

Industry Definitions

The National Electrical Manufacturers Association (NEMA) is a US Manufacturers Organization which actively promotes standardized product specifications for electrical apparatus. While NEMA does not actually test products, it establishes the performance criteria for enclosures intended for specific environments.

NEMA standards describe each type of enclosure in general and functional terms, and specifically omits reference to construction details. In other words NEMA specifies what an enclosure must do, not how to manufacture it. This is also true about the EN 60.529/IEC 529.

NEMA performance criteria and test methods are used by Underwriters Laboratories (UL) and Canadian Standards Association (CSA) as guidelines for investigation and listing of electrical enclosures.

The tested enclosures are then authorized to carry a label by UL or CSA to prove it has passed the required tests and meets the applicable UL and CSA standard.

NEMA CLASSIFICATIONS

Definitions – Non-Hazardous Locations

Type 1

Enclosures are intended for indoor use primarily to provide a degree of protection against contact with the enclosed equipment. NEMA Standard 1-10-1979.

Type 2

Enclosures are intended for indoor use primarily to provide a degree of protection against limited amounts of falling water and dirt. NEMA Standard 1-10-1979.

Type 3

Enclosures are intended for outdoor use primarily to provide a degree of protection against windblown dust, rain, sleet, and external ice formation. NEMA Standard 1-10-1979.

Type 3R

Enclosures are intended for outdoor use primarily to provide a degree of protection against falling rain, sleet, and external ice formation. (May be ventilated). NEMA Standard 1-10-1979.

Type 3S

Enclosure are intended for outdoor use primarily to provide a degree of protection against windblown dust, rain, sleet, and to provide for operation of external mechanisms when ice laden. NEMA Standard 1-10-1979.

Type 4

Enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against wind-blown dust and rain, splashing water, and hose-directed water. NEMA Standard 1-10-1979.

Type 4X

Enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against corrosion, windblown dust and rain, splashing water, and hose-directed water. NEMA Standard 1-10-1979.

Type 5

Enclosures are intended for indoor use primarily to provide a degree of protection against settling airborne dust, falling dirt, and dripping non-corrosive liquids. NEMA Standard 5-25-1988.

Type 6

Enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against the entry of water during occasional, temporary submersion at a limited depth. NEMA Standard 1-10-1979.

Type 6P

Enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against the entry of water during prolonged submersion at a limited depth. NEMA Standard 1-10-1979.

Type 11

Enclosures are intended for indoor use primarily to provide, by oil submersion, a degree of protection to enclosed equipment against the corrosive effects of liquids and gases. NEMA Standard 1-10-1979.

Type 12

Enclosures are intended for indoor use primarily to provide a degree of protection against dust, falling dirt, and dripping non-corrosive liquids. NEMA Standard 1-10-1979.

Type 12K

Enclosures with knock-outs are intended for indoor use primarily to provide a degree of protection against dust, falling dirt, and dripping non-corrosive liquids other than at knock-outs. NEMA Standard 1-10-1979.

Type 13

Enclosures are intended for indoor use primarily to provide a degree of protection against dust, spraying of water, oil, and non-corrosive coolant. NEMA Standard 1-10-1979.

Definitions – Hazardous Locations

Type 7

Enclosures are for use indoors in locations classified as Class I, Groups A, B, C, or D, as defined in the National Electrical Code. NEMA Standard 1-10-1979.

Type 8

Enclosures are for indoor or outdoor use in locations classified as Class I, Groups A, B, C, or D, as defined in the National Electrical Code. NEMA Standard 1-10-1979.

Type 9

Enclosures are for indoor use in locations classified as Class II, Groups E, F, or G as defined in the National Electrical Code. NEMA Standard 5-19-1986.

Type 10

Enclosures are constructed to meet the applicable requirements of the Mine Safety and Health Administration. NEMA Standard 1-10-1979.



ENCLOSURE TYPES NON-HAZARDOUS LOCATIONS			
TYPE DESIGNATION	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA STANDARD 250) AND ELECTRICAL AND ELECTRONIC MFG. ASSOCIATION OF CANADA (EEMAC)	 UNDERWRITERS LABORATORIES INC. (UL 50 AND UL 508)	 CANADIAN STANDARDS ASSOCIATION (STANDARD C22.2 NO. 94)
1	Enclosures are intended for indoor use primarily to provide a degree of protection against contact with the enclosed equipment or locations where unusual service conditions do not exist.	Indoor use primarily to provide protection against contact with the enclosed equipment and against a limited amount of falling dirt.	General purpose enclosure. Protects against accidental contact with live parts.
2	Enclosures are intended for indoor use primarily to provide a degree of protection against limited amounts of falling water and dirt.	Indoor use to provide a degree of protection against limited amounts of falling water and dirt.	Indoor use to provide a degree of protection against dripping and light splashing of non-corrosive liquids and falling dirt.
3	Enclosures are intended for outdoor use primarily to provide a degree of protection against wind-blown dust, rain, and sleet; undamaged by the formation of ice on the enclosure.	Outdoor use to provide a degree of protection against windblown dust and windblown rain; undamaged by the formation of ice on the enclosure.	Indoor or outdoor use; provides a degree of protection against rain, snow, and windblown dust; undamaged by the external formation of ice on the enclosure.
3R	Enclosures are intended for outdoor use primarily to provide a degree of protection against falling rain and sleet; undamaged by the formation of ice on the enclosure.	Outdoor use to provide a degree of protection against falling rain; undamaged by the formation of ice on the enclosure.	Indoor or outdoor use; provides a degree of protection against rain and snow; undamaged by the external formation of ice on the enclosure.
4	Enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against windblown dust and rain, splashing water, and hose-directed water; undamaged by the formation of ice on the enclosure.	Either indoor or outdoor use to provide a degree of protection against falling rain, splashing water, and hose-directed water; undamaged by the formation of ice on the enclosure.	Indoor or outdoor use; provides a degree of protection against rain, snow, windblown dust, splashing and hose-directed water; undamaged by the external formation of ice on the enclosure.
4X	Enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against corrosion, windblown dust and rain, splashing water, and hose-directed water; undamaged by the formation of ice on the enclosure.	Either indoor or outdoor use to provide a degree of protection against falling rain, splashing water, and hose-directed water; undamaged by the formation of ice on the enclosure; resists corrosion.	Indoor or outdoor use; provides a degree of protection against rain, snow, windblown dust, splashing and hose-directed water; undamaged by the external formation of ice on the enclosure; resists corrosion.
6	Enclosures are intended for use indoors or outdoors where occasional submersion is encountered.	Indoor or outdoor use to provide a degree of protection against entry of water during temporary submersion at a limited depth; undamaged by the formation of ice on the enclosure.	Indoor or outdoor use; provides a degree of protection against the entry of water during temporary submersion at a limited depth; undamaged by the external formation of ice on the enclosure; resists corrosion.
12	Enclosures are intended for indoor use primarily to provide a degree of protection against dust, falling dirt, and dripping non-corrosive liquids.	Indoor use to provide a degree of protection against dust, dirt, fiber flyings, dripping water, and external condensation of non-corrosive liquids.	Indoor use; provides a degree of protection against circulating dust, lint, fibers, and flyings; dripping and light splashing of non-corrosive liquids; not provided with knockouts.
13	Enclosures are intended for indoor use primarily to provide a degree of protection against dust, spraying of water, oil, and non-corrosive coolant.	Indoor use to provide a degree of protection against lint, dust seepage, external condensation and spraying of water, oil, and non-corrosive liquids.	Indoor use; provides a degree of protection against circulating dust, lint, fibers, and flyings; seepage and spraying of non-corrosive liquids, including oils and coolants.

This material is reproduced from NEMA. The preceding descriptions, however, are not intended to be complete representations of National Electrical Manufacturers Association standards for enclosures nor those of the Electrical and Electronic Manufacturers Association of Canada.

This material is reproduced from Underwriters Laboratories Inc. Standard for Safety for Cabinets and Boxes, UL 50, Copyright 1997 and Industrial Control Equipment, UL 508, Copyright 1996 by Underwriters Laboratories Inc.

This material is reproduced from the Canadian Standards Association.

Underwriters Laboratories Inc. (UL) shall not be responsible to anyone for the use of or reliance upon a UL Standard by anyone. UL shall not incur any obligation or liability for damages, including consequential damages, arising out of or connection with the use, interpretation of, or reliance upon a UL Standard.

COMPARISON OF SPECIFIC NON-HAZARDOUS APPLICATIONS INDOOR LOCATIONS											
PROVIDES A DEGREE OF PROTECTION AGAINST THE FOLLOWING ENVIRONMENTAL CONDITIONS	TYPE OF ENCLOSURE										
	1*	2*	4	4X	5	6	6P	11	12	12K	13
Incidental contact with the enclosed equipment	•	•	•	•	•	•	•	•	•	•	•
Falling dirt	•	•	•	•	•	•	•	•	•	•	•
Falling liquids and light splashing		•	•	•		•	•	•	•	•	•
Dust, lint, fibers, and flyings†			•	•	•	•	•		•	•	•
Hose down and splashing water			•	•		•	•				
Oil and coolant seepage									•	•	•
Oil or coolant spraying and splashing											•
Corrosive agents				•			•	•			
Occasional temporary submersion						•	•				
Occasional prolonged submersion							•				

*These enclosures may be ventilated. However, Type 1 may not provide protection against small particles of falling dirt when ventilation is provided in the enclosure top.

†These fibers and flyings are non-hazardous materials and are not considered Class III type ignitable fibers or combustible flyings. For Class III type ignitable fibers or combustible flyings see the National Electrical Code, Section 500-6(a).



In order to protect the sometimes delicate equipment against foreign objects there are protection standards developed which grade the degree of protection level achieved. It is important to know that there are two such standards for the degree of protection by an enclosure.

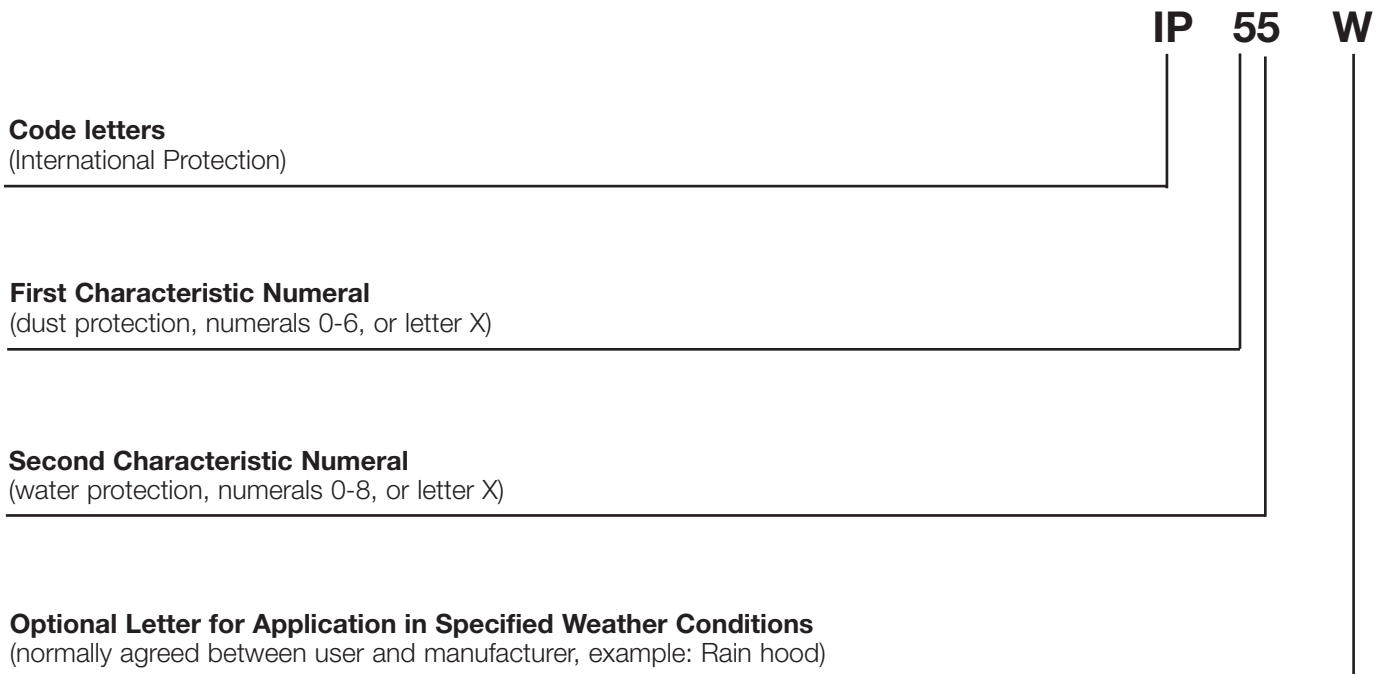
- The European specification: IP-code according to EN 60.529 / IEC 529
- The American specification: TYPE-code according to NEMA 250

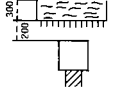
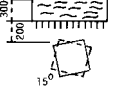
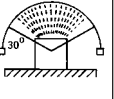
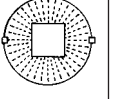
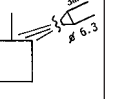
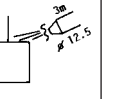
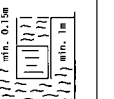
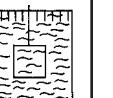
The European IP-Code

To help the design engineer identify the degree of protection provided by an enclosure, EN60.529/IEC 529 (International Electrotechnical Commission) was introduced. The latest version was issued 11/89. (Correct at date of printing). Both harmonized standards classify the extent to which an enclosure will resist the ingress of solid bodies and water under designated tests.

After successful testing the enclosure will be allocated a classification code with the letters IP (International Protection) prefixing that code.

Further explanation of the degree of protection provided by an enclosure indicated by the IP-code is detailed below:



THE IP SCALE										
1ST NUMERAL: DEGREE OF PROTECTION WITH RESPECT TO PERSONS AND SOLID OBJECTS.		2ND NUMERAL: DEGREE OF PROTECTION WITH RESPECT TO HARMFUL INGRESS OF WATER								
		0	1	2	3	4	5	6	7	8
		Non protected	Protected against dripping water	Protected against dripping water of $\pm 15^\circ$ angle	Protected against dripping water of $\pm 60^\circ$ angle	Protected against splashing water	Protected against water jets	Protected against heavy seas	Protected against immersion	Protected against submersion
0	Non Protected	IP 00	Test time 10 mins 	Test time 10 mins 	Test time 10 mins max 200 		Test time 1 min/m 	Test time 1 min/m 	Test time 30 mins 	Test time 30 mins 
1	Protected against solid objects greater than Dia. 50 mm	IP 10	IP 11	IP 12	IP 13					
2	Protected against solid objects greater than Dia. 12 mm	IP 20	IP 21	IP 22	IP 23					
3	Protected against solid objects greater than Dia. 2.5 mm	IP 30	IP 31	IP 32	IP 33	IP 34				
4	Protected against solid objects greater than Dia. 1.0 mm	IP 40	IP 41	IP 42	IP 43	IP 44	IP 45	IP 46		
5	Dust protected					IP 54	IP 55	IP 56		
6	Dust tight						IP 65	IP 66	IP 67	IP 68

NEMA TO IEC - ENCLOSURE RATING CROSS-REFERENCE*								
NEMA TYPE	IP23	IP30	IP32	IP55	IP64	IP65	IP66	IP67
1	•							
2		•						
3					•			
3R			•					
4							•	
4X							•	
6								•
12				•				
13						•		

*Note: This cross-reference table is an approximation of NEMA and IEC classifications for reference only. Please consult the appropriate agency's requirements and test qualifications for complete information.

NEMA

National Electrical Manufacturers' Association
2101 L Street Northwest, Washington, DC 20037
NEMA Standards Publication No. 250
Enclosures for Electrical Equipment (1000 Volts Maximum)
NEMA Standards Publication No. ICS6
Enclosures for Industrial Controls and Systems

UL

Underwriters' Laboratories Inc.
333 Pfingsten Road, Northbrook, IL 60062
UL 50 Cabinets and Boxes
UL 508 Industrial Control Equipment
UL 870 Wireway, Auxiliary Gutter, and Associated fittings.

CSA

Canadian Standards Association
178 Rexdale Boulevard, Rexdale, Toronto, Ontario Canada
M9W 1R3
CSA Standard C22.2, No. 14 Industrial Control Equipment
for Use in Ordinary (Non-Hazardous) Locations
CSA Standard C22.2, No. 40 Cutout, Junction,
and Pull Boxes
CSA Standard C22.2, No. 94-M91 Special Purpose
Enclosures

JIC

Joint Industry Counsel
7901 Westpark Drive, McLean, VA 22101
EMP-1 Electrical Standards for Mass Production Equipment
EGP-1 Electrical Standards for General Purpose
Machine Tools

IEC

International Electrotechnical Commission
3 Rue de Varem, CH-1211
Geneva 20, Switzerland
IEC 529 Classification of Degrees of Protection
Provided by Enclosures

CERTIFICATES & APPROVALS



AS Austria



SETI Finland



SEV Switzerland



IMQ Italy



ÖVE Austria



UTE France



UL U.S.A.



KEMA Netherlands



CEBEC Belgium



VDE Germany



UR U.S.A.



NEMKO Norway



CSA, CEC Canada



BS Great Britain



Lloyd's Register
of
Shipping



AEE Spain



DEMKO Denmark



ASTA Great Britain



SEMKO Sweden

ANSI

American National Standards Institute
1430 Broadway
New York, NY 10018
ANSI Z55.1-1967 Gray Finishes for Industrial
Apparatus and Equipment

EEMAC

Electrical/Electronic Manufacturers Association of Canada
10 Carlson Court
Suite 500
Rexdale (Toronto), Ontario Canada M9W 6L2

TUV

TUV Rheinland
Glenview, IL
Newtown, CT
San Ramon, CA

VDE

Institute of German Electronics Engineers
Merianstrasse 28
D-6050 Offenbach, Germany

EIA

Electronic Industries Association
2001 Eye Street Northwest
Washington, DC 20006
EIA RS-310-D Racks, Panels, and Associated Equipment

NFPA

National Fire Protection Association
Batterymarch Park
Quincy, MA 02269
NFPA 70 National Electrical Code

FORD

Ford Manufacturing Standards
Ford Motor Company
The American Road
Dearborn, MI 48121
EXI Electrical Standards for Mass Production Equipment

Degreasing, Iron Phosphatizing and Rinsing

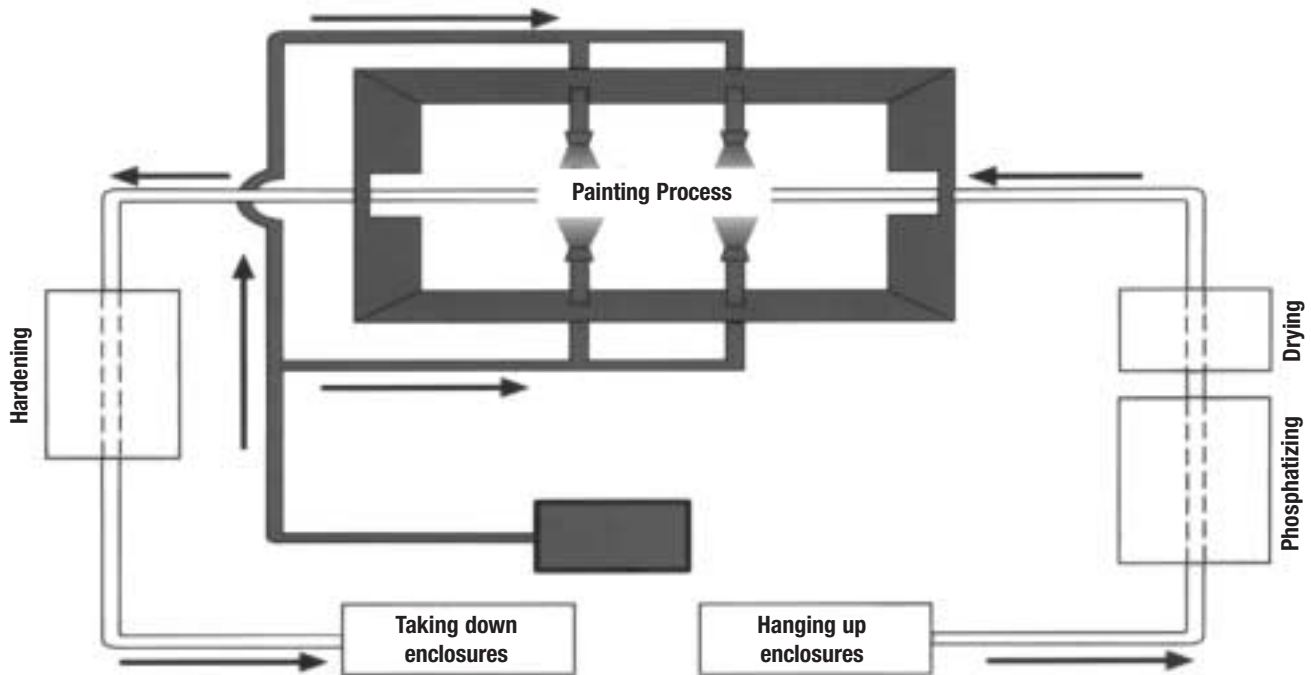
During this process the steel is cleaned and passivated. This way the product will not corrode and good adhesion of the paint to the steel surface is achieved.

Forced Drying

To make sure that the products are completely dry before the painting process starts, they are dried at 100 degree C.

Structure Powder Coating

The powder coating is electrostatically applied. This way ALL faces are covered inside and outside assuring high mechanical strength, very good corrosion protection and resistance to chemicals, temperature and weather variations. The powder coating can easily be re-painted and is free from heavy metals, chromate and silicon.



MATERIALS AND FINISHES METALS		
CHARACTERISTICS OF VARIOUS MATERIALS	COSTS	SUGGESTED APPLICATION
<p>Hot Rolled Pickled and Oiled Steel Sheets (ASTM A569)</p> <p>A low-carbon, hot-finished steel produced by passing bar stock, at a temperature above the recrystallation temperature, between a set of rolls. Scale has been removed by means of a hot, weak sulfuric acid bath, after which an oil film is applied.</p>	Low	General indoor and outdoor use after a suitable finish has been applied to protect against corrosion.
<p>Cold Rolled Steel (ASTM A366)</p> <p>A low-carbon, cold-finished steel produced by passing bar stock through a set of rolls.</p>	Low	General indoor and outdoor use after a suitable finish has been applied to protect against corrosion.
<p>Galvanized Steel (ASTM A526)</p> <p>Steel with a zinc coating to provide corrosion resistance. The most common method of applying the zinc coating is hot dip galvanizing. Other optional methods include electrodeposition and metal spraying. Galvanizing provides protection against corrosion by serving as a sacrificial barrier and providing cathodic protection at sheared edges.</p>	Low to Moderate	Indoor or outdoor use in neutral pH (pH is a measurement of the degree of acidity or alkalinity of a solution: pH values from 0 to 7 indicate acidity, and pH values from 7 to 14 indicate alkalinity). Resists oil, gas, glycerine, dichromates, borates, and silicates. Most frequent application is outdoor including seacoast atmospheres. Additional finishes may be applied to improve corrosion resistance.
<p>18-8 Stainless Steel (Type 302-304)</p> <p>A highly corrosion resistant iron-based alloy containing between 18% and 20% chromium. Stainless steel is the strongest of the corrosion resistant materials. It exhibits many of the same resistances attributed to fiberglass materials as well as resistance to highly polar solvents such as acetone and mek.</p>	Moderate	Indoor and outdoor use. Ideally suited for use in food processing areas, dairies, breweries, or any wet area. Also works well in areas where caustic elements or alkalies are present.
<p>316 or 316L Stainless Steel</p> <p>Provide improved resistance to salt, some acids, and high temperature. Resistance to sulfates and chlorine is less than Type 304.</p>	Moderate to High	Indoor or outdoor use in almost any environment. These stainless steels are the most corrosion resistant metal materials used by Wiegmann for enclosures. A superior material choice for marine environments.
<p>5052 Aluminum</p> <p>A lightweight metal that has a protective oxide layer which shields its surface from most corrosive elements. 5052 is the strongest non-heat treatable aluminum alloy.</p>	Moderate	Indoor or outdoor use, particularly in marine environments. Also an excellent choice for enclosures exposed to solvents, petrochemicals, some acids, most sulfates and nitrates.
<p>Monel</p> <p>A high nickel-base alloy characterized by good strength and good resistance to heat and corrosion.</p>	High	Frequently specified for marine and chemical plant applications. Mainly used as hardware on non-metallic enclosures.



N.I.B. GAUGE EQUIVALENTS	
GAUGE NUMBER	THICKNESS (INCHES)
7 Gauge	.179
8 Gauge	.164
9 Gauge	.150
10 Gauge	.134
11 Gauge	.120
12 Gauge	.105
13 Gauge	.090
14 Gauge	.075
15 Gauge	.067
16 Gauge	.060
17 Gauge	.054
18 Gauge	.048
19 Gauge	.042
20 Gauge	.036
21 Gauge	.033
22 Gauge	.030

*Steel Manufacturers' Standard Gauge
for Sheet Steel (Hot or Cold Rolled)*

NEMA TO IEC - ENCLOSURE RATING CROSS-REFERENCE* DECIMAL & METRIC EQUIVALENTS							
4THS	8THS	16THS	32NDS	64THS	TO 3 PLACES	TO 2 PLACES	ILLIMETERS
				1/64	.016	.02	0
			1/32		.031	.03	1
				3/64	.047	.05	1
		1/16			.062	.06	2
				5/64	.078	.08	2
			3/32		.094	.09	2
				7/64	.109	.11	3
	1/8				.125	.12	3
				9/64	.141	.14	4
			5/32		.156	.16	4
				11/64	.172	.17	4
		3/16			.188	.19	5
				13/64	.203	.20	5
			7/32		.219	.22	6
				15/64	.234	.23	6
1/4					.250	.25	6
				17/64	.266	.27	7
			9/32		.281	.28	7
				19/64	.297	.30	8
		5/16			.312	.31	8
				21/64	.328	.33	8
			11/32		.344	.34	9
				23/64	.359	.36	9
	3/8				.375	.38	10
				25/64	.391	.39	10
			13/32		.406	.41	10
				27/64	.422	.42	11
		7/16			.438	.44	11
				29/64	.453	.45	12
			15/32		.469	.47	12
				31/64	.484	.48	12
1/2					.500	.50	13
				33/64	.516	.52	13
			17/32		.531	.53	13
				35/64	.547	.55	14
		9/16			.562	.56	14
				37/64	.578	.58	15
			19/32		.594	.59	15
				39/64	.609	.61	15
	5/8				.625	.62	16
				41/64	.641	.64	16
			21/32		.656	.66	17
				43/64	.672	.67	17
		11/16			.688	.69	17
				45/64	.703	.70	18
			23/32		.719	.72	18
				47/64	.734	.73	19
3/4					.750	.75	19
				49/64	.766	.77	19
			25/32		.781	.78	20
				51/64	.797	.80	20
		13/16			.812	.81	21
				53/64	.828	.83	21
			27/32		.844	.84	21
				55/64	.859	.86	22
7/8					.875	.88	22
				57/64	.891	.89	23
			29/32		.906	.91	23
				59/64	.922	.92	23
		15/16			.938	.94	24
				61/64	.953	.95	24
			31/32		.969	.97	25
				63/64	.984	.98	25
1 inch					1.000	1.00	25



LENGTH CONVERSIONS			
1mm = 0.039 in.	8mm = 0.315 in.	60mm = 2.362 in.	400mm = 15.748 in.
2mm = 0.079 in.	9mm = 0.354 in.	70mm = 2.756 in.	500mm = 19.685 in.
3mm = 0.118 in.	10mm = 0.394 in.	80mm = 3.150 in.	600mm = 23.622 in.
4mm = 0.157 in.	20mm = 0.787 in.	90mm = 3.543 in.	700mm = 27.559 in.
5mm = 0.197 in.	30mm = 1.181 in.	100mm = 3.937 in.	800mm = 31.496 in.
6mm = 0.236 in.	40mm = 1.575 in.	200mm = 7.874 in.	900mm = 35.433 in.
7mm = 0.276 in.	50mm = 1.969 in.	300mm = 11.811 in.	1000mm = 39.370 in.

AREA CONVERSIONS	
IMPERIAL TO METRIC	METRIC TO IMPERIAL
1 sq. inch = 645.16 sq. millimeters	1 sq. millimeter (mm ²) = 0.00155 sq. inch
1 sq. inch = 6.4516 sq. centimeters	1 sq. centimeter (cm ²) = 0.1550 sq. inch
1 sq. foot = 929.03 sq. centimeters	1 sq. meter (m ²) = 10.7640 sq. feet
1 sq. foot = 0.0929 sq. meter	1 sq. meter (m ²) = 1.196 sq. yards
1 sq. yard = 0.836 sq. meter	

CONVERSIONS	
3.0 mm = 0.118 ins.	10 gauge = 0.1345/0.1225 ins. = 3.416 / 3.112 mm
2.5 mm = 0.098 ins.	12 gauge = 0.1046 / 0.0926 ins. = 2.657 / 2.352 mm
2.0 mm = 0.079 ins.	14 gauge = 0.0747 / 0.0667 ins. = 1.897 / 1.694 mm
1.5 mm = 0.059 ins.	16 gauge = 0.0598 / 0.5928 ins. = 1.519 / 1.341 mm

Repainting

For best adhesion results, correct surface preparation before repainting is critical. To avoid discoloration of solvent-based high solids baking enamel, do not bake over 360 F. Always follow instructions provided by your **paint manufacturer**. Apply thin finish coats. Allow the paint to cure properly for best adhesion and hardness.

Panel Installation

When installing the interior sub-panel, it may be necessary to bend one or more mounting studs (slightly) to permit the panel to slide in place. If this would happen, simply position the panel on the studs that line up properly, and pry the other stud into position with a screwdriver inserted through the panel hole.

Door Closing Adjustments

(Single Door Wall Mount) If the surface on which the enclosure is mounted is not flat, the door may not open and close properly. If heavy equipment is mounted on the door, the door may sag slightly. If the top of door strikes the lip which extends around the body opening, place metal shims

behind the mounting foot which is located at the bottom of the enclosure and closest to the door hinge. Place the shims between the mounting foot and the wall or mounting surface; be sure all mounting bolts are tight!

(Two Door Floor Mounting) The overlapping doors are factory-fitted to meet evenly at the top and bottom. If the floor under the enclosure is not level, the doors will not close evenly. In this case, place metal shims under the corners of the enclosure. The enclosure should be bolted in place with doors closed to prevent tipping when installing shims. Shims under the right front corner will raise the right door. Shims under the left front corner will raise the left door. It is important that the doors meet evenly to insure a proper seal against liquids and dust. Be sure all mounting bolts are tight!

Lifting Enclosures

To lift an enclosure which has eyebolts or mounting feet, be sure to use all the eyebolts or tip mounting feet provided. Arrange your chains and cables with spreader bars, etc., so you are lifting straight up on the eyebolts or top mounting feet.



WIEGMANN QUOTATION REQUEST

CUSTOMER INFORMATION		
Agent: _____	Name: _____	Date _____
Distributor: _____	End Customer: _____	
Dist. Contact: _____	Customer Contact: _____	
Stocking Dist. (Y/N) _____	New Quote (Y/N): _____	
(If repeat, list old quote #.)		

ENCLOSURE INFORMATION		
Total Quantity: _____	Blanket: _____	Per Release _____
Request Delivery _____		
Standard Size _____	Special Size _____	
Nema List: NEMA 1 _____	NEMA 12 _____	NEMA 3R _____
	NEMA 4 _____	NEMA 4X _____
Material: CRS _____	SS _____	Alum. _____ Galv. _____
Spl. Punching: Door _____	Tub _____	Panel _____ Accessories _____
Pems/Weld Studs (Y/N) _____		
Panel (Y/N) _____		
Accessories Installed (Fans, Heaters, etc.) (Y/N) _____		
Standard Color _____	Special Size _____	
Drawing # _____		

COMPETITIVE INFORMATION	
Competition _____	Competition Price Level _____
Wiegmann Target Price (Dist. Net) _____	

It is the responsibility of the Sales Agent to provide all pertinent information necessary to quote. Information missing or illegible drawings may result in a "no quote" or hold until information is researched & provided.

Please attach drawings (if applicable).

Please copy and complete.



Mail to: **Hubbell Wiegmann**
Attention: Quotations
 501 West Apple
 Freeburg, IL 62243

Or fax to:
(618)539-5794



Custom Design Support & Solutions

Wiegmann can provide custom enclosure design support tailored for your application. When you take advantage of Wiegmann's expertise you can be confident that your enclosure will reflect the latest technology configured to match your installation requirements.

Our services are designed to support a wide variety of customers from first-time users of Wiegmann enclosures to established customers creating advanced systems on accelerated implementation schedules. When you need custom enclosures, count on us for help. No one knows enclosures like Wiegmann.

Industry Standards

Our procedures and products are designed and manufactured to comply with National Electrical Manufacturers Association (NEMA), Underwriters Laboratories Inc. (UL), Canadian Standards Association (CSA), International Electrotechnical Commission (IEC), and American National Standards Institute (ANSI) requirements for enclosures. Proper use and application of standards is carefully monitored. This commitment to quality is your assurance that Wiegmann custom enclosures, like their standard enclosure counterparts, will stand up even under the most rigorous conditions.

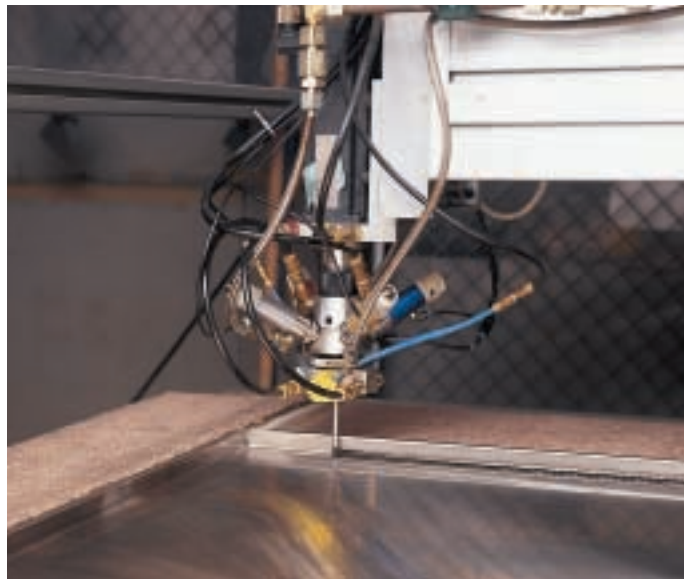
Total Custom Manufacturing Capability

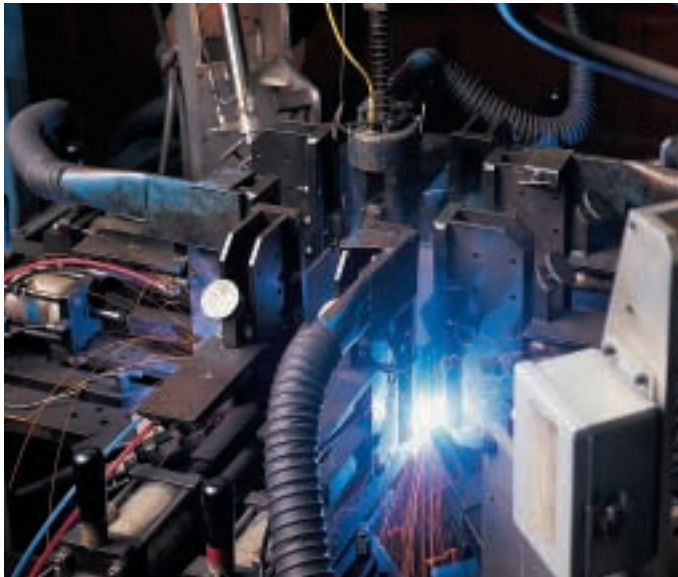
Our custom engineering department and manufacturing facility employ state-of-the-art systems and equipment for fast turnaround.

Wiegmann manufacturing systems and procedures were designed from the ground up to meet a wide range of customer requirements. So if your application calls for unique materials or finishes, holes or cutouts, special sizes or shapes, we can help you meet those expectations.

We can also handle custom finishes on steel, stainless steel and aluminum. Custom products can be painted in any number of colors or color combinations. Wiegmann's offers special colors in powder coats.

Finally, Wiegmann's Customer Support Services is dedicated to a single goal providing the best possible service for both our products and our customers. Our network of authorized representatives and distributors stand ready to assist you in providing pricing information and delivery schedules as well as expert advice and recommendations.


WIEGMANN®



To obtain a quotation and place an order for a custom enclosure, contact your local factory authorized Wiegmann representative sales office.

Suggestions for Ordering

These suggestions will help you plan your custom enclosure.

Establish...

- Product quantity
- Environmental factors
- Product lead time
- Delivery deadlines
- Schedule of shipments

Determine enclosure material of choice based upon application and environment.

Develop a detailed drawing or layout or Wiegmann will be happy to assist in drawing. This will help us do an accurate job of pricing, engineering, and estimating delivery schedules.

Provide us with the name and telephone number of a project team member who is familiar with the technical aspects of the order.

Consider modifying a Wiegmann standard enclosure. Wiegmann manufactures over 2,500 models and with minor modifications may be suitable for your application.

See page L11 for custom ordering form.

