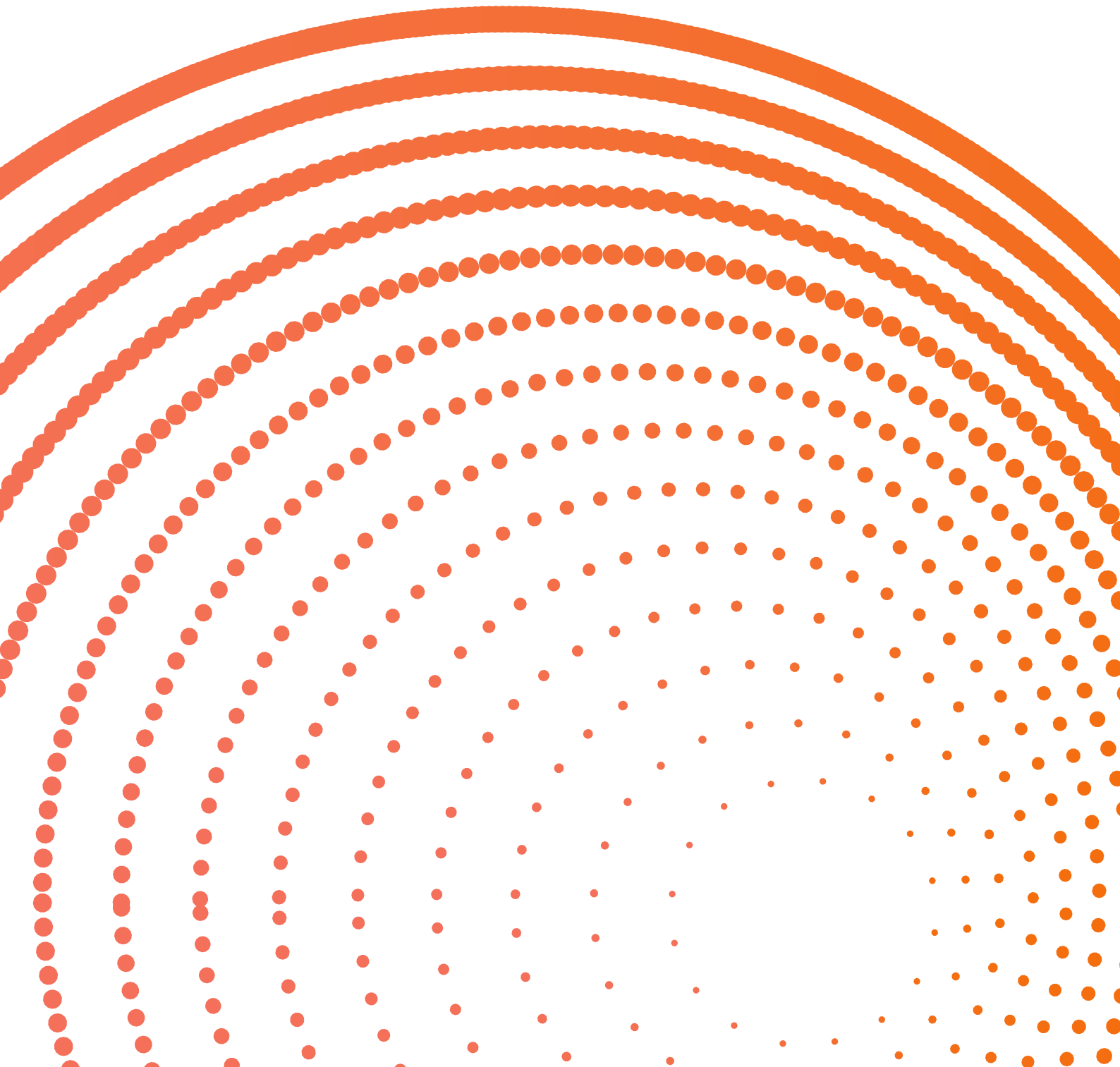


Cast High Chrome Balls Technical Specifications



Grinding Media

Milling





Chemistry (Weight %)

| Product Code | Cr | | Mn | | Si | | C | | Mo | |
|--------------|------|------|------|------|-------------|------|------|------|------|------|
| | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. |
| MCCR 10 | 9 | 11 | 0.3 | 1.5 | 0.3 | 1.3 | 2.0 | 3.5 | 0.00 | 0.15 |
| MCCR 12 | 11 | 13 | 0.3 | 1.5 | 0.3 | 1.3 | 2.0 | 3.5 | 0.00 | 0.15 |
| MCCR 15 | 14 | 16 | 0.3 | 1.5 | 0.3 | 1.3 | 2.0 | 3.5 | 0.00 | 0.15 |
| MCCR 18 | 17 | 19 | 0.3 | 1.5 | 0.3 | 1.3 | 2.0 | 3.5 | 0.00 | 0.15 |
| MCCR 21 | 20 | 22 | 0.3 | 1.5 | 0.3 | 1.3 | 2.0 | 3.5 | 0.00 | 0.15 |
| MCCR 24 | 23 | 25 | 0.3 | 1.5 | 0.3 | 1.3 | 2.0 | 3.5 | 0.00 | 0.15 |
| MCCR 27 | 26 | 28 | 0.3 | 1.5 | 0.3 | 1.3 | 2.0 | 3.5 | 0.00 | 0.15 |
| MCCR 30 | 29 | 31 | 0.3 | 1.5 | 0.3 | 1.3 | 2.0 | 3.5 | 0.00 | 0.15 |
| S Max (0.1) | | | | | P Max (0.1) | | | | | |

| Diameter (mm) | Mass | |
|------------------|-----------|-----------|
| | Min. (kg) | Max. (kg) |
| 15 | 0.013 | 0.015 |
| 17 | 0.019 | 0.022 |
| 20 | 0.030 | 0.036 |
| 25 | 0.059 | 0.071 |
| 30 | 0.101 | 0.123 |
| 40 | 0.240 | 0.291 |
| 50 | 0.469 | 0.568 |
| 60 | 0.811 | 0.982 |
| 65 | 1.016 | 1.236 |
| 70 | 1.288 | 1.559 |
| 80 | 1.923 | 2.238 |
| 90 | 2.738 | 3.314 |

| Hardness, HRc | | |
|--------------------|-----|-----|
| Ball Diameter (mm) | Min | Max |
| 15 - 90 | 58 | 69 |

Technical Services

Pulp Chemistry Surveys

- Monitor plant response to the grinding media choice
- Measure pH, Eh, dissolved oxygen, conductivity and temperature profiles
- Quarterly or bi-annual review to provide metallurgical feedback.

Alloy Scoping Tests

- Assist to select the optimal chrome specific to the ore type
- Our laboratories can perform grindability and flotation tests
- Ore mineralogy, hardness, abrasiveness, and other plant conditions considered.

Reagent Optimization

- Molycop Chemicals team can review current reagent regime
- Laboratory tests to investigate optimal addition rates
- Reagent recommendations specific to optimal grinding media selected.

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

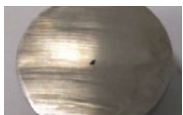
Hardness shall comply with the suppliers' technical specification. Typically, hardness shall fall into the ranges on the previous page.

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.



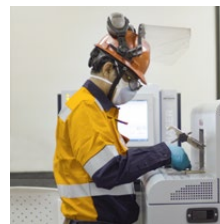
Bags

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.



Quality Assurance

Every batch produced is inspected to measure chemistry, hardness, packaging, etc. Only after approval will each batch be allowed to ship to the site. These reports are readily available and show our commitment to the customer to provide the highest standard of quality that is associated with Molycop.



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



molycop.com

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