# Indian Minerals Yearbook 2020

## (Part- III : MINERAL REVIEWS)

## 59th Edition

# BAUXITE

## (ADVANCE RELEASE)

**GOVERNMENT OF INDIA**
**MINISTRY OF MINES**
**INDIAN BUREAU OF MINES**

Indira Bhavan, Civil Lines,
NAGPUR – 440 001

PHONE/FAX NO. (0712) 2565471
PBX: (0712) 2562649, 2560544, 2560648
E-MAIL: cme@ibm.gov.in
Website: www.ibm.gov.in

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# 3 Bauxite

Bauxite is basically an aluminous rock that contains hydrated aluminium oxide as main constituent and iron oxide, silica & titania as minor constituents present in varying proportions. Hydrated aluminium oxides present in the bauxite ore are diaspore and boehmite, $Al_2O_3.H_2O$ ($Al_2O_3$:85%; Al:45%); gibbsite or hydrargillite, $Al_2O_3.3H_2O$ ($Al_2O_3$: 65.4%; Al:34.6%), and bauxite (containing colloidal alumina hydrogel), $Al_2O_3.2H_2O$ ($Al_2O_3$:73.9%; Al:39.1%). The iron oxide in bauxite ore is present as haematite or goethite; silica as clay; and free quartz & titania as leucoxene or rutile. Bauxite is the principal ore of aluminium which is one of the most important non-ferrous metals used in the modern industry. It is also an essential ore for Refractory and Chemical industries. The country has 3,896 million tonnes of resources of bauxite which is sufficient to meet both domestic and export demands.

## RESERVES/RESOURCES

Reserves/Resources of bauxite in the country as on 1.4.2015, as per NMI database, based on UNFC system have been placed at 3,896 million tonnes. These resources include 656 million tonnes Reserves and 3,240 million tonnes Remaining Resources. By grades, about 77% resources are of Metallurgical grade. The resources of Refractory and Chemical grades are limited and together account for about 4%. By States, Odisha alone accounts for 51% of country's resources of bauxite followed by Andhra Pradesh (16%), Gujarat (9%), Jharkhand (6%), Maharashtra (5%) and Madhya Pradesh & Chhattisgarh (4% each). Major bauxite resources are concentrated in the East Coast bauxite deposits in Odisha and Andhra Pradesh (Table-1).

## EXPLORATION & DEVELOPMENT

The exploration & development details, if any, are covered in the Review on "Exploration & Development" under "General Reviews".

## PRODUCTION & STOCKS

The production of bauxite at 21,824 thousand tonnes in 2019-20 decreased by 8% as compared to that of the previous year.

There were 138 reporting mines in 2019-20 as against 157 in the previous year. Besides, production of bauxite was reported as an associated mineral by 6 mines during the year. In all, 57 producers reported production of bauxite in 2019-20. Out of these, ten principal producers having 34 mines contributed about 88.59% of the total production.

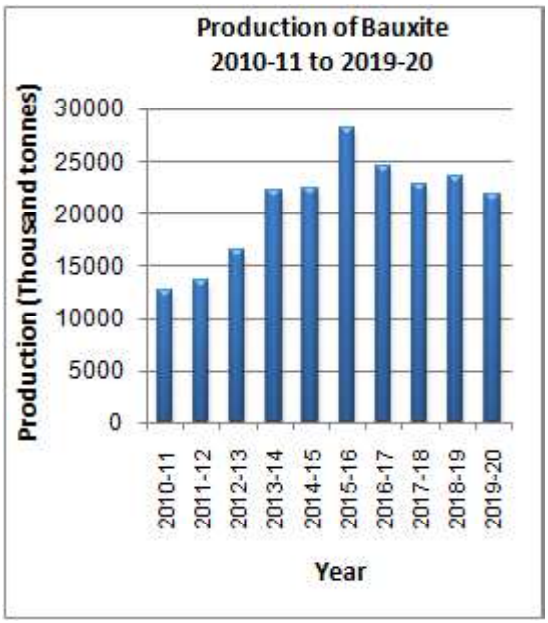
NALCO is the leading producer of bauxite and contributed 33% to the total production. The share of Public Sector mines was about 50 % of the total production in 2019-20, as against 46% in the previous year.

About 85 % of the total production of bauxite was of 40 – 45% $Al_2O_3$ grade, 10% was of Cement grade and the remaining production was reported in other grades except one grade (above 60% $Al_2O_3$ grade), during the year 2019-20.

Odisha emerged as the leading producing State accounting for about 71% of the total production during 2019-20 (Tables -2 to 5).

Mine-head closing stocks of bauxite in 2019-20 were 20,749 thousand tonnes as compared to 19,927 thousand tonnes in the previous year. About 83% of the total stock was held in Gujarat at the end of the year (Tables- 6 'A' & 6 'B').

The average daily employment of labour in bauxite mines was 5,574 in 2019-20 as against 6,093 in the previous year.



## Table – 1 : Reserves/Resources of Bauxite as on 1.4.2015
## (By Grades/States)

(In '000 tonnes)

| Grade/State | Reserves | | | | Remaining Resources | | | | | | | | Total Resources (A+B) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Proved STD111 | Probable | | Total (A) | Feasibility STD211 | Pre-feasibility | | Measured STD331 | Indicated STD332 | Inferred STD333 | Reconnaissance STD334 | Total (B) | |
| | | STD121 | STD122 | | | STD221 | STD222 | | | | | | |
| **All India : Total** | **434043** | **18599** | **203780** | **656422** | **254378** | **132633** | **382369** | **710878** | **430890** | **1209706** | **119588** | **3240442** | **3896864** |
| **By Grades** | | | | | | | | | | | | | |
| Chemical | 6844 | - | 52 | 6896 | 276 | 4584 | 411 | 3018 | 182 | 4922 | - | 13393 | 20289 |
| Refractory | 58239 | - | 8919 | 67158 | 637 | 12439 | 45808 | 7267 | 734 | 10496 | 489 | 77870 | 145027 |
| Chemical/Refractory Mixed with others | 3546 | 139 | 742 | 4426 | 1184 | 2218 | 205 | 2970 | 216 | 8484 | - | 15278 | 19704 |
| Metallurgical-1 | 266825 | 6241 | 166026 | 439093 | 186793 | 54042 | 270125 | 450564 | 292022 | 669230 | 19573 | 1942349 | 2381442 |
| Metallurgical-2 | 44140 | 501 | 655 | 45296 | 28908 | 20698 | 35585 | 105661 | 67906 | 310738 | 22520 | 592016 | 637312 |
| Metallurgical mixed | 9897 | 26 | 5157 | 15080 | 5051 | 3841 | 2518 | 53969 | - | 28799 | 17340 | 111518 | 126598 |
| Low Grade | 19779 | 11167 | 9870 | 40816 | 11769 | 4803 | 19569 | 23447 | 54837 | 119307 | 48190 | 281922 | 322738 |
| Beneficiable | - | - | - | - | - | - | - | 55096 | - | - | - | 55096 | 55096 |
| Mixed grade Excluding Chem./Refrac. | 16993 | 232 | 2000 | 19225 | 5285 | 7507 | 6824 | 6839 | 4370 | 13266 | - | 44092 | 63317 |
| Abrasive | 651 | - | 70 | 721 | 28 | 805 | 123 | 92 | 56 | 961 | 840 | 2906 | 3627 |
| Others | 3347 | 97 | 8241 | 11685 | 3856 | 143 | 1097 | 1949 | 4848 | 10997 | 1545 | 24435 | 36120 |
| Unclassified | 3545 | 196 | 2048 | 5789 | 10183 | 21540 | 105 | - | 5720 | 11039 | 8954 | 57540 | 63329 |
| Not-known | 236 | - | - | 236 | 407 | 12 | - | 5 | - | 21465 | 138 | 22027 | 22263 |
| **By States** | | | | | | | | | | | | | |
| Andhra Pradesh | - | - | - | - | - | - | - | 188971 | 138120 | 288176 | - | 615267 | 615267 |
| Bihar | - | - | - | - | - | - | - | - | - | 4114 | - | 4114 | 4114 |
| Chhattisgarh | 12537 | 218 | 2313 | 15068 | 15341 | 4570 | 46389 | 37264 | 12892 | 23483 | 18747 | 158687 | 173755 |
| Goa | 12357 | - | 1207 | 13564 | 14919 | 1097 | 10121 | 6820 | - | 8646 | - | 41603 | 55168 |
| Gujarat | 154911 | 2094 | 28229 | 185234 | 17324 | 35470 | 3925 | 28953 | 22107 | 56857 | 710 | 165347 | 350581 |
| Jammu & Kashmir | - | - | - | - | - | - | - | 1323 | 182 | 1220 | - | 2725 | 2725 |
| Jharkhand | 54471 | 219 | 8049 | 62740 | 9734 | 6154 | 15117 | 17883 | 17397 | 54106 | 55930 | 176321 | 239061 |
| Karnataka | 126 | 1123 | 3140 | 4389 | 2468 | 864 | 10 | 82 | 2220 | 35603 | - | 41246 | 45635 |
| Kerala | - | - | - | - | 29 | - | 24 | 2037 | 9284 | 2722 | - | 14096 | 14096 |
| Madhya Pradesh | 11979 | 3313 | 8299 | 23591 | 12566 | 15084 | 6013 | 11061 | 54484 | 50590 | - | 149797 | 173388 |
| Maharashtra | 11281 | 11221 | 3686 | 26188 | 15449 | 2064 | 16809 | 39197 | 8367 | 76501 | - | 158386 | 184574 |
| Odisha | 176002 | 441 | 148856 | 325269 | 166547 | 66189 | 280396 | 365938 | 155253 | 590780 | 44202 | 1669305 | 1994574 |
| Rajasthan | - | - | - | - | - | - | - | - | - | 528 | - | 528 | 528 |
| Tamil Nadu | 379 | - | - | 379 | - | 1141 | 3564 | 960 | 10084 | 8363 | - | 24112 | 24491 |
| Uttar Pradesh | - | - | - | - | - | - | - | 10390 | 500 | 8018 | - | 18908 | 18908 |

*Figures rounded off*

**Table – 2 : Principal Producers of Bauxite, 2019-20**

| Name & address of producers | Location of mine | |
|---|---|---|
| | State | District |
| National Aluminium Co. Ltd, NALCO Bhawan, P-1, Nayapalli, Bhubaneswar-751 061, Odisha. | Odisha | Koraput |
| Utkal Alumina International Ltd, J-6, Jayadev-Vihar, Bhubaneswar-751 013, Odisha. | Odisha | Raygada |
| Odisha Mining Corporation Ltd. OMC House, Unit-V, Post Box No. 34, Bhubaneswar- 751 001 Odisha . | Odisha | Koraput |
| Hindalco Industries Ltd, Ahura Centre, I[st] Floor, B-Wing, Mahakali Caves road, Andheri (East), Mumbai-400 093, Maharashtra. | Chhattisgarh<br>Jharkhand<br><br><br>Maharashtra | Surguja<br>Gumla<br>Latehar<br>Lohardaga<br>Kolhapur |
| Bharat Aluminium Co. Ltd, 8/9 Aluminium Sadan, Core-6, Scope Office Complex, 7 Lodhi Road, New Delhi- 110 003. | Chhattisgarh | Kabirdham<br>Surguja |

(Contd)

Table- 2 (Concld)

| Name & address of producer | Location of mine | |
|---|---|---|
| | State | District |
| Minerals & Minerals Ltd, Court Road, Lohardaga-835 302, Jharkhand. | Jharkhand | Lohardaga<br>Gumla |
| Gujarat Mineral Development Corporation Ltd, Khanij Bhawan, 132 Feet Ring Road, Near University Ground, Vastrapur, Ahmedabad -380 052, Gujarat. | Gujarat | Devbhoomi-Dwarka<br>Kachchh |
| Pandya Kaushik Kumar, 51/52 Giriraj Campus, Opp. Jain Temple, Bayad. Dist. Aravalli - 383 325. Gujarat. | Gujarat | Sabarkantha |
| Alimiya Imamali Saiyad, FF/16, Samruddhi Complex, Near L.I.C. Office, Himmatnagar, Dist, Sabarkantha-383 001 Gujarat. | Gujarat | Sabarkantha |
| Bhartesh Construction Company, Pro. of M/s Bhartesh Construction Co. Shop No. 34, Goaves, Hindwadi, Belgaum - 590 011 Karnataka | Maharashtra | Kolhapur |

**Table – 3 : Production of Bauxite, 2017-18 to 2019-20**
**(By States)**

(Quantity in tonnes; Value in ₹'000)

| States | 2017-18 | | 2018-19 | | 2019-20 (P) | |
|---|---|---|---|---|---|---|
| | Quantity | Value | Quantity | Value | Quantity | Value |
| **India** | **22786106** | **15784174** | **23689619** | **17836033** | **21823793** | **15785647** |
| Chhattisgarh | 2558701 | 2199036 | 1502350 | 1607698 | 1566108 | 1551681 |
| Goa | 4378 | 876 | 518 | 104 | — | — |
| Gujarat | 3559241 | 2129517 | 2185325 | 1412294 | 2074098 | 1348770 |
| Jharkhand | 2593647 | 2275062 | 2412486 | 2479551 | 1418794 | 1301660 |
| Madhya Pradesh | 593633 | 442907 | 750433 | 599967 | 685924 | 548489 |
| Maharashtra | 2028765 | 955340 | 1424865 | 736127 | 595562 | 385700 |
| Odisha | 11447741 | 7781436 | 15413642 | 11000292 | 15483307 | 10649347 |

## Table – 4 (A) : Gradewise Production of Bauxite, 2018-19
## (By Sectors/States/Districts)

(Qty in tonnes; Value in ₹'000)

| State/District | No. of Mines | For use in Alumina & Aluminium extraction : $Al_2O_3$ content | | | | | For use other than Alumina & Aluminum extraction | | | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 55—60% | 50—55% | 45—50% | 40—45% | Below 40% | Cement | Abrasive | Refractory | Chemical | Quantity | Value |
| **India** | **157(6)** | - | **20124** | **833008** | **19183558** | **364788** | **2705854** | **8851** | **216787** | **356649** | **23689619** | **17836033** |
| Public Sector | 20 | - | - | 548858 | 9944538 | 29380 | 13357 | - | 36207 | 339066 | 10911406 | 7860698 |
| Private Sector | 137(6) | - | 20124 | 284150 | 9239020 | 335408 | 2692497 | 8851 | 180580 | 17583 | 12778213 | 9975335 |
| **Chhattisgarh** | **16** | - | - | **5935** | **1496415** | - | - | - | - | - | **1502350** | **1607698** |
| Kabirdham | 3 | - | - | 140 | 461956 | - | - | - | - | - | 462096 | 633493 |
| Kondagaon | 2* | - | - | - | - | - | - | - | - | - | - | - |
| Surguja | 11 | - | - | 5795 | 1034459 | - | - | - | - | - | 1040254 | 974205 |
| **Goa** | **1** | - | - | - | - | - | **518** | - | - | - | **518** | **104** |
| South Goa | 1 | - | - | - | - | - | 518 | - | - | - | 518 | 104 |
| **Gujarat** | **78** | - | **20124** | **39045** | **99917** | **29405** | **1467161** | **8851** | **181595** | **339227** | **2185325** | **1412294** |
| Devbhoomi Dwarka | 51 | - | 20124 | 12737 | 99917 | 25 | 741082 | 8851 | 140313 | - | 1023049 | 621060 |
| Jamnagar | 1 | - | - | - | - | - | 897 | - | - | - | 897 | 449 |
| Kheda | 9 | - | - | - | - | - | 211846 | - | - | - | 211846 | 180704 |
| Kachchh | 8 | - | - | 26308 | - | 29380 | 6637 | - | 31082 | 339066 | 432473 | 388250 |
| Porbandar | 5 | - | - | - | - | - | 264396 | - | 10200 | - | 274596 | 128023 |
| Sabarkantha | 4 | - | - | - | - | - | 242303 | - | - | 161 | 242464 | 93808 |
| **Jharkhand** | **23** | - | - | **41874** | **2336199** | **14232** | - | - | **20181** | - | **2412486** | **2479551** |
| Gumla | 15 | - | - | 41874 | 1416419 | - | - | - | 20181 | - | 1478474 | 1468634 |
| Latehar | 2 | - | - | - | 3440 | - | - | - | - | - | 3440 | 3777 |
| Lohardaga | 6 | - | - | - | 916340 | 14232 | - | - | - | - | 930572 | 1007140 |
| **Madhya Pradesh** | **20(6)** | - | - | - | **132271** | **16926** | **568803** | - | **15011** | **17422** | **750433** | **599967** |
| Anuppur | 1 | - | - | - | 7141 | - | 13595 | - | - | - | 20736 | 17315 |
| Jabalpur | 2 | - | - | - | - | - | 60487 | - | 4000 | 2850 | 67337 | 52912 |
| Katni | 8(3) | - | - | - | - | 16926 | 317677 | - | 2805 | - | 337408 | 244653 |
| Rewa | 1 | - | - | - | - | - | 11680 | - | - | - | 11680 | 9437 |
| Satna | 3(3) | - | - | - | - | - | 56150 | - | 5206 | 14572 | 75928 | 68446 |
| Shahdol | 2 | - | - | - | 125130 | - | 49799 | - | - | - | 174929 | 155438 |
| Sidhi | 3 | - | - | - | - | - | 59415 | - | 3000 | - | 62415 | 51766 |
| **Maharashtra** | **14** | - | - | **236481** | **502206** | **16806** | **669372** | - | - | - | **1424865** | **736127** |
| Kolhapur | 6 | - | - | 236481 | 242665 | 16806 | 411621 | - | - | - | 907573 | 465706 |
| Raigarh | 4* | - | - | - | - | - | - | - | - | - | - | - |
| Ratnagiri | 4 | - | - | - | 259541 | - | 257751 | - | - | - | 517292 | 270421 |
| **Odisha** | **5** | - | - | **509673** | **14616550** | **287419** | - | - | - | - | **15413642** | **11000292** |
| Koraput | 3 | - | - | 509673 | 9604427 | - | - | - | - | - | 10114100 | 7189922 |
| Rayagada | 1 | - | - | - | 5012123 | 287419 | - | - | - | - | 5299542 | 3810370 |
| Sundargarh | 1* | - | - | - | - | - | - | - | - | - | - | - |

*Figures in parentheses indicate number of associated mines. * Only labour reported.*

## Table – 4 (B) : Gradewise Production of Bauxite, 2019-20 (P)
## (By Sectors/States/Districts)

(Qty in tonnes; Value in ₹'000)

| State/District | For use in Alumina & Aluminium extraction : $Al_2O_3$ content | | | | | | For use other than Alumina & Aluminum extraction | | | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. of Mines | 55—60% | 50—55% | 45—50% | 40—45% | Below 40% | Cement | Abrasive | Refractory | Chemical | Quantity | Value |
| **India** | **138(6)** | **5664** | **1653** | **119684** | **18636224** | **260580** | **2283459** | **66195** | **121330** | **329004** | **21823793** | **15785647** |
| Public Sector | 21 | - | - | 29 | 10495470 | 16031 | - | - | 32833 | 316090 | 10860453 | 7710937 |
| Private Sector | 117(6) | 5664 | 1653 | 119655 | 8140754 | 244549 | 2283459 | 66195 | 88497 | 12914 | 10963340 | 8074710 |
| **Chhattisgarh** | **15** | **-** | **-** | **29** | **1566079** | - | - | **-** | **-** | **-** | **1566108** | **1551681** |
| Kabirdham | 2 | - | - | 29 | 469800 | - | - | - | - | - | 469829 | 514512 |
| Kondagaon | 2* | - | - | - | - | - | - | - | - | - | - | - |
| Surguja | 11 | - | - | - | 1096279 | - | - | - | - | - | 1096279 | 1037169 |
| **Gujarat** | **66** | **5664** | **1653** | **-** | **67539** | **16031** | **1533420** | **66039** | **67662** | **316090** | **2074098** | **1348770** |
| Amreli | 1* | - | - | - | - | - | - | - | - | - | - | - |
| Devbhoomi Dwarka | 40 | 5664 | 1653 | - | 67539 | - | 266867 | 64669 | 38060 | - | 444452 | 307860 |
| Kheda | 10 | - | - | - | - | - | 471430 | - | - | - | 471430 | 299680 |
| Kachchh | 7 | - | - | - | - | 16031 | - | - | 22372 | 316090 | 354493 | 300462 |
| Porbandar | 4 | - | - | - | - | - | 227283 | 1370 | 7230 | - | 235883 | 140619 |
| Sabarkantha | 4 | - | - | - | - | - | 567840 | - | - | - | 567840 | 300149 |
| **Jharkhand** | **19** | - | - | **80355** | **1283236** | **11873** | **177** | **156** | **42997** | **-** | **1418794** | **1301660** |
| Gumla | 14 | - | - | 80355 | 846381 | 11873 | 177 | 156 | 42997 | - | 981939 | 911276 |
| Latehar | - | - | - | - | - | - | - | - | - | - | - | - |
| Lohardaga | 5 | - | - | - | 436855 | - | - | - | - | - | 436855 | 390384 |
| **Karnataka** | **1*** | - | - | - | - | - | - | - | - | - | - | - |
| Dakshina Kannada | 1* | - | - | - | - | - | - | - | - | - | - | - |
| **Madhya Pradesh** | **20(6)** | - | - | - | **124935** | **4213** | **533191** | **-** | **10671** | **12914** | **685924** | **548489** |
| Anuppur | 1 | - | - | - | - | - | 24368 | - | - | - | 24368 | 16545 |
| Jabalpur | 2 | - | - | - | - | - | 110030 | - | - | 1000 | 111030 | 83802 |
| Katni | 8(4) | - | - | - | - | 4213 | 274450 | - | - | - | 278663 | 193283 |
| Rewa | 1 | - | - | - | - | - | 13889 | - | - | - | 13889 | 10609 |
| Satna | 3(2) | - | - | - | - | - | 35510 | - | 5974 | 11914 | 53398 | 59160 |
| Shahdol | 2 | - | - | - | 124935 | - | 49990 | - | - | - | 174925 | 150350 |
| Sidhi | 3 | - | - | - | - | | 24954 | - | 4697 | - | 29651 | 34740 |
| **Maharashtra** | **12** | **-** | **-** | **39300** | **334264** | **5327** | **216671** | **-** | **-** | **-** | **595562** | **385700** |
| Kolhapur | 6 | - | - | 39300 | 295744 | 5327 | - | - | - | - | 340371 | 240657 |
| Raigarh | 3* | - | - | - | - | - | - | - | - | - | - | - |
| Ratnagiri | 3 | - | - | - | 38520 | - | 216671 | - | - | - | 255191 | 145043 |
| **Odisha** | **5** | **-** | **-** | **-** | **15260171** | **223136** | **-** | **-** | **-** | **-** | **15483307** | **10649347** |
| Koraput | 3 | - | - | - | 10186479 | - | - | - | - | - | 10186479 | 7124728 |
| Rayagada | 1 | - | - | - | 5073692 | 223136 | - | - | - | - | 5296828 | 3524619 |
| Sundargarh | 1* | - | - | - | - | - | - | - | - | - | - | - |

*Figures in parentheses indicate number of associated mines. * Only labour reported.*

## Table – 5 : Production of Bauxite, 2018-19 and 2019-20 (By Frequency Groups)

(Quantity in tonnes)

| Production group | No. of mines | | Production for the group | | Percentage to total production | | Cumulative percentage | |
|---|---|---|---|---|---|---|---|---|
| | 2018-19 | 2019-20 (P) | 2018-19 | 2019-20 (P) | 2018-19 | 2019-20 (P) | 2018-19 | 2019-20 (P) |
| **Total** | **156(6)** | **138(6)** | **23689619** | **21823793** | **100.00** | **100.00** | **-** | **-** |
| Up to 1000 | 60 | 52(1) | 4796 | 1542 | 0.02 | 0.01 | 0.02 | 0.01 |
| 1001 — 3000 | 10(1) | 5 | 22180 | 8250 | 0.09 | 0.04 | 0.11 | 0.05 |
| 3001 — 5000 | 4 | 4(1) | 16750 | 22871 | 0.07 | 0.10 | 0.18 | 0.15 |
| 5001 — 10000 | 5(1) | 7 | 44804 | 51716 | 0.19 | 0.24 | 0.37 | 0.39 |
| 10001 — 25000 | 17(1) | 11 | 298510 | 192388 | 1.26 | 0.88 | 1.63 | 1.27 |
| 25001 — 50000 | 9(2) | 21(3) | 427890 | 961512 | 1.81 | 4.41 | 3.44 | 5.68 |
| 50001 and above | 51(1) | 38(1) | 22874689 | 20585514 | 96.56 | 94.32 | 100.0 | 100.00 |

*Figures in parentheses indicate number of associated mines*

## Table – 6 (A) : Mine-head Closing Stocks of Bauxite, 2018-19 (P) (By States & Grades)

(Quantity in tonnes)

| State | For use in Alumina & Aluminium metal Extraction $Al_2O_3$ Content | | | | | | For use other than Alumina & Aluminium metal extraction | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 60% & above | 55— 60% | 50— 55% | 45— 50% | 40— 45% | Below 40% | Cement | Abrasive | Refractory | Chemical | Total |
| **India** | **-** | **-** | **373** | **622057** | **2101287** | **522124** | **15298346** | **500524** | **493268** | **388807** | **19926787** |
| Chhattisgarh | - | - | - | 1630 | 54630 | - | - | 95 | 1255 | 1261 | 58871 |
| Goa | - | - | - | - | 4020 | - | 18402 | - | - | - | 22422 |
| Gujarat | - | - | 373 | 565650 | 496711 | 29740 | 14524532 | 500429 | 450460 | 376820 | 16944715 |
| Jharkhand | - | - | - | 4469 | 110470 | 37156 | - | - | - | - | 152095 |
| Karnataka | - | - | - | - | 19296 | - | 9000 | - | - | - | 28296 |
| Madhya Pradesh | - | - | - | 3999 | 2406 | 332354 | 260067 | - | 41553 | 10726 | 651105 |
| Maharashtra | - | - | - | 46309 | 180724 | 111702 | 486345 | - | - | - | 825080 |
| Odisha | - | - | - | - | 1233030 | 11172 | - | - | - | - | 1244202 |

**Table – 6 (B) : Mine-head Closing Stocks of Bauxite, 2019-20 (P)**

**(By States & Grades)**

(Qty in tonnes)

| State | For use in Alumina & Aluminium metal Extraction $Al_2O_3$ Content | | | | | | For use other than Alumina & Aluminium metal extraction | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 60% & | 55— | 50— | 45— | 40— | Below | Cement | Abrasive | Refractory | Chemical |
| Total | above | 60% | 55% | 50% | 45% | 40% | | | | | |
| **India** | **-** | **-** | **-** | **636817** | **2494574** | **518927** | **15814055** | **497172** | **487762** | **299791** | **20749099** |
| Chhattisgarh | - | - | - | 1630 | 70027 | - | - | 95 | 1255 | 1261 | 74268 |
| Goa | - | - | - | - | 4020 | - | 18402 | - | - | - | 22422 |
| Gujarat | - | - | - | 517727 | 414313 | 45751 | 15002415 | 497077 | 454218 | 283359 | 17214860 |
| Jharkhand | - | - | - | 46963 | 167999 | 21597 | - | - | - | - | 236559 |
| Karnataka | - | - | - | - | - | - | 9000 | - | - | - | 9000 |
| Madhya Pradesh | - | - | - | 3999 | 14947 | 328705 | 304186 | - | 32289 | 15171 | 699297 |
| Maharashtra | - | - | - | 53309 | 201528 | 111702 | 480052 | - | - | - | 846591 |
| Odisha | - | - | - | 13189 | 1621740 | 11172 | - | - | - | - | 1646101 |

# MINING & TRANSPORT

The mining of bauxite is carried out by opencast method. The mines are classified in the following three categories depending upon the level of mechanisation:

(i) Manually operated mines
(ii) Semi-mechanised mines
(iii) Mechanised mines

## Manually Operated Mines

Many bauxite mines are small and produce less than 10,000 tpy. The entire work of overburden removal, extraction of bauxite and loading of bauxite on to trucks is carried out manually and the bauxite is transported to respective railway siding or plants by road.

## Semi-mechanised Mines

In semi-mechanised mines, mining operations are carried out by jack hammer drilling and normally ANFO mixture is used as an explosive for blasting in mineralised zone as well as in overburden, if required. Loading of mineral on to trucks or dumpers is done by payloaders or manually. Since bauxite occurs as small lenses or pockets or boulders or as segregations in murrum and laterite, it is difficult to mechanise the mining operations.

## Mechanised Mines

Mechanised mining operations are carried out in a few captive mines of the alumina/aluminium plants. These mines use compressed-air drills for drilling blastholes. Sometimes, compressed-air jack hammer drills are also used for drilling blastholes for secondary blasting of boulders and also for toe drilling in irregular bauxite faces caused due to improper fragmentation of bauxite. The blasted overburden/ore materials are handled and transported separately by using shovels or excavators and trucks/dumpers. Separate benches are maintained for overburden and ores. The height of benches in ore varies from 1.5 to 7.5 m. Hindalco has done away with drilling and blasting at its Durgmanwadi mines in Maharashtra and instead has adopted the state-of-the-art ripper dozer which is regarded as "Miner's Plough". The ripper dozer silently ploughs the mine surface to extract the mineral. It eliminates ground vibrations and air pollution normally causes dust, gases and noise.

In Bagru Hill mines of Hindalco in Jharkhand, the blasted bauxite is transported with the help of dumpers to the crusher. The 4-inch crushed bauxite is then transported to Lohardaga railway station by a monocable aerial ropeway. BALCO also has monocable ropeway for transporting bauxite from its captive mines to the alumina plant at Korba in Chhattisgarh.

Computerised mine planning, use of mobile crusher, simultaneous land reclamation, restricting operations to small portions of mining area at a time, etc. have greatly helped in conserving energy and faster land rehabilitation.

In Odisha, NALCO has adopted the mechanised 'Trench method' of opencast mining at Panchpatmali (North-Central Block) mine. In this method, a pilot trench is driven through the middle of the deposit and several other trenches are opened on both sides in a staggered pattern exposing and creating more number of working faces. Transportation of ore to alumina refinery at Damanjodi has been done through a 14.6 km long single-flight, multi-curve cable belt conveyor of 1800 TPH capacity. The mining operations involve dozing aside the top fertile soil which is usually preserved and hard laterite of 3 m thickness is drilled and blasted. The overburden is removed using higher capacity mobile equipment like dumpers and wheel loaders to expose the bauxite bed. The top slice of bauxite having 8–10 m thickness is loosened by drilling and blasting and the bauxite of 3–4 m thickness at the bottom contact is removed selectively using backhoe shovels.

The Government of Odisha has extended mining lease period of Panchpatmali (North-Central Block) mine up to 16.11.2032 from 31.03.2020 and Panchpatmali (South Block) up to 19.07.2029 from 31.03.2020. The Panchpatmali (North- Central Block) has achieved 100% capacity utilisation with transportation (production) of 6.825 million tonnes for third successive year and transportation from South block was 0.4 million tonnes during the year. The bauxite production from mines of NALCO during the year 2019-20 was about 7.30 million tonnes. The higher capacity mobile equipment like dumpers, wheel loaders, ripper dozers and faster drills have been introduced.

Pottangi Bauxite Mine (75 million tonnes) in the Koraput district of Odisha has been reserved by Government of India in favour of M/s NALCO. The Government of Odisha has issued terms and condition for grant of Pottangi lease over the reduced area of 697.979 ha.

# CONSUMPTION

In 2019-20, the consumption of bauxite estimated at 24.03 million tonnes increased marginally by 8% as compared to 22.17 million tonnes in the previous year. Alumina/Aluminium Industry was the principal consumer of bauxite and accounted for 89% consumption in 2019-20 followed by Cement (8%) and Calcination (2%) (Table-7).

Gujarat was the main supplier of abrasive and refractory grade bauxite. Besides, Madhya Pradesh also produces refractory grade bauxite. Alumina plants draw supplies mostly from their captive mines. Hindalco sources bauxite from other suppliers too (Table- 8).

**Table-7 : Consumption* of Bauxite 2017-18 to 2019-20 (By Industries)**

(In tonnes)

| Industry | 2017-18 | 2018-19 (R) | 2019-20 (P) |
|---|---|---|---|
| **All Industries** | **20630600(59)** | **22170700(63)** | **24025300(58)** |
| Abrasives | 65700 | 35900 | 74600 |
| Alumina | 18385500 | 19714000 | 21388100 |
| Calcination | 283800 | 116300 | 457700 |
| Cement | 1806200 | 2214100 | 2036400 |
| Ferroalloys | 15900 | 19300 | 30500 |
| Refractory[1/] | 65500 | 70200 | 37100 |
| Others (ceramic, chemical, Pulversing) | 8000 | 900 | 900 |

*Figures rounded off*

** Includes actual reported consumption and/or estimates made wherever required and paucity of data, hence, coverage may not be completed.*

*1/ Includes consumption of calcined bauxite.*

*( ): Number of plants reported/estimated.*

**Table – 8 : Domestic Sources of Supplies of Bauxite to Alumina Plants**

| Producer | Plant | Source of supply |
|---|---|---|
| NALCO | Damanjodi, Koraput (Odisha) | Captive mines at Panchpatmali Hills, Koraput distt. Odisha. |
| BALCO | Korba (Chhattisgarh) | Captive mines in Surguja & Bodai-Daldali in Kabirdham (Kawardha) distt. Chhattisgarh. |
| Hindalco Industries | Renukoot (Uttar Pradesh) | Captive mines in Shahdol distt. Madhya Pradesh; Gumla & Lohardaga distts. Jharkhand and Surguja distt. in Chhattisgarh. Also other suppliers include suppliers from Odisha, Madhya Pradesh and Jharkhand; Katni Bauxite Pvt. Ltd, Satna, Laxmidasji Ramji, Katni; and Minerals & Minerals Corp., Gujarat. |
| | Belagavi (Karnataka), Muri, Ranchi (Jharkhand) | Captive mines in Chandgad & Durgmanwadi, Kolhapur distt. Maharashtra and Lohardaga distt. in Jharkhand. Udgiri, Gudeghar, Kolhapur distt., Maharashtra and Bhoomi Resourc -es Pvt Ltd, Maharashtra. |
| Utkal Alumina | Odisha | Baphlimali bauxite mine (Odisha) |
| Vedanta Aluminium | Lanjigarh (Odisha) | Supplier from Gujarat, BALCO, Bagmar Bauxite Industries Pvt Ltd, Chhattisgarh; LDR, M.P. and abroad. |

## USES & SPECIFICATIONS

Bauxite is primarily used to produce alumina through the Bayer process. Aluminium Industry normally uses bauxite containing minimum 40% $Al_2O_3$. However, slightly inferior grades with a suitable blend are also used depending upon other characteristics, such as, solubility in caustic soda and absence of silica. The BIS has specified IS:5953-1985(Reaffirmed 2008 & 2014) specifications for metallurgical grade bauxite. Details of the industries are provided in a separate Review 'Aluminium and Alumina'.

In Steel Industry, bauxite is used as a slag corrector in place of fluorite and generally bauxite, containing 45 to 54% $Al_2O_3$ and 5% $SiO_2$ (max.) is consumed. Size preference is 25 to 125 mm with a tolerance of 5% (max.) for -25 mm & +100 mm fractions.

BIS has prescribed the specifications of bauxite 'IS : 10817-1984 (Reaffirmed in 2020) for Refractory Industry.

The IS specifications of bauxite for consumption in Chemical and Petroleum industries are given in 'IS : 3605-1984 (Reaffirmed 2020).

Apart from the chemical specifications, the physical requirements are that the material passing through 90-micron IS sieve but retained on 212-micron IS sieve should be 90% maximum; that passing through 300-micron IS sieve shall be 1% by mass maximum; and that passing through 212- micron IS sieve but retained on 300-micron IS sieve should be 10% maximum.

The other specifications laid down by BIS are 'IS:8228-1976 (Reaffirmed 2020)' for bauxite sand and 'IS:8988-1978 (Reaffirmed 2019)' for bauxite powder for foundry washes.

As per Ministry of Mines Notification dated 25th April 2018, the threshold value of bauxite mineral has been classified into the following two categories:

(i) For Aluminous laterite: $Al_2O_3$– 20% (min.)

(ii) For Bauxite: $Al_2O_3$– 30% (min.) and $SiO_2$ (Total) –7% (max.)

## SUBSTITUTION

There is no substitute for bauxite as source for aluminium metal extraction carried out on a large scale. However, calcined clay can be substituted for refractory bauxite but only with reduction in time and stock resistance. Sillimanite, alumina, silicon carbide, magnesite–chromite and carbon–magnesite refractories are the other alternatives for high-alumina material but these would entail higher cost. Silicon carbide and diamonds can substitute for fused aluminium oxide in abrasive use but these would entail again at higher cost. Synthetic mullite is a probable substitute for bauxite-based refractories.

Silicon carbide and alumina–zirconia are costlier substitutes for bauxite-based abrasives. The raw material like alunite, anorthosite, coal wastes and oil shales are other potential sources of alumina. The extraction, however, would require new plants with different technology. These non-bauxitic materials could satisfy the demand for primary metal, refractories, aluminium chemicals and abrasives.

## TRADE POLICY

As per the Foreign Trade Policy 2015-2020 and policy on export and import, imports of aluminium ores and concentrates including natural bauxite, calcined and activated bauxite and others are permitted free. There are no policy restrictions on the export of bauxite.

## WORLD REVIEW

The world bauxite reserves are estimated at 30 billion tonnes and are located mainly in Guinea (25%), Australia (17%), Vietnam (12%), Brazil (9%), Jamaica (7%), Indonesia (4%), China (3%).and Russia (2%) Countrywise reserves of bauxite are furnished in table-9.

The world production of bauxite increased marginally by 1% to 347 million tonnes in 2019 as compared to 343 million tonnes in preceding year. Australia continued to be the major producer and accounted for about 30% share in the total production, followed by Guinea (20%), China (18%), , Brazil (9%) and India (6%) (Table-10).

To provide generalised view of the development in various countries the country wise description sourced from latest available publication of USGS, Mineral Year Book, 2018 is detailed below:

**Table – 9 : World Reserves of Bauxite (By Principal Countries)**

(In '000 tonnes)

| Country | Reserves |
|---|---|
| **World: Total (rounded off)** | **30000000** |
| Australia [a] | 5100000 |
| Brazil | 2700000 |
| Canada | - |
| China | 1000000 |
| Guinea | 7400000 |
| India* | 660000 |
| Indonesia | 1200000 |
| Jamaica | 2000000 |
| Kazakhstan | 160000 |
| Malaysia | 170000 |
| Russia | 500000 |
| Saudi Arabia | 190000 |
| United States | 20000 |
| Vietnam | 3700000 |
| Other countries | 4900000 |

***Source:*** *USGS, Mineral Commodity Summaries, 2020.*
*(a) For Australia, joint Ore Reserves Committee - compliant reserves were 2.2 billion tonnes.*

## Australia

Bauxite production decreased by 3% (3.02 Mt) and alumina production was essentially unchanged compared with that in 2017. Decreased bauxite production was attributed to a labor dispute which lasted about 8 weeks. The capacities of the Kwinana, Pinjarra, and Wagerup refineries were 2.2 Mt/yr, 4.2 Mt/yr, and 2.6 Mt/yr, respectively. The Huntly Mine capacity was 26 Mt/yr and the Willowdale Mine capacity was 10 Mt/yr. The mines and refineries were operated by Alcoa (60%) as part of its joint venture with Alumina Ltd. (40%). Rio Tinto plc continued construction of the Amrun Mine in Queensland and made the first shipment of bauxite from the mine in December. Completion of the 22.8-Mt/yr bauxite mine was scheduled for March 2019. The bauxite would be shipped through the Port of Cape York and upgraded port facilities would increase export capacity by about 10 Mt/yr. Production from the Amrun Mine would replace production from the East Weipa Mine about 40 kilometers (km) away which was nearing the end of its reservesd Metro Mining Ltd. started production from the Bauxite Hills Mine in Queensland in April. By August, the mine was producing at a rate of 2.4 Mt/yr. The mine was scheduled to reach a production rate of 3.5 Mt/yr in 2019. Further capacity expansion to 6 Mt/yr was planned by yearend 2021. The bauxite deposit reserves were reported to be 109.5 Mt.

## Canada

Orbite Technologies Inc. was repairing equipment that failed during trial production from its high-purity alumina refinery in Cap-Chat, Quebec. Trial production from the 3-metric-ton-per-day plant was halted in March after 2 months owing to equipment issues. Inspection of the plant's calciner identified problems with the heating system. As a result of the shutdown and equipment issues, Orbite filed for protection under the Bankruptcy and Insolvency Act in April. In addition to high-purity alumina, Orbite's plant was designed to produce gallium, iron oxide, rare-earth elements, and high-purity silica from high-alumina clay.

## China

Alumina production increased by 5% (3.51 Mt) to 72.5 Mt, compared with that in 2017. The increased production was attributed to production from new capacity and restarts of capacity at several refineries that had been temporarily shut down to comply with environmental regulations. Alumina capacity at yearend 2018 was estimated to be 83.4 Mt/yr, a 3% increase from 81 Mt/yr at yearend 2017. Approximately 73.5 Mt/yr of capacity was in use at yearend. Although new capacity was added, some startups were delayed until permits were issued and because of limited bauxite supplies at some refineries in the northern part of the country. Many of the new alumina refineries under construction or planned for construction were located in port cities rather than adjacent to inland bauxite deposits. Stricter enforcement of environmental regulations and decreasing quality of bauxite reserves discouraged new refineries in many inland cities while availability of abundant bauxite imports made port locations more attractive. China imported 511,000 t of alumina, 82% less than the 2.86 Mt imported in 2017. The leading sources of alumina imports, in descending

order, were Australia (49%) and Indonesia (12%). China exported 1.46 Mt of alumina in 2018 compared with 56,000 t in 2017, as the alumina price in the world market increased in response to refinery shutdowns in Australia and Brazil. China imported 82.6 Mt of bauxite, 20% more than the 68.6 Mt imported in 2017. The leading sources of bauxite imports, in descending order, were Guinea (46%), Australia (36%), and Indonesia (9%). Imports from Australia, Guinea, and Indonesia increased by 4.29 Mt (17%), 10.6 Mt (38%), and 6.25 Mt (483%), respectively, compared with those in 2017, accounting for the increased imports. These increases were partially offset by decreased imports from Brazil (by 1.71 Mt), India (by 1.47 Mt), and Malaysia (by 4.22 Mt).

The Government of China ordered alumina refineries and aluminum smelters in certain regions to shut down 30% of capacity from November 15, 2017, until March 15, 2018. The order to shut down capacity cited environmental concerns about pollution produced by refineries, smelters, and powerplants during the winter. Refineries and smelters in 31 cities, mainly in the central and eastern Provinces, were affected by the order. When the restrictions expired, some of the capacity affected by the policy was restarted. The Government instituted a similar shutdown from October 1, 2018, to March 31, 2019, to reduce pollution during the winter, requiring alumina refineries and aluminum smelters in 26 cities to close 30% of their capacity.

## Indonesia

Bauxite production was 11 Mt in 2018 compared with 2.9 Mt in 2017, 1.4 Mt in 2016, 472,000 t in 2015, 2.56 Mt in 2014 , and 57 Mt in 2013. The overall increase in production was attributed to the rampup of production from mines that supplied two alumina refineries and some mines that were permitted to export bauxite. Alumina production was estimated to be 1 Mt in 2018, the same as the revised estimate in 2017, compared with 600,000 t in 2016, and 70,000 t in 2015. A ban on exporting bauxite and other unprocessed mineral ores took effect on January 12, 2014. The export ban was part of the 2009 Mining Law and was intended to increase economic development in the country through investment in mineral-processing facilities. Exports of bauxite resumed in July 2017 for the first time since the ban started in 2014. The Government of Indonesia issued export licenses to PT Aneka Tambang Tbk (Antam) and PT Bintan Alumina Indonesia Ltd. (Bintan) so that they could use proceeds of bauxite sales to finance construction of alumina refineries. The permit system was scheduled to end in 2023. Antam completed a bankable feasibility study for a 1-Mt/yr alumina refinery in Mempawah, West Kalimantan Province, with PT Indonesia Asahan Aluminium Ltd. (Inalum). Construction was scheduled to start in the first quarter of 2019. Expansion to 2 Mt/yr would begin after production of the first phase was ramped up. The refinery would supply Inalum's aluminum smelter in Asahan, North Sumatra Province, which Inalum planned to expand to 500,000 t/yr from 250,000 t/yr by 2020 (PT Aneka Tambang Tbk, 2018, p. 289, 322; 2019, p. 343). In December, Bintan started construction of a 1-Mt/yr alumina refinery in Galang Batang, Riau Islands Province. Bintan was a joint venture among Shandong Nanshan Aluminum Co. Ltd. (China) (94%), Redstone Alumina International Pte. (Australia) (5%), and PT Makhota Karya Utama (1%). A construction schedule was not available.

## Brazil

Bauxite production decreased by 24% (9.12 Mt) and alumina production decreased by 26% (2.91 Mt) compared with the revised amounts in 2017. Decreased bauxite and alumina production was attributed to environmental regulators' order to Norsk Hydro ASA to temporarily shut down one-half of the 6.3-Mt/yr capacity of the Alunorte alumina refinery on February 27. Heavy rainfall on February 16 and 17 resulted in high water levels in one of the refinery's waste disposal impounds. Monitoring of the impounds did not detect any leakage or failure, but the water level in one impound reached a dangerous point, prompting the order to shut down some production. On October 3, the mine and refinery shut down all capacity for a few weeks when the red mud impoundment reached its maximum capacity. However, production was restarted at one half of the capacity at the end of October when permits to use a new impoundment and filter press were issued. At yearend, the mine and refinery were producing at one-half of capacity while the company waited for approval to restart the other one-half of capacity. Norsk Hydro also shut down 230,000 t/yr of capacity at the adjacent 460,000-t/yr Albras primary aluminum smelter in April citing a shortage of alumina resulting from the refinery shutdown. An expansion project, started in 2016, was completed at the Juruti Mine, increasing capacity to 6.5 Mt/yr from 5.7 Mt/yr. The mine was a joint venture of Alcoa (60%) and Alumina Ltd. (40%).

**Table – 10 : World Production of Bauxite 2017 to 2019**
**(By Principal Countries)**

(In '000 tonnes)

| Country | 2017 | 2018 | 2019 |
|---|---|---|---|
| **World: Total (rounded off)** | **316200** | **343000** | **347100** |
| Australia | 89421 | 95948 | 105544 |
| Guinea[(n)] | 51701 | 59574 | 70173 |
| China | 69000* | 70751 | 62000* |
| Brazil[c] | 39244 | 38123 | 31938 |
| India**(f) | 22786 | 23688 | 22073 |
| Indonesia | 4200 | 13243 | 16593 |
| Jamaica | 8245 | 10058 | 9022 |
| Russia | 5523 | 5651 | 5574 |
| Saudi Arabia | 4117 | 4323 | 4781 |
| Other countries | 19120 | 21637 | 16164 |

***Source:*** *BGS World Mineral Production, 2015-2019.*
** Estimated*
*(f) Years ended 31 March following that stated.*
*(n) No adjustment has been made for moisture content*
***India's production of bauxite during 2017-18, 2018-19 and 2019-20 was 22.79 million tonnes, 23.69 million tonnes and 21.82 million tonnes, respectively.*

# FOREIGN TRADE

## Exports

In 2019-20, exports of bauxite decreased drastically by 65% to 524.23 thousand tonnes from 1,509.74 thousand tonnes in the previous year. Exports were mainly from Kuwait (47%), Nepal (24% ), Qatar (20%), Oman (3%) and Slovenia (2%). Export of bauxite other (aluminium ores & concentrate) were at 40 thousand tonnes during 2019-20 which increased manifold from 6.82 thousand tonnes reported in the preceding year. Exports were mainly to Nepal (98%) and Republic of Korea (2%). Export of bauxite (aluminium & concentrate) also decreased substantially by 68% to 484.23 thousand tonnes during 2019-20 from 1,502.92 thousand tonnes in the preceding year. Exports were mainly to Kuwait (51%), Qatar (22%) and Nepal (18%). (Tables-11 to 13).

## Imports

Import of bauxite decreased slightly by less than 1% to 2,246.68 thousand tonnes during 2019-20 from 2,254.60 thousand tonnes in the previous year. Imports were mainly from Guinea (87%), Sierra Leone (8%) and China & Solomon Islands (2% each). Imports of bauxite other ( aluminium ores & concentrates) decreased drastically by almost cent percent to 218 tonnes during 2019-20 from 179.49 thousand tonnes in the previous year. Imports were mainly from China (72%), Ukraine (12%) and UAE (10%). On the other hand, imports of bauxite (aluminium & concentrates) increased by 8% to 2,246.46 thousand tonnes during 2019-20 from 2,075.10 thousand tonnes in the preceding year. Imports were mainly from Guinea (87%), Sierra Leone (8%) and Solomon, Islands & China (2% each)(Tables-14 to 16).

**Table – 11 : Export of Bauxite (By Countries)**

| Country | 2018-19 (R) | | 2019-20 (P) | |
|---|---|---|---|---|
| | Qty (t) | Value (₹'000) | Qty (t) | Value (₹'000) |
| **All Countries** | **1509737** | **3045300** | **524228** | **1421269** |
| Kuwait | 206992 | 376268 | 244900 | 415559 |
| Nepal | 103494 | 252175 | 126962 | 300388 |
| Slovenia | 9428 | 128031 | 10749 | 159121 |
| Qatar | 52050 | 65303 | 105085 | 141634 |
| Italy | 4625 | 102615 | 4386 | 78520 |
| UK | 3400 | 93220 | 1826 | 48373 |
| Spain | 1025 | 23483 | 1750 | 35035 |
| Oman | 503 | 3197 | 16500 | 25750 |
| France | 2908 | 39472 | 1762 | 25596 |
| Argentina | 550 | 15455 | 875 | 24264 |
| Other countries | 1124762 | 1946081 | 9434 | 167029 |

*Figures rounded off*

**Table – 12 : Export of Bauxite: Other Aluminium Ores & Concentrates (By Countries)**

| Country | 2018-19 (R) | | 2019-20 (P) | |
|---|---|---|---|---|
| | Qty (t) | Value (₹'000) | Qty (t) | Value (₹'000) |
| **All Countries** | **6823** | **17662** | **40003** | **98806** |
| Nepal | 6592 | 13400 | 39308 | 93654 |
| Korea, Rep. of | - | - | 614 | 3358 |
| Bangladesh | 2 | 38 | 80 | 1738 |
| Tanzania | - | - | 1 | 21 |
| UAE | 2 | 46 | 1 | 21 |
| Guinea | - | - | - | 11 |
| Kenya | - | 2 | - | 2 |
| Sweden | - | - | ++ | ++ |
| China | - | - | ++ | ++ |
| Thailand | 75 | 1901 | - | - |
| Other countries | 153 | 2275 | - | - |

*Figures rounded off*

**Table – 13: Exports of Bauxite: Aluminium & Concentrates (By Countries)**

| Country | 2018-19 (R) | | 2019-20 (P) | |
|---|---|---|---|---|
| | Qty (t) | Value (₹'000) | Qty (t) | Value (₹'000) |
| **All Countries** | **1502915** | **3027637** | **484225** | **1322464** |
| Kuwait | 206970 | 375898 | 244900 | 415559 |
| Nepal | 96902 | 238775 | 87654 | 206733 |
| Slovenia | 9428 | 128031 | 10749 | 159121 |
| Qatar | 52050 | 65303 | 105085 | 141634 |
| Italy | 4625 | 102615 | 4386 | 78520 |
| UK | 3400 | 93220 | 1826 | 48373 |
| Spain | 1025 | 23483 | 1750 | 35035 |
| Oman | 503 | 3197 | 16500 | 25750 |
| France | 2908 | 39472 | 1762 | 25596 |
| Argentina | 550 | 15455 | 875 | 24264 |
| Other countries | 1124553 | 1942189 | 8738 | 161878 |

*Figures rounded off*

**Table – 14: Imports of Bauxite: Aluminium & Concentrates (By Countries)**

| Country | 2018-19 (R) | | 2019-20 (P) | |
|---|---|---|---|---|
| | Qty (t) | Value (₹'000) | Qty (t) | Value (₹'000) |
| **All Countries** | **179491** | **1142853** | **218** | **8948** |
| China | 24 | 409 | 158 | 4447 |
| UAE | - | - | 21 | 2702 |
| Netherlands | - | - | 13 | 1079 |
| Ukraine | 80 | 1161 | 26 | 388 |
| USA | - | - | ++ | 324 |
| Italy | - | - | ++ | 6 |
| Pakistan | 179387 | 1141280 | - | - |
| Guinea | ++ | 3 | - | - |

*Figures rounded off*

**Table – 15 : Imports of Bauxite (By Countries)**

| Country | 2018-19 (R) | | 2019-20 (P) | |
|---|---|---|---|---|
| | Qty (t) | Value (₹'000) | Qty (t) | Value (₹'000) |
| **All Countries** | **2254595** | **13364138** | **2246682** | **10817757** |
| Guinea | 832933 | 4043917 | 1955721 | 8126743 |
| China | 57634 | 1483909 | 55765 | 1380252 |
| Sierra Leone | - | - | 169378 | 774873 |
| Hong Kong | 4440 | 122321 | 9955 | 218474 |
| Solomonis | - | - | 48998 | 172801 |
| Singapore | 4250 | 69166 | 3925 | 92647 |
| Guyana | 1366 | 43454 | 1654 | 27616 |
| UAE | - | - | 1037 | 12689 |
| Netherlands | 398 | 15137 | 222 | 10414 |
| USA | ++ | 205 | ++ | 708 |
| Other countries | 1353574 | 7586028 | 26 | 540 |

*Figures rounded off*

**Table – 16 : Imports of Bauxite: Aluminium & Concentrates (By Countries)**

| Country | 2018-19 (R) | | 2019-20 (P) | |
|---|---|---|---|---|
| | Qty (t) | Value (₹'000) | Qty (t) | Value (₹'000) |
| **All Countries** | **2075104** | **12221284** | **2246464** | **10808810** |
| Guinea | 832933 | 4043913 | 1955721 | 8126743 |
| China | 57610 | 1483501 | 55607 | 1375804 |
| Sierra Leone | - | - | 169378 | 774873 |
| Hong Kong | 4440 | 122321 | 9955 | 218474 |
| Solomonis | - | - | 48998 | 172801 |
| Singapore | 4250 | 69166 | 3925 | 92647 |
| Guyana | 1366 | 43454 | 1654 | 27616 |
| UAE | - | - | 1016 | 9987 |
| Netherlands | 398 | 15137 | 209 | 9335 |
| USA | ++ | 205 | ++ | 384 |
| Other countries | 1174107 | 6443587 | ++ | 145 |

*Figures rounded off*

# FUTURE OUTLOOK

The total resources of bauxite that comprise various grades, as found to occur in the country as on 1.4.2015, are estimated at 3,896 million tonnes. The resources of Metallurgical grade bauxite are adequate while those of the Chemical and Refractory grade bauxite are relatively limited considering the future requirements.India's strength in aluminium is production due to its rich reserve of bauxite, a core resources used in production of aluminium. As per provision made in Mineral (Auction) Rule 2015, a total of 7 bauxite blocks were auctioned till June 2020 in the State of Maharashtra (6 blocks) and Madhya Pradesh (1block).

As per the FITCH Report, the production of bauxite is estimated to grow from the present 30.9 million tonnes to 50.7 million tonnes by 2027.