



Larson Metals Stainless Steel Fabrication

Fabricating stainless steel composite (SSCM) is challenging when compared to ACM due to the work hardening properties of stainless steel which slow down cutting and routing speeds by 75%, generating considerable amounts of heat, and rapidly consuming router bits. The following recommendations are an adaptation of the attached files which reference metric measurements.

- Cutting with a circular saw is generally best for lower heat generation and cleanness of cut. Blade tip speeds of 500 to 600 rpm are recommended with a feed rate of approximately 10" per minute with an 8" diameter blade.
- A square shear may also be used for straight cutting. A shear with a small clearance (0.1mm or less) and 1°30' rake angle is preferred. Please note that the cut edge will deform downward slightly due to the toughness of stainless steel. Shearing will also cause a slight bulge near the sheared edge. This is a normal condition and is caused by the shearing action forcing some of the core material back into the panel.
- CNC routers may also be used for cutting SSCM panels. It is recommended that one use square end mill router bits made of a super hard alloy, and coated with either a ceramic-coating, a Titanium Aluminum Nitride coating, or a Cobalt Aluminum coating. Feed speeds are considerably less for stainless steel composite and revolutions are lower.
- In order to use a CNC router for V-grooving SSCM panels, it is recommended to first cut the backside skin with a square ended milling bit as described above. Then, remove the core with regular carbide-tipped bit typically used with aluminum composite material to obtain a V-Groove. Router bits should have a 137 degree angle. The wider angle will allow bending the return farther to account for the greater spring-back of the stainless steel skin.
- Some companies have routed stainless steel composite directly. However, they have had to use a spray lubricant and significantly lower feed rates, 25% that of ACM. Additionally, router bits usually wore out and had to be replaced approximately every 2 panels.

larson metals® INOX FR Technical Specifications

Dimensional Specifications

1.1. Total thickness (mm)	4
1.2. Metal thickness (mm)	0,25 ext / 0,20 int
1.3. Weight (kg/m ²)	8,61
1.4. Standard width (mm)	1000
1.5. Minimum / Maximum length (mm)	2000 / 8000
1.6. Core	Mineral FR
1.7. Thickness tolerance (mm)	+ 0,2
1.8. Width tolerance (mm)	+ 2,5
1.9. Length tolerance (mm)	+ 10
1.10. Diagonal tolerances (mm)	± 3

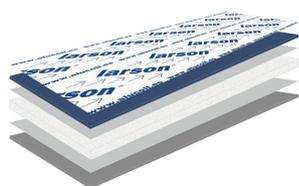
Mechanical Specifications

2.1. Moment of inertia (cm ⁴ /m) DIN 53293	0,144
2.2. Rigidity (KNcm ² /m) DIN 53293	2891
2.3. Modulus of elasticity (N/mm ²) UNE EN ISO 587-1/2	27897
2.4. Ultimate tensile strength (N/mm ²) UNE EN ISO 587-1/2	100,74
2.5. Elasticity limit (N/mm ²) UNE EN ISO 587-1/2	65,95
2.6. Elongation (%) UNE EN ISO 587-1/2	42,25
2.7. Thermal resistance (m ² K/W) UNE 92-202-89:1989	0,018
2.8. Thermal conductivity (W/mK) UNE 92-202-89:1989	0,238
2.9. Metal thermal expansion	1,2 mm/m Δ100°C
2.10. Excellent performance in temperatures (°C) (*)	-50 < +80
2.11. Fire classification UNE EN ISO 13501-1:2007	Bs1d0

(*) All processing jobs must be done at temperatures above 10 °C

Metal Quality

(AISI 316 ext) – (AISI 304 int)



Informative Document

Recommended processing for **larson**[®]

Cutting and processing of composite materials can be done easily with conventional routing machines, CNC machines, portable blade routing machines and manual routing machines with the appropriate blade.

Examples of different blade characteristics are shown next. Other similar tool characteristics will be acceptable as well.

Machining specifications CNC

(Data based on tools and machinery used in **Alucoil**[®] for other conditions see the technical characteristics of the tool supplier)

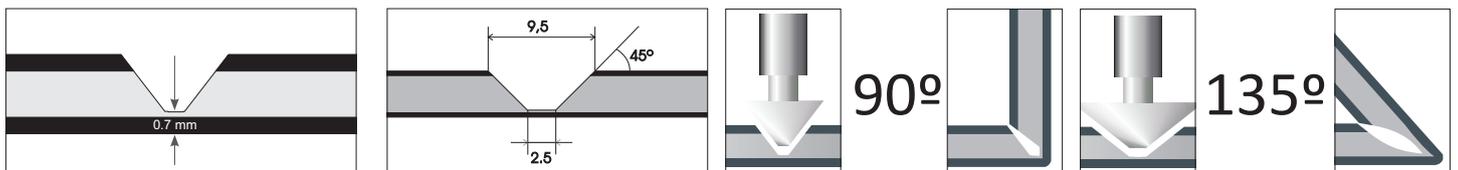
larson pe [®] larson metals [®] copper pe larson metals [®] brass pe	Routing Tool "V" shaped angle 45° D.12 mm Metal hard Maximun: Speed _{RPM} 18.000 / Advance 50 m/min Standard: Speed _{RPM} 18.000 / Advance 25 m/min Minimum: Speed _{RPM} 10.000 / Advance 7 m/min	Shape Cutting Tool D.6 mm Metal hard Maximun: Speed _{RPM} 17.000 / Advance 12 m/min Standard: Speed _{RPM} 17.000 / Advance 7 m/min Minimum: Speed _{RPM} 15.000 / Advance 4.5 m/min	Straight cutting Disc D.120x20 (13-12) Z4 Speed steel Speed 5.000 r.p.m Advance: 20 m/min
larson fr [®] larson metals [®] copper fr larson metals [®] brass fr	Routing Tool "V" shaped angle 45° D.12 mm Metal hard Maximun: Speed _{RPM} 12.000 / Advance 50 m/min Standard: Speed _{RPM} 12.000 / Advance 25 m/min Minimum: Speed _{RPM} 8.000 / Advance 7 m/min	Shape Cutting Tool D.6 mm Metal hard Maximun: Speed _{RPM} 17.000 / Advance 12 m/min Standard: Speed _{RPM} 17.000 / Advance 7 m/min Minimum: Speed _{RPM} 15.000 / Advance 4.5 m/min	Straight cutting Disc D.120x20 (13-12) Z4 Speed steel Speed 5.000 r.p.m Advance: 20 m/min
larson metals [®] inox fr	Routing Fresa en "V" angulo 45° D.12 mm Metal hard with coated TIALM Speed 2.200 r.p.m Advance: 8 m/min	Shape Cutting Tool D.6 mm Metal hard with coated TIALM Speed 4.000 r.p.m Advance: 6 m/min	Straight cutting Shears
Note: Characteristics of routing with disc (CNC) Material: Plates. Dimensions: 180 x 16 Speed: 6000 rpm Advance: 18 m/min		Note: Characteristics of routing with disc (Vertical saw) Material: Plates. Dimensions: 244 x 14 Speed: 5000 rpm Advance: 16 m/min	
Note: Characteristics of cut with disc (Vertical saw) Material: Steel. Diameter 300 x 3.2 x 30 Speed: 5000 rpm Advance: 16 m/min			

Cutting tolerances: Size requested +/- 1 mm.

Tolerances in the routing depth: 0,7 mm +/- 0.1 mm.

Maximum distance between hanging shapes: 500 mm

Tolerances between routing: 1 mm



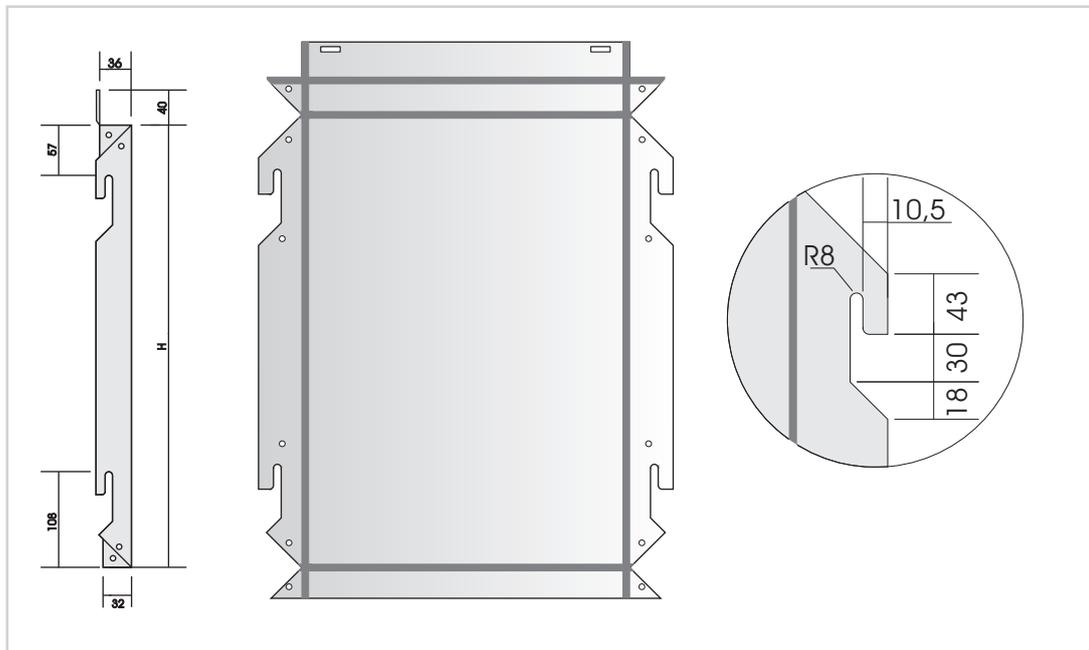
Important:

All processing jobs must be done using protection gloves and security goggles to avoid wounds or injuries by shavings.

All processing jobs of **larson** composites must be done with the protective plastic film to avoid damages and at temperatures above 10°C on coated surface.

The plastic film must remain until all processing jobs have been finished.

Milling must be done on the reverse side opposite of plastic film surface.



Inspection and maintenance

Inspection must be done at least once per year. This period of time may be shorter due to a more aggressive environment where material is placed. Please ask your supplier for advice regarding this issue.

Special recommendations:

Eliminate from façade leaves, grass, rust or other strange substances.

Cleaning: Any blocking in gutters that may cause overflowing on the façade. Dirt retained in places where rainfall cannot clean it naturally.

These aspects may improve the appearance of the building.

Check that cladding closure parts are sealed to avoid water penetration.

Once the building is finished, special care must be put on joints, damages on the coating layer, drill perforations, riveted points and materials that could have stuck to the façade.

Defects that may cause an early deterioration of coating or aluminium corrosion must be repaired. **If this is not possible replace the sheet.**

larson® composite façade cleaning

To obtain the longest lifetime possible for a larson façade is important to clean dirt accumulations, dumpings and other materials that may not be wiped naturally by rainfall. All larson cladding material must be cleaned once per year. The cleaning must be done with a soft sponge, wet cloth or with a water pressure system (max pressure 50 bar) avoiding any material that may scratch the finishing (sand, dust...). A neutral soap (PH 6-7) or washing powder or liquid can be mixed with the water (max 10% of detergent in water). Rinsing afterwards must be done with clean water that may contain some kind of liquid wax (i.e car washing) and drying after with non abrasive materials and a final wipe with a dry soft cotton cloth.

Precaution:

Organic solvents, acid or alkaline products as well as chlorine products must be avoided on cleaning of coated surfaces.

Using strong abrasives, hard brushes and dry cleaning may cause damages to coated surface.

Cleaning product: Beckryclean C0300000

Guidelines to users:

Clean the dirtiness of the façade with water.

Shake before use and pour the appropriate quantity.

Soak the sponge with the cleaning agent and spread among all the surface with the sponge. It should be done from top to bottom.

Remove the clearing agent from the façade with plenty of water after 2 to 5 minutes, from the application of cleaning agent. Check that there are no remains of the cleaning agent.

Remove with a sponge, cloth or leather the excess of water.

Precaution:

Contains ammoniac. Avoid inhalation.

Always work in open sites.

Use protection gloves.

Use the appropriate clothing.

Protect your eyes.

Consume:

6 - 7 spm per litre.

Manufacturer:

Beckers Industrielack GmbH

Postbox 100080, D-41539 Dormagen Germany

Fixing products:

LAK-VERZEGELING. Invisible protection layer for specially exposed façades in aggressive environments such as corrosive steam coming from nearby factories, etc.

GLUE CLEANER. Specially designed for dissolving blue, grease and silicon.

Anticorro:

Designed to protect cut edges and drill perforations. Avoids corrosion in aluminium exposed parts.

ALU-CARE Benelux

Tfno: 32/3/707 0624 Fax: 32/3/70715 88

Inspection and maintenance of larson metals® inox façades

The maintenance of a **larson metals®** inox (stainless steel) façade must be done the same way as if it was a normal **larson®** aluminium façade.

Graffiti cleaning:

El **larson metals®** inox can be cleaned easily with a simple paint solvent. The solvent must be applied with a non abrasive product such as a soft sponge or leather or cotton cloth.

Wiping the surface with acetone must be done afterwards cleaning the graffiti, to remove any solvent that might remain. Washing with abundant water comes after and then drying with non abrasive materials and with a cotton or similar cloth.

Cleaning of fingerprint or similar:

Fingerprints can be removed with acetone application with a non abrasive material such as a soft sponge or leather or cotton cloth. Washing with abundant water comes after and drying with non abrasive materials and with a cotton or similar cloth.

