

**PROTOCOLO DE IMPLEMENTACIÓN
CLÁUSULA PRECIO PREFERENTE
ENTRE
CORPORACIÓN DE FOMENTO DE LA PRODUCCIÓN
Y
SQM SALAR S.A.**

En Santiago, a 6 de septiembre de 2019, entre la **Corporación de Fomento de la Producción**, RUT N° 60.706.000-2, representada por su Vicepresidente Ejecutivo don Pablo Terrazas Lagos, cédula de identidad N° 9.587.229-8, ambos domiciliados en calle Moneda N° 921, comuna y ciudad de Santiago ("Corfo"); y **SQM Salar S.A.**, RUT N° 79.626.800-K, representada por don Gerardo Illanes González, cédula de identidad N° 13.904.120-8, y por don Gonzalo Aguirre Toro, cédula de identidad N° 13.441.419-7, todos domiciliados en calle Los Militares N° 4290, piso 6, comuna de Las Condes, Santiago (la "Sociedad" y junto a Corfo, las "Partes"), se acuerda el siguiente protocolo de implementación de la cláusula de precio preferente (el "Protocolo"), conforme a los términos que constan más adelante.

PRIMERO: ANTECEDENTES

- 1.1 Con fecha 17 de enero de 2018, las Partes celebraron una modificación del Contrato de Arrendamiento suscritos por Corfo, Sociedad Química y Minera de Chile S.A., la Sociedad y SQM Potasio S.A., copia del cual consta en una versión refundida, de la escritura otorgada con dicha fecha, en la notaría de Santiago de doña María Soledad Santos Muñoz (el "Contrato").
- 1.2 Los términos en mayúscula en este Protocolo, tendrán el significado que a dichos términos se les asigna en el Contrato, salvo que en este Protocolo se les haya dado un uso diverso.
- 1.3 De acuerdo a lo dispuesto en la Cláusula Décimo Quinta del Contrato, la Sociedad se obligó, durante toda la vigencia del Contrato, y previa aprobación de Corfo, a ofrecer a Productores Especializados sus productos de litio al Precio Preferente (la "Obligación de Precio más Favorable"), todo en los términos de dicha cláusula.
- 1.4 Para seleccionar a los Productores Especializados, Corfo ha decidido realizar un procedimiento de calificación abierto, igualitario y transparente, que entregue a los interesados toda la información necesaria para que las propuestas que se presenten resulten ajustadas al objeto de la convocatoria y se orienten a la materialización de proyectos que generen valor agregado en Chile.
- 1.5 Con el objeto de entregar información cierta e íntegra, y de, posteriormente, facilitar el proceso de implementación de la Obligación de Precio más Favorable, las Partes han acordado definir previamente el mecanismo de cálculo del Precio Preferente, en los términos que se describen en las cláusulas siguientes.



SEGUNDO: ELEMENTOS QUE INTEGRAN EL MECANISMO DE CÁLCULO DEL PRECIO MÁS FAVORABLE

Se entenderá por elementos que integran el mecanismo de cálculo del Precio más Favorable, aquellos que deberán ser considerados para el cálculo de Precio Preferente, y serán los siguientes:

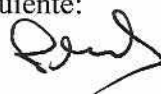
- 2.1 Precios de Exportación de la Sociedad. Los precios que se considerarán en el mecanismo de cálculo del Precio más Favorable para cada especificación de producto, corresponderán a los precios de exportación FOB puerto chileno de los códigos arancelarios para cada especificación de carbonato de litio e hidróxido de litio disponible para su venta por la Sociedad, correspondientes a las exportaciones efectuadas por la Sociedad en los últimos 6 meses (los “Precios de Exportación”). Corfo confirmará a SQM, dentro de los 5 días siguientes desde que se le ponga en su conocimiento, que el cálculo de Precio Preferente ha sido efectuado de conformidad a esta cláusula y al Contrato y bajo ninguna circunstancia podrá poner en conocimiento de los Productores Especializados la información o parámetros que ha usado para su determinación, por tratarse de información competitivamente sensible.
- 2.2 Productos y Especificaciones Técnicas. En el mecanismo de cálculo del Precio más Favorable, deberán considerarse los productos carbonato de litio e hidróxido de litio clasificados según los tipos de especificación técnica de cada uno de estos productos que comercialice la Sociedad y estén disponibles. Actualmente se encuentran disponibles para suministro a los Productores Especializados los siguientes productos, cuyas fichas técnicas se contienen en el Anexo 1 (las “Especificaciones Técnicas”):

Nº	Producto	Especificaciones Técnicas
1.	Carbonato de Litio TG	CRY 8900.00
2.	Carbonato de Litio TG	CRY 9000.00
3.	Carbonato de Litio TG	FIN 9000.00
4.	Carbonato de Litio TG	FIN 9001.99
5.	Carbonato de Litio TG	MIC 8900.00
6.	Carbonato de Litio BG	MIC 9000.00
7.	Hidróxido de Litio TG	LHI
8.	Hidróxido de Litio TG	LHI-W
9.	Hidróxido de Litio TG	LHT
10.	Hidróxido de Litio BG	LHT-B
11.	Hidróxido de Litio TG	LHT-O
12.	Hidróxido de Litio TG	LHT-O(S)
13.	Hidróxido de Litio TG	LHT(S)

Lo anterior, no obsta a que en el futuro se puedan agregar nuevos productos o especificaciones.

TERCERO: MECANISMO DE CÁLCULO DEL PRECIO PREFERENTE

El mecanismo de cálculo del Precio Preferente es el siguiente:



- 3.1 Procesamiento de información:
- (a) Levantamiento de los Precios de Exportación según lo definido en la sección 2.1 de este Protocolo; y
 - (b) Identificación de las distintas especificaciones de carbonato de litio e hidróxido de litio disponible para su venta por la Sociedad, conforme a su Especificación Técnica.
- 3.2 Elaboración de un catálogo por Especificación Técnica, entendiéndose por este catálogo la nómina de cada Especificación Técnica que contenga (i) los respectivos Precios de Exportación por cada producto de la Sociedad, ordenados en forma ascendente y (ii) una sección que destaque el tramo correspondiente al 20% del menor precio del volumen exportado por la Sociedad en los últimos 6 meses para cada producto.
- 3.3 Cálculo del promedio ponderado sobre los Precios de Exportación comprendidos en el respectivo tramo.
- 3.4 El cálculo del Precio Preferente, realizado conforme a esta cláusula, se realizará de forma mensual.

CUARTO: VOLÚMENES AFECTOS A LA OBLIGACIÓN DE PRECIO MÁS FAVORABLE Y AÑO DE ENTRADA

- 4.1. El Anexo 11 del Contrato (Capacidad Anual de Producción Teórica para Precios Preferentes de Litio) contiene el detalle de los volúmenes totales por año de producción teórica. Dichos volúmenes serán los afectos a la Obligación de Precio Más Favorable, independientemente de la producción efectiva (los "Volúmenes Afectos").
- 4.2. De conformidad con lo establecido en la Cláusula Décimo Quinta del Contrato (Precio Preferente para Productores Especializados), la Obligación de Precio más Favorable deberá cumplirse por la Sociedad, después de un año transcurrido desde que Corfo haya comunicado a la Sociedad los nombres y datos de contacto de los Productores Especializados.
- 4.3. Los Volúmenes Afectos se detallan en la cuarta columna de la tabla de más abajo, sobre los cuales se han aplicado los porcentajes incrementales desde un 15% hasta llegar a un 25%, para efectos de calcular el total de volumen de productos afectos a Precio Preferente por cada año, dando como resultado los volúmenes anuales indicados en la columna "Total Volumen destinado a Precio Preferente Li₂CO₃ Mt" y "Total Volumen destinado a Precio Preferente LiOH Mt".
- 4.4. Cabe hacer presente que para la aplicación inicial del 15% se ha tomado como supuesto que comienza a regir a partir del año 2021, considerando como escenario la selección de los Productores Especializados en el 2020, y la consiguiente comunicación escrita a la Sociedad conforme a la sección 4.2 de este Protocolo.



Año	Producción Li ₂ CO ₃ Mt	Producción LiOH Mt	Total Producción Mt	Aplicación de % Escalonado	Total Volumen Precio Preferente Li ₂ CO ₃ Mt	Total Volumen Precio Preferente LiOH Mt
2018	60.000	6.000	66.000	0	-	-
2019	60.000	6.000	66.000	0	-	-
2020	60.000	6.000	66.000	0	-	-
2021	85.800	6.000	91.800	15,0	12.870	900
2022	110.000	6.000	116.000	17,5	19.250	1.050
2023	110.000	6.000	116.000	20,0	22.000	1.200
2024	110.000	6.000	116.000	22,5	24.750	1.350
2025	110.000	6.000	116.000	25,0	27.500	1.500
2026	110.000	6.000	116.000	25,0	27.500	1.500
2027	110.000	6.000	116.000	25,0	27.500	1.500
2028	110.000	6.000	116.000	25,0	27.500	1.500
2029	110.000	6.000	116.000	25,0	27.500	1.500
2030	110.000	6.000	116.000	25,0	27.500	1.500
Total	1.255.800	78.000	1.333.800		243.870	13.500

QUINTO: CONDICIONES COMERCIALES Y ELEMENTOS RELEVANTES DE SUMINISTRO A PRECIO PREFERENTE

- 5.1 El Precio Preferente que resulte de la aplicación del mecanismo de cálculo del que da cuenta este Protocolo tendrá, al menos, las siguientes condiciones, salvo que se acuerde algo distinto entre la Sociedad y el respectivo Productor Especializado:
- (a) Deberá ser un precio de contado.
 - (b) Será considerado bajo incoterm FCA, planta Salar del Carmen.
 - (c) La moneda en que se expresará será dólares de los Estados Unidos de América.
 - (d) El Productor Especializado deberá considerar volúmenes de entrega del respectivo producto de manera uniforme a lo largo del año que corresponda su suministro (esto es, de manera trimestral o mensual, según se convenga con la Sociedad).
 - (e) El producto será entregado en envase estándar bajo la cual la Sociedad hace sus ventas, cuyo detalle se encuentra indicado en cada especificación técnica bajo el nombre de “*standard packaging*”.
 - (f) Deberá contener las cláusulas estándar que la Sociedad tiene en sus contratos de venta o suministro, relacionadas con materias de (i) anticorrupción y (ii) cumplimiento de normativa de la Comisión Chilena de Energía Nuclear.
- 5.2 Otros elementos o condiciones, distintos a los indicados en la sección 5.1 anterior, deberán ser negociados entre cada Productor Especializado y la Sociedad, en condiciones equivalentes a las convenidas entre la Sociedad con otros clientes.

SEXTO: PRELACIÓN DEL CONTRATO

Las Partes entienden y declaran que nada en este Protocolo modifica o reemplaza las obligaciones establecidas en la en la Cláusula Décimo Quinta del Contrato (Precio Preferente para Productores Especializados).



SÉPTIMO: PLAZO

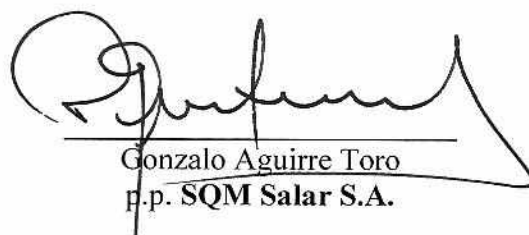
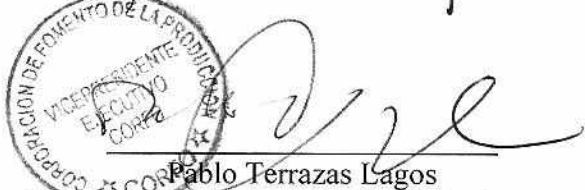
La Sociedad se obliga a negociar durante un plazo de 2 meses con los Productores Especializados una vez presentada la oferta a éstos, debiendo notificar a Corfo, dentro de un plazo máximo de 3 días hábiles contados desde el término de las negociaciones del resultado de ellas.

OCTAVO: EJEMPLARES

El presente Convenio se firma en dos ejemplares, quedando uno en poder de cada parte.

NOVENO: PERSONERÍAS

La personería de don Pablo Terrazas Lagos consta del Decreto Supremo N°360, de 1945, del Ministerio de Economía que aprueba el Reglamento de la Corporación y en la ley N°6.640. La personería de don Gerardo Illanes González y de don Gonzalo Aguirre Toro para actuar en nombre y representación de SQM, consta en escritura pública otorgada de fecha 1 de agosto de 2019 otorgada en la Notaría de Santiago de doña María Soledad Santos Muñoz.

 Gerardo Illanes González p.p. SQM Salar S.A.	 Gonzalo Aguirre Toro p.p. SQM Salar S.A.
 Pablo Terrazas Lagos  Corporación de Fomento de la Producción	

Anexo 1

Especificaciones Técnicas

1. Carbonato de Litio TG CRY7000.00
2. Carbonato de Litio TG CRY8000.00
3. Carbonato de Litio TG CRY8900.00
4. Carbonato de Litio TG CRY9000.00
5. Carbonato de Litio TG FIN9000.00
6. Carbonato de Litio TG FIN9001.99
7. Carbonato de Litio TG FIN9500.00
8. Carbonato de Litio TG MIC8900.00
9. Carbonato de Litio TG MIC9000.00
10. Hidróxido de Litio TG LHI
11. Hidróxido de Litio TG LHI-W
12. Hidróxido de Litio TG LHT
13. Hidróxido de Litio TG LHT (S)
14. Hidróxido de Litio TG LHT-B
15. Hidróxido de Litio TG LHT-O(S)
16. Hidróxido de Litio TG LHT-O



PRODUCT DATA SHEET - LITHIUM PRODUCTS

LITHIUM CARBONATE

Chemical Grade - Crystallized

CAS N° 554-13-2

GENERAL DESCRIPTION	
CHEMICAL FORMULA	Li_2CO_3
APPEARANCE	White Crystals
INTERNAL CODE	CRY7000.00

CHEMICAL SPECIFICATIONS				
GUARANTEED				
PURITY	Li_2CO_3	%	95	min
CHLORIDE	Cl	%	0.6	max
SULPHATE	SO_4	%	0.4	max
SODIUM	Na	%	2.5	max
POTASSIUM	K	%	0.5	max
CALCIUM	Ca	%	0.3	max
MAGNESIUM	Mg	%	0.1	max
BORON	B	ppm	160	max
IRON	as Fe_2O_3	%	0.08	max
MOISTURE	H_2O	%	4.2	max
INSOLUBLES	in acid	%	1.2	max

STANDARD PACKAGING

- 800 kg woven polypropylene maxibag.

Before using this product, please read the product specifications, the material safety data sheet and any other applicable product literature. This product cannot be used in any process or application related to nuclear fusion, including isotope enrichment. The conditions of your use and application of our products, technical assistance and information (whether verbal, written, or by way of production evaluations), including any suggested formulations and recommendations, are beyond our control. Therefore, it is imperative that you test our products, technical assistance and information to determine to your own satisfaction whether they are suitable for your intended uses and applications. Such application-specific analysis must at least include testing to determine suitability from a technical as well as health, safety, and environmental standpoints. It is also not recommended that the product be used for any described purpose without verification by the user of compliance with all applicable laws, regulations and registration requirements. No warranty is made as to the accuracy of any data or statements contained herein other than the chemical specifications guaranteed in this Product Data Sheet. While this product is furnished in good faith, this product is provided to you without any representation or warranty, expressed or implied, as to condition, utility, merchantability, completeness, suitability or fitness for any particular purpose or use or any other matter or thing whatsoever and without recourse against SQM in any event. Without limiting the generality of the foregoing, SQM specifically disclaims any responsibility or liability relating to the use of this product and shall not in any event, be liable for any special, incidental or consequential damages arising from such use.



PRODUCT DATA SHEET - LITHIUM PRODUCTS

LITHIUM CARBONATE

Industrial Grade - Crystallized

CAS N° 554-13-2

GENERAL DESCRIPTION	
CHEMICAL FORMULA	Li_2CO_3
APPEARANCE	White Crystals
INTERNAL CODE	CRY8000.00

CHEMICAL SPECIFICATIONS			
GUARANTEED			
PURITY	Li_2CO_3	%	98 min
CHLORIDE	Cl	%	0.6 max
SULPHATE	SO_4	%	0.4 max
SODIUM	Na	%	1.3 max
POTASSIUM	K	%	0.5 max
CALCIUM	Ca	%	0.3 max
MAGNESIUM	Mg	%	0.1 max
BORON	B	ppm	160 max
IRON	as Fe_2O_3	%	0.08 max
MOISTURE	H_2O	%	1.3 max
INSOLUBLES	in acid	%	1.2 max

STANDARD PACKAGING

- 1000 kg woven polypropylene maxibag.

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PRODUCT DATA SHEET - LITHIUM PRODUCTS

LITHIUM CARBONATE

Technical Grade - Crystallized

CAS N° 554-13-2

GENERAL DESCRIPTION	
CHEMICAL FORMULA	Li_2CO_3
APPEARANCE	White Crystals
INTERNAL CODE	CRY8900.00

CHEMICAL SPECIFICATIONS GUARANTEED				
PURITY	Li_2CO_3	%	99	min
CHLORIDE	Cl	%	0.04	max
SULPHATE	SO_4	%	0.05	max
SODIUM	Na	%	0.1	max
POTASSIUM	K	%	0.05	max
CALCIUM	Ca	%	0.04	max
MAGNESIUM	Mg	%	0.02	max
IRON	as Fe_2O_3	%	0.003	max
BORON	B	ppm	50	max
MOISTURE	H_2O	%	0.2	max
INSOLUBLES	in acid	%	0.03	max
LOSS ON IGNITION	LOI	%	0.7	max

STANDARD PACKAGING

- 800 kg woven polypropylene maxibag.

Before using this product, please read the product specifications, the material safety data sheet and any other applicable product literature. This product cannot be used in any process or application related to nuclear fusion, including isotope enrichment. The conditions of your use and application of our products, technical assistance and information (whether verbal, written, or by way of production evaluations), including any suggested formulations and recommendations, are beyond our control. Therefore, it is imperative that you test our products, technical assistance and information to determine to your own satisfaction whether they are suitable for your intended uses and applications. Such application-specific analysis must at least include testing to determine suitability from a technical as well as health, safety, and environmental standpoints. It is also not recommended that the product be used for any described purpose without verification by the user of compliance with all applicable laws, regulations and registration requirements. No warranty is made as to the accuracy of any data or statements contained herein other than the chemical specifications guaranteed in this Product Data Sheet. While this product is furnished in good faith, this product is provided to you without any representation or warranty, expressed or implied, as to condition, utility, merchantability, completeness, suitability or fitness for any particular purpose or use or any other matter or thing whatsoever and without recourse against SQM in any event. Without limiting the generality of the foregoing, SQM specifically disclaims any responsibility or liability relating to the use of this product and shall not in any event, be liable for any special, incidental or consequential damages arising from such use.



PRODUCT DATA SHEET - LITHIUM PRODUCTS

LITHIUM CARBONATE

Technical Grade - Crystallized

CAS N° 554-13-2

GENERAL DESCRIPTION	
CHEMICAL FORMULA	Li_2CO_3
APPEARANCE	White Crystals
INTERNAL CODE	CRY9000.00

CHEMICAL SPECIFICATIONS			
GUARANTEED			
PURITY	Li_2CO_3	%	99 min
CHLORIDE	Cl	%	0.02 max
SULPHATE	SO_4	%	0.05 max
SODIUM	Na	%	0.1 max
POTASSIUM	K	%	0.05 max
CALCIUM	Ca	%	0.04 max
MAGNESIUM	Mg	%	0.01 max
IRON	as Fe_2O_3	%	0.003 max
BORON	B	ppm	30 max
MOISTURE	H_2O	%	0.2 max
INSOLUBLES	in acid	%	0.02 max
LOSS ON IGNITION	LOI	%	0.7 max

GUARANTEED SIEVE ANALYSIS			
(CUMULATIVE %)			
US Standard Sieve	Tyler	mm	
+20	+20	0.84	1.5% max
+200	+200	0.07	55% min

PHYSICAL PROPERTIES - TYPICAL	
TAP DENSITY	g/cm^3 > 0.88
FREE FALL DENSITY	g/cm^3 > 0.67

STANDARD PACKAGING
- 25 kg multilayer paper bag with PE liner.
- 50 lb multilayer paper bag with PE liner.
- 1000 kg woven polypropylene maxibag.
- 1200 kg woven polypropylene maxibag.

Before using this product, please read the product specifications, the material safety data sheet and any other applicable product literature. This product cannot be used in any process or application related to nuclear fusion, including isotope enrichment. The conditions of your use and application of our products, technical assistance and information (whether verbal, written, or by way of production evaluations), including any suggested formulations and recommendations, are beyond our control. Therefore, it is imperative that you test our products, technical assistance and information to determine to your own satisfaction whether they are suitable for your intended uses and applications. Such application-specific analysis must at least include testing to determine suitability from a technical as well as health, safety, and environmental standpoints. It is also not recommended that the product be used for any described purpose without verification by the user of compliance with all applicable laws, regulations and registration requirements. No warranty is made as to the accuracy of any data or statements contained herein other than the chemical specifications guaranteed in this Product Data Sheet. While this product is furnished in good faith, this product is provided to you without any representation or warranty, expressed or implied, as to condition, utility, merchantability, completeness, suitability or fitness for any particular purpose or use or any other matter or thing whatsoever and without recourse against SQM in any event. Without limiting the generality of the foregoing, SQM specifically disclaims any responsibility or liability relating to the use of this product and shall not in any event, be liable for any special, incidental or consequential damages arising from such use.

PRODUCT DATA SHEET - LITHIUM PRODUCTS

LITHIUM CARBONATE

Technical Grade - Powder

CAS N° 554-13-2

GENERAL DESCRIPTION	
CHEMICAL FORMULA	Li_2CO_3
APPEARANCE	White Powder
INTERNAL CODE	FIN9000.00

CHEMICAL SPECIFICATIONS GUARANTEED			
PURITY	Li_2CO_3	%	99 min
CHLORIDE	Cl	%	0.02 max
SULPHATE	SO_4	%	0.1 max
SODIUM	Na	%	0.1 max
POTASSIUM	K	%	0.05 max
CALCIUM	Ca	%	0.04 max
MAGNESIUM	Mg	%	0.01 max
IRON	as Fe_2O_3	%	0.003 max
BORON	B	ppm	30 max
MOISTURE	H_2O	%	0.2 max
INSOLUBLES	in acid	%	0.03 max
LOSS ON IGNITION	LOI	%	0.7 max

GUARANTEED SIEVE ANALYSIS (CUMULATIVE %)			
US Standard Sieve	Tyler	mm	
+60	+60	0.25	0%
+200	+200	0.07	12% max

PHYSICAL PROPERTIES - TYPICAL	
TAP DENSITY	g/cm^3 > 0.45

STANDARD PACKAGING
- 10 kg multilayer paper bag with PE liner.
- 500 kg woven polypropylene maxibag with inner polyethylene bag.

Before using this product, please read the product specifications, the material safety data sheet and any other applicable product literature. This product cannot be used in any process or application related to nuclear fusion, including isotope enrichment. The conditions of your use and application of our products, technical assistance and information (whether verbal, written, or by way of production evaluations), including any suggested formulations and recommendations, are beyond our control. Therefore, it is imperative that you test our products, technical assistance and information to determine to your own satisfaction whether they are suitable for your intended uses and applications. Such application-specific analysis must at least include testing to determine suitability from a technical as well as health, safety, and environmental standpoints. It is also not recommended that the product be used for any described purpose without verification by the user of compliance with all applicable laws, regulations and registration requirements. No warranty is made as to the accuracy of any data or statements contained herein other than the chemical specifications guaranteed in this Product Data Sheet. While this product is furnished in good faith, this product is provided to you without any representation or warranty, expressed or implied, as to condition, utility, merchantability, completeness, suitability or fitness for any particular purpose or use or any other matter or thing whatsoever and without recourse against SQM in any event. Without limiting the generality of the foregoing, SQM specifically disclaims any responsibility or liability relating to the use of this product and shall not in any event, be liable for any special, incidental or consequential damages arising from such use.

PRODUCT DATA SHEET - LITHIUM PRODUCTS

LITHIUM CARBONATE

Technical Grade - Powder

CAS N° 554-13-2

GENERAL DESCRIPTION	
CHEMICAL FORMULA	Li_2CO_3
APPEARANCE	White Powder
INTERNAL CODE	FIN9001.99

CHEMICAL SPECIFICATIONS	
GUARANTEED	
PURITY Li_2CO_3 %	99 min
CHLORIDE Cl %	0.02 max
SULPHATE SO_4 %	0.1 max
SODIUM Na %	0.1 max
POTASSIUM K %	0.05 max
CALCIUM Ca %	0.04 max
MAGNESIUM Mg %	0.01 max
IRON as Fe_2O_3 %	0.003 max
BORON B ppm	30 max
MOISTURE H_2O %	0.1 max
INSOLUBLES in acid %	0.02 max
LOSS ON IGNITION LOI %	0.6 max

GUARANTEED SIEVE ANALYSIS (CUMULATIVE %)				
US Standard Sieve	Tyler	mm		
+100	+100	0.15	1.5%	max
+200	+200	0.07	20%	max

PHYSICAL PROPERTIES - TYPICAL	
TAP DENSITY g/cm^3	> 0.5

STANDARD PACKAGING
- 20 kg woven polypropylene bag.
- 600 kg woven polypropylene maxibag.

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PRODUCT DATA SHEET - LITHIUM PRODUCTS

LITHIUM CARBONATE

Technical Grade - Powder

CAS N° 554-13-2

GENERAL DESCRIPTION

CHEMICAL FORMULA

Li_2CO_3

APPEARANCE

White Fine Powder

INTERNAL CODE

FIN 9500.00

CHEMICAL SPECIFICATIONS

GUARANTEED

LITHIUM CARBONATE	Li_2CO_3	wt%	99.0	min
CHLORIDE	Cl	%	0.020	max
SULPHATE	SO_4	%	0.10	max
SODIUM	Na	%	0.10	max
POTASSIUM	K	%	0.050	max
CALCIUM	Ca	%	0.040	max
MAGNESIUM	Mg	%	0.010	max
IRON	as Fe_2O_3	%	0.003	max
BORON	B	ppm	30	max
MOISTURE	H_2O	%	0.20	max
INSOLUBLES	in acid	%	0.03	max
LOSS ON IGNITION (550°C)	LOI	%	0.70	max
TOTAL MAGNETIC IMPURITIES	MMP	ppb	300	max

PHYSICAL SPECIFICATIONS

GUARANTEED PARTICLE SIZE

D50	Median	μm	9.1 min - 15.0 max
D90		μm	60 max
D100		μm	400 max
> 250 μm		%	0.0 max

STANDARD PACKAGING

- 20 kg multilayer paper bag with PE inner layer; 40 bags per pallet, stretch wrapped.
- 500 kg woven polypropylene big bag with inner polyethylene bag; stack of 2 big bags.

REMARKS

Lot size is 24 MT. Guarantee is based on a composite sample of 24 MT. This material contains ultra-fine material, and therefore some caking may occur when it is not duly handled and stored. To minimize the risk of caking, we recommend: (1) to store the material in closed and dry areas, not exposed to sunlight or a heating source, (2) to stack maximum two pallets, and ideally do not stack the pallets, (3) to keep the original packing (bags+shrinkwrap) until the product will be used, without exposing the product to humidity, (4) to consume the material preferably before twelve months from its production date, indicated in the lot number from the third and up to the eighth digit (yy-mm-dd).

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PRODUCT DATA SHEET - LITHIUM PRODUCTS

LITHIUM CARBONATE

Technical Grade - Micronized

CAS N° 554-13-2

GENERAL DESCRIPTION	
CHEMICAL FORMULA	Li ₂ CO ₃
APPEARANCE	White Fine Powder
INTERNAL CODE	MIC8900.00

CHEMICAL SPECIFICATIONS				
GUARANTEED				
PURITY	Li ₂ CO ₃	%	99.0	min
CHLORIDE	Cl	%	0.02	max
SULPHATE	SO ₄	%	0.1	max
SODIUM	Na	%	0.1	max
POTASSIUM	K	%	0.05	max
CALCIUM	Ca	%	0.04	max
MAGNESIUM	Mg	%	0.01	max
IRON	as Fe ₂ O ₃	%	0.003	max
BORON	B	ppm	30	max
MOISTURE	H ₂ O	%	0.2	max
INSOLUBLES	in acid	%	0.03	max
LOSS ON IGNITION (550°C)	LOI	%	0.7	max

GUARANTEED PARTICLE SIZE				
Parameter	Description			
D50	Median	µm	9	max
D90	Size @ 90%	µm	20	max
D100	Size @ 100%	µm	40	max

TYPICAL PHYSICAL PROPERTIES			
TAP DENSITY	g/cm ³	0.70	min
		1.0	max

STANDARD PACKAGING
- 20 kg multilayer paper bag with PE liner.
- 600 kg woven polypropylene maxibag with inner polyethylene bag

REMARKS
Having this material in an ultra-fine particle size, some caking may occur when it is not duly handled and stored. To minimize the risk of caking, we recommend: (1) to store the material in closed and dry areas, not exposed to sunlight or a heating source, (2) stack maximum two pallets, and ideally do not stack the pallets, (3) keep the original packing (bags+shrinkwrap) until the product will be used, without exposing the product to humidity, (4) consume the material before twelve months from its production date, indicated by the first four digits of the lot number.

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PRODUCT DATA SHEET - LITHIUM PRODUCTS

LITHIUM CARBONATE

Battery Grade

CAS N° 554-13-2

GENERAL DESCRIPTION

CHEMICAL FORMULA	Li_2CO_3
APPEARANCE	White Fine Powder
INTERNAL CODE	MIC 9000.00

CHEMICAL SPECIFICATIONS

GUARANTEED

LITHIUM CARBONATE	Li_2CO_3	wt%	99.2	min
CHLORIDE	Cl	%	0.01	max
SULPHATE	SO_4	%	0.03	max
SODIUM	Na	%	0.06	max
POTASSIUM	K	%	0.005	max
CALCIUM	Ca	%	0.01	max
MAGNESIUM	Mg	%	0.01	max
IRON	Fe	%	0.001	max
NICKEL	Ni	%	0.001	max
COPPER	Cu	%	0.001	max
LEAD	Pb	%	0.001	max
ALUMINUM	Al	%	0.001	max
CHROMIUM	Cr	%	0.001	max
ZINC	Zn	%	0.001	max
MOISTURE	H_2O	%	0.2	max
INSOLUBLES	in acid	%	0.01	max
LOSS ON IGNITION (550°C)	LOI	%	0.5	max
TOTAL MAGNETIC IMPURITIES	MMP	ppb	300	max

PHYSICAL SPECIFICATIONS

GUARANTEED PARTICLE SIZE

D50	Median	μm	9	max
D90	Size @ 90%	μm	20	max
D100	Size @ 100%	μm	40	max

STANDARD PACKAGING

- 20 kg multilayer paper bag with PE inner layer; 40 bags per pallet, stretch wrapped.
- 600 kg woven polypropylene big bag with inner polyethylene bag; stack of 2 big bags.

REMARKS

This material contains ultra-fine material, and therefore some caking may occur when it is not duly handled and stored. To minimize the risk of caking, we recommend: (1) to store the material in closed and dry areas, not exposed to sunlight or a heating source, (2) stack maximum two pallets, and ideally do not stack the pallets, (3) keep the original packing (bags+shrinkwrap) until the product will be used, without exposing the product to humidity, (4) consume the material before twelve months from its production date, indicated in the lot number from the third and up to the eighth digit (yy-mm-dd).

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PRODUCT DATA SHEET - LITHIUM PRODUCTS

**LITHIUM HYDROXIDE
MONOHYDRATE**

Industrial Grade

CAS N° 1310-66-3

GENERAL DESCRIPTION	
CHEMICAL FORMULA	LiOH × H ₂ O
APPEARANCE	White Crystals
INTERNAL CODE	LHI

CHEMICAL SPECIFICATIONS				
GUARANTEED				
LITHIUM HYDROXIDE	LiOH	wt%		56.5 min
CHLORIDE	Cl	wt%		0.005 max
SULPHATE	SO ₄	wt%		0.03 max
CALCIUM OXIDE	CaO	wt%		0.03 max
POTASSIUM	K	wt%		0.01 max
SODIUM	Na	wt%		0.03 max
CARBON DIOXIDE	CO ₂	wt%		0.35 max
IRON OXIDE	Fe ₂ O ₃	wt%		0.0015 max
INSOLUBLES	in HCl	wt%	0.008 max	

PHYSICAL PROPERTIES	
MOLECULAR WEIGHT	41.96
TYPICAL BULK DENSITY	g/cm ³ ≈ 0.9
WATER SOLUBILITY	g /100 g H ₂ O @10°C 22.3 @80°C 26.8

STANDARD PACKAGING
- 25 kg or 50 lb polyethylene bag or multilayer paper bag with PE liner, 35 bags per pallet, stretch wrapped.
- 250 kg woven polypropylene maxibag with inner polyethylene bag
- 1000 lb woven polypropylene maxibag with inner polyethylene bag

REMARKS
Lithium hydroxide monohydrate LiOH×H ₂ O may tend to agglomerate if it is exposed at temperatures over 40°C for extended periods, because the bonded water molecules tend to be lost as free water, causing some dissolution and-re-crystallization of molecules of the product. This phenomena occurs in variable extent depending on transport/storage conditions and promotes lack of fully free-flowing condition.

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PRODUCT DATA SHEET - LITHIUM PRODUCTS

**LITHIUM HYDROXIDE
MONOHYDRATE**

Industrial Grade Low Dust - Wet

CAS N° 1310-66-3

GENERAL DESCRIPTION	
CHEMICAL FORMULA	LiOH × H ₂ O
APPEARANCE	White Crystals
INTERNAL CODE	LHI-W

CHEMICAL SPECIFICATIONS GUARANTEED				
LITHIUM HYDROXIDE	LiOH	wt%	55	min
CHLORIDE	Cl	wt%	0.005	max
SULPHATE	SO ₄	wt%	0.03	max
CALCIUM OXIDE	CaO	wt%	0.03	max
POTASSIUM	K	wt%	0.01	max
SODIUM	Na	wt%	0.03	max
CARBON DIOXIDE	CO ₂	wt%	0.35	max
IRON OXIDE	Fe ₂ O ₃	wt%	0.0015	max
INSOLUBLES	in HCl	wt%	0.008	max
Free Water	H ₂ O	wt%	Added up to a level that allows the achievement of guaranteed assay	

PHYSICAL PROPERTIES	
MOLECULAR WEIGHT	41.96
TYPICAL BULK DENSITY	g/cm ³ ≈ 0.9
WATER SOLUBILITY	g /100 g H ₂ O @10°C 22.3 @80°C 26.8

STANDARD PACKAGING
- 25 kg or 50 lb polyethylene bag or multilayer paper bag with PE liner, 35 bags per pallet, stretch wrapped.
- 100 kg drums with inner PE bag, 5 drums per pallet, stretch wrapped.

REMARKS
Lithium hydroxide monohydrate LiOH×H ₂ O may tend to agglomerate if it is exposed at temperatures over 40°C for extended periods, because the bonded water molecules tend to be lost as free water, causing some dissolution and-re-crystallization of molecules of the product. This phenomena occurs in variable extent depending on transport/storage conditions and promotes lack of fully free-flowing condition.

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PRODUCT DATA SHEET - LITHIUM PRODUCTS

**LITHIUM HYDROXIDE
MONOHYDRATE**

Technical Grade

CAS N° 1310-66-3

GENERAL DESCRIPTION	
CHEMICAL FORMULA	LiOH × H ₂ O
APPEARANCE	White Crystals
INTERNAL CODE	LHT

CHEMICAL SPECIFICATIONS				
GUARANTEED				
LITHIUM HYDROXIDE	LiOH	wt%	56.5	min
LITHIUM HYDROXIDE	LiOH	wt%	58.1	max
CHLORIDE	Cl	wt%	0.005	max
SULPHATE	SO ₄	wt%	0.03	max
CALCIUM OXIDE	CaO	wt%	0.03	max
POTASSIUM	K	wt%	0.01	max
SODIUM HYDROXIDE	NaOH	wt%	0.05	max
LITHIUM CARBONATE	Li ₂ CO ₃	wt%	0.5	max
IRON OXIDE	Fe ₂ O ₃	wt%	0.0015	max
INSOLUBLES	in water	wt%	0.008	max
SILICON OXIDE	SiO ₂	wt%	0.03	max
ALUMINIUM	Al	wt%	0.005	max
BORON	B	wt%	0.005	max
MERCURY	Hg	ppb	500	max
MAGNESIUM	Mg	wt%	0.005	max
OIL CONTENT		wt%	0	max

PHYSICAL PROPERTIES			
MOLECULAR WEIGHT			41.96
TYPICAL BULK DENSITY	g/cm ³		≈ 0.9
WATER SOLUBILITY	g /100 g H ₂ O		
	@10°C		22.3
	@80°C		26.8

STANDARD PACKAGING

- 25 kg or 50 lb polyethylene bag or multilayer paper bag with PE liner, 35 bags per pallet, stretch wrapped.
- 100 kg drums with inner PE bag, 5 drums per pallet, stretch wrapped.

REMARKS

Lithium hydroxide monohydrate LiOH×H₂O may tend to agglomerate if it is exposed at temperatures over 40°C for extended periods, because the bonded water molecules tend to be lost as free water, causing some dissolution and re-crystallization of molecules of the product. This phenomena occurs in variable extent depending on transport/storage conditions and promotes lack of fully free-flowing condition.

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PRODUCT DATA SHEET - LITHIUM PRODUCTS

**LITHIUM HYDROXIDE
MONOHYDRATE**

Technical Grade

CAS N° 1310-66-3

GENERAL DESCRIPTION	
CHEMICAL FORMULA	LiOH × H ₂ O
APPEARANCE	White Crystals
INTERNAL CODE	LHT (S)

CHEMICAL SPECIFICATIONS				
GUARANTEED				
LITHIUM HYDROXIDE	LiOH	wt%	56.5	min
LITHIUM HYDROXIDE	LiOH	wt%	58.1	max
CHLORIDE	Cl	wt%	0.005	max
SULPHATE	SO ₄	wt%	0.03	max
CALCIUM OXIDE	CaO	wt%	0.03	max
POTASSIUM	K	wt%	0.01	max
SODIUM HYDROXIDE	NaOH	wt%	0.05	max
LITHIUM CARBONATE	Li ₂ CO ₃	wt%	0.5	max
IRON OXIDE	Fe ₂ O ₃	wt%	0.0015	max
INSOLUBLES	in water	wt%	0.008	max
SILICON OXIDE	SiO ₂	wt%	0.03	max
ALUMINIUM	Al	wt%	0.005	max
BORON	B	wt%	0.005	max
MERCURY	Hg	ppb	500	max
MAGNESIUM	Mg	wt%	0.005	max
OIL CONTENT		wt%	0	max

PHYSICAL PROPERTIES	
MOLECULAR WEIGHT	41.96
TYPICAL BULK DENSITY	g/cm ³ ≈ 0.9
WATER SOLUBILITY	g / 100 g H ₂ O
	@10°C 22.3 @80°C 26.8

STANDARD PACKAGING

- 25 kg or 50 lb polyethylene bag or multilayer paper bag with PE liner, 35 bags per pallet, stretch wrapped.
- 100 kg drums with inner PE bag, 5 drums per pallet, stretch wrapped.

REMARKS

Lithium hydroxide monohydrate LiOH×H₂O may tend to agglomerate if it is exposed at temperatures over 40°C for extended periods, because the bonded water molecules tend to be lost as free water, causing some dissolution and re-crystallization of molecules of the product. This phenomena occurs in variable extent depending on transport/storage conditions and promotes lack of fully free-flowing condition.

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PRODUCT DATA SHEET - LITHIUM PRODUCTS

LITHIUM HYDROXIDE MONOHYDRATE

Technical Battery Grade

CAS N° 1310-66-3

GENERAL DESCRIPTION	
CHEMICAL FORMULA	$\text{LiOH} \times \text{H}_2\text{O}$
APPEARANCE	White Crystals
INTERNAL CODE	LHT-B

CHEMICAL SPECIFICATIONS			
GUARANTEED			
LITHIUM HYDROXIDE	LiOH	wt%	56.5 min
CHLORIDE	Cl	wt%	0.005 max
SULPHATE	SO ₄	wt%	0.03 max
CALCIUM OXIDE	CaO	wt%	0.01 max
POTASSIUM	K	wt%	0.01 max
SODIUM	Na	wt%	0.01 max
MAGNESIUM	Mg	ppm	100 max
IRON	Fe	ppm	10 max
CHROMIUM	Cr	ppm	10 max
COPPER	Cu	ppm	10 max
ZINC	Zn	ppm	10 max
CARBON DIOXIDE	CO ₂	wt%	0.35 max
INSOLUBLES	in HCl	wt%	0.008 max

PHYSICAL PROPERTIES		
TYPICAL BULK DENSITY	g/cm ³	approx. 0.9
WATER SOLUBILITY ¹	g /100 g H ₂ O	
	@10°C	22.3
	@80°C	26.8

¹ Reference value taken from literature

STANDARD PACKAGING
- 25 kg or 50 lb polyethylene bag or multilayer paper bag with PE liner, 40 bags per pallet, stretch wrapped.
- 500 kg woven polypropylene maxibag with inner polyethylene bag

REMARKS
Lithium hydroxide monohydrate $\text{LiOH} \times \text{H}_2\text{O}$ may tend to agglomerate if it is exposed at temperatures over 40°C for extended periods, because the bonded water molecules tend to be lost as free water, causing some dissolution and re-crystallization of molecules of the product. This phenomena occurs in variable extent depending on transport/storage conditions and promotes lack of fully free-flowing condition.

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PRODUCT DATA SHEET - LITHIUM PRODUCTS

**LITHIUM HYDROXIDE
MONOHYDRATE**

Technical Grade Low Dust - Oil

CAS N° 1310-66-3

GENERAL DESCRIPTION	
CHEMICAL FORMULA	LiOH × H ₂ O
APPEARANCE	White Crystals
INTERNAL CODE	LHT-O(S)

CHEMICAL SPECIFICATIONS				
GUARANTEED (*)				
LITHIUM HYDROXIDE	LiOH	wt%	56.5	min
LITHIUM HYDROXIDE	LiOH	wt%	58.1	max
CHLORIDE	Cl	wt%	0.005	max
SULPHATE	SO ₄	wt%	0.03	max
CALCIUM OXIDE	CaO	wt%	0.03	max
POTASSIUM	K	wt%	0.01	max
SODIUM HYDROXIDE	NaOH	wt%	0.05	max
LITHIUM CARBONATE	Li ₂ CO ₃	wt%	0.5	max
IRON OXIDE	Fe ₂ O ₃	wt%	0.0015	max
INSOLUBLES	in water	wt%	0.008	max
SILICON OXIDE	SiO ₂	wt%	0.03	max
ALUMINIUM	Al	wt%	0.005	max
BORON	B	wt%	0.005	max
MERCURY	Hg	ppb	500	max
MAGNESIUM	Mg	wt%	0.005	max
OIL CONTENT		wt%	1.00	max
(*) Analyzed before addition of dust suppressant oil				

PHYSICAL PROPERTIES		
MOLECULAR WEIGHT		41.96
TYPICAL BULK DENSITY	g/cm ³	≈ 0.9
WATER SOLUBILITY	g /100 g H ₂ O	
	@10°C	22.3
	@80°C	26.8

STANDARD PACKAGING
- 25 kg or 50 lb polyethylene bag or multilayer paper bag with PE liner, 35 bags per pallet, stretch wrapped.
- 100 kg drums with inner PE bag, 5 drums per pallet, stretch wrapped.

REMARKS
Lithium hydroxide monohydrate LiOH×H ₂ O may tend to agglomerate if it is exposed at temperatures over 40°C for extended periods, because the bonded water molecules tend to be lost as free water, causing some dissolution and re-crystallization of molecules of the product. This phenomena occurs in variable extent depending on transport/storage conditions and promotes lack of fully free-flowing condition.

Before using this product, please read the product specifications, the material safety data sheet and any other applicable product literature. This product cannot be used in any process or application related to nuclear fusion, including isotope enrichment. The conditions of your use and application of our products, technical assistance and information (whether verbal, written, or by way of production evaluations), including any suggested formulations and recommendations, are beyond our control. Therefore, it is imperative that you test our products, technical assistance and information to determine to your own satisfaction whether they are suitable for your intended uses and applications. Such application-specific analysis must at least include testing to determine suitability from a technical as well as health, safety, and environmental standpoints. It is also not recommended that the product be used for any described purpose without verification by the user of compliance with all applicable laws, regulations and registration requirements. No warranty is made as to the accuracy of any data or statements contained herein other than the chemical specifications guaranteed in this Product Data Sheet. While this product is furnished in good faith, this product is provided to you without any representation or warranty, expressed or implied, as to condition, utility, merchantability, completeness, suitability or fitness for any particular purpose or use or any other matter or thing whatsoever and without recourse against SQM in any event. Without limiting the generality of the foregoing, SQM specifically disclaims any responsibility or liability relating to the use of this product and shall not in any event, be liable for any special, incidental or consequential damages arising from such use.

PRODUCT DATA SHEET - LITHIUM PRODUCTS

**LITHIUM HYDROXIDE
MONOHYDRATE**

Technical Grade Low Dust - Oil

CAS N° 1310-66-3

GENERAL DESCRIPTION	
CHEMICAL FORMULA	LiOH × H ₂ O
APPEARANCE	White Crystals
INTERNAL CODE	LHT-O

CHEMICAL SPECIFICATIONS			
GUARANTEED (*)			
LITHIUM HYDROXIDE	LiOH	wt%	56.5 min
LITHIUM HYDROXIDE	LiOH	wt%	58.1 max
CHLORIDE	Cl	wt%	0.005 max
SULPHATE	SO ₄	wt%	0.03 max
CALCIUM OXIDE	CaO	wt%	0.03 max
POTASSIUM	K	wt%	0.01 max
SODIUM HYDROXIDE	NaOH	wt%	0.05 max
LITHIUM CARBONATE	Li ₂ CO ₃	wt%	0.5 max
IRON OXIDE	Fe ₂ O ₃	wt%	0.0015 max
INSOLUBLES	in water	wt%	0.008 max
SILICON OXIDE	SiO ₂	wt%	0.03 max
ALUMINIUM	Al	wt%	0.005 max
BORON	B	wt%	0.005 max
MERCURY	Hg	ppb	500 max
MAGNESIUM	Mg	wt%	0.005 max
OIL CONTENT		wt%	1.00 max
(*) Analyzed before addition of dust suppressant oil			

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