

barytes veins do not persist beyond 13 m in depth. The barytes is white and greyish and is found associated with galena, cerusite, malachite and azurite. Thus association indicates its hydrothermal origin. Barytes appears to have formed by the replacement of limestone at the contact with the schist.

#### (9) TAMIL NADU<sup>(28)</sup>

Barytes is reported from Madurai, North Arcot-Ambedkar (formerly North Arcot), Periyar and Tiruchchirappali districts.

The description of important deposits is as follows:

##### (i) North Arcot-Ambedkar (formerly North Arcot):

The deposit is located 1.6 km SW of Alangayam in two hillocks on either side of the road, which connects this place with Mettur. These two hillocks and the intervening ground are largely occupied by pyroxene gneiss traversed by abundant veins of barytes associated with quartz. A lens like body also occurs just east of Andyappanur, 11 km south of Alangayam running NE-SW.

##### (ii) Tiruchchirappali

In Tiruchchirappalli district, in the Cretaceous strata in a small area SE of Karai, celestite is found to be interbedded with barytes.

##### (iii) Coimbatore

Veins and lenses of barytes are noticed in gneisses intruded by granite and pegmatite hillocks about 0.8 km west of Kurichchi.

#### (10) OTHER STATES

Barytes is also found in Chitradurga and Gulbarga districts in Karnataka, Dehradun district in Uttar Pradesh and Purulia district in West Bengal.

#### 4.2. INDIAN RESERVES

Mineral Resources in any area can be defined on the basis of (i) knowledge of mineral deposit and (ii) its value. Resources therefore can be envisaged as identified or undiscovered under present available knowledge and economic or sub-economic under present levels of price and technology.

Conditional resources may be defined as that portion of the total resource which becomes usable in future subject to certain conditions being favourable. Reserves on the contrary, can be defined as material with definite tonnage and characteristic which can be mined and processed to yield a product that can be sold at profit whereas resources in an area include other materials as well as the inference is based on scanty geological data.

The latest NMI prepared by IBM, as on 1.4.1990 have computed categorywise reserves of barytes in India on the basis of data furnished by various exploratory agencies and other allied organisations. The NMI deals with depositwise and gradewise reserves of the mineral in different states of India which are broadly discussed and tabulated.

##### 4.2.1 All India Categorywise, Gradewise Reserves and Resources of Barytes in India

The All India total in situ reserves of barytes are 82,806,944 tonnes of which 13,114,248 tonnes (15.8 percent) is under proved category, 60,559,482 tonnes (73.1 percent) is under probable category and 9,133,215 tonnes (11 percent) is under possible category.

All India total recoverable reserves is estimated to be 70,146,559 tonnes of which 12,007,783 tonnes (17.1 percent) classified under proved category, 51,539,610 tonnes (73.5 percent) under probable category and 6,599,166 tonnes (9.4 percent) under possible category.

The categorywise, gradewise reserves and resources are given under Table-4.1.

##### 4.2.2 Statewise Total categorywise: Reserves and Resources of Barytes in India

The All India total in situ reserves is estimated to be 82,806,945 tonnes. Among Indian states, A.P. is the major producer of barytes having a total in situ reserves of 78,809,428 tonnes (95.17 percent) and is followed by Rajasthan 2,844,887 tonnes (3.43 percent). The other states which have meagre contribution of in situ reserves are Bihar: 35,900 tonnes (0.04 percent); Himachal Pradesh

15,370 tonnes (0.01 percent); Karnataka 15,175 tonnes (0.01 percent); Madhya Pradesh 268,711 tonnes (0.32 percent); Maharashtra 137,055 tonnes (0.16 percent); Tamil Nadu 222,419 tonnes (0.26 percent); Uttar Pradesh 25,000 tonnes (0.03 percent); and West Bengal 433,000 tonnes (0.52 percent).

The total All India recoverable reserves is 70,146,559 tonnes. A.P. is the major producer of barytes having total recoverable reserves of 67,053,540 tonnes (95.5 percent) followed by Rajasthan 2,357,732 tonnes (3.36 percent). The other states which have a meagre recoverable reserves are Bihar 15,160 tonnes (0.02 percent); Himachal Pradesh 12,296 tonnes (0.17 percent); Karnataka 9,105 tonnes (0.01 percent); Madhya Pradesh 193,328 tonnes (0.27 percent); Maharashtra state 65,215 tonnes (0.09 percent); Tamil Nadu 117,184 tonnes (0.16 percent); Uttar Pradesh 20,000 tonnes (0.02 percent); and West Bengal 303,000 tonnes (0.43 percent).

The status of statewise total categorywise reserves and resources are given under Table-4.2.

#### 4.2.3 Statewise, categorywise, Recoverable Reserves and Resources in Leasehold and Freehold Areas of Barytes in India

##### Andhra Pradesh

The total recoverable reserves of A.P. is 67,053,540 tonnes from the districts of Anantapur, Cuddapah, Krishna, Kurnool, Nellore, Prakasam and Khammam. In Anantapur district, a total recoverable reserves of 31,140 tonnes are estimated which is in the freehold area. In Cuddapah district, a total of 17,038,751 tonnes of recoverable reserve is estimated in the leasehold area. In Krishna district, a total of 3,500 tonnes of recoverable reserve is estimated in freehold area. In Kurnool district, a total of 38,395 tonnes of recoverable reserve is estimated in leasehold area. In Nellore district, a total of 318,678 tonnes is estimated in leasehold area and 1,720,000 tonnes in freehold area. In Prakasam district a total of 48,520 tonnes is estimated in leasehold area and 22,300 tonnes in freehold area. In Khammam dis-

trict, a total of 267,481 tonnes is estimated in leasehold area and 293,125 tonnes in freehold area.

##### Bihar

The total recoverable reserves in Bihar are 15,160 tonnes located in the district Palamau 14,000 tonnes and Singhbhum 1,160 tonnes and they are in the freehold areas.

##### Himachal Pradesh

The total recoverable reserves in Himachal Pradesh are 12,296 tonnes located in Sirmur district of which 9,896 tonnes is in leasehold area and 2,400 tonnes is in freehold area.

##### Karnataka

The total recoverable reserves in Karnataka are 9,150 tonnes located in Chitradurga district and it is in freehold area.

##### Madhya Pradesh

The total recoverable reserves in Madhya Pradesh are 193,327 tonnes located in the district of Dewas, Dhar, Shivpuri, Sidhi and Tikamgarh. Out of which a total of 15,282 tonnes of recoverable reserves estimated in leasehold area in Dewas, 15,926 tonnes in Dhar, 19,269 tonnes in Shivpuri and 60,251 tonnes in Tikamgarh. The total recoverable reserves of 82,600 tonnes is estimated in the freehold area in Sidhi district.

##### Maharashtra

The total recoverable reserve in Maharashtra are 65,215 tonnes located in Chandrapur district out of which 33,887 tonnes are in leasehold area and 31,328 tonnes in freehold area.

##### Rajasthan

The total recoverable reserves in Rajasthan is 2,357,732 tonnes located in the districts of Alwar, Bharatpur, Bhilwara, Bundi, Pali, Sikar and Udaipur. In Alwar district the total recoverable reserves estimated in leasehold area are 751,452 tonnes and 9,075 tonnes in freehold area. In Bharatpur district, the total recoverable reserves are 1,260 tonnes in leasehold area. In Bhilwara

district, the total recoverable reserves are 1,294 tonnes in freehold area. In Bundi district, the total recoverable reserves are 15,954 tonnes in freehold area. In Pali district, total recoverable reserves of 2,144 tonnes are in freehold area. In Sikar district, total recoverable reserves of 40,793 tonnes are estimated in leasehold area. In Udaipur district, a total recoverable reserves of 1,526,160 tonnes are estimated in leasehold area and 9,600 tonnes in freehold area.

#### Tamil Nadu

In Tamil Nadu total recoverable reserves of 117,184 tonnes are estimated in Madurai, North Arcot-Ambedkar (formerly North Arcot), Tiruchchirappalli and Periyar districts. A total recoverable reserves of 80,000 tonnes are estimated in leasehold area of Madurai and 10,544 tonnes in leasehold area of North Arcot-Ambedkar district. In Tiruchchirappalli and Periyar

districts total recoverable reserves of 1,400 tonnes and 24,890 tonnes respectively are estimated in freehold areas.

#### Uttar Pradesh

In Uttar Pradesh, total recoverable reserves of 20,000 tonnes are estimated in freehold area in Dehradun district.

#### West Bengal

In West Bengal, total recoverable reserves of 303,000 tonnes are estimated in the freehold area of Purulia district.

The Statewise, categorywise reserves and resources in leasehold and freehold areas of barytes in India is given under Table- 4.3.

The statewise, districtwise, categorywise recoverable reserves and resources in leasehold and freehold areas of barytes in India is given under Table- 4.4.

**TABLE- 4.1: ALL INDIA CATEGORYWISE GRADEWISE RESERVES AND RESOURCES OF BARYTES IN INDIA**  
(As on 1.4.1990)

(UNIT : TONNES)

(Figures in parentheses are percentages)

	PROVED	PROBABLE	POSSIBLE	TOTAL	GRADE
Insitu Reserves	4,590 (1.2)	-	367,531 (98.8)	372,121 (100.0)	Chemical 'A'
	125,743 (6.6)	578,048 (30.1)	1,215,721 (63.3)	1,919,512 (100.0)	Chemical 'B'
	4,124,578 (15.1)	21,351,660 (78.2)	1,843,897 (6.7)	27,320,135 (100.0)	Oil Well Drilling
		105,650 (100.0)	-	105,650 (100.0)	Paint
	2,618,405 (6.2)	36,517,150 (85.9)	3,393,380 (8)	42,528,935 (100.0)	Low

## DEPOSITS &amp; RESERVES

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	PROVED	PROBABLE	POSSIBLE	TOTAL	GRADE
	6,174,370 (76.3)	1,594,000 (19.7)	318,857 (3.9)	8,087,227 (100.0)	Others
	66,483 (2.9)	403,322 (17.8)	1,792,620 (79.2)	2,262,425 (100.0)	Unclassified
	79 (0.0)	9,652 (4.6)	201,209 (95.4)	210,940 (100.0)	Not known
<b>TOTAL</b>	<b>13,114,248</b> (15.8)	<b>60,559,482</b> (73.1)	<b>9,133,215</b> (11.0)	<b>82,806,945</b> (100.0)	
	3,442 (1.3)	-	258,538 (98.7)	261,980 (100.0)	Chemical 'A'
	98,651 (6.5)	401,116 (26.4)	1,017,875 (67.1)	1,517,642 (100.0)	Chemical 'B'
<b>RECOVERABLE RESERVES</b>	<b>3,789,419</b> (16.5)	<b>18,172,674</b> (79.3)	<b>941,427</b> (4.1)	<b>22,903,520</b> (100.0)	Oil Well Drilling
		80,520 (100.0)	-	80,520 (100.0)	Paint
	2,385,968 (6.6)	31,096,558 (85.9)	2,714,830 (7.5)	36,197,356 (100.0)	Low
	5,682,660 (76.4)	1,466,480 (19.7)	284,887 (3.8)	7,434,027 (100.0)	Others
	47,580 (3.0)	315,095 (19.9)	1,224,672 (77.2)	1,587,347 (100.0)	Unclassified
	63	7,167 (4.4)	156,937 (95.6)	164,167 (100.0)	Not known
<b>TOTAL</b>	<b>12,007,783</b> (17.1)	<b>51,539,610</b> (73.5)	<b>6,599,166</b> (9.4)	<b>70,146,559</b> (100.0)	

Source: Latest NMI prepared by IBM.

**TABLE- 4.2 : STATEWISE TOTAL CATEGORYWISE RESERVES AND RESOURCES OF BARYTES IN INDIA**

(UNIT : TONNES)  
(figures in parentheses are percentages)

STATE	INSITU	RECOVERABLE
1. A.P.	78,809,428 (95.17)	67,053,540 (95.50)
2. Bihar	35,900 (0.04)	15,160 (0.02)
3. Himachal Pradesh	15,370 (0.01)	12,296 (0.17)
4. Karnataka	15,175 (0.01)	9,105 (0.01)
5. Madhya Pradesh	268,711 (0.32)	193,328 (0.27)
6. Maharashtra	137,055 (0.16)	65,215 (0.09)
7. Rajasthan	2,844,887 (3.43)	2,357,732 (3.36)
8. Tamil Nadu	222,419 (0.26)	117,184 (0.16)
9. Uttar Pradesh	25,000 (0.03)	20,000 (0.02)
10. West Bengal	433,000 (0.52)	303,000 (0.43)

Source : Latest NMI prepared by IBM.

**TABLE - 4.3 : STATEWISE, CATEGORYWISE RESERVES AND RESOURCES IN LEASEHOLD AND FREEHOLD AREAS OF BARYTES IN INDIA**

(UNIT : TONNES)

a = Leasehold area  
b = Freehold area

STATE	INSITU	RECOVERABLE
1. ANDHRA PRADESH	a = 20,485,312 b = 58,324,116	a = 17,711,825 b = 49,341,715
2. BIHAR	a = --- b = 35,900	a = --- b = 15,160
3. HIMACHAL PRADESH	a = 12,370 b = 3,000	a = 9,896 b = 2,400
4. KARNATAKA	a = --- b = 15,175	a = --- b = 9,105
5. MADHYA PRADESH	a = 150,711 b = 118,000	a = 110,728 b = 82,600
6. MAHARASHTRA	a = 74,400 b = 62,655	a = 33,887 b = 31,328
7. RAJASTHAN	a = 2,793,607 b = 51,280	a = 2,319,665 b = 38,067
8. TAMIL NADU	a = 184,359 b = 38,060	a = 90,544 b = 26,640
9. UTTAR PRADESH	a = --- b = 25,000	a = --- b = 20,000
10. WEST BENGAL	a = --- b = 433,000	a = --- b = 30,300

Source : Latest NMI prepared by IBM

TABLE- 4.4 : STATEWISE, DISTRICTWISE, CATEGORYWISE RECOVERABLE RESERVES AND RESOURCES IN LEASEHOLD AND FREEHOLD AREAS OF BARYTES IN INDIA

(UNIT : TONNES )

(a = Leasehold area )

(b = Freehold area )

(Figures in parentheses are percentages)

STATE/ DISTRICT	PROVED	PROBABLE	POSSIBLE	TOTAL	GRADE
<b>1. ANDHRA PRADESH</b>					
<b>(i) Anantapur</b>					
a =	-	a =	-	a =	-
b =	-	b =	7,740 (100.0)	b =	7,740 (100.0)
a =	-	a =	-	a =	Oil well - drilling
b =	-	b =	8,400 (100.0)	b =	8,400 (100.0)
a =	-	a =	-	a =	Low
b =	-	b =	15,000 (100.0)	b =	15,000 (100.0)
<b>Total of Anantapur</b>					
a =	-	a =	-	a =	-
b =	-	b =	31,140 (100.0)	b =	31,140 (100.0)

(Contd.)

TABLE-4.4 (Contd.)

STATE/ DISTRICT	PROVED	PROBABLE	POSSIBLE	TOTAL	GRADE	
(ii) Cuddapah	a =	a =	a =	a =	13,500	
	b =	b =	b =	b =	(100.0)	
	a =	a =	a =	a =	115,280	Chemical 'A'
	b =	b =	b =	b =	(45.1)	
	a =	a =	a =	a =	30,000	Chemical 'B'
	b =	b =	b =	b =	(57.0)	
	a =	a =	a =	a =	387,780	
	b =	b =	b =	b =	(7.4)	
	a =	a =	a =	a =	59,330	Oil well-
	b =	b =	b =	b =	(0.4)	drilling
	a =	a =	a =	a =	12,000	
	b =	b =	b =	b =	(100.0)	
	a =	a =	a =	a =	1,007,120	Paint
	b =	b =	b =	b =	(27.5)	
a =	a =	a =	a =	30,085,163	Low	
b =	b =	b =	b =	(98.4)		
a =	a =	a =	a =	1,466,480		
b =	b =	b =	b =	(19.8)		
a =	a =	a =	a =	5,682,660		
b =	b =	b =	b =	(76.6)		
a =	a =	a =	a =	7,417,780	Others	
b =	b =	b =	b =	(100.0)		

(Contd.)



TABLE-4.4 (Contd.)

STATE/ DISTRICT	PROVED	PROBABLE	POSSIBLE	TOTAL	GRADE
Cuddappah (Concld.)	a = 37,250 (8.7)	a = 234,647 (54.6)	a = 157,903 (36.7)	a = 429,800 (100.0)	Unclassified
	b = 9,180 (12.3)	b = 15,500 (20.7)	b = 50,142 (87.0)	b = 74,822 (100)	
Total of Cuddappah	a = 11,977,381 (70.3)	a = 3,841,347 (22.5)	a = 1,220,023 (7.2)	a = 17,038,751 (100.0)	
	b = 13,780 (0.0)	b = 46,596,593 (98.6)	b = 641,946 (1.4)	b = 47,252,319 (100.0)	
(iii) Krishna	a = -	a = -	a = -	a = -	Oil well- drilling
	b = -	b = -	b = 3,500 (100)	b = 3,500 (100.0)	
Total of Krishna	a = -	a = -	a = -	a = -	
	b = -	b = -	b = 3,500 (100.0)	b = 3,500 (100.0)	
(iv) Kurnool	a = -	a = 4,145 (10.8)	a = 5,045 (54.9)	a = 9,190 (100.0)	Oil well- drilling (Contd.)
	b = -	b = -	b = 12,150 (100.0)	b = 12,150 (100.0)	

TABLE-4.4 (Contd.)

STATE/ DISTRICT	PROVED	PROBABLE	POSSIBLE	TOTAL	GRADE
Kurnool (Concdd.)	a = -	a = -	a = -	a = -	-
	b = -	b = -	b = 4,300 (100.0)	b = 4,300 (100.0)	Chemical 'B'
	a = -	a = -	a = 6,000 (100.0)	a = 6,000 (100.0)	-
	b = -	b = -	b = -	b = -	Low
	a = -	a = -	a = 21,455 (100.0)	a = 21,455 (100.0)	-
	b = -	b = -	b = 2,484 (100.0)	b = 2,484 (100.0)	Unclassified
	a = -	a = -	a = 1,750 (100.0)	a = 1,750 (100.0)	-
	b = -	b = -	b = -	b = -	Not known
	a = -	a = -	a = 2,484 (100.0)	a = 2,484 (100.0)	-
	b = -	b = -	b = -	b = -	Unclassified
Total of Kurnool	a = -	a = 4,145 (10.8)	a = 34,250 (89.2)	a = 38,395 (100.0)	-
	b = -	b = -	b = 19,331 (100.0)	b = 19,331 (100.0)	-

(Contd.)

TABLE-4.4 (Contd.)

STATE/ DISTRICT	PROVED	PROBABLE	POSSIBLE	TOTAL	GRADE	
(v) Nellore	a =	a =	a =	a =	31,320	Chemical 'B'
	b =	b =	b =	b =	(100.0)	
	a =	a =	a =	a =	253,400	Oil well- drilling
	b =	b =	b =	b =	(100.0)	
	a =	a =	a =	a =	33,958	Unclassified
	b =	b =	b =	b =	(100.0)	
	a =	a =	a =	a =	-	Low
	b =	b =	b =	b =	1,720,000	
					(100.0)	
	Total of Nellore	a =	a =	a =	a =	318,678
	b =	b =	b =	b =	(100.0)	
					1,720,000	
					(100.0)	
(vi) Prakasam	a =	a =	a =	a =	26,440	Chemical 'A'
	b =	b =	b =	b =	(100.0)	
					2,800	(Contd.)
					(100.0)	

TABLE-4.4 (Contd.)

STATE/ DISTRICT	PROVED	PROBABLE	POSSIBLE	TOTAL	GRADE
	a =	a =	a =	a =	7,030 (100.0)
	b =	b =	b =	b =	-
	a =	a =	a =	a =	12,050 (100.0)
	b =	b =	b =	b =	-
	a =	a =	a =	a =	3,000 (100.0)
	b =	b =	b =	b =	19,500 (100.0)
					Unclassified
					(100.0)
<b>Total of Prakasam</b>	a =	a =	a =	a =	48,520 (100.0)
	b =	b =	b =	b =	22,300 (100.0)
<b>(vii) Khammam</b>	a =	a =	a =	a =	42,849 (100.0)
	b =	b =	b =	b =	8,400 (100.0)
					Chemical 'B'
					Oil well- drilling
					Unclassified
					(100.0)

TABLE-4.4 (Contd.)

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STATE/ DISTRICT	PROVED	PROBABLE	POSSIBLE	TOTAL	GRADE	
Khammam (Concdd.)	a =	a =	a =	a =		
	b =	b =	b =	b =	Chemical 'A'	
	a =	a =	140,000 (100.0)	140,000 (100.0)		
	b =	b =	200,432 (100.0)	200,432 (100.0)		
	a =	a =	-	-		
	b =	b =	-	-	Oil well drilling	
	a =	10,800 (44.6)	13,400 (55.4)	13,400 (55.4)	24,200 (100.0)	
	b =	b =	4,725 (100.0)	4,725 (100.0)	4,725 (100.0)	Unclassified
	a =	a =	-	-	-	
	b =	b =	-	-	-	Low
				140,000 (100.0)		
Total of Khammam	a =	22,976 (8.6)	244,505 (91.4)	267,481 (100.0)		
	b =	-	93,125 (100.0)	293,125 (100.0)		
2. BIHAR						
(i) Palamau	a =	a =	a =	a =		
	b =	b =	b =	b =	Unclassified	
			14,000 (100.0)	14,000 (100.0)		

(Contd.)