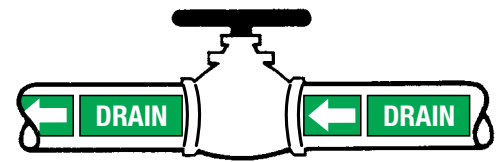
If pipelines are above or below normal line of vision, place CRAFTMARK markers below or above horizontal centerline of pipe as shown.



Where pipelines pass through a wall, apply a CRAFTMARK marker and arrow on the pipe both entering and exiting a wall.

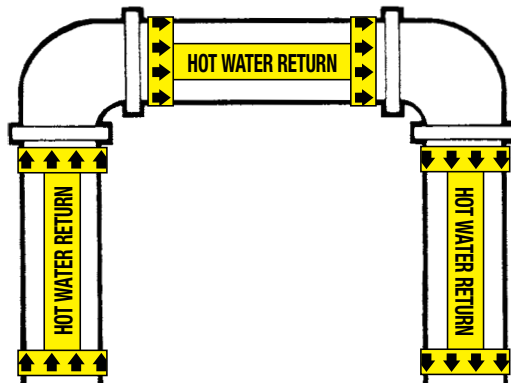


Place a CRAFTMARK marker and arrow marker on each riser and T-joint with arrows pointing away from legend.

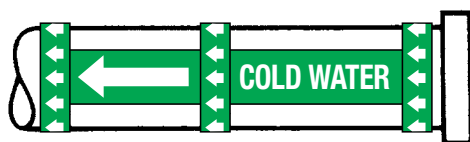
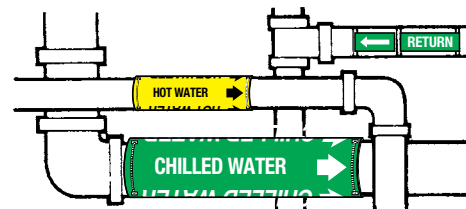


Apply a CRAFTMARK marker and arrow marker either entering or exiting a valve to show contents and direction flow.

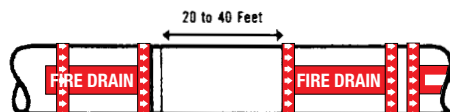
Identify pipe contents with CRAFTMARK markers and matching arrows where pipes change direction or heights.



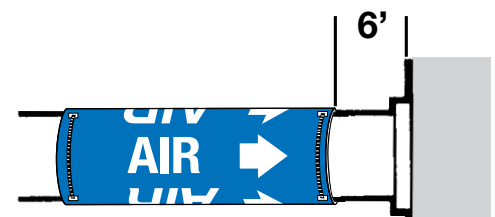
Indicate pipe content flow direction with arrows of matching style, color and material to the pipe marker used. Place so that arrow points away from the legend.



360° color coding is provided by color banding the circumference of your pipes. Arrow tapes give location and color code from all vantage points.



Apply CRAFTMARK markers and arrows every 20 to 40 feet along continuous lines, or at frequent intervals as needed on straight pipe runs.



Place CRAFTMARK markers within six feet of the entrance or exit to a vessel or tank and at entrances to manifolding.

ASME A13.1 -4.4 TYPE AND SIZE OF LETTERS

**2020 ASME (ANSI) SIZE CHART
LENGTH OF COLOR FIELD AND SIZE OF LETTERS**

OUTSIDE DIAMETER OF PIPE OR COVERING		LENGTH OF COLOR FIELD		SIZE OF LETTERS	
IN	MM	IN	MM	IN	MM
3/4" to 1 1/4"	19 - 32	8"	200	1/2"	
1 1/4" to 2"	38 - 51	8"	200	3/4"	19
2 1/4" to 6"	64 - 150	12"	300	1 1/4"	
8" to 10"	200 - 250	24"	600	2 1/2"	64
over 10"	over 250	32"	800	3 1/2"	

ASME A13.1 -4.5 ABANDONED PIPING



“Piping that has been abandoned in place should be identified. The recommended color scheme is Safety White background with Black letters. When the abandoned piping is protected from corrosion by the addition of a pressurized fluid or contains residual hazardous material, the legend should indicate that”.



GLOBAL HARMONIZATION STANDARD FOR PIPE LABELING

CRAFTMARK
PIPE MARKERS SINCE 1959
www.CraftmarkID.com



Description	Pictogram	Hazard class and hazard category
Explosing Bomb GHS 1		Unstable explosives Explosives of Divisions 1.1, 1.2, 1.3, 1.4 Self reactive substances and mixtures, Types A,B Organic peroxides, Types A,B
Flame GHS 2		Flammable gases, category 1 Flammable aerosols, categories 1,2 Flammable liquids, categories 1,2,3 Flammable solids, categories 1,2 Self-reactive substances and mixtures, Types B,C,D,E,F Pyrophoric liquids, category 1 Pyrophoric solids, category 1 Self-heating substances and mixtures, categories 1,2 Substances and mixtures, which in contact with water, emit flammable gases, categories 1,2,3 Organic peroxides, Types B,C,D,E,F
Flame Over Circle GHS 3		Oxidizing gases, category 1 Oxidizing liquids, categories 1,2,3
Gas Cylinder GHS 4		Gases under pressure: - Compressed gases - Liquefied gases - Refrigerated liquefied gases - Dissolved gases
Corrosion GHS 5		Corrosive to metals, category 1 Skin corrosion, categories 1A,1B,1C Serious eye damage, category 1
Skull & Crossbones GHS 6		Acute toxicity (oral, dermal, inhalation), categories 1,2,3
Exclamation Mark GHS 7		Acute toxicity (oral, dermal, inhalation), category 4 Skin irritation, category 2 Eye irritation, category 2 Skin sensitisation, category 1 Specific Target Organ Toxicity – Single exposure, category 3
Health Hazard GHS 8		Respiratory sensitization, category 1 Germ cell mutagenicity, categories 1A,1B,2 Carcinogenicity, categories 1A,1B,2 Reproductive toxicity, categories 1A,1B,2 Specific Target Organ Toxicity – Single exposure, categories 1,2 Specific Target Organ Toxicity – Repeated exposure, categories 1,2 Aspiration Hazard, category 1
Environment GHS 9		Hazardous to the aquatic environment - Acute hazard, category 1 - Chronic hazard, categories 1,2

WHAT IT MEANS...

Globally Harmonized System of Classification and Labeling of Chemicals

Chemicals, through the different steps from their production to their handling, transport and use, are a real danger for human health and the environment. Employees and workers, using many different languages and alphabets are confronted daily with these dangerous chemicals.

To face this danger, and given the reality of the extensive global trade in chemicals and the need to develop national programs to ensure their safe use, transport and disposal, it was recognized that an internationally-harmonized approach to classification and labeling would provide the foundation for such programs. Once countries have consistent and appropriate information on chemicals they import or produce in their own countries, the infrastructure to control chemical exposures and protect people and the environment can be established in a comprehensive manner.

The new system, which was called “Globally Harmonized System of Classification and Labeling of Chemicals (GHS)”, addresses classification of chemicals by types of hazards and proposes harmonized hazard communication elements, including labels and pipe markers. On the 28th of November 2008 the European Council adopted the GHS regulation. The publication followed on the 31st of December 2008 meaning that GHS can now be applied from the 21st of January 2009.

ASME (ANSI) A13.1-2020 states “The applicable GHS pictogram as illustrated may be included ...” “Where piping is connected to containers that are labeled in accordance with GHS requirements, a corresponding label on piping may be provided” Craftmark has full line of GHS pictogram roll tapes and individual labels for use on piping.