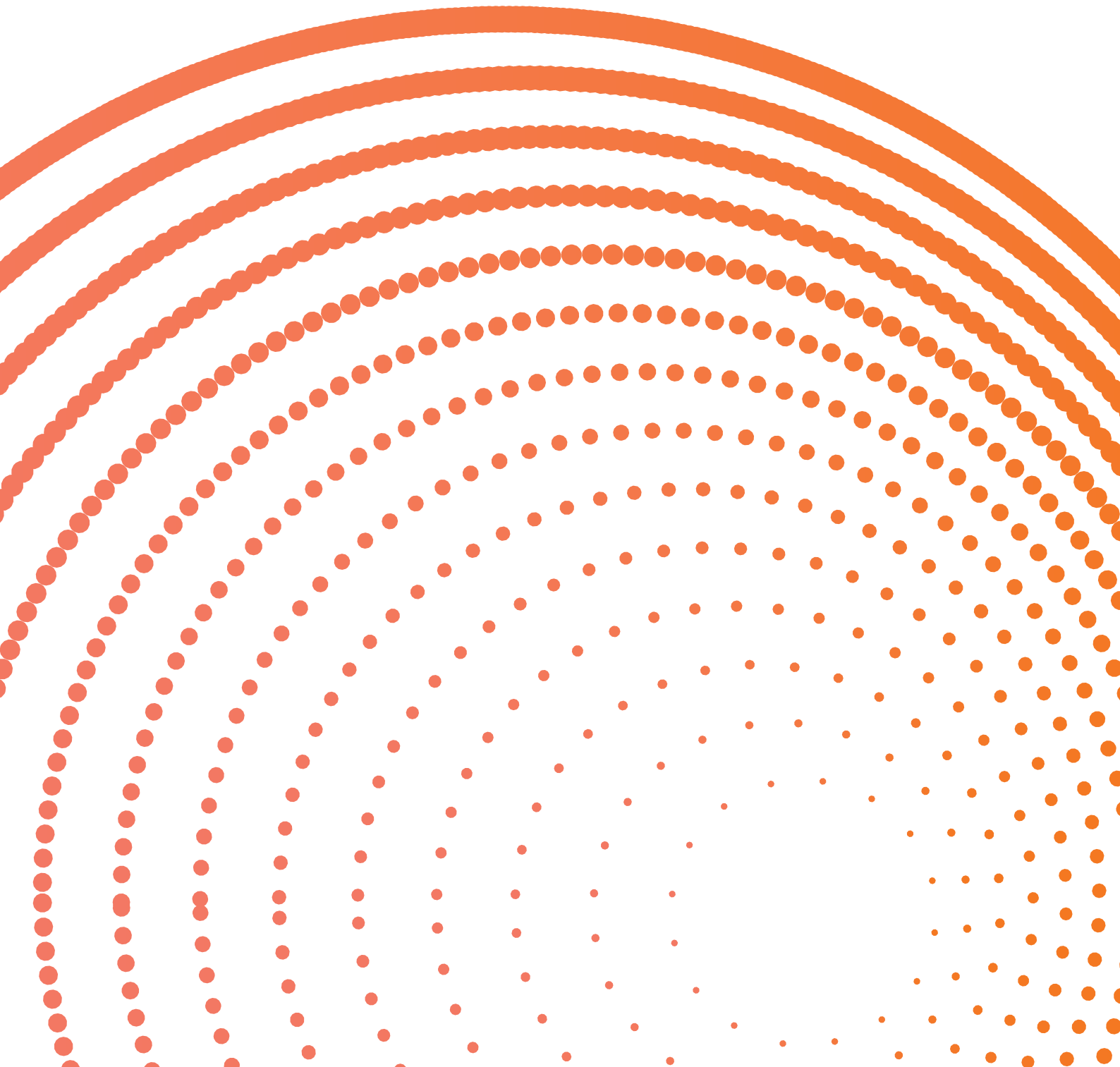


# Ball Milling Technical Specifications



Cast Balls

Milling



**Chemistry (Weight %)**

Product Code	Cr		Mn		Si		C		Mo	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
MCCR10	10	12	0.3	1.5	0.3	2.0	2.0	3.5	0.00	0.05
MCCR12	12	15	0.3	1.5	0.3	1.3	2.0	3.5	0.00	0.05
MCCR15	15	18	0.3	1.5	0.3	1.3	2.0	3.5	0.00	0.05
MCCR18	18	21	0.3	1.5	0.3	1.3	2.0	3.5	0.00	0.05
MCCR21	21	24	0.3	1.5	0.3	1.3	2.0	3.5	0.00	0.05
MCCR24	24	27	0.3	1.5	0.3	1.3	2.0	3.5	0.00	0.05
MCCR27	27	30	0.3	1.5	0.3	1.3	2.0	3.5	0.00	0.05
MCCR30	30	32	0.3	1.5	0.3	1.3	2.0	3.5	0.00	0.05
S Max (0.1)					P Max (0.1)					

**Nominal Ball Diameter in (mm) & Mass in (g)**

**Ovality**

(mm)	Min. (kg)	Max. (kg)	(mm)	Min. (kg)	Max. (kg)	(mm)	Max.	(mm)	Max.
15	0.013	0.015	50	0.469	0.568	15	7.5	50	5.5
17	0.019	0.022	60	0.811	0.982	17	7.5	60	5.5
20	0.030	0.036	70	1.288	1.559	20	7.5	70	5.5
25	0.059	0.071	80	1.923	2.238	25	7.0	80	5.5
30	0.101	0.123	90	2.738	3.314	30	6.5	90	5.5
50	0.240	0.291	n/a	n/a	n/a	40	6.0	n/a	n/a

**HRC**

Ball Diameter	Min	Max
High Cast Chrome Ball	58	69

The above is intended as a guide only. Individual ball hardness readings may fall outside the range listed above.

## Product Specifications

### Chemistry

Chemistries must comply with the nominated technical specification provided by the supplier. Typically, chemistries should comply with the table on the previous page.

### Weight

Ball weights are typically within the minimum and maximum ranges on the previous page.

### Hardness

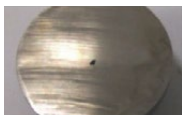
Hardness shall comply with the suppliers' technical specification. Typically, hardness shall fall into the ranges on the previous page.

### Ovality

Ovality should comply with the suppliers' technical specification. Typically ovality shall comply with the maximums on the previous page.

### Shrinkage And Porosity

- a. Centre shrinkage cavities not greater than 10% of the radius of the ball are permissible. Shrinkage cavities within the body of the ball are not permissible. Photos following provide typical examples:
- b. Porosity is not permissible. The following photos show typical examples:



Cavity complies with Certificate of Conformance (COF) testing requirements.



Cavity does not comply with COF testing requirements.



Porosity does not comply with COF testing requirements.

### Surface Defects and Irregularities

- a. Surface defects should comply with the suppliers' specifications. The following photos provide typical acceptance and non-compliance examples:

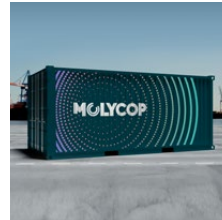


Acceptable surface irregularities..



Unacceptable surface irregularities..

## Packaging Options



### Bulk

Balls can be transported in bulk open top trucks, open top rail cars, or in standard 20ft containers.



### Bags

Balls can be supplied in polypropylene bags which have secure bag straps to reduce time and effort in loading and unloading. While bags are treated to resist UV rays, bags should be protected from direct sunlight to maximize shelf life.



### Drums

Recycled drums can also be supplied. Drums are more efficient for some modes of transportation and can also be delivered on wooden pallets.



If you're interested in exploring Molycop's products and services, we're here to help.



[molycop.com](https://molycop.com)

All Rights Reserved 2023

This publication has been prepared by Moly-Cop Global Holdings Inc. on its behalf and as agent for each of its related companies. All information contained in this publication is subject to change, replacement and/or modification at any time, without notice. Moly-Cop Global Holdings Inc. expressly disclaims all warranties, whether expressed or implied, oral or written, including any implied warranty of merchantability, fitness for a particular purpose, non-infringement, or other warranties arising from course of dealing, course of performance, usage of trade, or otherwise. The information is provided on an "as is" and "as available" basis. The information is provided for informational purposes only and Moly-Cop Global Holdings Inc. does not warrant the accuracy of any information or that the information will be error-free. Users of this publication are responsible to verify the accuracy and completeness of all information. Moly-Cop Global Holdings Inc. shall have no liability for any losses or damages of any kind arising out of or resulting from this publication, its contents and any use thereof.

Photographs shown are representative only of typical applications and are current as of August, 2023. This publication is not an offer to trade and shall not form any part of the trading terms in any transaction.

Reproduction in whole or in part, in any form or medium without the express written permission of Moly-Cop Global Holdings Inc. is prohibited. All images and content, trademarks or registered trademarks are the property of Moly-Cop Global Holdings Inc.

