



May 4, 2026

Heather Kuoppamaki, P.E.
Oregon Department of Environmental Quality
700 NE Multnomah Street, Suite 600
Portland, Oregon 97232

Re: Response to DEQ letter dated March 3, 2026
Swanson Group Mfg. LLC—Roseburg, Oregon

Dear Heather:

Swanson Group Mfg. LLC (Swanson) received your letter dated March 3, 2026 (the letter) relating to the Cleaner Air Oregon (CAO) Emissions Inventory submitted to the Oregon Department of Environmental Quality (DEQ) on August 28, 2025. See Your DEQ Online (YDO) submittal ID 68543 for additional details. Swanson retained Maul Foster and Alongi, Inc. (MFA) to assist with each step of the CAO permitting process, including preparing the following responses to the information requested in the letter.

This response letter is organized in the same manner as the information was requested in the letter. DEQ comments are shown in bold followed by the response. This response letter also includes supporting documentation as attachments, along with an updated version of the AQ520 CAO Emissions Inventory Form (AQ520 Form) and supporting emissions inventory spreadsheet. Each document is being submitted in YDO commensurate with submittal of these responses. These items are also being provided to you via email as a courtesy.

General Comments

1. **Toxics Emissions Unit (TEU) Lumber Drying Kiln (LDK) has four Sub-Units (TESUs) based on type of wood dried in the kiln (LDK_DF, LDK_WF, LDK_WH, LDK_LP). Please note that the activity levels presented in Tab 2 of the AQ520 form for these TESUs could become permit limits on a wood type basis. DEQ is available to discuss alternative throughput estimation methods if there are concerns with this potential permit limit.**

We appreciate the clarity provided by the DEQ on this issue and understands that the kiln production rates included in the AQ520 Form may become permit limits in the future. Note the annual production rates for the kilns shown in the AQ520 Form are already being used as the basis for the current Plant Site Emission Limits shown in the Title V Operating Permit no. 10-0030-TV-01 issued by the DEQ to the facility on September 26, 2022.

2. **The daily activity limits for TEU LDK should represent the maximum amount of lumber loaded into the kilns for drying in any 24-hour period. For lumber dried in batches with drying times longer than 24 hours, DEQ does not generally approve the assumption that daily kiln emissions are distributed evenly over a period greater than 24 hours without justification. DEQ is available to discuss the maximum daily activity levels if there are concerns.**

It is well understood that emissions from kilns occur over the duration of a kiln batch cycle. Some pollutants emit at higher rates towards the beginning of a batch cycle, some towards the beginning, and others remaining fairly constant over the entire batch cycle. The typical kiln batch cycle duration at the facility is 48 hours. As a result, assuming that 100% of toxic air contaminant (TAC) emissions will be generated during the first 24-hour period of the kiln batch cycle is overly conservative and unrealistic. This conservative kiln assumption will also be layered on top of other conservative assumptions inherent to conducting health risk assessments in Oregon. For example, it is already conservatively assumed that all emission units are operating at maximum capacity over a 24-hour period at the facility, and that these emissions will align with worst-case meteorological events depicted in the dispersion model, and that exposure to these maximum TAC emissions will occur nonstop over 24 hours to an individual.

Although MFA and Swanson disagree with the CAO permitting program's position on this issue, Swanson is accommodating this request solely to continue the CAO permitting process for the facility. The maximum daily throughput for the kilns in the revised AQ520 Forms assumes 100% of daily kiln production capacity is assigned to the worst-case wood species based on a toxicity weighted emission rate evaluation conducted by MFA as shown in the updated emissions inventory. MFA performed the toxicity weighted emission rate evaluation by dividing the TAC emission factor (in units of pounds per thousand board feet) by the corresponding TAC acute risk-based concentration (in units of micrograms per cubic meter), then summing the calculated acute toxicity weighted emission rates for a specific wood species. The wood species with the highest ranked total acute toxicity weighted emissions rate represents the potential worst-case wood species for assessing acute risk. For this reason, only one wood species (e.g., Lodgepole Pine) is presented with a maximum daily throughput for the requested potential to emit scenario. Swanson reserves the right to revise the maximum daily throughput for each kiln in future permitting actions in order to more accurately reflect that potential pollutants will be emitted over the entire kiln batch cycle duration.

- 3. For the boiler, TEU KB, two complete scenarios should be provided. DEQ recommends submitting these in two separate AQ520 forms.**
 - a. The first scenario is normal operations without startup; this scenario should include all the throughput required for normal activities.**
 - b. The second scenario should be a worst-case day with startup activities followed by normal operations. The throughput for the second scenario should include the maximum throughput for startup operations in addition to the maximum operational hours that could be conducted in a startup day.**
 - c. These activity levels may become permit limits. DEQ is available to discuss if there are concerns with the potential permit limits.**

The normal operating scenario and startup scenario have been incorporated into separate AQ520 Forms as requested. The AQ520 Form titled "AQ520_Rev1_Swanson RSM_Normal" represents the normal operating scenario, and the other AQ520 Form titled "AQ520_Rev1_Swanson RSM_Startup" represents the startup operating scenario. The only difference between the two AQ520 Forms are the maximum daily emission estimates for the Kipper hog fuel boiler (permitted emissions unit ID KB).

Specific Comments

- 1. Submit to DEQ the following additional information:**
 - a. A list of the onsite "Distillate oil, kerosene, gasoline, natural gas or propane burning equipment" that are being considered as categorically exempt TEU activities. Provide**

throughput, fuel storage, and Btu/hour ratings to confirm the equipment meets the requirements to be exempted using [Oregon Administrative Rule (OAR)] 340-245-0060(3)(b)(B).

Swanson operates a small backup natural gas-fired emergency generator to support the main offices in case of power failure. The maximum heat input capacity for this emergency generator is 0.62 million British thermal units (MMBtu) per hour, which is below the exemption threshold of 2 MMBtu per hour per OAR 340-245-0060(3)(b)(B)(ii), meaning the generator is a categorically exempt TEU for purposes of CAO permitting. There are no other stationary fuel burning equipment at the facility considered to be categorically exempt TEUs except for onsite mobile equipment (e.g., forklifts, front-end loaders, water trucks, etc.) which are categorically exempt TEUs under OAR 340-245-0060(3)(b)(A), “evaporative and tailpipe emissions from on-site motor vehicle operation.”

b. Manufacturer data for the natural gas-fired emergency generator (NG_EGEN) to justify using emission factors for a 4 stroke, rich burn engine.

The backup natural gas-fired emergency generator specification sheet is presented in Attachment A. As shown in the attached specification sheet, the generator utilizes an inline 4 cylinder engine, meaning it is a 4 stroke engine. According to the manufacturer’s website, this generator model is a part of Generac’s non-industrial rich-burn engine line, featuring first-in-class dual-valve, ultra-low-pressure fuel delivery and intelligent engine controls, designed for cleaner-burning gaseous fuels (e.g., natural gas or propane). As stated under 1.a above, the backup natural gas-fired emergency generator is considered to be a categorically exempt TEU.

2. Submit to DEQ revised supporting calculations in Excel format including the following updates:

a. For TEU GDF, use the attached gasoline compositional data to speciate the VOC emissions.

This request is incorporated in the revised AQ520 Forms.

b. For TESUs SHOP_ANY and SHOP_E309:

i. For welding type ER70S-6 – the emissions estimates refer to the annual activity rate for E70T, not ER70S-6. Please update to resolve this discrepancy.

This request is incorporated in the revised AQ520 Forms.

ii. Use the methodology outlined in San Diego County Air Pollution Control District (SDAPCD) Welding Operations Guidance. For welding rod and welding processes that are listed in AP-42 12.19, use the calculation methodology provided in Sections 1.1.1 and 1.1.2 of the SDAPCD guidance. DEQ has also provided our Welding Emissions Tool. This includes the following:

1. For welding type E70T:

a. Use the PM₁₀ Emission Factor of 15.1 lb/lb from AP 42 Table 12.19-1 and the methodology in SDAPCD section 1.1.2 when calculating annual emissions for toxic air contaminants (TACs) listed in the SDS but not listed in AP-42 Table 12.19-2. This includes the following TACs:

- i. Aluminum and compounds (CASRN 7429-90-5);**
- ii. Include quartz as respirable crystalline silica (CASRN 7631-86-9) at a concentration of 0.55%; and**
- iii. Include calcium fluoride as fluorides (DEQ SEQ ID 239) at a concentration of 0.55%.**

- b. Include the following TACs from AP-42 12.19 and use the methodology in SDAPCD Section 1.1.1 to estimate annual emissions:
 - i. Hexavalent Chromium (CASRN 18540-29-2). Use the Total Chromium emission factor of 0.004 lb/Mlb in AP-42 Table 12.19-2 and multiply by the 10% conversion rate for FCAW; and
 - ii. Insoluble nickel compounds (DEQ SEQ ID 365). Use the 0.005 lb/Mlb emission factor in AP-42 Table 12.19-2.

The requests for E70T revisions are incorporated in the revised AQ520 Forms with one caveat. MFA noted that the PM₁₀ emission factor from AP-42 Chapter 12.19, Table 12.19-1 is actually in units of pound per thousand pound, and not pound per pound, as shown under 1.a above. MFA incorporated the PM₁₀ emission factor consistent with AP-42 Chapter 12.19.

2. For welding type ER5356: Emissions estimates for aluminum and compounds (CASRN 7429-90-5) use the annual usage from E70T (1,200 lb/yr). The annual usage reported for ER5356 is 10 lb/yr. Please update to resolve this discrepancy.

This correction is incorporated in the revised AQ520 Form.

3. For welding type FABTUF 960:
 - a. Report nickel as insoluble nickel compounds (DEQ SEQ ID 365).

This request is incorporated in the revised AQ520 Form.

4. For welding type ER4043:
 - a. Emissions estimates for aluminum and compounds (CASRN 7429-90-5) use the annual usage for E70T (1,200 lb/yr). The annual usage reported for ER4043 is 10 lb/yr. Please update to resolve this discrepancy.
 - b. Emissions estimates for copper and compounds (CASRN 7440-50-8) use the annual usage for FABTUF960 (200 lb/yr). The annual usage reported for ER4043 is 10 lb/yr. Please update to resolve this discrepancy.

These corrections for ER4043 are incorporated in the revised AQ520 Form.

5. For welding type ER60-6:
 - a. The information provided is a product description, not an SDS. Please provide an SDS for this material.
 - b. Emissions estimates use the annual wire usage for FABTUF960 (200 lb/yr). The annual usage reported for ER60-6 is 50 lb/yr. Please update to resolve this discrepancy.
 - c. Include phosphorous as phosphorous and compounds (DEQ SEQ ID 504) at a concentration of 0.0125%.
 - d. Report nickel as insoluble nickel compounds (DEQ SEQ ID 365).

MFA and Swanson could not obtain a safety data sheet for the Weifang Welding ER60-6 wire used at the facility. The previously provided documentation was obtained from this website¹, which represents the best composition data for the wire that we could find. Based on further research online, "Weifang

¹ Focus Technology Co., Ltd. <https://forwardwelding.en.made-in-china.com/product/cfJpCNibXghk/China-Er60-Ger70s-6-Welding-Wire-Er60-Ger70s-6-Welding-Wire.html> [accessed May 2, 2026].

Forward Welding Materials Co., Ltd., based in Weifang, China, is a major manufacturer of welding consumables, producing copper-coated solid MIG welding wire that often aligns with the AWS ER70S-6 classification (commonly referred to in China as ER50-6 or similar specifications depending on the specific product line and certification). The previously provided documentation from the website also references the ER70S-6 welding type as being characteristic of ER60-6. MFA obtained a safety data sheet for ER70S-6 from ESAB DENTON. A printout of the previously provided product documentation for ER60-6 and the ER70S-6 ESAB DENTON safety data sheet are presented in Attachment B. Each potential TAC compound in the ESAB DENTON safety data sheet is included in the previously provided documentation. Hence, although we cannot obtain an exact safety data sheet for the Weifang Welding ER60-6 wire, the website documentation provides sufficient justification for the composition data used in the revised AQ520 Forms, especially given the low usage rate in comparison to the other welding types used at the facility. The other requested changes for ER60-6 are incorporated in the revised AQ520 Forms.

6. For welding type FABCO EXCEL ARC-71:

- a. Include copper as copper and compounds (CASRN 7440-50-8) at a concentration of 0.5%.
- b. Include as respirable crystalline silica (CASRN 7631-86-9) at a concentration of 1%.
- c. Emissions estimates for aluminum and compounds (CASRN 7429-90-5) use the annual usage for E70T (1,200 lb/yr). The annual usage reported for FABCO EXCEL ARC-71 is 90 lb/yr. Please update to resolve this discrepancy.
- d. Emissions estimates for the following TACs use the annual usage for FABTUF960 (200 lb/yr). The annual usage reported for FABCO EXCEL ARC-71 is 90 lb/yr. Please update to resolve this discrepancy.
 - i. Manganese and compounds (CASRN 7439-96-5); and
 - ii. Molybdenum trioxide (CASRN 1313-27-5).

These requests for FABCO EXCEL ARC-71 are incorporated in the revised AQ520 Forms.

7. For welding type E7018:

- a. Use the PM10 Emission Factor of 15.1 lb/lb from AP-42 Table 12.19-1 and the methodology in SDAPCD section 1.1.2 when calculating annual emissions for TACs listed in the SDS but not listed in AP-42 Table 12.19-2. This includes the following TACs:
- b. Include the following TACs from AP-42 12.19 and use the methodology in SDAPCD Section 1.1.1 to estimate annual emissions:
 - i. Hexavalent Chromium (CASRN 18540-29-2). Use the Total Chromium emission factor of 0.006 lb/Mlb in AP-42 Table 12.19-2 and multiply by the 55% conversion rate for SMAW; and
 - ii. Include cobalt and compounds (CASRN 7440-50-8) using an emission factor of 0.0005 lb/lb.
- c. Emissions estimates use the annual wire usage for E309 (20 lb/yr). The annual usage reported for E7018 is 2,000 lb/yr. Please update to resolve this discrepancy.

The requests for E7018 are incorporated in the revised AQ5620 Forms with one caveat. MFA used the PM₁₀ emission factor from AP-42 Chapter 12.19, Table 12.19-1 for SMAW E7018 of 18.4 pound per thousand pound, and not 15.1 pound per pound, as shown under 7.a above. MFA incorporated the PM₁₀ emission factor consistent with AP-42 Chapter 12.19.

8. For welding type E308:

- a. The concentration of aluminum and compounds should be reported as 3%.**
- b. Report nickel as insoluble nickel compounds (DEQ SEQ ID 365).**

These requests for E308 are incorporated in the revised AQ520 Forms.

9. For welding type E309: Report nickel as insoluble nickel compounds (DEQ SEQ ID 365).

This request is incorporated in the revised AQ520 Forms.

3. Submit to DEQ a revised AQ520 Inventory Form, along with all supporting calculations in Excel format, as well as all information required under OAR 340-245-0040(4).

a. For SHOP TESUs (SHOP_ANY and SHOP_E309)

- i. Currently, SHOP_ANY and SHOP_E309 are listed on Tab 2, but only emissions for SHOP_E309 are listed on Tab 3. Please modify the welding TESUs so TESUs listed on Tab 2 also have emissions estimates in Tab 3. This could be done by combining them into one TEU in Tab 2 and including a note in Column L that the daily emission factors are based on the worst-case rod usage; or reporting annual and daily separate in Tab 3.**

This request is incorporated in the revised AQ520 Forms. The maximum daily usage rate for welding activities in the revised AQ520 Forms assume 100% of welding capacity is assigned to the worst-case welding type based on the toxicity weighted emission rate evaluation conducted by MFA as shown in the updated emissions inventory. MFA performed the toxicity weighted emission rate evaluation by dividing the TAC unit emission factor (in units of pound per pound) for a specific welding type by the corresponding TAC acute risk-based concentration (in units of micrograms per cubic meter), then summing the calculated acute toxicity weighted emission rates for a specific welding type. The calculated acute toxicity weighted emission rate was then multiplied by the maximum daily usage rate for the corresponding welding type. The welding type with the highest ranked acute toxicity weighted maximum daily emissions rate represents the potential worst-case welding type for assessing acute risk. For this reason, only one welding activity (e.g., use of the Lincoln Electric Company E309 electrode) is presented with a maximum daily usage rate for the requested potential to emit scenario. The toxicity weighted emission rate assessment was performed to determine the worst-case welding type at the facility that may contribute to predicted acute risk since welding activities at the facility are sporadic and it is highly unlikely each product would be used simultaneously in a day. Annual emission estimates represent the total emissions from each welding rod/wire type used at the facility.

- ii. Confirm Maximum Daily usage is one (1) lb per day, or provide material supporting this daily usage rate. This is not consistent with an average annual usage of 4,100 lb per year.**

The maximum daily usage of 1 pound per day for the Lincoln Electric Company E309 welding type is correct. Lincoln Electric Company E309 represents the worst-case welding rod for purposes of assessing acute risk as detailed in the preceding response.

- iii. **Update as necessary to incorporate changes to emissions estimates based on comments in Specific Comment 2.b, above.**

This request is incorporated in the revised AQ520 Forms.

- b. **Include wood chip storage as an Exempt TEU in Tab 2. Methanol is a known TAC emission from wood chip piles.² However, based on worse case throughput, the potential risk is below ½ of the Aggregate TEU Level and the wood chip storage can be considered an Exempt TEU in accordance with OAR 340-245-0060(3)(a).**

MFA disagrees that Methanol is a known TAC emission from wood chip piles. To justify the request, the DEQ provided a reference to the Prevention of Significant Deterioration Permit for the PotlatchDeltic Land and Lumber, LLC—St. Maries Complex dated July 23, 2019 (PSD permit). Table 2-1 in the PSD permit presents the permitted emissions unit at the St. Maries Complex. As shown in Table 2-1, the only storage pile emissions unit is identified as “wind erosion of outdoor hog fuel pile” with emissions unit ID HFP. An emissions inventory for the St. Maries Complex is presented in Appendix A of the PSD permit. As shown in the table titled “Summary of SMC Non-HAP Potential to Emit” in Appendix A, emissions unit HFP is presented with no VOC emissions, meaning there would be no Methanol emissions, since Methanol is a known VOC. For this reason, we have not incorporated this request into the revised AQ520 Forms.

- c. **Tab 5, Column F "Percent Composition" should be entered as a decimal, not whole number. The emissions estimates are calculated correctly.**

This request is incorporated in the revised AQ520 Forms.

- d. **For the TESUs KB_N and KB_SU, report nickel as insoluble nickel compounds (DEQ SEQ ID 365).**

This request is incorporated in the revised AQ520 Forms.

- e. **Update the AQ520 form as necessary to incorporate changes to emissions estimates based on comments in Specific Comment 2.a, above.**

See response to comment 2.a above.

We believe this response letter sufficiently responds to each request from the DEQ letter. Swanson and MFA look forward to continue working with the DEQ throughout the CAO permitting process for the facility. If the DEQ has any questions or requires clarifying information about the contents of this submittal, please contact me at (971) 254-8077 or bsnuffer@maulfoster.com.

Sincerely,



Brian Snuffer Zukas, PE
Senior Air Quality Consultant

Attachments

A—Emergency Generator Specification Sheet

B—Welding Type ER60-6 Supporting Documentation

cc: Jeff Remington, Swanson

Attachment A

Emergency Generator Specification Sheet

Protector® Series

GENERAC®

PROTECTOR® SERIES Standby Generators Liquid-Cooled Gaseous Engine

Protector® Series

1 of 9

INCLUDES:

- Two-Line LCD Multilingual Digital Evolution™ Controller (English/Spanish/French/Portuguese) With External Viewing Window for Easy Indication of Generator Status and Breaker Position
- Isochronous Electronic Governor
- Sound Attenuated Enclosure
- Closed Coolant Recovery System
- Smart Battery Charger
- UV/Ozone Resistant Hoses
- $\pm 1\%$ Voltage Regulation
- Field Convertible Fuel Type With No Mechanical Adjustment Required.
- 5 Year Limited Warranty
- UL 2200 Listed
- Listed and labeled by the Southwest Research Institute allowing installation as close as 18 in (457 mm) to a structure*

*Must be located away from doors, windows, and fresh air intakes and in accordance with local codes.

https://assets.swri.org/library/DirectoryOfListedProducts/ConstructionIndustry/973_DoC_204_13204-01-01_Rev9.pdf

Standby Power Rating

Model RG048 (Aluminum - Bisque) - 48 kW 60 Hz

Model RG060 (Aluminum - Bisque) - 60 kW 60 Hz

Model RG080 (Aluminum - Bisque) - 80 kW 60Hz



QUIET-TEST



*Assembled in the USA using domestic and foreign parts

Meets EPA Emission Regulations
CA / MA Emission Compliant

FEATURES

- **INNOVATIVE DESIGN & PROTOTYPE TESTING** are key components of GENERAC'S success in "IMPROVING POWER BY DESIGN." But it doesn't stop there. Total commitment to component testing, reliability testing, environmental testing, destruction and life testing, plus testing to applicable CSA, NEMA, EGSA, and other standards, allows you to choose GENERAC POWER SYSTEMS with the confidence that these systems will provide superior performance.
- **TEST CRITERIA:**
 - ✓ **PROTOTYPE TESTED**
 - ✓ **SYSTEM TORSIONAL TESTED**
 - ✓ **NEMA MG1-22 EVALUATION**
 - ✓ **MOTOR STARTING ABILITY**
- **MOBILE LINK® CONNECTIVITY:** Free with select Protector Series standby generator sets, Mobile Link Wi-Fi allows users to monitor the generator set status from anywhere in the world using a smartphone, tablet, or PC. Easily access information such as the current operating status and maintenance alerts. Users can connect an account to an authorized service dealer for fast, friendly, and proactive service. With Mobile Link, users are taken care of before the next power outage.
- **SOLID-STATE, FREQUENCY COMPENSATED VOLTAGE REGULATION.** This state-of-the-art power maximizing regulation system is standard on all Generac models. It provides optimized FAST RESPONSE to changing load conditions and MAXIMUM MOTOR STARTING CAPABILITY by electronically torque-matching the surge loads to the engine. Digital voltage regulation at $\pm 1\%$.
- **SINGLE SOURCE SERVICE RESPONSE** from Generac's extensive dealer network provides parts and service know-how for the entire unit, from the engine to the smallest electronic component.
- **GENERAC TRANSFER SWITCHES.** Long life and reliability are synonymous with GENERAC POWER SYSTEMS. One reason for this confidence is the GENERAC product line is offered with its own transfer systems and controls for total system compatibility.

GENERAC®



48 / 60 / 80 kW

GENERAC®

application & engineering data

GENERATOR SPECIFICATIONS

	48 kW	60 / 80 kW
Type	Synchronous	Synchronous
Rotor Insulation Class	F	H
Stator Insulation Class	H	H
Telephone Interference Factor (TIF)	<50	<50
Alternator Output Leads 1-Phase	4 wire	4 wire
Alternator Output Leads 3-Phase	6 wire	6 wire
Bearings	Sealed Ball	Sealed Ball
Coupling	Flexible Disc	Flexible Disc
Excitation System	Direct	Brushless

VOLTAGE REGULATION

Type	Electronic
Sensing	Single Phase
Regulation	± 1%

GOVERNOR SPECIFICATIONS

Type	Electronic
Frequency Regulation	Isochronous
Steady State Regulation	± 0.25%

ELECTRICAL SYSTEM

Battery Charge Alternator	12 Volt 35 Amp
Static Battery Charger	2.5 Amp
Recommended Battery (battery not included)	Group 27F (48kW), 725CCA
System Voltage	12 Volts

GENERATOR FEATURES

Revolving field heavy duty generator Directly connected to the engine Operating temperature rise 120 °C above a 40 °C ambient Class H insulation is NEMA rated Class F insulation is NEMA rated All models fully prototyped tested

ENCLOSURE FEATURES

Aluminum weather protective enclosure	Ensures protection against mother nature. Electrostatically applied textured epoxy paint for added durability.
Enclosed critical grade muffler	Quiet, critical grade muffler is mounted inside the unit to prevent injuries.
Small, compact, attractive	Makes for an easy, eye appealing installation.
SAE	Sound attenuated enclosure ensures quiet operation.

ENGINE SPECIFICATIONS

	48 kW	60 / 80 kW
Make	Generac	Generac
Model	Inline 4 cylinder	Inline 4 cylinder
Cylinders	4	4
Displacement (Liters)	4.5	4.5
Bore (in/mm)	4.5 / 114.3	4.5 / 114.3
Stroke (in/mm)	4.25 / 107.95	4.25 / 107.95
Compression Ratio	9.9:1	8.85:1
Intake Air System	Naturally Aspirated	Turbocharged and aftercooled
Lifter Type	Hydraulic	Hydraulic

ENGINE LUBRICATION SYSTEM

Oil Pump Type	Gear
Oil Filter Type	Full Flow Spin-On Cartridge
Crankcase Capacity (qt / l)	12 / 11

ENGINE COOLING SYSTEM

Type	Ethylene Glycol 50 / 50 Mix
Water Pump	Belt-Driven
Fan Speed (rpm)	2,100
Fan Diameter 48 kW (in / cm)	20 (50.8)
Fan Diameter 60 kW and 80 kW (in / cm)	22 (55.9)
Fan Mode	Pusher

FUEL SYSTEM

Fuel Type	Natural Gas, Propane Vapor
Fuel Shut Off Solenoid	Standard
LP Fuel Pressure	7 - 14 in Water Column
NG Fuel Pressure	3.5 - 14 in Water Column

48 / 60 / 80 kW

GENERATOR OUTPUT VOLTAGE/kW - 60 Hz

		kW LPG	Amp LPG	kW Nat. Gas	Amp Nat. Gas	CB Size (Both)
RG048	120/240 V, 1Ø, 1.0 pf	48	200	48	200	200
	120/208 V, 3Ø, 0.8 pf	48	167	48	167	175
	120/240 V, 3Ø, 0.8 pf	48	144	48	144	150
	277/480 V, 3Ø, 0.8 pf	48	72	48	72	80
RG060	120/240 V, 1Ø, 1.0 pf	60	250	60	250	300
	120/208 V, 3Ø, 0.8 pf	60	208	60	208	200
	120/240 V, 3Ø, 0.8 pf	60	180	60	180	200
	277/480 V, 3Ø, 0.8 pf	60	90	60	90	100
RG080	120/240 V, 1Ø, 1.0 pf	75	312	80	333	400
	120/208 V, 3Ø, 0.8 pf	75	260	80	278	300
	120/240 V, 3Ø, 0.8 pf	75	226	80	241	300
	277/480 V, 3Ø, 0.8 pf	75	113	80	120	150

SURGE CAPACITY IN AMPS

		Voltage Dip @ < .4 pf	
		15%	30%
RG048	120 / 240 V, 1Ø	100	300
	120 / 208 V, 3Ø	118	242
	120 / 240 V, 3Ø	144	260
	277 / 480 V, 3Ø	64	123
RG060	120 / 240 V, 1Ø	150	413
	120 / 208 V, 3Ø	135	313
	120 / 240 V, 3Ø	117	289
	277 / 480 V, 3Ø	54	122
RG080	120 / 240 V, 1Ø	283	600
	120 / 208 V, 3Ø	236	500
	120 / 240 V, 3Ø	204	432
	277 / 480 V, 3Ø	102	192

ENGINE FUEL CONSUMPTION

		Natural Gas		Propane	
		(ft³ / hr)	(m³ / hr)	(gal / hr)	(l / hr)
RG048	Exercise cycle	101	2.86	0.67	2.54
	25% of rated load	201	5.7	2.88	104.7
	50% of rated load	336	9.5	4.16	151.3
	75% of rated load	447	12.7	5.28	192
	100% of rated load	604	17.1	6.61	240.4
RG060	Exercise cycle	103	2.9	0.9	33.2
	25% of rated load	257	7.3	2.1	78
	50% of rated load	432	12.2	4.4	161.2
	75% of rated load	618	17.5	6.8	247.2
	100% of rated load	808	22.9	8.4	305.6
RG080	Exercise cycle	103	2.9	0.9	33.2
	25% of rated load	292	8.3	2.6	93.6
	50% of rated load	534	15.1	5.7	208.8
	75% of rated load	799	22.6	8.3	303.2
	100% of rated load	1,063	30.1	10.8	393.2

Note: Fuel pipe must be sized for full load.

For Btu content, multiply ft³ / hr x 2,520 (LP) or ft³ / hr x 1,000 (NG).

For megajoule content, multiply m³ / hr x 93.15 (LP) or m³ / hr x 37.26 (NG).

Refer to "Emissions Data Sheets" for maximum fuel flow for EPA and SCAQMD permitting purposes.

STANDBY RATING: Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. There is no overload capability for this rating. Ratings are in accordance with ISO-3046-1. Design and specifications are subject to change without notice.

48 / 60 / 80 kW
ENGINE COOLING

	48 kW	60 / 80 kW
Air Flow (inlet air including alternator and combustion air in cfm / cmm)	2,829 / 80.1	3,197 / 90.5
System Coolant Capacity (gal / liters)	2.9 / 11	4.5 / 17
Heat Rejection to Coolant (BTU per hr / MJ per hr)	201,600	204,570
Maximum Operation Air Temperature on Radiator (°F / °C)	150 / 66	150 / 66
Maximum Ambient Temperature (°F / °C)	140 / 60	140 / 60

COMBUSTION REQUIREMENTS

Flow at Rated Power (scfm / cmm)	92.7 / 2.6	170.4 / 4.8
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SOUND EMISSIONS

Sound Output in dB(A) at 23 ft (7 m) With Generator*	68	68
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*In exercise mode

EXHAUST

Exhaust Flow at Rated Output (scfm / cmm)	104 / 2.9	181 / 5.1
Exhaust Temperature at Muffler Outlet (°F / °C)	945 / 507	1,213 / 656

ENGINE PARAMETERS

Rated Synchronous rpm	1,800	1,800
-----------------------	-------	-------

POWER ADJUSTMENT FOR AMBIENT CONDITIONS

Temperature Deration	3% for every 10 °C above 25 °C or 1.65% for every 10 °F above 77 °F
Altitude Deration (48 kW)	1% for every 100 m above 183 m or 3% for every 1,000 ft above 600 ft
Altitude Deration (60 kW and 80 kW)	1% for every 100 m above 915 m or 3% for every 1,000 ft above 3,000 ft

CONTROLLER FEATURES

Two-Line Plain Text LCD Display.....	Simple user interface for ease of operation.
Mode Switch: Auto	Automatic Start on Utility failure. 7 day exerciser.
Off	Stops unit. Power is removed. Control and charger still operate.
Manual	Start with starter control, unit stays on. If utility fails, transfer to load takes place.
Programmable Start Delay Between 10-30 Seconds	10 sec standard
Engine Start Sequence.....	Cyclic cranking: 16 sec on, 7 rest (90 sec maximum duration)
Engine Warm-up.....	5 sec
Engine Cool-Down.....	1 min
Starter Lock-Out	Starter cannot re-engage until 5 sec after engine has stopped.
Smart Battery Charger	Standard
Automatic Voltage Regulation With Over and Under Voltage Protection	Standard
Automatic Low Oil Pressure Shutdown	Standard
Overspeed Shutdown	Standard, 72 Hz
High Temperature Shutdown	Standard
Overcrank Protection.....	Standard
Safety Fused.....	Standard
Failure to Transfer Protection	Standard
Low Battery Protection	Standard
50 Event Run Log	Standard
Future Set Capable Exerciser.....	Standard
Incorrect Wiring Protection	Standard
Internal Fault Protection	Standard
Common External Fault Capability.....	Standard
Governor Failure Protection.....	Standard

48 / 60 / 80 kW
available accessories

Model #	Product	Description
G0071690	Mobile Link® 4G LTE Cellular Accessory	Generac's Mobile Link allows you to check the status of your generator from anywhere that you have access to an Internet connection from a PC or with any smart device. You will even be notified when a change in the generator's status occurs via e-mail or text message. Note: Harness Adapter Kit required. Available in the U.S. only.
G006478-0	Kit, Adapter Mobile Link L/C (Required for QT and RG Series)	The Harness Adapter Kit is required to make liquid-cooled units compatible with Mobile Link®.
G007992-0	Cold Weather Kit	If the temperature regularly falls below 32 °F (0 °C), install a cold weather kit to maintain optimal battery temperature. Kit consists of battery warmer with thermostat built into the wrap.
G007990-0	Extreme Cold Weather Kit	Recommended where the temperature regularly falls below 32 °F (0 °C) for extended periods of time. For liquid cooled units only.
G005651-0	Base Plug Kit	Add base plugs to the base of the generator to keep out debris.
G005703-0 - Bisque	Paint Kit	If the generator enclosure is scratched or damaged, it is important to touch-up the paint to protect from future corrosion. The paint kit includes the necessary paint to properly maintain or touch-up a generator enclosure.
G007991-0	Scheduled Maintenance Kit	The Liquid-Cooled Scheduled Maintenance Kits offer all the hardware necessary to perform complete maintenance on Generac liquid-cooled generators.
G006664-0	Local Wireless Monitor	Completely wireless and battery powered, Generac's wireless remote monitor provides you with instant status information without ever leaving the house.
G006665-0	Wireless Remote Extension Harness	Recommended for use with the Wireless Remote on units up to 60 kW, required for use on units 70 kW or greater.
G007993-0	E-Stop	E-stop allows for immediate fuel shutoff and generator shutdown in the event of an emergency.
G007005-0	Wi-Fi LP Fuel Level Monitor	The Wi-Fi enabled LP fuel level monitor provides constant monitoring of the connected LP fuel tank. Monitoring the LP tank's fuel level is an important step in making sure your generator is ready to run during an unexpected power failure. Status alerts are available through a free application to notify when your LP tank is in need of a refill.
G007000-0 (50 amp) G007006-0(100 amp)	Smart Management Module	Smart Management Modules (SMM) are used to optimize the performance of a standby generator. They manage large electrical loads upon startup and shed them to aid in recovery when overloaded. In many cases, using SMM's can reduce the overall size and cost of the system.
A0000018981	Ultrasonic Cleaner Solution	An ultra-concentrated anti-corrosive cleaning solution engineered to reach the smallest cavities to clean the toughest contaminants. This water based formula is non-toxic, biodegradable, safe for both metal and plastic surfaces, and is superior in rinsability.
A0000019001	All Surface Protectant	All surface protectant for vinyl, rubber, plastics creates a barrier that seals & protects surfaces from water, UV rays while renewing the look of the surface.

48 kW

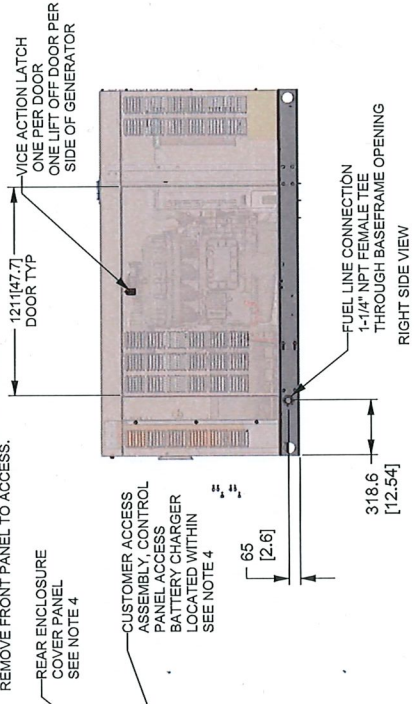
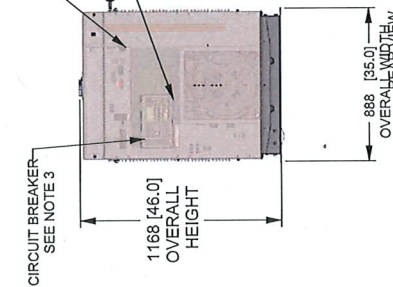
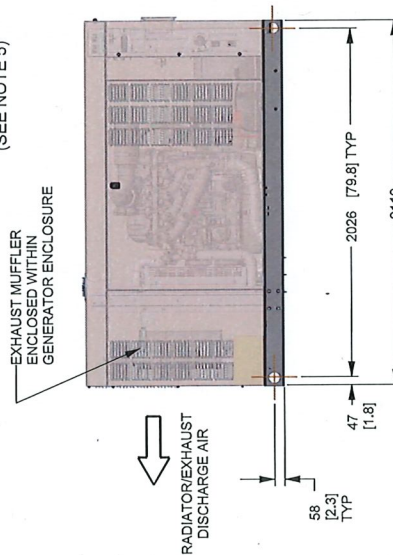
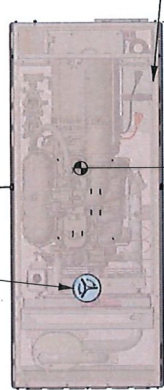
Drawing #A0000293718-C (1 of 2)

ENGINE/KW	ENCLOSURE MATERIAL	WEIGHT DATA	
		WEIGHT GENSET ONLY KG [LBS]	WEIGHT SHIPPING SKID KG [LBS]
4.5/48kW	AL	808 [1781]	859 [1893]

SERVICE ITEM	4.5L
OIL FILL CAP	LEFT SIDE
OIL DIP STICK	LEFT SIDE
OIL FILTER	LEFT SIDE
OIL DRAIN HOSE	RIGHT SIDE
RADIATOR DRAIN HOSE	RIGHT SIDE
COOLANT RECOVERY BOTTLE	RIGHT SIDE
RADIATOR FILL CAP	ROOF TOP
AIR CLEANER ELEMENT	LEFT SIDE
MUFFLER	LEFT SIDE
DRIVE BELT	EITHER SIDE
BATTERY	LEFT SIDE

REFERENCE OWNERS MANUAL
FOR PERIODIC REPLACEMENT
PARTS LIST

- NOTES:
1. MINIMUM RECOMMENDED CONCRETE PAD SIZE IS 6" OFFSET OF OVERALL LENGTH AND WIDTH OF GENERATOR. (1933.8 (47") WIDE X 2423.2 (95.4") LONG). REFERENCE INSTALLATION GUIDE SUPPLIED WITH THE UNIT FOR CONCRETE PAD GUIDELINES.
 2. ALLOW SUFFICIENT ROOM ON ALL SIDES OF THE GENERATOR FOR MAINTENANCE AND SERVICING. THIS UNIT MUST BE INSTALLED IN ACCORDANCE WITH CURRENT APPLICABLE NFPA 37 AND NFPA 70 STANDARDS AS WELL AS ANY OTHER FEDERAL, STATE, AND LOCAL CODES.
 3. CONTROL PANEL / CIRCUIT BREAKER INFORMATION:
 - SEE SPECIFICATION SHEET OR OWNERS MANUAL
 - ACCESSIBLE THROUGH CUSTOMER ACCESS ASSEMBLY DOOR ON REAR OF GENERATOR.
 - 4. REMOVE THE REAR ENCLOSURE COVER PANEL TO ACCESS
 5. HIGH VOLTAGE CONNECTION INCLUDING AC LOAD LEAD CONDUIT CONNECTION. NEUTRAL CONNECTION. BATTERY CHARGER 120 VOLT AC (0.5 AMP MAX) CONNECTION.
 6. LOW VOLTAGE CONNECTION INCLUDING TRANSFER SWITCH CONTROL WIRES.
 7. CENTER OF GRAVITY AND WEIGHT MAY CHANGE DUE TO UNIT OPTIONS.
 8. BOTTOM OF GENERATOR SET MUST BE ENCLOSED TO PREVENT PEST INFESTATION AND RECIRCULATION OF DISCHARGE AIR AND/OR IMPROPER COOLING AIR FLOW.
 9. REFERENCE OWNERS MANUAL FOR LIFTING SURFACE SHALL BE 5/8-11 GRADE 5 (USE STANDARD SAE TORQUE SPECS)
 10. MUST ALLOW FREE FLOW OF INTAKE AIR, DISCHARGE AIR AND EXHAUST. SEE SPEC SHEET FOR MINIMUM AIR FLOW AND MAXIMUM RESTRICTION REQUIREMENTS.
 11. GENERATOR MUST BE INSTALLED SUCH THAT FRESH COOLING AIR IS AVAILABLE AND THAT DISCHARGE AIR FROM RADIATOR IS NOT RECIRCULATED.
 12. EXHAUST MUFFLER ENCLOSED WITHIN GENERATOR ENCLOSURE. REMOVE FRONT PANEL TO ACCESS.



DIMENSIONS: MM [INCH]

48 kW

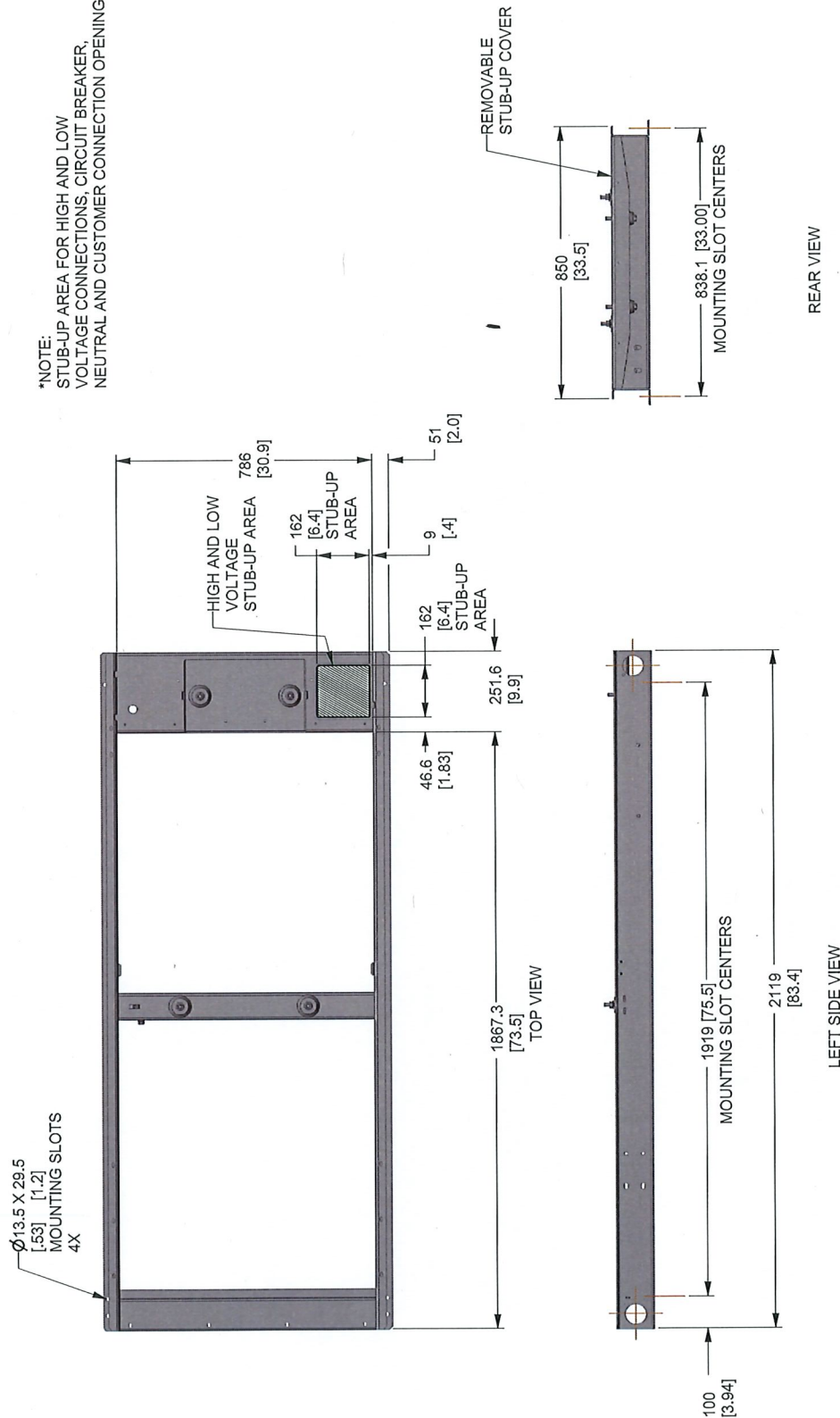
Drawing #A0000293718-C (2 of 2)

GENERAC®
installation layout

Protector® Series

7 of 9

*NOTE:
STUB-UP AREA FOR HIGH AND LOW
VOLTAGE CONNECTIONS, CIRCUIT BREAKER,
NEUTRAL AND CUSTOMER CONNECTION OPENING.



60 / 80 kW

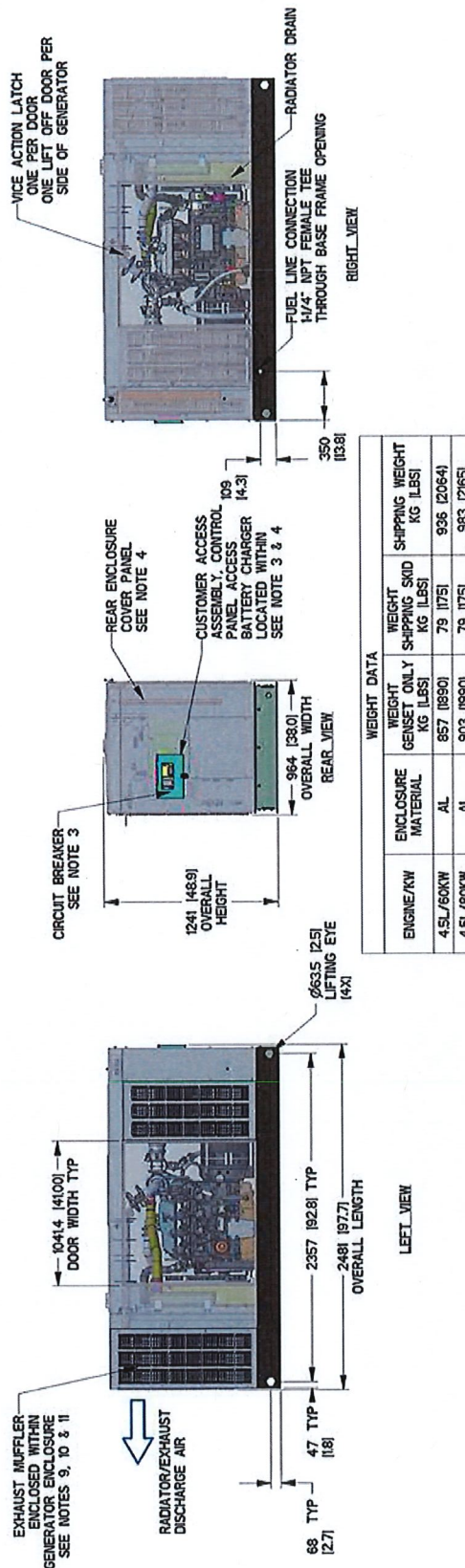
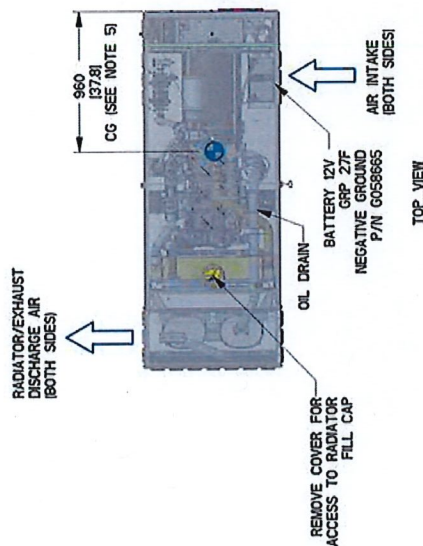
Drawing #A0000293264 (1 of 2)

GENERAC® installation layout

- NOTES:
1. MINIMUM RECOMMENDED CONCRETE PAD SIZE 16" LARGER PER SIDE THAN GENERATOR (1269 ISO) WIDE 2786 (107) LONG.
 2. REFERENCE INSTALLATION GUIDE SUPPLIED WITH UNIT FOR CONCRETE PAD GUIDELINES.
 3. ALLOW SUFFICIENT ROOM ON ALL SIDES OF THE GENERATOR FOR MAINTENANCE AND SERVICING. THIS UNIT MUST BE INSTALLED IN ACCORDANCE WITH CURRENT APPLICABLE NFPA 37 AND NFPA 70 STANDARDS AS WELL AS ANY OTHER FEDERAL, STATE, AND LOCAL CODES.
 4. CONTROL PANEL / CIRCUIT BREAKER INFORMATION:
 - SEE SPECIFICATION SHEET OR OWNERS MANUAL
 - ACCESSIBLE THROUGH CUSTOMER ACCESS ASSEMBLY ON REAR OF GENERATOR
 - INSIDE STOPPING PREVENTS FUEL AND LEAD ACID BATTERY CONNECTION, NEUTRAL CONNECTION, BATTERY CHARGER TO VOLTAGE (IS AMP MAX) CONNECTION AND ACCESS TO TRANSFER SWITCH CONTROLS. REMOVE REAR COVER FOR ACCESS.
 - CENTER OF GRAVITY AND WEIGHT MAY CHANGE DUE TO UNIT OPTIONS.
 - BOTTOM OF GENERATOR SET MUST BE ENCLOSED TO PREVENT PEST INTRUSION AND RECIRCULATION OF DISCHARGE AIR AND/OR IMPROPER COOLING AIR FLOW.
 - REFERENCE OWNERS MANUAL FOR LIFTING WARNINGS.
 - MOUNTING BOLTS OR STUDS TO MOUNTING SURFACE SHALL BE 5/8-11 GRADE 5
 - USE STANDARD SAE TORQUE SPECS
 - SHEET ALLOW FREE FLOW OF INTAKE AIR, DISCHARGE AIR AND EXHAUST. SEE SPEC
 - GENERATOR MUST BE INSTALLED SUCH THAT FRESH COOLING AIR IS AVAILABLE AND THAT DISCHARGE AIR FROM RADIATOR IS NOT RECIRCULATED.
 - REMOVE FRONT END PANEL TO ACCESS EXHAUST MUFFLER. ACCESS AVAILABLE THROUGH DOORS TO FAN BELT.

SERVICE ITEM	4.5L
OIL FILL CAP	LEFT SIDE
OIL DIP STICK	LEFT SIDE
OIL FILTER	LEFT SIDE
OIL DRAIN HOSE	LEFT SIDE
RADIATOR DRAIN HOSE	RIGHT SIDE
COOLANT RECOVERY BOTTLE	RIGHT SIDE
RADIATOR FILL CAP	ROOF TOP
AIR CLEANER ELEMENT	EITHER SIDE
SPARK PLUGS	LEFT SIDE
MUFFLER	SEE NOTE 11
FAN BELT	EITHER SIDE
BATTERY	LEFT SIDE

REFERENCE OWNERS MANUAL
FOR PERIODIC REPLACEMENT
PART LISTINGS



Drawing #A0000293264 (2 of 2)



Attachment B

Welding Type ER60-6 Supporting Documentation

Er60-Ger70s-6 Welding Wire Er60-Ger70s-6...

US\$680.00-880.00

5 Tons (MOQ)

Port:Qing...

Production Capacity:1500...

Payment Terms:L/C, ...

Send Inquiry

Weifang Forward Welding Materials Co., Ltd.

📍 Shandong, China

Rating: 4.0/5

Last Login Date: Apr 21, 2026

Main Products: Welding Wire, CO2 Welding Wire, MIG Welding Wire, Submerged Arc Welding Wire,...

More >

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Silver Cadmium-Free Brazing Wire for HVA...	mig welding wire ERNiCrMo-10 Nickel...	CO2 Gas Shielded Copper Coated Weldi...	TIG Rod Er70s-6 Welding Wire, TIG Fille...	3mm-5mm PE PP PVC Welding Wire	Sdgh Tech Factory Price CE 0.8mm 0.9m...
US\$556.88-566....	US\$29.00	US\$700.00-1,50...	US\$1,000.00	US\$2.00-3.00	US\$5.00
20 kg (MOQ)	100 kg (MOQ)	1 Ton (MOQ)	10 Tons (MOQ)	1,000 kg (MOQ)	1,000 kg (MOQ)
Er70s-6/CE71t-1/H10mn2 MIG Gas...	Good Quality Excellent Weldability Ernicrfe-7...	on Sale! Sn63pb37 Tin Lead Solder Wire for...	Effortless Welding: Arccatain 2lb Er70s-6...	50g Tin Lead Welding Wire Sn60pb40 0.5mm	E71t-1c Flux Cored MIG Wire Er70s-6 Solid Wir...
US\$650.00-810....	US\$28.00-32.00	US\$16.00-17.00	US\$2.17-2.21	US\$1.50-2.80	US\$...0-1,3...
1 Ton (MOQ)	10 kg (MOQ)	100 kg (MOQ)	20 Pieces (MOQ)	100 Pieces (MOQ)	1 Ton (MOQ)

Product Description	Company Info	People who liked this also liked
Basic Info.		Copper-Coated CO2 Gas-Shield Weldin... TradeMessenger

Products

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Inquiry Basket

Slag Characteristic	Acidic	Extended Length	>20mm
Certificate	CE/ABS/ ISO/ Kr/ BV/ Lr/ CCS/Dnv/Nk	OEM Package	Yes
Quality	Good and Stable	Delivery Time	in 10days
Usage	Strength 500MPa Welding Parts	Price	Competitive
Trademark	Forward Welding	Transport Package	Spool+Carton+ Pallet or in Drum for Shipment
Specification	0.8 0.9 1.0 1.2 1.6 2.0mm	Origin	Shandong
HS Code	72292000		

Product Description

AWS ER70S-6 Gas shielded Welding

Wire

Product Description

Gas Shield Welding Wire ISO9001, SGS, BV Certified Factory	
GB/T8110	ER50-6
AWS A5.18	ER70S-6
EN ISO 14341-A	G42 2 C G3Si1
DIN 8559	SG2
JIS Z3312	YGW12
Surface treatment	Copper coated
Condition	Solid wire
Diameter	0.8mm, 0.9mm, 1.0mm, 1.2mm, 1.6mm,2.0mm
Diameter tolerance	-0.02mm
Welding method	Mig, Mag, CO2
Shielding gas	He, Ar, O2, CO2
Polarity	DC+
Welding position	All except vertical down

Characteristics

ER50-6(ER70S-6) welding wire is certified by ISO9001, approved by CCS, ABS, GL/DNV, BV, LR, NK, KR. It is copper coated solid wire with high level

Aluminium MIG Wel
ding Wire 1.2mm

Negotiable
1 Ton (MOQ)

Low Spatters Gas S
hield Welding Wire...

US\$1.05
5,000 kg (MOQ)

Spray Welding Wire,
Wire CO2, Er70s-6

US\$0.90-1.00
1,000 kg (MOQ)

Self Shielded Flux C
ored Welding Wire

US\$0.83-1.00
1,000 kg (MOQ)

Nickel MIG Welding
Wire Ernicr-3 Inco...

**US\$33.00-
38.00**
50 kg (MOQ)

Top Grade Ernicu-7
Nickel-Copper Allo...

**US\$33.00-
38.00**
50 kg (MOQ)

Pure Nickel Alloy Wi
re Nickel Wire Erni...

**US\$28.00-
32.00**
10 kg (MOQ)

Aws A...
White Spool V

US\$800.00
10 Tons (MOQ)

Sq2 G3si1 Aws A5.
Q2 G...

TradeMessenger

Products

Post My RFQ

Inquiry Basket

The high level of deoxidizers in ER60-G(ER70S-6) provide strong resistance to mill scales and rusts on the base metal. Low fume, low spatter, excellent wetting action and highly fluid weld puddle. Low blowhole sensitivity, the weld metal shows good temperature impact toughness.

Chemical Composition of Welding Wire(%)

C	Mn	Si	P	S	Ni	Cr	Mo	Cu
0.06-0.15	1.4-1.85	0.80-1.15	<=0.025	<=0.025	<=0.15	<=0.15	<=0.15	<=0.15

Mechanical Properties of Deposited Metal

Yield Strength (ksi)Mpa	Tensile Strength (ksi)Mpa	Elongation (%)	Charpy V-notch Impact Requirements (Limits for 3 out of 5 Specimen) (J)		Radio-Graphic test
			Test Temp.	Value	
Min(60) 420	Min(48) 500	Min 22	-30	Min 27	Grade 1

Welding Instructions

Flow quantity of shielding gas should be 25 L/min. approximately.

Use wind screen against wind.

Keep distance between the tip and base metal 6-15mm for less than 250A and 15-25mm for more than 250A of welding current.

Size and recommended current (Amp.)

Size (mm)	0.8	0.9mm	1	1.2	1.6
F & H.F.	50-120	50-200	50-220	80-350	120-550
V-up & O.H.	30-100	30-100	30-200	60-320	-

Packaging & Shipping

1kg per D100mm plastic spool,then 4spools per carton,200cartons per pallet;
5kg per D200mm plastic spool,then 200spools per pallet;
15kg per D270mm black or white plastic spool,D300mm black plastic spool,K300 metal basket with core or without inner core,then 84 or 72spools per pallet.
250kg per drum,then 4drums per pallet.
350kg per drum,then 2drums per pallet

PACKING TERMS

Diameter	0.8m m	0.9m m	1.0m m	1.2m m	1.6m m	2.0m m
Plastic spool 5kg D200mm(HIPS black)	√	√	√	√	√	

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Products ▾

Post My RFQ

Inquiry Basket

white)	✓	✓	✓	✓	✓	✓
Drum packing 250kg			✓	✓	✓	
Drum packing 350kg			✓	✓	✓	

Company Profile

Weifang Forward Welding Material Co.,Ltd, as the main subsidiary company of Weifang Steel group (founded in1972,employs 6600 people,one of top 500 enterprises in China),We are leading manufacturer of gas shielded and Submerged arc welding wire, have annually production capacity of 300 thousand tons varies welding materials. Since July,2022, we have invested about 75\$ million to upgrade our production line, physical chemistry Laboratory&test instrument, keep achieving more intelligent, more environmental friendly,higher efficiency, more reliable quality control, better market feedback continually. Our products certificated by CE, ABS,CCS,LR,DNV,GL,KR,NK,ISO 9000 and so on.

Our Advantages

Why choose us?

- 1. Professional service for products
- 2. Much more competitive price
- 3. Honest and excellent supplier
- 4. Delivery time is shorter than others.
- 5. We believe the good quality is the basis for cooperation.
- 6. We could provide free samples for test to you.
- 7. Our company policy is Quality First, and to establish Long Time business, not just one time.

Thank you !!

Send your message to this supplier

* From:

To: Ms. Ava

*Message:

We suggest you detail your product requirements and company information here.

Send

This is not what you are looking for?  Post a Sourcing Request Now



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TradeMessenger



SAFETY DATA SHEET

This Safety Data Sheet complies with Annex II of 830/2015 amending EC No. 1907/2006, CLP directive 1272/2008, also in accordance with ISO 11014-1 and ANSI Z400.1

All-State ER70S-6

Issued: 2018-01-14

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Trade name	All-State ER70S-6
------------	-------------------

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use	Arc Welding
-----	-------------

1.3. Details of the supplier of the safety data sheet

SDS created by	TDS Team
----------------	----------

Supplier	ESAB DENTON
----------	-------------

Street address	2800 Airport Road Denton, TX 76207
----------------	---------------------------------------

Telephone	1-800-372-2123
-----------	----------------

Email	sdsrequest@esab.com
-------	---------------------

Web site	www.esab.com
----------	--------------

1.4. Emergency telephone number

Emergency phone number	1-800-372-2123
------------------------	----------------

Available outside office hours	No
--------------------------------	----

Other

Classification:
AWS A5.18, ER70S-6

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

The product is not classified

2.2. Label elements

The product do not require labeling



SAFETY DATA SHEET

This Safety Data Sheet complies with Annex II of 830/2015 amending EC No. 1907/2006, CLP directive 1272/2008, also in accordance with ISO 11014-1 and ANSI Z400.1

All-State ER70S-6

Issued: 2018-01-14

2.3. Other hazards

Skin contact is normally no hazard but should be avoided to prevent possible allergic reactions.

Persons with a pacemaker should not go near welding or cutting operations until they have consulted their doctor and obtained information from the manufacturer of the device.

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

Fumes: Overexposure to welding fumes may result in symptoms like metal fume fever, dizziness, nausea, dryness or irritation of the nose, throat or eyes. Chronic overexposure to welding fumes may affect pulmonary function. Prolonged inhalation of chromium compounds above safe exposure limits can cause cancer. Overexposure to manganese and manganese compounds above safe exposure limits can cause irreversible damage to the central nervous system, including the brain, symptoms of which may include slurred speech, lethargy, tremor, muscular weakness, disturbances and spastic gait.

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

Radiation: Arc rays can severely damage eyes or skin.

Electricity: Electric shock can kill.

Other

Emergency Overview: Metal wire or rods in varying colours. This product is normally not considered hazardous as shipped. Gloves should be worn when handling to prevent cuts and abrasions.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

Chemical name	CAS No. EC No. REACH No.	Concentration	Classification	R-pharse H-pharse
IRON	7439-89-6 231-096-4 Registered	>95%	- -	- -
Manganese	7439-96-5 231-105-1 -	1 - 2%	- -	- -
Silicon	7440-21-3 231-130-8 -	<1%	- -	- -
Copper	7440-50-8 231-159-6 -	<0,5%	- -	- -
Chromium*	7440-47-3 231-157-5 -	<0,15%	- -	- -

Product based on

This product is continuous metal wires and solid metal rods.

SECTION 4: First aid measures

4.1. Description of first aid measures

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

Inhalation

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



SAFETY DATA SHEET

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All-State ER70S-6

Issued: 2018-01-14

Skin contact

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

Eye contact

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

4.2. Most important symptoms and effects, both acute and delayed

Not applicable

4.3. Indication of any immediate medical attention and special treatment needed

Not applicable

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media

No specific recommendations for welding consumables. Welding arcs and sparks can ignite combustible and flammable materials. Use the extinguishing media recommended for the burning materials and fire situation.

5.2. Special hazards arising from the substance or mixture

Not applicable

5.3. Advice for firefighters

Special protective equipment for fire-fighters

Wear self-contained breathing apparatus as fumes or vapors may be harmful.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Wear hand, head, eyes, ear and body protection like welders gloves, helmet or face shield with filter lens, safety boots, apron, arm and shoulder protection. Keep protective clothing clean and dry. Check condition of protective clothing and equipment on a regular basis.

6.2. Environmental precautions

Refer to Section 13.

6.3. Methods and material for containment and cleaning up

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

6.4. Reference to other sections

Refer to Section 8 and Section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Preventive handling precautions

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



SAFETY DATA SHEET

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All-State ER70S-6

Issued: 2018-01-14

7.2. Conditions for safe storage, including any incompatibilities

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

7.3. Specific end use(s)

Arc Welding

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure limits

Use industrial hygiene monitoring equipment to ensure that exposure does not exceed applicable national exposure limits. The following limits can be used as guidance. Unless noted, all values are for 8 hour time weighted averages (TWA). For information about welding fume analysis refer to Section 10.

National occupational exposure limits

Ingre dient	CAS no.	EC N o.	Exposur e limit mg/m3-p pm		Short-term ex posure limit mg/m3-ppm		Ceiling expo sure limit mg/m3-ppm		Remark	Sou rce	Year
Chro mium *	7440- 47-3	231-1 57-5	1	-	-	-	-	-	Metal	OS HA	2017
Chro mium *	7440- 47-3	231-1 57-5	0,005	-	-	-	-	-	as Cr(VI)(water sol. an d insol. inorganic comp ds)	OS HA	2017
Chro mium *	7440- 47-3	231-1 57-5	0,5	-	-	-	-	-	as Cr(Cr(II) and Cr(III) i norganic compds)	OS HA	2017
Copp er	7440- 50-8	231-1 59-6	0,1	-	-	-	-	-	Fume, as Cu	OS HA	2017
Mang anese	7439- 96-5	231-1 05-1	-	-	-	-	5	-	as Mn	OS HA	2017
Silico n	7440- 21-3	231-1 30-8	5	-	-	-	-	-	Respirable fraction	OS HA	2017
Silico n	7440- 21-3	231-1 30-8	15	-	-	-	-	-	Total dust	OS HA	2017
IRON	7439- 89-6	231-0 96-4	-	-	-	-	-	-	No PEL	OS HA	2017
Copp er	7440- 50-8	231-1 59-6	1	-	-	-	-	-	as Cu (dust,mist)	OS HA	2017

8.2. Exposure controls

Not applicable

Other

Avoid exposure to welding fumes, radiation, spatter, electric shock, heated materials and dust.
Train welders to avoid contact with live electrical parts and insulate conductive parts.



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Ventilation

Ensure sufficient ventilation, local exhaust, or both, to keep welding fumes and gases from breathing zone and general area. Use special care when welding painted or coated steels since hazardous substances from the coating may be emitted. Use respirator or air supplied respirator when welding or brazing in a confined space, or where local exhaust or ventilation is not sufficient to keep exposure values within safe limits.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance

Steel wire or rod

Appearance, colour

Varying color

Appearance, physical state

Solid

Auto-ignition temperature

Not applicable

Decomposition temperature

No data available

Evaporation rate

Not applicable

Explosive properties

Not applicable

Flammability (solid, gas)

Not applicable

Flash point

Not applicable

Initial boiling point and boiling range

No data available

Melting point

>1000°C / >1800°F

Melting point / freezing point

Not applicable

Odour

Not applicable

Odour treshold

Not applicable

Oxidising properties

Not applicable

Partition coefficient: n-octanol / water

Not applicable

pH

Not applicable

pH value

Not applicable

Relative density

No data available

Solubility

No data available

Upper / lower flammability or explosive limits

No data available

Vapour density

Not applicable



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Vapour pressure Not applicable

Viscosity Not applicable

Volatility Not applicable

9.2. Other information

Not applicable

SECTION 10: Stability and reactivity

10.1. Reactivity

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

10.2. Chemical stability

Chemical stability This product is stable under normal conditions.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions Not applicable

10.4. Conditions to avoid

Conditions to avoid This product is only intended for normal welding purposes.

10.5. Incompatible materials

Incompatible materials Not applicable

10.6. Hazardous decomposition products

Hazardous decomposition products

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

The amount of fumes generated from this product varies with welding parameters and dimensions, but is generally no more than 1 to 13 g/kg consumable.

Fumes from this product may contain compounds of the following chemical elements: Fe, O, Mn, Cr, Si and Cu. The rest is not analyzed, according to available standards.

Other

Refer to applicable national exposure limits for fume compounds, including those exposure limits for fume compounds found in Section 8.

A significant amount of the chromium in the fumes can be hexavalent chromium, which has a very low exposure limit in some countries.

Manganese has a low exposure limit, in some countries, that may be easily exceeded.

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

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Information on toxicological effects

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



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Acute toxicity

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

Skin corrosion/irritation

No data available

Serious eye damage/irritation

No data available

Respiratory/skin sensitization

No data available

Germ cell mutagenicity

No data available

Genotoxicity

No data available

Carcinogenicity

*This product contains substance(s) that may cause cancer, which is/are classified as Carcinogenic to humans as per IARC.

Repeated dose toxicity

No data available

Reproductive toxicity

No data available

STOT-single exposure

No data available

STOT-repeated exposure

No data available

Aspiration hazard

No data available

LD50 Oral

No data available

LD50 Dermal

No data available

LC50 Inhalation

No data available

Other

Long term effect

Chronic toxicity: Overexposure to welding fumes may affect pulmonary function. Prolonged inhalation of chromium compounds above safe exposure limits can cause cancer. Overexposure to manganese and manganese compounds above safe exposure limits can cause irreversible damage to the central nervous system, including the brain, symptoms of which may include slurred speech, lethargy, tremor, muscular weakness, disturbances and spastic gait.

SECTION 12: Ecological information

12.1. Toxicity

Acute toxicity

No data available

Toxicity

No data available

Aquatic

No data available

Soil

No data available

Acute fish toxicity

No data available

Acute algae toxicity

No data available

Acute crustacean toxicity

No data available



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Chronical toxicity No data available

12.2. Persistence and degradability

Persistence and degradability No data available

Decay/transformation No data available

12.3. Bioaccumulative potential

Bioaccumulative potential No data available

12.4. Mobility in soil

Mobility No data available

12.5. Results of PBT and vPvB assessment

Results of PBT and vPvB assessment No data available

12.6. Other adverse effects

Not applicable

Other

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

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Disposal considerations

Discard any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with federal and local regulations. Use recycling procedures if available.
USA RCRA: Unused products or product residue containing chromium is considered hazardous waste if discarded, RCRA ID Characteristic Toxic Hazardous Waste D007.
(<https://rcrainfo.epa.gov/rcrainfoweb/action/modules/main/glossary/waste.jsessionid=A98F2456754BC0CE970C52F4E3AA429F>)
Residues from welding consumables and processes could degrade and accumulate in soils and groundwater.

SECTION 14: Transport information

14.1. UN number

Not applicable

14.2. UN proper shipping name

Not applicable

14.3. Transport hazard class(es)

Not applicable

14.4. Packing group

Not applicable



14.5. Environmental hazards

Not applicable

14.6. Special precautions for user

Not applicable

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

EU regulations

Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC.
Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006
Commission Regulation (EU) 2015/830 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)
DIRECTIVE 2008/98/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL. of 19 November 2008. on waste and repealing certain Directives.
European Parliament and Council Directive 94/62/EC of 20 December 1994 on packaging and packaging waste.



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Other regulations, limitations and legal regulations

Poland Regulations:

ACT of 25 February 2011 on the chemical substances and their mixtures(OJ # 63, poz. 322).

Regulation of the Minister of Labour and Social Policy of 6 June 2014 on Maximum Permissible Concentration and Intensity of Agents Harmful to Health in the Working Environment (Dz. u. z. 2014, poz 817).

The Act on Waste of 14 December 2012, Journal of Laws of 2013, item 21 with amendments

Act of 13th June 2013 on packaging management and packaging waste (Journal of Laws of 2013, item 888).

Regulation of the Minister of the Environment of 9 December 2014 on waste catalogue (Journal of Laws of 2014, item 1923).

Regulation of the Minister of Economy of 21 December 2005. Concerning essential requirements for personal protective equipment (Journal. Laws No. 259, item. 2173).

Regulation of the Minister of Health of 2 February 2011 on tests and measurements of factors harmful to health in the working environment (the Journal of Laws 2011, no. 33, item 166).

USA Regulations :

USA: This product contains or produces a chemical known to the state of California to cause cancer and birth defects (or other reproductive harm). (California Health & Safety Code § 25249.5 et seq.)

CERCLA/SARA Title III Reportable Quantities (RQs) and/or Threshold Planning Quantities (TPQs): Product is a solid solution in the form of a solid article. Spills or releases resulting in the loss of any ingredient at or above its RQ require immediate notification to the National Response Center and to your Local Emergency Planning Committee.

EPCRA/SARA Title III 313 Toxic Chemicals: The following metallic components are listed as SARA 313 "Toxic Chemicals" and potential subject to annual SARA 313 reporting. See Section 3 for weight percent.
Manganese: 1.0% de minimis concentration
Copper: 1.0% de minimis concentration
Chromium: 1.0% de minimis concentration

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

International Inventories:

Australia: The substance(s) in this product is/are in compliance with the inventory requirements of Australian Inventory of Chemical Substances (AICS)

United States EPA Toxic Substance Control Act: All constituents of this product are on the TSCA inventory list or are excluded from listing.

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

15.2. Chemical safety assessment

Chemical safety assessment

No data available

Other

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

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

ELECTRIC SHOCK can kill. ARC RAYS and SPARKS can injure eyes and burn skin.

Wear correct hand, head, eye and body protection.



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SECTION 16: Other information

Changes to previous revision

This Safety Data Sheet has been revised due to modifications to Sections 1-16. This SDS supersedes... 1027/05

References to key literature and data sources

Refer to ESAB "Welding and Cutting - Risks and Measures", F52-529 "Precautions and Safe Practices for Electric Welding and Cutting" and F2035 "Precautions and Safe Practices for Gas Welding, Cutting and Heating" available from ESAB, and to: www.esab.com

Other

Additional information

USA: Contact ESAB at www.esabna.com or 1-800 ESAB-123 if you have any questions about this SDS. American National Standard Z49.1 Safety in Welding and Cutting, ANSI/AWS F1.5 Methods for Sampling and Analyzing Gases from Welding and Allied Processes, ANSI/AWS F1.1 "Method for Sampling Airborne Particles Generated by Welding and Allied Processes", AWSF3.2M/F3.2 "Ventilation Guide for Weld Fume", 550 North Le Jeune Road, Miami Florida 33135. Safety and Health Fact Sheets available from AWS at www.aws.org.

OSHA Publication 2206 (29 C.F.R. 1910), U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954

American Conference of Governmental Hygienists (ACGIH), Threshold Limit Values and Biological Exposure Indices, 6500 Glenway Ave., Cincinnati, Ohio 45211, USA.

NFPA 51B "Standard for Fire Prevention During Welding, Cutting and Other Hot Work" published by the National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169

UK: WMA Publication 236 and 237, "Hazards from Welding fume", "The arc welder at work, some general aspects of health and safety".

Germany: Accident prevention regulation BGV D1, "Welding, cutting and related procedures"

Canada: CSA Standard CAN/CSA-W117.2-01 "Safety in Welding, Cutting, and Allied Processes".

This product has been classified according to the hazard criteria of the CPR and the SDS contains all of the information required by the CPR.

ESAB requests the users of this product to study this Safety Data Sheet (SDS) and become aware of product hazards and safety information. To promote safe use of this product a user should: notify its employees, agents and contractors of the information on this SDS and any product hazards/safety information.furnish this same information to each of its customers for the products

Request such customers to notify employees and customers for the same product hazards and safety information.

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