Name of undertaking:

Split Rock Brewing Co.

Proponent:

(i) **Name of Corporate Body**:
Twillingate Brewery Limited

(ii) Address:
119 Main St.
Twillingate, NL
A0G 4M0

(iii) **Chief Executive Officer**:

Name: Robin Vatcher
Official Title: President
Address: 81 Rink Road
Twillingate, NL
A0G 4M0
Phone No.: 709-884-2318

(iv) Principal Contact Person for purposes of environmental assessment:

Name: Tim Vatcher
Official Title: Director
Address: 110 Main St.
Twillingate, NL
A0G 4M0

The Undertaking:

(i) Nature of the Undertaking:

Robin Vatcher, Tim Vatcher and Matthew Vincent, the owners of Twillingate Brewery Limited, are presently seeking approval to operate a Microbrewery along with a Lounge at 119 Main St. (approx 4000 Square feet building) in Twillingate, NL. The beer we will produce will be made with all natural ingredients (water, malted barley, hops and yeast) with no added preservatives or pasteurization.

In addition to producing beer, visitors to our facility will be able to learn from our Brewmaster about the process of making beer and how our equipment works. As well, visitors will be able to sample our beer in our lounge area and purchase merchandise.

(ii) Purpose/Rationale/Need for the Undertaking:

Registration
Microbrewery
Twillingate Brewery Limited

Twillingate, Newfoundland, the iceberg capital of the world, is a top tourist destination in our province and has been known for providing a unique, authentic, rural Newfoundland experience to all visitors to our town.

The craft beer and microbrewery industry have exploded across the country, more recently in Newfoundland and the maritime provinces, and has been experiencing great success. Nova Scotia currently has over 30 microbreweries with many succeeding in rural locations. Newfoundland has several microbreweries started in the past years and have had a great reception in the province and among visitors.

We believe that a microbrewery in Twillingate, would be a great addition to a already great experience that you will find in our community.

In order for us to achieve this, we need to purchase the necessary equipment and carry out renovation work to an existing building in our area.

Description of the Undertaking:

(i) Geographic Location

The site (building) is located within the Town of Twillingate, at 119 Main St.. The property (land and building) that the microbrewery will be located on is in a commercial area with several business's in the same area.

We have approval from the Town of Twillingate for this undertaking and they are excited about this addition to the town.

At the end of this document, you will find a topographic map and a scale photo showing the vicinity of Twillingate and the location of our project. A site survey of the building and property is also attached along with a drawing of the building indicating the portion that will contain the brewery and the portion that will contain our lounge.

We will be using the Town of Twillingate's water supply and sewage system.

(ii) Physical Features

As mentioned above, the site is in an existing building located in Twillingate.

There will be no new buildings, pipelines, roads, etc. constructed for the brewery as the brewery will use all the existing structures.

The brewery and lounge area in our building will take up our entire 4000 square feet area of our building.

The building has previously been used for several commercial retail stores over the years but has never had any oil tanks or kerosene that would affect the grounds or under ground. Only electric heat has been used.

The building is located in the center of the town of Twillingate, surrounded by a variety of business's and it is less than 50 ft away from the ocean.

(iii) Construction

The building in which the brewery will be operating is an existing commercial building. Approximately 1500 square feet of the building will be used for the microbrewery and the remainder will be used for our tap room and lounge.

We have made a few changes to the existing building which have been approved by Service NL and Newfoundland power.

All of our contractors and carpenters have followed and will continue to follow provincial OH&S, environmental standards and guidelines throughout the construction work.

The brewery construction will consist of renovations/leasehold improvements to the existing building in order to accommodate a brewery and tap room. Some of the improvements are as follows:

- Electrical upgrade to 600 Amp service
- Plumbing upgrades and installations
- Installation of washrooms with wheelchair accessible features
- Other construction and finishing work include installation of a wheelchair ramp, fire-rated dry wall, etc. to bring the building up to code to obtain all the necessary permits and approvals required. The interior is designed with a theme that reflects outport Newfoundland lifestyle and culture.

The only potential pollutants that we can think of would be the use of any machinery during the time we replaced some of our plumbing. The pollutants from our equipment will be minimal.

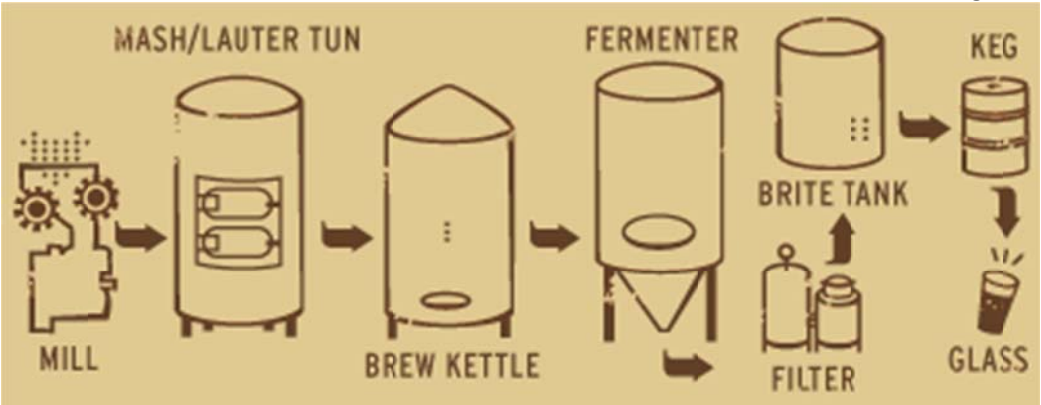
(iv) Operations

Microbrewery Operations: The operation of the microbrewery will consist of:

(a) the brewing process, which is carried out once or twice a week with stages taking place over a 2-3 week period, (b) crushing grain and (c) cleaning.

(a) The Brewing Process
A schematic of a typical brewing process is as follows:

Registration
Microbrewery
Twillingate Brewery Limited



The brewing process typically runs over an 8-hour period and the steps shown above can be described as follows:

-Heating, via electrical elements, approximately 477 L of water in a large stainless steel tank to a temperature of 75 C.

- The heated water is transferred via pump and hose to a second stainless steel insulated tank where malted barley/grain is added. The grains are “steeped” in the hot water (63 C) for approximately 1 hour. Additional water (approximately another 100 – 150 L, depending on the recipe) is added to sprinkle over the grains to draw off more starches where possible.

- The liquid (now called “wort”) is then drawn off the tank via pump and hose and transferred into a third stainless steel tank fitted with electrical elements. The wort is heated to 100 C and boils for approximately 1 hour. During the boil, hops (the female flower of the hop plant, Humulus lupulus) are added giving the beer its bitterness along with further flavour and aroma.

- The wort is then drawn off the tank via pump and hose and passes through a plate chiller that runs on cold water. In the plate chiller, the wort passes alongside cold running water to cool it down to room temperature.

- The wort then leaves the plate chiller and enters a fermentation tank that contains a glycol jacket. Brewer’s ale yeast is added to the wort in this tank. The temperature of the tank is controlled to hold the wort at a consistent 18 C for 5-7 days. Glycol circulates throughout the outside of the tank (via the “jacket”) to keep the temperature consistent. The glycol is kept cool via the operation of a small glycol chiller.

- After fermentation is complete, the liquid (now alcohol beer) is cooled in the same tank over a 12-24 hour period to reach a temperature of 4 C. The beer is then transferred via pump and hose to a carbonating/conditioning tank that is also glycol-jacketed.

- The temperature of the carbonating/conditioning tank is held at 4 C during which is carbonated via the addition of CO2. The carbonated beer is then transferred into kegs.

- During the brewing process, we will be operating two 2.5 HP mobile variable frequency drive pumps that will perform all of the above transfers of liquid via hose.

(b) Crushing Grain:

We will be crushing small amounts of grains prior to brewing and we will be doing so in a small enclosed room with explosion-proof fixtures, emergency stops, and proper ventilation.

(c) Cleaning:

The tanks and equipment are cleaned and sanitized after every use utilizing a clean-in-place (CIP) system with non-caustic (alkaline) cleaner and sanitizer. Less frequently on an as-needed basis, diluted caustic cleaners are used to remove scale and stone from inside the tanks. The cleaners will be discussed further below.

Other Operations

We will also be operating a walk-in cooler in the premises for keg and hop storage. We will also run a tasting area, which will be a licensed lounge area, including a patio, where we will have a small draft system to offer our beer on tap to the public in pint and sample-sized glasses. We will also have a small retail area where we will offer merchandise.

Water Demand/Usage

During our entire operations, our water demand will fluctuate daily. Despite a baseline demand for regular washroom use of visitors, the only times water will be required will be: 1) on a brew day and 2) during cleaning. On a brew day, our water demand is approximately 650 litres (170 gallons) for the brewing process. During the cleaning process (which follows a brew day), approximately 150 litres (40 gallons) is used. Based on our discussions with Fire & Life Safety and Service NL, we are currently working on the assumption of a 65-person maximum occupancy and using the formula for water usage for a lounge/bar of "max. occupancy * 2 * 25 litres" to determine our maximum water usage for regular washroom use. This works out to "65 * 2 * 25 litres" = approximately 3250 litres (860 gallons).

Therefore, the maximum water demand possible in one day, if we brewed, cleaned and had maximum capacity of occupants, would be approximately 4050 litres (1070 gallons).

To alleviate the water demand, we plan to schedule brew days and cleaning during our time of lower occupancy.

We will also be collecting hot water from our wort chiller to utilize for cleaning.

Period of Operations

The Brewery and lounge will be open to the public year around. Our busiest season will most likely be during the tourist season (May – October).

Potential Sources of Pollutants

Airborne emissions:

There are only two very small opportunities for airborne emissions during our operations:

1) Steam during the brewing process and 2) Dust during the grain-crushing process. We confirm that both will result in very little to no actual air emissions and all are 100% natural and will contain no

chemicals or toxic substances. The amount that escapes the brewery is almost zero. As explained below its very contained.

The steam occurs during the brewing process. Water that has steeped in malted barley/wheat is drawn off and put into a boil kettle. It is boiled for approximately 1 hour and hops (a natural plant grown in the Northwest of the U.S. and throughout Europe) are added at various stages of the boil to give the beer a more distinct flavour. At this point, the liquid only contains starches from the grains and flavours drawn off of the hops, which are all-natural and contain no chemicals or toxic substances. The steam from this boil emits only a slight odour, as mentioned consisting only of barley and hops. The majority of this steam will be captured by a water-misting system and condensate trap which is integrated within our boil kettle. This condensate is then directed to our drainage system and is 100% natural and non-toxic. This particular process greatly diminishes the amount of brewing odours being emitted from our building. We confirm that there are no chemicals or toxic substances that will be emitted. Attached are our MSDS sheets.

There will also be a very small amount of airborne grain dust when we crush the grains. To deal with this we will be crushing the grain in a fully-enclosed room and collecting the crushed grain in a enclosed container. We will also use explosion-proof fixtures and motor for the mill as well.
We confirm that the emission of grain dust from the building will be very small to negligible in nature, all-natural (non-toxic and no chemicals of any nature). Any grain dust escaping our crushing process will be contained to our designated room and will be swept and discarded as needed.

Solid Waste & Liquid effluents:

Fortunately, all waste produced during the brewing process is organic material, which therefore has the potential to be recycled, reused or composted. It is our goal to operate as environmentally-friendly as possible and with the very small scale of our operations, we believe a fully sustainable operation is attainable.
The wastes produced during the brewing process of a single batch of 475 litres of beer and subsequent cleaning of the equipment, consist of:

– **Water (varies, around 150 litres) –** though the majority of water used makes up the beer product, a considerable amount of water will also be used to cool the beer through our plate chiller and used in cleaning the equipment. We intend to recapture the water used in the plate chiller for our cleaning process to dilute and rinse our cleaners. Upon completion of the cleaning process, it will become an effluent discharge. If we brew at max capacity in a year we can brew 635 hectolitres. But I don't think we will be brewing that much our first year.

– **Waste beer (variable) –** this will be a minimal liquid effluent that will result from any accidental spillage. If the waste will be give to famers it will be given the day of or refrigerated in our cold room until it can be picked up. This waste will be produced throughout or 8 hour brew day.

– **Spent grains (approx. 200-250 lb) –** this is the "steeped" grains leftover once the liquid has been drawn off from the tank. Since this is a food-grade by-product it will be used as animal feed for local farmers or composted.

– **Spent hops/Kettle Trub (approx. 10 – 15 litres) –** this is the precipitate left in the boil kettle upon completion of the boil and removal of the liquid. It has a "slurry" consistency and since this is a food-grade by-product, we intend to either re-use it as a soil improver or compost it.

– **Yeast/Fermentation Trub (approx. 15 – 20 litres) –** this is the biomass left at the bottom of the fermentation tank upon removal of the liquid (beer). It is composed of mainly heavy fats, proteins and inactive yeast. A portion (5-7 litres) will be re-used for yeast propagation for a future batch and once its lifespan has expired, we will use it for compost.

– **Cleaning products (small amounts) –** fortunately there are environmentally-friendly products available for the cleaning needs of the brewery. The cleaning product most used, particularly for every cleaning session after every brew, will be Solid. This is a low alkaline, non-caustic, environmentally and user-friendly clean-in-place cleaner. Not every cleaning session, but there may be some instances where we have to use Formul-a-Acid a biodegradable nitric/phosphoric acid blend to dissolve scale and beerstone as well as re-passivate the inside of our tanks. When required with our system, a diluted solution of Reaction 2000 caustic is used. All cleaning practices mentioned above are standard to the brewing industry. At max capacity it would be 22.5L each of reaction 2000 and formul-a-acid per year. Again may be closer to 50% of this.

All liquid effluents will be disposed of through use of our Town's sewage system. For cleaning of the tasting room, bathrooms, etc. we also intend to use biodegradable, environmentally friendly cleaning products.

(v) Occupations:

The brewery and lounge will be a year around business so we will be needing several employees to cover off the various jobs required to run such a business. Servers, Bartenders, a Brewmaster, and general maintenance workers will be needed for us to operate.

All of our previously mentioned renovation work is being carried out by local contractors and construction workers.

Approval of the undertaking:

The following is a list of permits, licences and approvals required for this microbrewery:

<u>Municipal</u>

- Municipal Approval – Town of Twillingate

<u>Provincial</u>

- Environmental Assessment and Approval & Registration – Department of Environment and Conservation
- Building Accessibility & Fire and life Safety Approval – Service NL
- Manufacturer's Licence – NLC
- Lounge Licence – NLC

- Brewers Agent Licence – NLC

Federal

- Excise Duty Licence
- Labelling Requirements – Canadian Food Inspection Agency

Schedule:

The construction date depends on final approval of this application. Construction can otherwise begin prior to the remaining licences and approvals as such will not be granted until the final inspections of completed work.

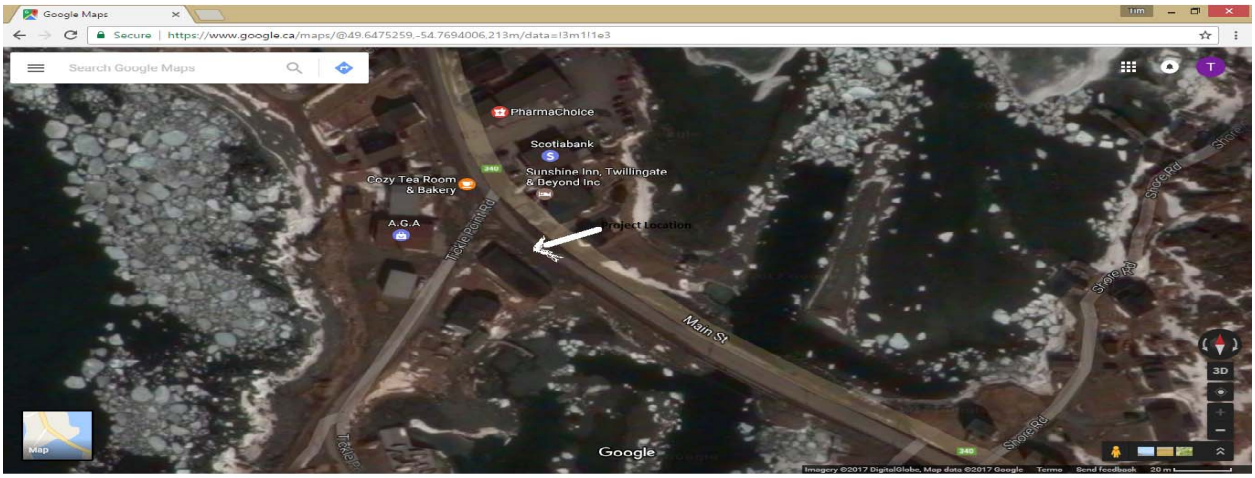
Funding:

Personal Funds

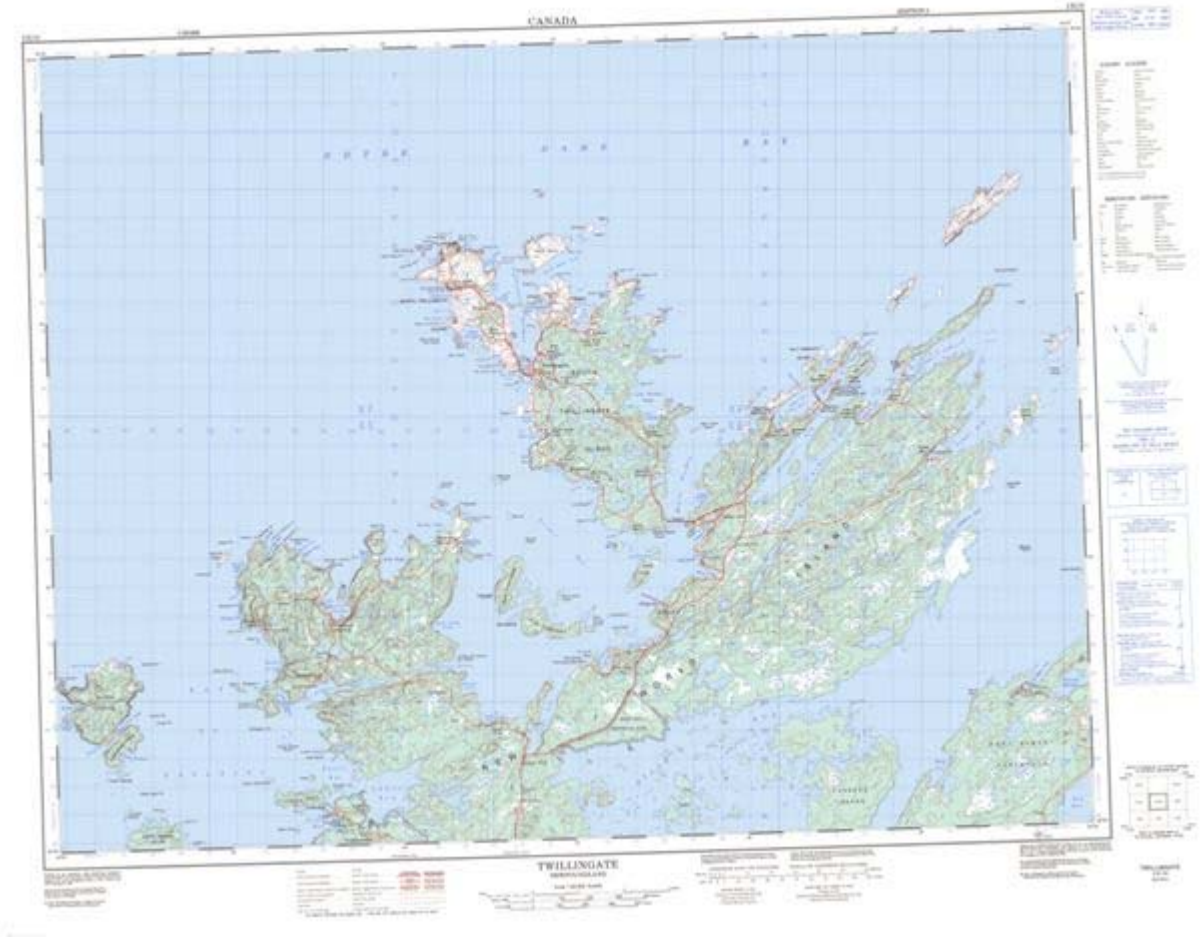
Estimated Capital costs of the project $450,000

Project-related documents attached

Registration
Microbrewery
Twillingate Brewery Limited



Registration
Microbrewery
Twillingate Brewery Limited



Registration
Microbrewery
Twillingate Brewery Limited

Registration
Microbrewery
Twillingate Brewery Limited

Registration
Microbrewery
Twillingate Brewery Limited

atomes

MATERIAL SAFETY DATA SHEET / page 1

SOLID

HAZARD RATING
HAZARD CODE

4- SEVERE
3- SERIOUS
2- MODERATE
1- SLIGHT
0- MINIMAL

FIRE HAZARD (0)
HEALTH HAZARD (1)
REACTIVITY (0)
PERSONAL PROTECTION (R)

SECTION I: PRODUCT IDENTIFICATION

TRADE NAME AND SYNONYMS	CHEMICAL FORMULA	MATERIAL USE
SOLID	**Proprietary**	**Solid non-foaming degreaser**

SECTION II: HAZARDOUS INGREDIENTS OF MATERIAL

HAZARDOUS INGREDIENTS	APPROXIMATE CONCENTRATION (%)	CAS. NA OR UN NUMBERS	LD_{50} (SPECIFY SPECIES & ROUTE)
Sodium metasilicate	**40-80%**	**1012-79-3**	**N/AV**

The other ingredients are not regulated and proprietary.

SECTION III: PHYSICAL DATA OF MATERIAL

PHYSICAL STATE	pH (1%)	ODOUR AND APPEARANCE	
Powdered	**Alkaline**	**Mild - Whitish**	
% VOLATILE (BY VOL.)	SPECIFIC GRAVITY	VAPOUR PRESSURE (MM)	VAPOUR DENSITY (AIR-1)
N/AV	**N/AV**	**N/AV**	**N/AV**
EVAPORATION RATE	BOILING POINT (ºC)	FREEZING POINT (ºC)	SOLUBILITY IN WATER (20ºC)
N/AV	**N/AV**	**N/AV**	**Partially complete**

N/A = Not Applicable **N/AV = Not Available**

SECTION IV: FIRE AND EXPLOSION HAZARD

MEANS OF EXTINCTION
Vaporised water, foam of carbon bioxide.
HAZARDOUS COMBUSTION PRODUCTS
CO, CO_2 products of combustion.
SPECIAL PROCEDURES **N/A**

FLAMMABILITY **NO**
IF YES UNDER WHAT CONDITIONS? **N/A**
FLASH POINT (°C) AND METHOD **N/A**
UPPER EXPLOSION LIMIT (% BY VOLUME) **N/A**
LOWER EXPLOSION LIMIT (% BY VOLUME) **N/A**

atomes 3485 Ashby, Saint Laurent (Quebec) Canada H4R 2K3 Tel. :(514) 745 2597 Fax: (514) 745 5176

atomes

MATERIAL SAFETY DATA SHEET / page 2

SECTION V: REACTIVITY DATA

CHEMICAL STABILITY **YES** IF NO, UNDER WHAT CONDITIONS? **N/A** INCOMPATIBILITY TO OTHER SUBSTANCES **YES** IF SO, WHICH ONES? **Strong oxydizers, reducing agents, acids and alkalines agents.**	REACTIVITY AND UNDER WHAT CONDITIONS? **When in contact with strong oxydizers, reducing agents, acids and alkalines agents.** HAZARDOUS DECOMPOSITION PRODUCTS **CO, CO_2.**

SECTION VI: TOXICOLOGICAL PROPERTIES

ROUTE OF ENTRY **Skin contact** **Eye contact** **Ingestion** EFFECTS OF ACUTE EXPOSURE TO MATERIAL SKIN : **Causes severe irritation.** EYES: **Causes severe irritation.** INGESTION : **May causes irritation, abdominal pain, diarrhea.**	EXPOSURE LIMITS **N.AV.** CARCINOGENICITY, REPRODUCTIVE EFFECTS, TERATOGENICITY, MUTAGENICITY **None**

SECTION VII: PREVENTIVE MESURES

PERSONAL PROTECTIVE EQUIPMENT GLOVES (SPECIFY) **Rubber** EYES (SPECIFY) **Safety goggles** RESPIRATORY (SPECIFY) **None** OTHER (SPECIFY) **None**	ENGINEERING CONTROLS (E.G. VENTILATION, ENCLOSED PROCESS SPECIFY) **N/A** LEAKS AND SPILLS PROCEDURE **Wash away with water.** WASTE DISPOSAL **Neutralize and then dispose according to local laws.** HANDLING PROCEDURES AND EQUIPMENT **N/A** STORAGE REQUIREMENTS **Steel or plastic. Store at 20°C to 30°C. Keep lid closed.** SPECIAL SHIPPING INFORMATION **Shipping temperature has to be between 20°C and 30°C.**

SECTION VIII: FIRST AID MEASURES

SKIN: **Flush skin with abundant water for 15 minutes. If irritation persists, seek medical attention.**
EYES: **Flush eyes with abundant water for 15 minutes. If irritation persists, seek medical attention.**
INGESTION : **Drink 3-4 glasses of water, do not induce vomiting. Consult physician.**

SECTION IX: EMERGENCY NUMBER

PREPARED BY	PHONE NUMBER	DATE
Technical Department	**Tel: 514-745-2597**	**March 15, 2016**

SECTION X: W.H.M.I.S. Classe(s) : E

SHIPPING : **SODIUM METASILICATE**
CLASS 8 UN3253 PGIII

atomes

MATERIAL SAFETY DATA SHEET / page 1

REACTION 2000

HAZARD RATING
HAZARD CODE

4- SEVERE
3- SERIOUS
2- MODERATE
1- SLIGHT
0- MINIMAL

FIRE HAZARD (0)
HEALTH HAZARD (4)
REACTIVITY (2)
PERSONAL PROTECTION (R)

SECTION I: PRODUCT IDENTIFICATION

TRADE NAME AND SYNONYMS	CHEMICAL FORMULA	MATERIAL USE
Reaction 2000	**Proprietary**	**Non foaming alkaline cleaner**

SECTION II: HAZARDOUS INGREDIENTS OF MATERIAL

HAZARDOUS INGREDIENTS	APPROXIMATE CONCENTRATION (%)	CAS. NA OR UN NUMBERS	LD_{50} (SPECIFY SPECIES & ROUTE)
Potassium Hydroxide	**5-15**	**1310-58-3**	**365 mg/kg (Oral-Rat)**

The other ingredients are not hazardous.

SECTION III: PHYSICAL DATA OF MATERIAL

PHYSICAL STATE	pH (1.0%)	ODOUR AND APPEARANCE
Liquid	**12.00±1.00**	**Mild- Colorless**

% VOLATILE (BY VOL.)	SPECIFIC GRAVITY	VAPOUR PRESSURE (MM)	VAPOUR DENSITY (AIR-1)
N/AV	**1.220±0.050**	**N/AV**	**N/AV**

EVAPORATION RATE	BOILING POINT (°C)	FREEZING POINT (°C)	SOLUBILITY IN WATER (20°C)
N/AV	**N/AV**	**N/AV**	**Complete**

N/A = Not Applicable **N/AV = Not Available**

SECTION IV: FIRE AND EXPLOSION HAZARD

MEANS OF EXTINCTION
Vaporised water, foam of carbon bioxide.
HAZARDOUS COMBUSTION PRODUCTS
CO, CO_2 products of combustion.
SPECIAL PROCEDURES **N/A**

FLAMMABILITY **NO**
IF YES UNDER WHAT CONDITIONS? **N/A**
FLASH POINT (°C) AND METHOD **N/A**
UPPER EXPLOSION LIMIT (% BY VOLUME) **N/A**
LOWER EXPLOSION LIMIT (% BY VOLUME) **N/A**

atomes 3485 ASHBY , Saint Laurent (Quebec) Canada H4R 2K3 Tel. :(514) 745 2597 Fax: (514) 745 5176

atomes

MATERIAL SAFETY DATA SHEET / page 2

SECTION V: REACTIVITY DATA

CHEMICAL STABILITY **YES**
IF NO, UNDER WHAT CONDITIONS? **N/A**
INCOMPATIBILITY TO OTHER SUBSTANCES **YES**
IF SO, WHICH ONES?
Acids and Ammonia.

REACTIVITY AND UNDER WHAT CONDITIONS?
When in contact with acids and ammonia.
HAZARDOUS DECOMPOSITION PRODUCTS
This product decomposes at high temperature to generate oxydes of chlorine.
CO, CO_2 are also the products of decomposition.

SECTION VI: TOXICOLOGICAL PROPERTIES

ROUTE OF ENTRY
Skin contact
Eye contact
Ingestion
EFFECTS OF ACUTE EXPOSURE TO MATERIAL
SKIN : **Causes severe irritation.**
EYES: **Causes severe irritation.**
INGESTION : **May causes irritation, abdominal pain, diarrhea.**

EXPOSURE LIMITS **N.AV.**
CARCINOGENICITY, REPRODUCTIVE EFFECTS, TERATOGENICITY, MUTAGENICITY
None

SECTION VII: PREVENTIVE MESURES

PERSONAL PROTECTIVE EQUIPMENT
GLOVES (SPECIFY)
Rubber
EYES (SPECIFY)
Safety goggles
RESPIRATORY (SPECIFY)
None
OTHER (SPECIFY)
None

ENGINEERING CONTROLS (E.G. VENTILATION, ENCLOSED PROCESS SPECIFY) **N/A**
LEAKS AND SPILLS PROCEDURE
Wash away with water.
WASTE DISPOSAL
Neutralize and then dispose according to local laws.
HANDLING PROCEDURES AND EQUIPMENT
N/A
STORAGE REQUIREMENTS
Steel or plastic. Store at 20°C to 30°C. Keep lid closed.
SPECIAL SHIPPING INFORMATION
Shipping temperature has to be between 20°C and 30°C.

SECTION VIII: FIRST AID MEASURES

SKIN: **Flush skin with abundant water for 15 minutes. If irritation persists, seek medical attention.**
EYES: **Flush eyes with abundant water for 15 minutes. If irritation persists, seek medical attention.**
INGESTION : **Drink 3-4 glasses of water, do not induce vomiting. Consult physician.**

SECTION IX: EMERGENCY NUMBER

PREPARED BY	PHONE NUMBER	DATE
Technical Department	**Tel: 514-745-2597**	**April 23 2015**

SECTION X: W.H.M.I.S. Classe(s) : E

SHIPPING : **Corrosive liquids N.O.S. / Potassium hydroxide in solution**
Classe 8 (9.2) UN 1814 PG III

atomes

MATERIAL SAFETY DATA SHEET / page 1

FORMUL-A-CID

HAZARD RATING
HAZARD CODE

4- SEVERE
3- SERIOUS
2- MODERATE
1- SLIGHT
0- MINIMAL

FIRE HAZARD (0)
HEALTH HAZARD (4)
REACTIVITY (2)
PERSONAL PROTECTION (R)

SECTION I: PRODUCT IDENTIFICATION

TRADE NAME AND SYNONYMS	CHEMICAL FORMULA	MATERIAL USE
FORMUL-A-CID	**Proprietary**	**Acid cleaner**

SECTION II: HAZARDOUS INGREDIENTS OF MATERIAL

HAZARDOUS INGREDIENTS	APPROXIMATE CONCENTRATION (%)	CAS. NA OR UN NUMBERS	LD_{50} (SPECIFY SPECIES & ROUTE)
Phosphoric acid	**10-30**	**7664-38-2**	**1520 mg/kg (Oral-Rat)**
Nitric acid	**15-40**	**7697-37-2**	**<500mg/kg oral human**

The other ingredients are not hazardous.

SECTION III: PHYSICAL DATA OF MATERIAL

PHYSICAL STATE	pH (1.0%)	ODOUR AND APPEARANCE
Liquid	**1.60±1.00**	**Mild – Clear red**

% VOLATILE (BY VOL.)	SPECIFIC GRAVITY	VAPOUR PRESSURE (MM)	VAPOUR DENSITY (AIR-1)
N/AV	**1.240±0.050**	**N/AV**	**N/AV**

EVAPORATION RATE	BOILING POINT (°C)	FREEZING POINT (°C)	SOLUBILITY IN WATER (20°C)
N/AV	**N/AV**	**N/AV**	**Complete**

N/A = Not Applicable **N/AV = Not Available**

SECTION IV: FIRE AND EXPLOSION HAZARD

MEANS OF EXTINCTION
Vaporised water, foam of carbon bioxide.
HAZARDOUS COMBUSTION PRODUCTS
CO, CO_2 products of combustion.
SPECIAL PROCEDURES **N/A**

FLAMMABILITY **NO**
IF YES UNDER WHAT CONDITIONS? **N/A**
FLASH POINT (°C) AND METHOD **None**
UPPER EXPLOSION LIMIT (% BY VOLUME) **None**
LOWER EXPLOSION LIMIT (% BY VOLUME) **None**

atomes 6065 Thimens, Saint Laurent (Quebec) Canada H4S 1V8 Tel. :(514) 745 2597 Fax: (514) 745 5176

atomes

MATERIAL SAFETY DATA SHEET / page 2

SECTION V: REACTIVITY DATA

CHEMICAL STABILITY **YES** IF NO, UNDER WHAT CONDITIONS? **N/A** INCOMPATIBILITY TO OTHER SUBSTANCES **YES** IF SO, WHICH ONES? **Strong oxydizers, reducing agents, acids and alkalines agents (Caustic).**	REACTIVITY AND UNDER WHAT CONDITIONS? **When in contact with strong oxydizers, reducing agents, acids and alkalines agents (Caustic).** HAZARDOUS DECOMPOSITION PRODUCTS **CO, CO_2 .**

SECTION VI: TOXICOLOGICAL PROPERTIES

ROUTE OF ENTRY **Skin contact** **Eye contact** **Ingestion** EFFECTS OF ACUTE EXPOSURE TO MATERIAL SKIN : **Causes severe irritation.** EYES: **Causes severe irritation.** INGESTION : **May causes irritation, abdominal pain, diarrhea.**	EXPOSURE LIMITS **N.AV.** CARCINOGENICITY, REPRODUCTIVE EFFECTS, TERATOGENICITY, MUTAGENICITY **None**

SECTION VII: PREVENTIVE MESURES

PERSONAL PROTECTIVE EQUIPMENT GLOVES (SPECIFY) **Rubber** EYES (SPECIFY) **Safety goggles** RESPIRATORY (SPECIFY) **None** OTHER (SPECIFY) **None**	ENGINEERING CONTROLS (E.G. VENTILATION, ENCLOSED PROCESS SPECIFY) **N/A** LEAKS AND SPILLS PROCEDURE **Wash away with water.** WASTE DISPOSAL **Neutralize and then dispose according to local laws.** HANDLING PROCEDURES AND EQUIPMENT **N/A** STORAGE REQUIREMENTS **Steel or plastic. Store at 20°C to 30°C. Keep lid closed.** SPECIAL SHIPPING INFORMATION **Shipping temperature has to be between 20°C and 30°C.**

SECTION VIII: FIRST AID MEASURES

SKIN: **Flush skin with abundant water for 15 minutes. If irritation persists, seek medical attention.**
EYES: **Flush eyes with abundant water for 15 minutes. If irritation persists, seek medical attention.**
INGESTION : **Drink 3-4 glasses of water, do not induce vomiting. Consult physician.**

SECTION IX: EMERGENCY NUMBER

PREPARED BY	PHONE NUMBER	DATE
Technical Department	**Tel: 514-745-2597**	**February 07, 2016**

SECTION X: W.H.M.I.S. Classe(s) : E (corosive Material) , C (oxidizing material)

SHIPPING :	**Corrosive liquid, acidic, inorganic, N.O.S. / Phosphoric and nitric acid** **Classe 8 UN 3264 PG III**

Registration
Microbrewery
Twillingate Brewery Limited