General Information
Section G

G General Information

Organization of Catalog

Organization of the Catalog

The Eaton's Crouse-Hinds catalog includes products from eight major offerings: Industrial Fittings, Commercial Products, Control, Apparatus, Enclosures, Industrial Lighting, Signaling Devices, and Plugs and Receptacles.

Major Sections

The eight product lines are broken down into major sections to catalog similar items. The sections are:

Product Line	Major Section
Fittings	Section F
Commercial Products	Section CP
Control	Section C
Apparatus	Section A
Enclosures	Section E
Industrial Lighting	Section L
Signaling Devices - Visual and Audible	Section S
Plugs & Receptacles	Section P

Product Sections

Each of the eight major product sections is broken down into minor product sections to make it easier to find and select desired items. Each minor product section has an index for that section.

Product Line	Major Section	Minor Sections
Fittings	Section F	1F – 6F
Commercial Products	Section CP	CP
Control	Section C	1C – 7C
Apparatus	Section A	1A – 4A
Enclosures	Section E	1E – 6E
Industrial Lighting	Section L	1L – 10L
Signaling Devices - Visual and Audible	Section S	1S – 6S
Plugs & Receptacles	Section P	1P – 11P

Transition Pages

Black transition pages help identify each product section for easy reference. The transition pages provide information on new products within the product section, as well as notable changes to the product section since the last printing of the Eaton's Crouse-Hinds Full-Line Catalog.

Catalog Page Layout

To make it easier to find specific information about a product, all catalog pages follow the same general layout.
A sample follows.

Product Section and Product Family

General Hazardous (Classified) Locations Suitability

3F **Condulet® Conduit Outlet Boxes With Covers**

EAB Series

Cl. I, Div. 1 & 2, Groups A, B, C, D
Cl. II, Div. 1, Groups E, F, G
Cl. II, Div. 2, Groups F, G
Cl. III
NEMA 3,4,7ABCD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

3F

Applications:

EAB series conduit outlet boxes are installed in conduit systems within hazardous areas to:

- Provide protection against exterior explosion where acetylene, hydrogen and other hazardous gases are present
- Protect conductors in threaded rigid conduit
- Act as pull and splice boxes
- Interconnect lengths of conduit
- Change conduit direction
- Provide access to conductors for maintenance and future system changes

Features:

EAB series conduit outlet boxes have:

- Five different hub configurations
- Taper threaded hubs to provide ground continuity
- Smooth integral hub bushing to protect conductor insulation when pulling
- Threaded cover openings
- Surface covers furnished with boxes
- Neoprene "o"-ring gasket and green ground screw are both standard.
- Four standard mounting pads, except for EABY.
- Cover threads are 16 pitch.

Typical Product Applications & Key Product Features

Certifications and Compliances:

- NEC/CEC:
  - Class I, Division 1 & 2, Groups A, B, C, D
  - Class II, Division 1, Groups E, F, G
  - Class II, Division 2, Groups F, G
  - Class III
- UL Standard: 886
- CSA Standard: C22.2 No. 30

Complete Certifications and Compliances

Standard Finishes:

- *Feraloy* – electrogalvanized and aluminum acrylic paint
- Aluminum – natural

Standard Materials:

- Bodies – *Feraloy*® iron alloy
- Covers – Copper-free aluminum

Standard Materials and Standard Finishes of Construction

Options:

Description	Suffix
Bodies – copper-free aluminum Covers – *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint	SA†*
Corro-free epoxy powder coat	WOD S752

Size Ranges:

- Hub – ½" to 1"
- Cover opening – 3" dia.

Options, Accessories and Additional Technical Specs

EABC

Hub Size	Cat. #
½	EABC16†
¾	EABC26
1	EABC36†

EABT

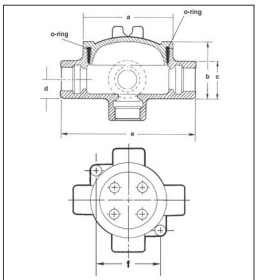
Hub Size	Cat. #
½	EABT16†
¾	EABT26†
1	EABT36†

EABL

Hub Size	Cat. #
½	EABL16†
¾	EABL26†
1	EABL36†

Dimensions

In Inches:



EAB Series

†Available in copper-free aluminum, add suffix -SA.
*EAB0687 is listed for Group C & D only.

EABX

Hub Size	Cat. #
½	EABX16†
¾	EABX26†
1	EABX36†

EABY

Hub Size	Cat. #
½	EABY16†
¾	EABY26†

Replacement Cover:

Size	Cat. #
3"	EAB06

Replacement O-Ring:

Description	Cat. #
Replacement O-Ring	GASK1151

Fixture Cover

Union Hub Type

Cover Opening Dia.	Fixt. Stem Size	Cat. #
3"	¾	EAB0687*

Ordering Information

EAB Series

Cat. #	a	b	c	d	e	f
16	3¾	2 17/32	1½	¾	5 5/16	3 3/32
26	3¾	2 25/32	1¼	⅞	5 5/16	3 3/32
36	3¾	2 25/32	1¼	⅞	5 5/16	3 3/32

Dimensional Information

Crouse-Hinds by EATON

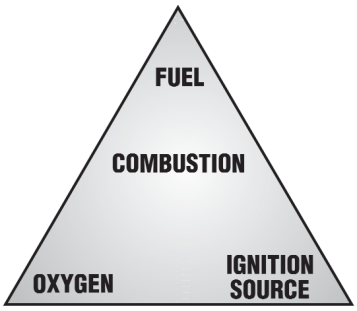
G General Information

Reference Information
Hazardous (Classified) Locations

The installation and maintenance of equipment for use in Hazardous (Classified) Locations is governed by the National Electrical Code® (NEC), Canadian Electrical Code® (CEC), and/or other local codes. The information that follows is not intended to be a comprehensive discussion of Hazardous Areas, but a general overview which can be used to assist in the selection of appropriate equipment.

Hazardous (Classified) Locations

A source of energy is all that is needed to touch off an explosion when flammable gases, vapors or combustible dusts are mixed in the proper proportion with air. The explosion triangle is an effective way to remember this principle.



COMBUSTION TRIANGLE

In an industrial enviroment, sparks or heat from electrical equipment can be the source of ignition, which can ignite surrounding gases or combustible dusts with disastrous results.

Users, insurance underwriters and engineering companies classify hazardous areas. Eaton's Crouse-Hinds cannot classify hazardous areas.

There are two methods for classifying hazardous areas: Classes and Zones.

Using the Classes methodology, hazardous areas are broken down into three distinct classes based upon the material that makes the area hazardous.

Classes:

Class I areas are hazardous because of the presence of Gases & Vapors. Examples of areas that may have Class I areas are: refineries, chemical plants, paint spray areas, waste water treatment facilities, printing presses, and pharmaceutical facilities.

Class II areas are hazardous because of the presence of Combustible Dusts. Examples of areas that may have Class II areas are: grain processing and storage facilities, coal handling and storage areas, cocoa plants, metal grinding areas, and munitions plants.

Class III areas are hazardous because of the presence of Easily Ignitable Fibers & Flyings. Examples of areas that may have Class III areas are: textile mills, wood cutting and pulverizing facilities, insulation manufacturing areas, cotton mills and wool processing areas.

Divisions:

Within the Classes classification, areas are divided into two distinct Divisions; Division 1 and Division 2.

Division 1 atmospheres cover locations where the hazardous material can exist under normal operating conditions. Division 1 is referred to as "*normally hazardous*". An example of an area that could be rated as Class I, Division 1 would be an area surrounding a vat where a product is being produced and flammable vapors are released as a normal by-product of the manufacturing process.

Division 2 atmospheres cover locations where the hazardous material does not typically exist. Division 2 is referred to as "*not normally hazardous*". Examples of areas that could be rated as Class I, Division 2 would be a location where flammable gases or vapors are handled in a closed system, or confined within suitable enclosures, or where hazardous concentrations are normally prevented by positive mechanical ventilation. Areas adjacent to Division 1 locations, into which gases might occasionally flow, would also belong to Division 2.

Class II areas are also divided into Division 1 and Division 2 depending on the quantity of dust present in the area. In Class II, Division 1 areas the combustible dust is in the air under normal operating conditions in quantities sufficient to produce explosive or ignitable mixtures. In Class II, Division 2 areas the combustible dust is not normally in the air in quantities sufficient to produce explosive or ignitible mixtures.

A Class III, Division 1 location is a location in which easily ignitible fibers or materials producing combustible flyings are manufactured or used.

A Class III, Division 2 location is a location in which easily ignitible fibers are stored or handled other than in the process of manufacture.

Groups:

Hazardous areas are then broken down into sub-categories grouped based on the characteristics of the materials. Class I areas (gases and vapors) are divided into four groups; A, B, C, D.

Class II areas (dusts) are divided into three groups; E, F, G. (For areas rated Class II, Group E there is no Division 2, only Division 1).

There are no groups for Class III (easily ignitible fibers and flyings).

The chart below shows typical hazardous material for each group.

Class I - (Gases & Vapors)	Class II **(Dusts)**	**Class III (Fibers & Flyings)**
A – Acetylene	E – Metal	No groups
B – Hydrogen	F – Carbonaceous	
C – Ethylene	G – Grain (organic)	
D – Propane		

In selecting equipment, equipment must be approved not only for the class of location but also for the explosive, combustible, or ignitible properties of the specific gas, vapor, dust, fiber or flyings that will be present. In addition, heat producing equipment, such as light fixtures and heaters, must not operate with temperatures, as appropriately measured, that are above the temperature, which could potentially be a source of ignition. An identification number is used to identify the maximum temperature of the equipment and is marked on the equipment. The identification number is referred to as a "T-number".

The chart below shows maximum temperature for each of the 14 T-numbers.

Temperature Identification Numbers.

Maximum Temperature		Identification Number
Deg.C	**Deg.F**	
450	842	T1
300	572	T2
280	536	T2A
260	500	T2B
230	446	T2C
215	419	T2D
200	392	T3
180	356	T3A
165	329	T3B
160	320	T3C
135	275	T4
120	248	T4A
100	212	T5
85	185	T6

Zones:

The 2008 edition of the NEC and the 2009 edition of the CEC gave industries in North America a choice of how to classify hazardous areas.

The Zone Classification addresses areas made hazardous due to the presence of flammable gases or vapors, or flammable liquids and is based upon the IEC three zone system.

A Class I, Zone 0 location is a location in which ignitible concentrations of flammable gases or vapors are present continuously or for long periods of time. An example of an area that could be classified as Class I, Zone 0 is the vapor space within a vented tank.

Reference Information
Hazardous (Classified) Locations

A Class I, Zone 1 location is a location in which ignitible concentrations of flammable gases or vapors are likely to exist under normal operating conditions. An area adjacent to a Class I, Zone 0 location would also be a Zone 1 location.
An example of an area that could be classified Class I, Zone 1 would be a container filling area in a refinery.

(Zone 0 and Zone 1 locations are similar to Division 1).

A Class I, Zone 2 location is a location in which ignitible concentrations of flammable gases or vapors are not likely to occur in normal operation and if they do occur will exist only for a short period.

An example of an area that could be classified Class I, Zone 2 would be a container storage area.

(Zone 2 locations are similar to Division 2).

Groups:

Similar to the Classes method of classifying hazardous areas, the Zone method also groups the hazardous gases or vapors together based upon characteristics of those gases or vapors. In the Zone classification system, there are three groups; IIC, IIB, and IIA.

The chart below shows typical hazardous material for each group.

Group	Typical Gas or Vapor
IIC	Acetylene and Hydrogen
IIB	Acetaldehyde and Ethylene
IIA	Methane, Gasoline, and Propane

Also similar to the Class method, the Zone method requires equipment be marked to show the operating temperature or temperature range. The temperature range is identified through the use of an identification number.

The table below shows the maximum surface temperature for the six temperature classes.

Classification of Maximum Surface Temperature for Group II Electrical Equipment						
Temp. Class	**T1**	**T2**	**T3**	**T4**	**T5**	**T6**
Max. Surface Temp. (°C)	≤ 450	≤ 300	≤ 200	≤ 135	≤ 100	≤ 85

Methods of Protection

Many of the products offered in this Eaton's Crouse-Hinds catalog are designed and manufactured for safe use within a hazardous (classified) location, when properly installed and maintained. Some of the more commonly used protection techniques incorporated into product design and manufacture are listed below.

Explosionproof equipment contains the explosion and allows gases to cool as they escape the enclosure across threaded, flat or serrated joints. These metallic enclosures are drilled and tapped for conduit or cable glands.

Intrinsic Safety allows instrumentation and control circuits to operate properly under normal conditions, but protects them if an electrical fault occurs, by limiting the voltage and current, thus preventing ignition from sparks or overheating.

Flameproof enclosures – With this type of protection, those parts that are capable of igniting an explosive atmosphere are built into a flameproof enclosure that withstands the explosion pressure if a flammable mixture is ignited inside it. The transmission of the explosion to the surrounding atmosphere is prevented.

Increased Safety – This type of protection is used for electrical apparatus that, under normal operating conditions, does not form an ignition. Apparatus that produces arcs or sparks in the course of normal operation or apparatus that generates "excessive" heat are not suitable for this type of protection. Therefore, this type of protection in not used for equipment such as switchgear, pushbuttons and motors.

Dust-ignition Proof – This type of protection used for applications in Class II (dusts) in North America excludes ignitible concentrations of dusts and offers cool operating temperatures.

ATEX, IECEx, GB, GOST, and Other International Hazardous Locations Requirements:

Outside of North America, much of the world uses the IEC system of standards as the basis for classifying and specifying hazardous locations equipment. The IEC system uses the zone classification method for defining the type and degree of hazard. Gas groups, temperature codes and protection techniques are similar to those used for NEC/CEC zone classifications.

For further information on zones and ATEX/IEC Type protection techniques, refer to the Eaton's Crouse-Hinds Ex Digest.

Please note, the above information is provided only as an overview of hazardous (classified) locations and protection techniques. For more detailed information, including a comprehensive list of hazardous atmospheres and their characteristics as well as a glossary of terms, consult the appropriate governing code, the Eaton's Crouse-Hinds Code Digest, or contact your local Eaton's Crouse-Hinds representative.

G General Information

Reference Information
Gases and Vapors – Hazardous Substances Used in Business and Industry

TABLE I

Class I* Group	Substance	Auto–*Ignition Temp. °F	Auto–*Ignition Temp. °C	Flash Point °F	Flash Point °C	Flammable Limits Percent by Volume Lower	Flammable Limits Percent by Volume Upper	Vapor Density (Air Equals 1.0)
C	Acetaldehyde	347	175	-38	-39	4	60	1.5
D	Acetic Acid	867	464	103	39	4	19.9 @ 200°F	2.1
D	Acetic Anhydride	600	316	120	49	2.7	10.3	3.5
D	Acetone	869	465	-4	-20	2.5	13	2
D	Acetone Cyanohydrin	1270	688	165	74	2.2	12	2.9
D	Acetonitrile	975	524	42	6	3	16	1.4
A	Acetylene	581	305	gas	gas	2.5	100	0.9
B(C)	Acrolein (inhibited)‡	455	235	-15	-26	2.8	31	1.9
D	Acrylic Acid	820	438	122	50	2.4	8	2.5
D	Acrylonitrile	898	481	32	0	3	17	1.8
D	Adiponitrile	—	—	200	93	—	—	—
C	Allyl Alcohol	713	378	70	21	2.5	18	2
D	Allyl Chloride	905	485	-25	-32	2.9	11.1	2.6
B(C)	Allyl Glycidyl Ether‡	—	—	—	—	—	—	—
D	Ammonia§	928	498	gas	gas	15	28	0.6
D	n-Amyl Acetate	680	360	60	16	1.1	7.5	4.5
D	sec-Amyl Acetate	—	—	89	32	—	—	4.5
D	Aniline	1139	615	158	70	1.3	11	3.2
D	Benzene	928	498	12	-11	1.3	7.9	2.8
D	Benzyl Chloride	1085	585	153	67	1.1	—	4.4
B(D)	1,3-Butadiene‡	788	420	gas	gas	2	12	1.9
D	Butane	550	288	-76	-60	1.6	8.4	2
D	1-Butanol	650	343	98	37	1.4	11.2	2.6
D	2-Butanol	761	405	75	24	1.7 @ 212°F	9.8 @ 212°F	2.6
D	n-Butyl Acetate	790	421	72	22	1.7	7.6	4
D	iso-Butyl Acetate	790	421	—	—	—	—	—
D	sec-Butyl Acetate	—	—	88	31	1.7	9.8	4
D	t-Butyl Acetate	—	—	—	—	—	—	—
D	n-Butyl Acrylate (inhibited)	559	293	118	48	1.5	9.9	4.4
C	n-Butyl Formal	—	—	—	—	—	—	—
B(C)	n-Butyl Glycidyl Ether‡	—	—	—	—	—	—	—
C	Butyl Mercaptan	—	—	35	2	—	—	3.1
D	t-Butyl Toluene	—	—	—	—	—	—	—
D	Butylamine	594	312	10	-12	1.7	9.8	2.5
D	Butylene	725	385	gas	gas	1.6	10	1.9
C	n-Butyraldehyde	425	218	-8	-22	1.9	12.5	2.5
D	n-Butyric Acid	830	443	161	72	2	10	3
†	Carbon Disulfide	194	90	-22	-30	1.3	50	2.6
C	Carbon Monoxide	1128	609	gas	gas	12.5	74	1
C	Chloroacetaldehyde	—	—	—	—	—	—	—
D	Chlorobenzene	1099	593	82	28	1.3	9.6	3.9
C	1-Chloro-1-Nitropropane	—	—	144	62	—	—	4.3
D	Chloroprene	—	—	-4	-20	4	20	3
D	Cresol	1038-1110	559-599	178-187	81-86	1.1-1.4	—	—
C	Crotonaldehyde	450	232	55	13	2.1	15.5	2.4
D	Cumene	795	424	96	36	0.9	6.5	4.1
D	Cyclohexane	473	245	-4	-20	1.3	8	2.9
D	Cyclohexanol	572	300	154	68	—	—	3.5
D	Cyclohexanone	473	245	111	44	1.1 @212°	9.4	3.4
D	Cyclohexene	471	244	<20	<-7	—	—	2.8
D	Cyclopropane	938	503	gas	gas	2.4	10.4	1.5
D	p-Cymene	817	436	117	47	0.7 @212°F	5.6	4.6
C	n-Decaldehyde	—	—	—	—	—	—	—
D	n-Decanol	550	288	180	82	—	—	5.5
D	Decene	455	c225	<131	<5	—	—	4.84
D	Diacetone Alcohol	1118	603	148	64	1.8	6.9	4
D	o-Dichlorobenzene	1198	647	151	66	2.2	9.2	5.1
D	1,1-Dichloroethane	820	438	22	-6	5.6	—	—
D	1,2-Dichloroethylene	860	460	36	2	5.6	12.8	3.4
C	1,1-Dichloro-1-Nitroethane	—	—	168	76	—	—	5
D	1,3-Dichloropropene	—	—	95	35	5.3	14.5	3.8
C	Dicyclopentadiene	937	503	90	32	—	—	—
D	Diethyl Benzene	743-842	395-450	133-135	56-57	—	—	4.6
C	Diethyl Ether	320	160	-49	-45	1.9	36	2.6
C	Diethylamine	594	312	-9	-23	1.8	10.1	2.5
C	Diethylaminoethanol	—	—	—	—	—	—	—
C	Diethylene Glycol Monobutyl Ether	442	228	172	78	0.85	24.6	5.6

Reference Information
Gases and Vapors – Hazardous Substances Used in Business and Industry

TABLE I (cont'd)

Class I* Group	Substance	Auto–*Ignition Temp. °F	Auto–*Ignition Temp. °C	Flash Point °F	Flash Point °C	Flammable Limits Percent by Volume Lower	Flammable Limits Percent by Volume Upper	Vapor Density (Air Equals 1.0)
C	Diethylene Glycol Monomethyl Ether	465	241	205	96	—	—	—
	Di-isobutyl Ketone	745	396	120	49	0.8 @ 200°F	7.1 @ 200°F	4.9
D	Di-isobutylene	736	391	23	-5	0.8	4.8	3.9
D	Di-isopropylamine	600	316	30	-1	1.1	7.1	3.5
C	N-N-Dimethyl Aniline	700	371	145	63	—	—	4.2
C	Dimethyl Formamide	833	455	136	58	2.2 @ 212°F	15.2	2.5
D	Dimethyl Sulfate	370	188	182	83	—	—	4.4
D	Dimethylamine	752	400	gas	gas	2.8	14.4	1.6
C	1,4-Dioxane	356	180	54	12	2	22	3
C	Dipentene	458	237	113	45	0.7 @ 302°F	6.1 @ 302°F	4.7
D	Di-n-propylamine	570	299	63	17	—	—	3.5
C	Dipropylene Glycol Methyl Ether	—	—	186	86	—	—	5.11
D	Dodecene	491	255	—	—	—	—	—
C	Epichlorohydrin	772	411	88	31	3.8	21	3.2
D	Ethane	882	472	gas	gas	3	12.5	1
D	Ethanol	685	363	55	13	3.3	19	1.6
D	Ethyl Acetate	800	427	24	-4	2	11.5	3
D	Ethyl Acrylate (inhibited)	702	372	50	10	1.4	14	3.5
D	Ethyl sec-Amyl Ketone	—	—	—	—	—	—	—
D	Ethyl Benzene	810	432	70	21	0.8	6.7	3.7
D	Ethyl Butanol	—	—	—	—	—	—	—
D	Ethyl Butyl Ketone	—	—	115	46	—	—	4
D	Ethyl Chloride	966	519	-58	-50	3.8	15.4	2.2
D	Ethyl Formate	851	455	-4	-20	2.8	16	2.6
D	2-Ethyl Hexanol	448	231	164	73	0.88	9.7	4.5
D	2-Ethyl Hexyl Acrylate	485	252	180	82	—	—	—
C	Ethyl Mercaptan	572	300	<0	<-18	2.8	18	2.1
C	n-Ethyl Morpholine	—	—	—	-32	—	—	—
C	2-Ethyl-3-Propyl Acrolein	—	—	155	—	—	—	4.4
D	Ethyl Silicate	—	—	125	gas	—	—	7.2
D	Ethylamine	725	385	<0	<-18	3.5	14	1.6
C	Ethylene	842	450	gas	—	2.7	36	1
D	Ethylene Chlorohydrin	797	425	140	68	4.9	15.9	2.8
D	Ethylene Dichloride	775	413	56	52	6.2	16	3.4
C	Ethylene Glycol Monobutyl Ether	460	238	143	62	1.1 @ 200°F	12.7 @ 275°F	4.1
C	Ethylene Glycol Monobutyl Ether Acetate	645	340	160	71	1.7 @ 200°F	8.54 @ 275°F	—
C	Ethylene Glycol Monomethyl ether	455	235	110	43	1.7 @ 200°F	15.6 @ 200°F	3.0
C	Ethylene Glycol Monoethyl Ether Acetate	715	379	124	52	1.7	—	4.72
D	Ethylene Glycol Monomethyl Ether	545	285	102	39	1.8 @ STP	14 @ STP	2.6
B(C)	Ethylene Oxide‡	804	429	-20	-28	3.0	100	1.5
D	Ethylenediamine	725	385	104	40	2.5	12.0	2.1
C	Ethylenimine	608	320	12	-11	3.3	54.8	1.5
C	2-Ethylhexaldehyde	375	191	112	44	0.85 @ 200°F	7.2 @ 275°F	4.4
B	Formaldehyde (Gas)	795	429	gas	gas	7.0	73	1.0
D	Formic Acid (90%)	813	434	122	50	18	57	1.6
B	Fuel and Combustible Process Gas (containing more than 30 percent H_2 by volume)	—	—	—	—	—	—	—
D	Fuel Oils	410-765	210-407	100-336	38-169	0.7	5	—
C	Furfural	600	316	140	60	2.1	19.3	3.3
C	Furfuryl Alcohol	915	490	167	75	1.8	16.3	3.4
D	Gasoline	536-880	280-471	-36 to -50	-38 to -46	1.2-1.5	7.1-7.6	3.4
D	Heptane	399	204	25	-4	1.05	6.7	3.5
D	Heptene	500	260	<32	<0	—	—	3.39
D	Hexane	437	225	-7	-22	1.1	7.5	3
D	Hexanol	—	—	145	63	—	—	3.5
D	2-Hexanone	795	424	77	25	—	8	3.5
D	Hexenes	473	245	<20	<-7	—	—	3
D	sec-Hexyl Acetate	—	—	—	—	—	—	—
C	Hydrazine	74-518	23-270	100	38	2.9	9.8	1.1

G General Information

Reference Information
Gases and Vapors – Hazardous Substances Used in Business and Industry

TABLE I (cont'd)

Class I* Group	Substance	Auto–*Ignition Temp. °F	Auto–*Ignition Temp. °C	Flash Point °F	Flash Point °C	Flammable Limits Percent by Volume Lower	Flammable Limits Percent by Volume Upper	Vapor Density (Air Equals 1.0)
B	Hydrogen	968	520	gas	gas	4	75	0.1
C	Hydrogen Cyanide	1000	538	0	-18	5.6	40	0.9
C	Hydrogen Selenide	—	—	—	—	—	—	—
C	Hydrogen Sulfide	500	260	gas	gas	4	44	1.2
D	Isoamyl Acetate	680	360	77	25	1.0 @ 212°F	7.5	4.5
D	Isoamyl Alcohol	662	350	109	43	1.2	9.0 @ 212°F	3
D	Isobutyl Acrylate	800	427	86	30	—	—	4.42
C	Isobutyraldehyde	385	196	-1	-18	1.6	10.6	2.5
C	Isodecaldehyde	—	—	185	85	—	—	5.4
C	Iso-octyl Alcohol	—	—	180	82	—	—	—
C	Iso-octyl Aldehyde	387	197	—	—	—	—	—
D	Isophorone	860	460	184	84	0.8	3.8	—
D	Isoprene	428	220	-65	-54	1.5	8.9	2.4
D	Isopropyl Acetate	860	460	35	2	1.8 @ 100°F	8	3.5
D	Isopropyl Ether	830	443	-18	-28	1.4	7.9	3.5
C	Isopropyl Glycidyl Ether	—	—	—	—	—	—	—
D	Isopropylamine	756	402	-35	-37	—	—	2
D	Kerosene	410	210	110-162	43-72	0.7	5	—
D	Liquefied Petroleum Gas Manufactured Gas (see Fuel and Combustible Process Gas)	761-842	405-450	—	—	—	—	—
D	Mesityl Oxide	652	344	87	31	1.4	7.2	3.4
D	Methane	999	537	gas	gas	5.0	15.0	0.6
D	Methanol	725	385	52	11	6.0	36	1.1
D	Methyl Acetate	850	454	14	-10	3.1	16	2.8
D	Methyl Acrylate	875	468	27	-3	2.8	25	3.0
D	Methyl Amyl Alcohol	—	—	106	41	1.0	5.5	—
D	Methyl n-Amyl Ketone	740	393	102	39	1.1 @ 151°F	7.9 @ 250°F	3.9
C	Methyl Ether	662	350	gas	gas	3.4	27.0	1.6
D	Methyl Ethyl Ketone	759	404	16	-9	1.7 @ 200°F	11.4 @ 200°F	2.5
D	2-Methyl-5-Ethyl Pyridine	—	—	155	68	1.1	6.6	4.2
C	Methyl Formal	460	238	—	—	—	—	—
D	Methyl Formate	840	449	-2	-19	4.5	23	2.1
D	Methyl Isobutyl Ketone	840	440	64	18	1.2 @ 200°F	8.0 @ 200°F	3.5
D	Methyl Isocyanate	994	534	19	-7	5.3	26	1.97
C	Methyl Mercaptan	—	—	—	—	3.9	21.8	1.7
D	Methyl Methacrylate	792	422	50	10	1.7	8.2	3.6
D	2-Methyl-1-Propanol	780	416	82	28	1.7 @ 123°F	10.6 @ 202°F	2.6
D	2-Methyl-2-Propanol	892	478	52	11	2.4	8.0	2.6
D	alpha-Methyl Styrene	1066	574	129	54	1.9	6.1	—
C	Methylacetylene	—	—	gas	gas	1.7	—	1.4
C	Methylacetylene-Propadiene (stabilized)	—	—	—	—	—	—	—
D	Methylamine	806	430	gas	gas	4.9	20.7	1.0
D	Methylcyclohexane	482	250	25	-4	1.2	6.7	3.4
D	Methylcyclohexanol	565	296	149	65	—	—	3.9
D	o-Methylcyclohexanone	—	—	118	48	—	—	3.9
D	Monoethanolamine	770	410	185	85	—	—	2.1
D	Monoisopropanolamine	705	374	171	77	—	—	2.6
C	Monomethyl Aniline	900	482	185	85	—	—	3.7
C	Monomethyl Hydrazine	382	194	17	-8	2.5	92	1.6
C	Morpholine	590	310	98	37	1.4	11.2	3.0
D	Naphtha (Coal Tar)	531	277	107	42	—	—	—
D	Naphtha (Petroleum)▲	550	288	<0	<-18	1.1	5.9	2.5
D	Nitrobenzene	900	482	190	88	1.8 @ 200°F	—	4.3
C	Nitroethane	778	414	82	28	3.4	—	2.6
C	Nitromethane	785	418	95	35	7.3	—	2.1
C	1-Nitropropane	789	421	96	36	2.2	—	3.1
C	2-Nitropropane	802	428	75	24	2.6	11.0	3.1
D	Nonane	401	205	88	31	0.8	2.9	4.4
D	Nonene	—	—	78	26	—	—	4.35
D	Nonyl Alcohol	—	—	165	74	0.8 @ 212°F	6.1 @ 212°F	5.0
D	Octane	403	206	56	13	1.0	6.5	3.9
D	Octene	446	230	70	21	—	—	3.9
D	n-Octyl Alcohol	—	—	178	81	—	—	4.5

General Information

Reference Information
Gases and Vapors – Hazardous Substances Used in Business and Industry

TABLE I (cont'd)

Class I* Group	Substance	Auto–*Ignition Temp. °F	Auto–*Ignition Temp. °C	Flash Point °F	Flash Point °C	Flammable Limits Percent by Volume Lower	Flammable Limits Percent by Volume Upper	Vapor Density (Air Equals 1.0)
D	Pentane	470	243	<-40	<-40	1.5	7.8	2.5
D	1-Pentanol	572	300	91	33	1.2	10.0 @ 212°F	3.0
D	2-Pentanone	846	452	45	7	1.5	8.2	3.0
D	1-Pentene	527	275	0	-18	1.5	8.7	2.4
D	Phenylhydrazine	—	—	190	88	—	—	—
D	Propane	842	450	gas	gas	2.1	9.5	1.6
D	1-Propanol	775	413	74	23	2.2	13.7	2.1
D	2-Propanol	750	399	53	12	2.0	12.7 @ 200°F	2.1
D	Propiolactone	—	—	165	74	2.9	—	2.5
C	Propionaldehyde	405	207	-22	-30	2.6	17	2.0
D	Propionic Acid	870	466	126	52	2.9	12.1	2.5
D	Propionic Anhydride	545	285	145	63	1.3	9.5	4.5
D	n-Propyl Acetate	842	450	55	13	1.7 @ 100°F	8	3.5
C	n-Propyl Ether	419	215	70	21	1.3	7.0	3.53
B	Propyl Nitrate	347	175	68	20	2	100	—
D	Propylene	851	455	gas	gas	2.0	11.1	1.5
D	Propylene Dichloride	1035	557	60	16	3.4	14.5	3.9
B(C)	Propylene Oxide‡	840	449	-35	-37	2.3	36	2.0
D	Pyridine	900	482	68	20	1.8	12.4	2.7
D	Styrene	914	490	88	31	0.9	6.8	3.6
C	Tetrahydrofuran	610	321	6	-14	2.0	11.8	2.5
D	Tetrahydronaphthalene	725	385	160	71	0.8 @ 212°F	5.0 @ 302°F	4.6
C	Tetramethyl Lead	—	—	100	38	—	—	6.5
D	Toluene	896	480	40	4	1.1	7.1	3.1
D	Tridecene	—	—	—	—	—	—	—
C	Triethylamine	480	249	16	-9	1.2	8.0	3.5
D	Triethylbenzene	—	—	181	83	—	—	5.6
D	Tripropylamine	—	—	105	41	—	—	4.9
D	Turpentine	488	253	95	35	0.8	—	—
D	Undecene	—	—	—	—	—	—	—
C	Unsymmetrical Dimethyl Hydrazine (UDMH)	480	249	5	-15	2	95	2.0
C	Valeraldehyde	432	222	54	12	—	—	3.0
D	Vinyl Acetate	756	402	18	-8	2.6	13.4	3.0
D	Vinyl Chloride	882	472	-108.4	-78	3.6	33.0	2.2
D	Vinyl Toluene	921	494	127	53	0.8	11.0	4.1
D	Vinylidene Chloride	1058	570	-19	-28	6.5	15.5	3.4
D	Xylenes	867-984	464-529	81-90	27-32	1.0-1.1	7.0	3.7

*Data from NFPA 499 - "Recommended Practice for the Classification of Flammable Liquids, Gases or Vapors and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas".

‡ If equipment is isolated by sealing all conduit ½ in. or larger, in accordance with Section 501.15(A) of NFPA 70, National Electrical Code, equipment for the group classification shown in parentheses is permitted.

§ For classification of areas involving Ammonia, see Safety Code for Mechanical Refrigeration, ANSI/ASHRAE 15, and Safety Requirements for the Storage and Handling of Anhydrous Ammonia, ANSI/CGA G2.1.

† Certain chemicals may have characteristics that require safeguards beyond those required for any of the above groups. Carbon disulfide is one of these chemicals because of its low autoignition temperature and the small joint clearance to arrest its flame propagation.

▲ Petroleum Naphtha is a saturated hydrocarbon mixture whose boiling range is 20° to 135°C. It is also known as benzine, ligroin, petroleum ether, and naphtha.

G General Information

Reference Information
Dusts – Hazardous Substances Used in Business and Industry

TABLE II

Material*	Minimum Cloud or Layer Ignition Temp.† °F		°C
Class II, Group E			
Aluminum, atomized collector fines	1022	Cl	550
Aluminum, A422 flake	608		320
Aluminum — cobalt alloy (60-40)	1058		570
Aluminum — copper alloy (50-50)	1526		830
Aluminum — lithium alloy (15% Li)	752		400
Aluminum — magnesium alloy (Dowmetal)	806	Cl	430
Aluminum — nickel alloy (58-42)	1004		540
Aluminum — silicon alloy (12% Si)	1238	NL	670
Boron, commercial-amorphous (85% B)	752		400
Calcium Silicide	1004		540
Chromium, (97%) electrolytic, milled	752		400
Ferromanganese, medium carbon	554		290
Ferrosilicon (88%, 9% Fe)	1472		800
Ferrotitanium (19% Ti, 74.1% Fe, 0.06% C)	698	Cl	370
Iron, 98%, H2 reduced	554		290
Iron, 99%, Carbonyl	590		310
Magnesium, Grade B, milled	806		430
Manganese	464		240
Silicon, 96%, milled	1436	Cl	780
Tantalum	572		300
Thorium, 1.2%, O2	518	Cl	270
Tin, 96%, atomized (2% Pb)	806		430
Titanium, 99%	626	Cl	330
Titanium Hydride, (95% Ti, 3.8% H2)	896	Cl	480
Vanadium, 86.4%	914		490
Zirconium Hydride, (93.6% Zr, 2.1% H2)	518		270
Class II, Group F			
CARBONACEOUS DUSTS			
Asphalt, (Blown Petroleum Resin)	950	Cl	510
Charcoal	356		180
Coal, Kentucky Bituminous	356		180
Coal, Pittsburgh Experimental	338		170
Coal, Wyoming	—		—
Gilsonite	932		500
Lignite, California	356		180
Pitch, Coal Tar	1310	NL	710
Pitch, Petroleum	1166	NL	630
Shale, Oil	—		—
Class II, Group G			
AGRICULTURAL DUSTS			
Alfalfa Meal	392		200
Almond Shell	392		200
Apricot Pit	446		230
Cellulose	500		260
Cherry Pit	428		220
Cinnamon	446		230
Citrus Peel	518		270
Cocoa Bean Shell	698		370
Cocoa, natural, 19% fat	464		240
Coconut Shell	428		220
Corn	482		250
Corncob Grit	464		240
Corn Dextrine	698		370
Cornstarch, commercial	626		330
Cornstarch, modified	392		200
Cork	410		210
Cottonseed Meal	392		200
Cube Root, South Amer.	446		230
Flax Shive	446		230
Garlic, dehydrated	680	NL	360
Guar Seed	932	NL	500
Gum, Arabic	500		260
Gum, Karaya	464		240
Gum, Manila (copal)	680	Cl	360
Gum, Tragacanth	500		260
Hemp Hurd	428		220
Class II, Group G (cont'd)			
Lycopodium	590		310
Malt Barley	482		250
Milk, Skimmed	392		200
Pea Flour	500		260
Peach Pit Shell	410		210
Peanut Hull	410		210
Peat, Sphagnum	464		240
Pecan Nut Shell	410		210
Pectin	392		200
Potato Starch, Dextrinated	824	NL	440
Pyrethrum	410		210
Rauwolfia Vomitoria Root	446		230
Rice	428		220
Rice Bran	914	NL	490
Rice Hull	428		220
Safflower Meal	410		210
Soy Flour	374		190
Soy Protein	500		260
Sucrose	662	Cl	350
Sugar, Powdered	698	Cl	370
Tung, Kernels, Oil-Free	464		240
Walnut Shell, Black	428		220
Wheat	428		220
Wheat Flour	680		360
Wheat Gluten, gum	968	NL	520
Wheat Starch	716	NL	380
Wheat Straw	428		220
Woodbark, Ground	482		250
Wood Flour	500		260
Yeast, Torula	500		260
CHEMICALS			
Acetoacetanilide	824	M	440
Acetoacet-p-phenetidide	1040	NL	560
Adipic Acid	1022	M	550
Anthranilic Acid	1076	M	580
Aryl-nitrosomethylamide	914	NL	490
Azelaic Acid	1130	M	610
2,2-Azo-bis-butyronitrile	662		350
Benzoic Acid	824	M	440
Benzotriazole	824	M	440
Bisphenol-A	1058	M	570
Chloroacetoacetanilide	1184	M	640
Diallyl Phthalate	896	M	480
Dicumyl Peroxide (suspended on CaCO3), 40-60	356		180
Dicyclopentadiene Dioxide	788	NL	420
Dihydroacetic Acid	806	NL	430
Dimethyl Isophthalate	1076	M	580
Dimethyl Terephthalate	1058	M	570
3,5 - Dinitrobenzoic Acid	860	NL	460
Dinitrotoluamide	932	NL	500
Diphenyl	1166	M	630
Ditertiary Butyl Paracresol	878	NL	470
Ethyl Hydroxyethyl Cellulose	734	NL	390
Fumaric Acid	968	M	520
Hexamethylene Tetramine	770	S	410
Hydroxyethyl Cellulose	770	NL	410
Isotoic Anhydride	1292	NL	700
Methionine	680		360
Nitrosoamine	518	NL	270
Para-oxy-benzaldehyde	716	Cl	380
Paraphenylene Diamine	1148	M	620
Paratertiary Butyl Benzoic Acid	1040	M	560
Pentaerythritol	752	M	400
Phenylbetanaphthylamine	1256	NL	680
Phthalic Anydride	1202	M	650
Phthalimide	1166	M	630

Reference Information
Dusts – Hazardous Substances Used in Business and Industry

TABLE II

Material*	Minimum Cloud or Layer Ignition Temp.† °F		°C
Class II, Group G (cont'd)			
Salicylanilide	1130	M	610
Sorbic Acid	860		460
Stearic Acid, Aluminum Salt	572		300
Stearic Acid, Zinc Salt	950	M	510
Sulfur	428		220
Terephthalic Acid	1256	NL	680
DRUGS			
2-Acetylamino-5-nitrothiazole	842		450
2-Amino-5-nitrothiazole	860		460
Aspirin	1220	M	660
Gulasonic Acid, Diacetone	788	NL	420
Mannitol	860	M	460
Nitropyridone	806	M	430
1-Sorbose	698	M	370
Vitamin B1, mononitrate	680	NL	360
Vitamin C (Ascorbic Acid)	536		280
DYES, PIGMENTS, INTERMEDIATES			
Beta-naphthalene-azo-Dimethylaniline	347		175
Green Base Harmon Dye	347		175
Red Dye Intermediate	347		175
Violet 200 Dye	347		175
PESTICIDES			
Benzethonium Chloride	716	Cl	380
Bis(2-Hydroxy-5-chlorophenyl) methane	1058	NL	570
Crag No. 974	590	Cl	310
Dieldrin (20%)	1022	NL	550
2, 6-Ditertiary-butyl-paracresol	788	NL	420
Dithane	356		180
Ferbam	302		150
Manganese Vancide	248		120
Sevin	284		140
- Trithiobis (N,N-Dimethylthio-formamide)	446		230
THERMOPLASTIC RESINS AND MOLDING COMPOUNDS			
Acetal Resins			
Acetal, Linear (Polyformaldehyde)	824	NL	440
Acrylic Resins			
Acrylamide Polymer	464	NL	240
Acrylonitrile Polymer	860		460
Acrylonitrile-Vinyl Pyridine Copolymer	464		240
Acrylonitrile-Vinyl Chloride-Vinylidene Chloride Copolymer (70-20-10)	410		210
Methyl Methacrylate Polymer	824	NL	440
Methyl Methacrylate-Ethyl Acrylate Copolymer	896	NL	480
Methyl Methacrylate-Ethyl Acrylate-Styrene Copolymer	824	NL	440
Methyl Methacrylate-Styrene-Butadiene-Acrylonitrile Copolymer	896	NL	480
Methacrylic Acid Polymer	554		290
Cellulosic Resins			
Cellulose Acetate	644		340
Cellulose Triacetate	806	NL	430
Cellulose Acetate Butyrate	698	NL	370
Cellulose Propionate	860	NL	460
Ethyl Cellulose	608	Cl	320
Methyl Cellulose	644		340
Carboxymethyl Cellulose	554		290
Hydroxyethyl Cellulose	644		340

Material*	Minimum Cloud or Layer Ignition Temp.† °F		°C
Class II, Group G (cont'd)			
Chlorinated Polyether Resins			
Chlorinated Polyether Alcohol	860		460
Nylon (Polyamide) Resins			
Nylon Polymer (Polyhexa-methylene Adipamide)	806		430
Polycarbonate Resins			
Polycarbonate	1310	NL	710
Polyethylene Resins			
Polyethylene, High Pressure Process	716		380
Polyethylene, Low Pressure Process	788	NL	420
Polyethylene Wax	752	NL	400
Polymethylene Resins			
Carboxypolymethylene	968	NL	520
Polypropylene Resins			
Polypropylene (No Antioxidant)	788	NL	420
Rayon Resins			
Rayon (Viscose) Flock	482		250
Styrene Resins			
Polystyrene Molding Cmpd.	1040	NL	
Polystyrene Latex	932	NL	380
Styrene-Acrylonitrile (70-30)	932	NL	570
Styrene-Butadiene Latex(>75% Styrene; Alum Coagulated)	824	NL	
Vinyl Resins			
Polyvinyl Acetate	1022	NL	550
Polyvinyl Acetate/Alcohol	824		440
Polyvinyl Butyral	734	NL	390
Vinyl Chloride-Acrylonitrile Copolymer	878		470
Polyvinyl Chloride-Dioctyl Phthalate Mixture	608	NL	320
Vinyl Toluene-Acrylonitrile Butadiene Copolymer	936	NL	530
THERMOSETTING RESINS AND MOLDING COMPOUNDS			
Allyl Resins			
Allyl Alcohol Derivative (CR-39)	932	NL	500
Amino Resins			
Urea Formaldehyde Molding Compound	860	NL	460
Urea Formaldehyde-Phenol Formaldehyde Molding Compound (Wood Flour Filler)	464		240
Epoxy Resins			
Epoxy	1004	NL	540
Epoxy - Bisphenol A	950	NL	510
Phenol Furfural	590		310
Phenolic Resins			
Phenol Formaldehyde	1076	NL	580
Phenol Formaldehyde Molding Cmpd. (Wood Flour Filler)	932	NL	500
Phenol Formaldehyde, Polyalkylene-Polyamine Modified	554		290
Polyester Resins			
Polyethylene Terephthalate	932	NL	500
Styrene Modified Polyester-Glass Fiber Mixture	680		360
Polyurethane Resins			
Polyurethane Foam, No Fire Retardant	824		440
Polyurethane Foam, Fire Retardant	734		390

G General Information

Reference Information
Dusts – Hazardous Substances Used in Business and Industry

TABLE II

Material*	Minimum Cloud or Layer Ignition Temp.† °F		°C
Class II, Group G (cont'd)			
SPECIAL RESINS AND MOLDING COMPOUNDS			
Alkyl Ketone Dimer Sizing Compound	320		160
Cashew Oil, Phenolic, Hard	356		180
Chlorinated Phenol	1058	NL	570
Coumarone-Indene, Hard	968	NL	520
Ethylene Oxide Polymer	662	NL	350
Ethylene-Maleic Anhydride Copolymer	1004	NL	540
Lignin, Hydrolized, Wood-Type, Fines	842	NL	450
Petrin Acrylate Monomer	428	NL	220
Petroleum Resin (Blown Asphalt)	932		500
Rosin, DK	734	NL	390
Rubber, Crude, Hard	662	NL	350
Rubber, Synthetic, Hard (33% S)	608	NL	320
Shellac	752	NL	400
Sodium Resinate	428		220
Styrene — Maleic Anhydride Copolymer	878	Cl	470

† Normally, the minimum ignition temperature of a layer of a specific dust is lower than the minimum ignition temperature of a cloud of that dust. Since this is not universally true, the lower of the two minimum ignition temperatures is listed. If no symbol appears between the two temperature columns, then the layer ignition temperature is shown. "Cl" means the cloud ignition temperature is shown. "NL" means that no layer ignition temperature is available and the cloud ignition temperature is shown. "M" signifies that the dust layer melts before it ignites; the cloud ignition temperature is shown. "S" signifies that the dust layer sublimes before it ignites; the cloud ignition temperature is shown.
* Certain metal dusts may have characteristics that require safeguards beyond those required for atmospheres containing the dusts of aluminum, magnesium, and their commercial alloys. For example, zirconium, thorium, and uranium dusts have extremely low ignition temperatures (as low as 20°C and minimum ignition energies lower than any material classified in any of the Class I or Class II groups.

Data from NFPA 499 - "Recommended Practice for the Classification of Flammable Liquids, Gases or Vapors and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas".

Reference Information
Standard Materials and Finishes

Standard Materials and Finishes

Eaton's Crouse-Hinds offers products of numerous types of materials with numerous finishes to have an offering for virtually all types of applications.

The information below summarizes some of the most commonly used materials and finishes. For information relating to materials and finishes for a particular product or product family, consult the specific catalog page.

Standard Finishes:

Zinc Electroplate and Aluminum Acrylic Paint:
- Electrolytically deposited zinc plate
- Finished with aluminum acrylic paint on all cast *Feraloy*® iron alloy products unless otherwise specified

Electrogalvanized and Chromate Treatment:
- Applied to steel parts

Zinc Chromate Primer and Aluminum Acrylic Paint:
- Applied to certain ferrous castings

Zinc Mechanical Plating:
- Applied to certain ferrous castings and steel parts

Hot Dip Galvanize:
- Zinc plate by dipping in molten zinc

Natural Finish:
- Unplated, unpainted (non-ferrous metals only)

***Corro-free*™ Epoxy Powder Coat:**
- *Corro-free*™ powdered epoxy finish is applied electrostatically, resulting in a tough, durable coating. Powder epoxy finish has many advantages over enamel, lacquer, aluminum paint, or epoxy paint. Powder epoxy finish has superior adhesion. Coating over the entire casting is uniform, even in hidden crevices. Electrostatic application reduces galvanic action.

Standard Materials:

***Feraloy*® Iron Alloy:**
- *Feraloy*, an Eaton's Crouse-Hinds proprietary gray-iron alloy, offers strength, versatility, adaptability, and economy. Cast iron generally resists corrosion from alkalies, organic compounds, neutral and slightly acidic solutions, and certain concentrated acids and neutral brines. Cast Feraloy products are normally supplied with a finish of electrolytically deposited zinc plate covered with an aluminum acrylic paint. Physical properties similar to ASTM-A48 Class 30A (30,000 psi tensile)
- *Feraloy* iron alloy with zinc electroplate or hot dip galvanized finish resists corrosion.

Aluminum:
- **Copper-free aluminum is particularly resistant to salt atmospheres, sulfur gases and ammonium nitrate.** Eaton's Crouse-Hinds' copper-free aluminum alloy contains a maximum of 4/10 of 1% copper. Above this level, the rate of corrosion due to galvanic action within the structure of the metal increases rapidly. Eaton's Crouse-Hinds' copper-free aluminum products provide optimum protection against galvanic corrosion.
- Sand cast copper-free – contains maximum of 4/10 of 1% copper (21,000-25,000 psi tensile)
- Permanent mold copper-free contains maximum of 4/10 of 1% copper (21,000-25,000 psi tensile).
- Die-cast copper-free – ASTM B85 except with maximum of 4/10 of 1% copper

***Krydon*® Material:**
- *Krydon* is the trade name for Eaton's Crouse-Hinds' properietary formulation of fiberglass-reinforced polyester. It is specifically formulated for electrical products intended for use in the harshest corrosive environments. Krydon material has proven itself superior to all other commercially available materials used in corrosive environments.

  Besides being corrosion resistant, *Krydon* material has high impact strength, is fire retardant, heat resistant and withstands weathering – even over extended periods of time.

Brass:
- ASTM B16

Diallyl Phthalate (DAP):
- Acme #1-502 compound or equal

Glass-Filled Alkyd:
- Glaskyd #3001 or equal

Malleable iron:
- ASTM A47

Neoprene:
- ASTM D2000

Nylon:
- Type 6/6

Silicon Bronze:
- This metal was developed for structural and engineering uses requiring metals with high strength and fabrication capabilities, along with a corrosion resistance equal to that of copper. Silicon bronze is resistant to most dry gases and has excellent marine, industrial and rural atmospheric corrosion resistance. With variation of temper and chemical composition, a variety of nonmagnetic, high strength, readily fabricated copper-silicon alloys can be achieved.
- ASTM B584

Stainless Steel:
- Turned (bar) – ASTM A582
- Stamped (sheet) – ASTM A167

Tellurium Copper:
- ASTM B301

Vellum:
- ASTM F104

Vestamid™:
- Thermoplastic polymer, corrosion and weather resistant

Wrought Aluminum:
- Turned (bar) – ASTM B211
- Stamped (sheet) – ASTM B209

Wrought Steel:
- Turned (bar) – ASTM A108 leaded
- Stamped (sheet) – ASTM A366

G General Information

Reference Information
Corrosion Resistant Materials

Eaton's Crouse-Hinds Products Available in Corrosion Resistant Materials

The following guide is intended as a convenient aid in quickly selecting the material or finish best suited to reducing your corrosion problem. Refer to previous page for more detailed information on standard materials and finishes available for all products.

Products Material Guide	Krydon	Product Quick Selector Copper-Free Aluminum	Feraloy	Corro-Free Epoxy Coating	Engineered Plastics
Conduit Outlet Bodies & Boxes	•	•	•	•	
Cable & Cord Fittings	•	•	•	•	
Enclosures and Junction Boxes	•	•	•	•	
Unions, Couplings, Plugs, Grounding Devices & Seals	•	•	•		
Motor Control & Circuit Breakers	•	•	•	•	
Control Stations	•	•	•	•	•
Panelboards	•	•	•	•	•
Switches	•	•	•	•	• †
LED Luminaires	•	•	•	•	
Incandescent Luminaires	•	•	•	•	
Fluorescent Luminaires		•	•	•	• *
HID Luminaires		•	•	•	• *
Lighting Accessories	•	•	•	•	
Heavy Duty Plugs & Receptacles	•	•	•	•	
Interlocked Plugs & Receptacles	•	•	•	•	• †
Emergency Lighting	•	•	•	•	

Product types shown above are available as standard in materials indicated. Availability of those not shown depends on specific requirements.
†CSR Compact Interlock and NSR disconnect switches manufactured from Valox®
*N2MV Champ lighting fixtures available in PPS.

General Information

Reference Information
General Guide for Product Material Selection

When designing a new facility or improving an old one, corrosion control can mean the difference between trouble-free operation and costly downtime.

At Eaton's Crouse-Hinds, our years of experience in corrosion control can help you reduce equipment failures, costly repairs and loss of production.

The general guide below can help you in selecting the most suitable material for products used in corrosive enviroments.

A = Excellent B = Good C = Adequate D = Unsatisfactory

CHEMICAL ATMOSPHERE	Krydon	Copper-Free Aluminum	Feraloy	Corro-Free Epoxy Coating	Silicon Bronze	316 Stainless Steel	PPS	Valox 357
Acetic Acid	A	C	C	C	C	A	A	A
Acetic Anhydride	A	A	D	C	C	A	A	C
Acetone	A	A	A	C	A	A	A	C
Acetylene	A	A	A	A	D	A	A	B
Aluminum Chloride	A	D	D	A	C	D	A	B
Aluminum Sulfate	A	C	D	A	C	B	A	B
Ammonium Carbonate	A	A	A	A	D	A	C	C
Ammonium Chloride	A	D	D	A	D	D	A	C
Ammonium Hydroxide	A	A	B	A	D	B	A	D
Ammonium Nitrate	A	A	B	A	D	A	A	B
Ammonium Phosphate	A	C	B	A	D	B	A	B
Amyl Acetate	A	A	B	C	A	A	A	D
Amyl Alcohol	A	A	A	A	A	B	B	D
Aniline	A	B	D	B	C	A	A	D
Arsenious Acid	A	A	D	A	C	B	D	B
Asphalt	A	A	A	A	A	A	B	A
Barium Carbonate	A	D	A	A	A	B	B	B
Barium Chloride	A	D	D	A	C	B	B	A
Barium Hydroxide	A	D	A	A	A	A	B	C
Beer	A	A	A	A	A	A	B	A
Beet Sugar Liquors	A	A	A	A	A	A	B	A
Benzene	A	A	A	C	A	A	A	D
Benzoic Acid	A	A	D	A	A	A	A	D
Borax	A	B	A	A	A	A	B	A
Boric Acid	A	B	A	A	A	B	B	B
Bromine, Wet	B	D	D	C	C	D	D	D
Butane	A	A	A	A	A	B	B	B
Butyl Alcohol	A	A	B	A	A	A	B	A
Butyric Acid	A	A	D	C	A	B	A	B
Calcium Bisulfite	A	A	D	A	C	D	B	B
Calcium Chloride	A	C	B	A	A	D	A	A
Calcium Hydroxide	A	D	A	A	A	B	A	B
Calcium Hypochlorite	A	B	D	A	C	D	D	C

CHEMICAL ATMOSPHERE	Krydon	Copper-Free Aluminum	Feraloy	Corro-Free Epoxy Coating	Silicon Bronze	316 Stainless Steel	PPS	Valox 357
Calcium Sulfate	A	A	A	A	A	B	B	B
Cane Sugar Liquors	A	A	A	A	A	A	A	B
Carbon Dioxide, Dry	A	A	A	A	A	A	B	A
Carbon Dioxide, Wet	A	A	B	A	C	A	C	A
Carbon Disulfide	A	A	B	C	C	B	B	C
Carbon Tetrachloride	A	A	B	C	A	A	C	C
Carbonic Acid	A	A	B	A	C	B	C	B
Castor Oil	A	A	A	A	A	B	A	B
Chlorine	A	D	A	B	D	B	D	C
Chloroform	B	B	C	B	A	C	C	D
Citric Acid	A	A	D	A	A	B	A	A
Cottonseed Oil	A	A	A	A	A	B	B	C
Chromic Acid	A	B	B	C	D	C	B	D
Crude Oil	A	A	A	A	A	A	A	C
Ethyl Acetate	A	A	A	C	A	B	A	D
Ethyl Alcohol	A	A	A	A	A	A	B	B
Ethyl Chloride	A	B	B	B	A	A	B	B
Ethylene Dichloride	B	A	A	C	A	B	B	D
Ethylene Glycol	A	A	A	A	A	B	A	B
Fatty Acids	A	A	B	A	C	B	A	C
Ferric Chloride	A	D	D	A	D	D	B	B
Ferric Sulfate	A	D	D	A	D	B	A	B
Formaldehyde	A	A	B	A	A	B	B	D
Formic Acid	A	B	D	A	A	B	C	B
Freons, Dry	A	A	A	A	A	B	A	A
Fuel Oil	A	A	A	A	A	B	B	A
Furfural	D	A	A	C	A	B	A	C
Gasoline	A	A	A	A	A	A	A	A
Glue	A	A	A	A	A	B	B	B
Glycerine	A	A	A	A	A	A	A	C
Concd. Hydrochloric Acid	C	D	D	C	D	D	D	B
Hydrofluoric Acid	D	D	D	C	D	D	C	D
Hydrogen	A	A	A	A	A	A	A	A

G General Information

Reference Information
General Guide for Product Material Selection

When designing a new facility or improving an old one, corrosion control can mean the difference between trouble-free operation and costly downtime.

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The general guide below can help you in selecting the most suitable material for products used in corrosive enviroments.

A = Excellent B = Good C = Adequate D = Unsatisfactory

CHEMICAL ATMOSPHERE	Krydon	Copper-Free Aluminum	Feraloy	Corro-Free Epoxy Coating	Silicon Bronze	316 Stainless Steel	PPS	Valox 357
Hydrogen Peroxide	A	A	D	C	C	B	D	C
Hydrogen Sulfide	A	A	C	A	B	B	B	C
Kerosene	A	A	A	A	A	B	A	C
Ketones	A	A	A	C	A	B	A	D
Lacquers	A	A	B	A	A	A	C	B
Lacquer Solvents	A	A	B	C	A	A	C	C
Lactic Acid	A	B	D	B	B	B	A	B
Lime	B	B	A	B	A	B	C	C
Linseed Oil	A	A	A	A	A	B	A	A
Magnesium Chloride	A	B	D	A	A	B	A	B
Magnesium Hydroxide	A	D	A	A	A	A	A	C
Magnesium Sulfate	A	A	A	A	A	B	A	B
Marine Atmosphere	A	A	D	A	A	B	A	A
Mercuric Chloride	A	D	D	A	D	D	D	B
Mercury	A	D	B	A	D	A	D	B
Methyl Alcohol	A	A	A	A	A	B	B	D
Methyl Chloride	B	D	B	D	B	A	A	D
Methyl Ethyl Ketone	A	A	B	B	A	B	B	D
Mine Waters	A	B	D	B	B	A	B	B
Motor Oil	A	A	A	A	A	B	A	A
Nickel Chloride	A	D	D	A	D	D	D	A
Nickel Sulfate	A	D	D	A	C	B	B	B
Nitric Acid	C	A	D	A	D	B	D	B
Oleic Acid	A	A	B	A	B	B	D	C
Oxalic Acid	A	B	B	A	A	D	B	D
Oxygen	A	A	A	A	A	B	B	A
Perchloric Acid	A	D	D	C	D	D	D	C
Phenol	A	A	B	B	A	A	A	C
Phosphoric Acid	A	D	C	B	B	C	B	C
Picric Acid	A	A	B	B	D	B	D	C
Potassium Carbonate	A	B	A	A	A	A	A	A
Potassium Chloride	A	D	B	A	B	B	A	B
Potassium Cyanide	A	D	B	A	D	B	A	B
Potassium Hydroxide	C	D	A	B	C	B	A	B
Potassium Nitrate	A	A	A	A	B	B	A	A
Potassium Sulfate	A	A	A	A	A	A	A	A

CHEMICAL ATMOSPHERE	Krydon	Copper-Free Aluminum	Feraloy	Corro-Free Epoxy Coating	Silicon Bronze	316 Stainless Steel	PPS	Valox 357
Propane	A	A	A	A	A	B	B	B
Rosin	A	A	B	A	A	A	C	C
Sea Water	A	B	D	A	A	B	A	B
Sodium Bicarbonate	A	A	B	A	A	A	A	A
Sodium Bisulfate	A	B	D	A	A	B	B	B
Sodium Bisulfite	A	B	D	A	B	B	B	B
Sodium Carbonate	A	C	A	A	A	B	A	A
Sodium Chloride	A	D	B	A	A	B	A	B
Sodium Cyanide	A	D	B	A	D	A	B	B
Sodium Hydroxide	B	D	A	B	B	B	B	C
Sodium Hypochlorite	A	D	D	B	B	C	D	C
Sodium Nitrate	A	A	A	A	B	B	A	A
Sodium Phosphate	A	D	A	A	B	B	B	B
Sodium Silicate	A	B	A	A	A	A	A	B
Sodium Sulfate	A	A	A	A	A	A	A	C
Sodium Sulfite	A	A	B	A	A	B	A	C
Stearic Acid	A	A	B	A	B	A	A	B
Sulfur	A	A	A	A	D	A	A	A
Sulfur Dioxide, Dry	A	B	A	A	A	B	B	B
Sulfur Trioxide, Dry	A	A	A	A	A	B	C	C
Sulfur Trioxide, Wet	A	D	D	B	C	C	C	C
Sulfuric Acid	A	A	D	B	C	D	A	B
Sulfurous Acid	A	B	D	B	B	D	B	B
Tannic Acid	A	A	B	A	A	B	B	B
Tar	A	A	A	A	A	A	D	C
Tartaric Acid	A	A	B	B	B	A	A	C
Toluene	A	A	A	C	A	A	A	D
Trichlorethylene	A	A	B	C	A	B	C	C
Turpentine	A	A	A	A	A	A	A	C
Vegetable Oils	A	A	A	A	A	A	B	A
Vinegar	A	B	B	A	A	B	B	A
Vinyl Chloride	A	B	B	B	D	B	D	D
Waxes	A	A	A	A	A	B	B	A
Xylene	A	A	A	C	A	B	A	D
Zinc Chloride	A	B	B	A	D	B	B	B
Zinc Sulfate	A	B	B	A	C	A	C	A

General Information

Reference Information
Enclosure Type/Levels of Protection

Enclosure Type:
NEMA, CEC and NEC Types

A North American system of rating standard levels of protection provided to electrical apparatus by enclosures for (1) the protection of persons against contact with live or moving parts inside the enclosure; (2) the protection provided by enclosure against ingress of solids and/or liquids; (3) the protection provided by the enclosure against the deleterious effects of corrosion; and (4) the protection provided by the enclosure against damage due to the formation of external ice. This enclosure type is in addition to (and not an alternative to) the types of protection necessary to ensure protection against ignition in hazardous (classified) locations.

The chart below shows typical NEMA, CEC and NEC types of enclosure.

NEMA Classification **Typical NEMA, CEC and NEC types of enclosures are listed below:**	
• Type 3 Enclosure	are intended for outdoor use primarily to provide a degree of protection against dust, rain, sleet, and external formation.
• Type 3R Enclosure	are intended for outdoor use primarily to provide a degree of protection against falling rain, and external ice formation (these enclosures may be ventilated).
• Type 4 Enclosure	are intended for indoor or outdoor use primarily to provide a degree of protection against windblown dust and rain, splashing water, hose-directed water, and external ice formation.
• Type 4X Enclosure	are intended for indoor or outdoor use primarily to provide a degree of protection against corrosion, windblown dust and rain, splashing water, hose-directed water, and external ice formation.
• Type 7 Enclosure	are for use in indoor locations classified as Class I, Groups A, B, C, or D, as defined in the National Electrical Code®.
• Type 9 Enclosure	are for use in indoor locations classified as Class II, Groups E, F, or G, as defined in the National Electrical Code®.
• Type 12 Enclosure	are intended for indoor use primarily to provide a degree of protection against dust, falling dirt, and dripping noncorrosive liquids.

Degree of Protection (IP):

The Ingress Protection (IP) System of Enclosure Protection originated under the IEC system. However, it is now widely accepted and used in North America.

It is a system of rating standard levels of protection provided by apparatus for the protection of persons against contact with live or moving parts inside the apparatus, as well as the protection provided by apparatus against ingress of solids and/or liquids. This type of protection classification is in addition to (and not an alternative to) the types of protection necessary to ensure protection against ignition in hazardous (classified) locations.

The chart below shows ingress protection codes.

Ingress Protection: (IP) Codes

First Numeral **Protection against solid bodies**	**Second Numeral** **Protection against liquid**
0 – NO PROTECTION	0 – NO PROTECTION
1 – OBJECTS EQUAL TO OR GREATER THAN 50mm	1 – VERTICALLY DRIPPING WATER
2 – OBJECTS EQUAL TO OR GREATER THAN 12.5mm	2 – 75 TO 105° ANGLED DRIPPING WATER
3 – OBJECTS EQUAL TO OR GREATER THAN 2.5mm	3 – SPRAYING WATER
4 – OBJECTS EQUAL TO OR GREATER THAN 1.0mm	4 – SPLASHING WATER
5 – DUST-PROTECTED	5 – WATER JETS
6 – DUST-TIGHT	6 – HEAVY SEAS, POWERFUL WATER JETS
	7 – EFFECTS OF IMMERSION
	8 – INDEFINITE IMMERSION

i.e. An enclosure rated IP68 is rated to exclude dust (dust-tight) and rated for indefinite immersion.

G General Information

Reference Information Quality, Compliances & Third Party Certifications

Statement of Accuracy

The information published in this catalog and other literature has been compiled with great care and is sufficiently accurate for most purposes, but is not guaranteed. All statements, technical information and recommendations contained herein are based on information and tests we believe to be reliable. This catalog and the products contained within is subject to change without notice. The purchaser should determine the suitability of the product for his or her application and assumes all risk and liability whatsoever in connection therewith.

Compliances and Third Party Certifications

The products described in this catalog are of the highest possible quality. Eaton's Crouse-Hinds products have been tested and field proven in a wide variety of applications. Products are designed and manufactured to meet or exceed, in numerous products, multiple worldwide standards.

- The designs of Eaton's Crouse-Hinds products are original and proprietary. Some are patented.
- The product information in this catalog, though current at the catalog printing, is subject to improvements and modifications. Due to the breadth of our product offering with regard to the design, materials, components and the variations of these products available to our customers, it is impractical to adequately identify third-party certification of all items in this publication.
- Product improvements and other developments may, at times, affect third-party approval of testing laboratories such as Underwriters Laboratories, the Canadian Standards Association, Factory Mutual and others. To avoid publishing possibly superseded product certification information, Eaton's Crouse-Hinds has elected not to show *specific* certification references in this catalog.
- Eaton's Crouse-Hinds products are designed to meet or exceed the performance requirements of applicable standards. Where the term "compliances" is used in this catalog in conjunction with a UL/CSA standard number, it identifies the criteria which have governed the design and Company testing of the products listed on that page.
- The term "compliances" is not to be construed to mean that the products have been listed by the Underwriters' Laboratories/CSA. Such listing is a matter of independent record signified by product marking, carton marking, or other approved means.
- The individual product offerings in this catalog comply with the national and third-party standards identified under the 'Certifications and Compliances' sections. To obtain specific third-party approval information for these products, contact Eaton's Crouse-Hinds or the applicable agency.

Worldwide Testing Authorities

Country	Testing Authority
USA	**Underwriters Laboratories**
USA	**Factory Mutual**
USA	**ETL**
Canada	**CSA**
Mexico	**ANCE**
Austria	**TUV-A**
Austria	**BVFA**
Belgium	**ISSEP**
Denmark	**DEMKO**
Finland	**VTT**
China	**NEPSI**
Korea	**KOSHA**
Russia	**GOST-R**
Kazakhstan	**GOST-K**

Country	Testing Authority
France	**INERIS**
France	**LCIE**
Italy	**CESI**
Netherlands	**KEMA**
Norway	**NEMKO**
Spain	**LOM**
Sweden	**SP**
United Kingdom	**BASEEFA/EECS**
United Kingdom	**SIRA**
Germany	**PTB**
Germany	**BVS**
Hungary	**BKI**

