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Supply and demand of gypsum raw materials in Poland

Key words

Gypsum rock, synthetic gypsum, anhydrite, sources, domestic production, demand pattern

Abstract

The paper presents sources and production of gypsum raw materials in Poland in recent years, as well as characterise developments in leading industries, which consume these raw materials. Relationships between domestic producers and consumers of gypsum raw materials are also presented. As a summary, future gypsum raw materials balance on domestic market is anticipated.

Introduction

Gypsum and anhydrite belong to the group of mineral raw materials, showing very strong increasing tendency in consumption and production in Poland in recent years. The lowest volume of their domestic use was recorded in the beginning of the 1990s — under 700,000 tpy. However, in the second half of the 1990s increased domestic demand for gypsum & anhydrite used in cement, gypsum binders and gypsum plasterboards production, was followed by rising output from existing gypsum and anhydrite mines, as well as the supply of synthetic gypsum from flue gas desulphurisation. As a result, total gypsum and anhydrite supply reached almost 2.4 million t in 2000, with prospects for further growth even to 3.2 million tons in the next 3—4 years.

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1. Existing and potential sources of gypsum raw materials in Poland

Natural gypsum forms primarily Miocene evaporite-type deposits, occurring along the northern edge of the Carpathian Foredeep. The reserves of these shallow deposits are estimated at billions of tons, but recognised reserves in a few deposits in the Nida river valley amount to ca. 175 Mt. The prognostic reserves are many times larger, but their possible future use can be limited due to environmental constraints (this is the area of the Nida River Landscape Park).

The other deposits of natural gypsum raw materials — anhydrite, anhydrite-gypsum or gypsum rock — occur in the North Sudetic Syncline. Four deposits (Lubichów, Nawojów Śląski, Nowy Łąd, Nowy Łąd-Radłówka) having total reserves of ca. 83 Mt, are recognised there.

The domestic potential for the production of synthetic gypsum — in the process of removing sulphur from off-gases in coal-fired power plants — is enormous. The majority of Polish power plants is hard coal or brown coal fired. Total sulphur dioxide emissions from these power plants in the mid-1990s amounted to over 1.6 Mtpy, which would allow for the production of over 4 Mtpy of synthetic gypsum. However, only a part of these power plants constructed or will construct desulphurisation installations with synthetic gypsum as a final product.

Another huge secondary source of gypsum is phospho-gypsum, a waste material stored at the Police, Gdańsk and Wizów chemical plants; it is derived from the production of fertilisers made of phosphates and apatites. These plants deliver ca 2.5 Mtpy of phospho-gypsum. However, this material is not gypsum substitute of full value, due to its higher content of radioactive elements (especially material in Police and Gdańsk, where phosphate rock is processed), phosphates, and other reasons. It was periodically tested in small amounts by some cement plants.

2. Domestic production of gypsum raw materials — appearance of synthetic gypsum suppliers

Until the end of the 1980s, domestic production of gypsum raw materials was predominated by the “Dolina Nidy” company, delivering gypsum rock from two mines near Kielce. “Nowy Łąd” gypsum and anhydrite plants in Lower Silesia was the other supplier of such raw materials, producing anhydrite and white gypsum. In the 1990s, commencement of synthetic gypsum production in some power plants was the most important phenomenon on the domestic supply side. As a result, total domestic production of gypsum raw materials, after a drop to ca. 800,000 tpy in the beginning of the 1990s, increased to almost 2.4 Mt in 2000 (Fig. 1). Simultaneously, the share of natural gypsum and anhydrite production in total domestic gypsum raw materials supplies decreased from 100% in 1993 to only 54% in 2000 (Fig. 1, 2).

2.1. Gypsum rock

Gypsum rock mines are the most traditional and — up to 2000 — the most important source of gypsum raw materials in Poland. For years, two large mines, Leszcze and Borków-Chwałowice, have been operating in the Nida river valley, south of Kielce. Up to the end of the 1980s, both mines were managed by the Gypsum Combine in Gacki, afterwards renamed to the “Dolina

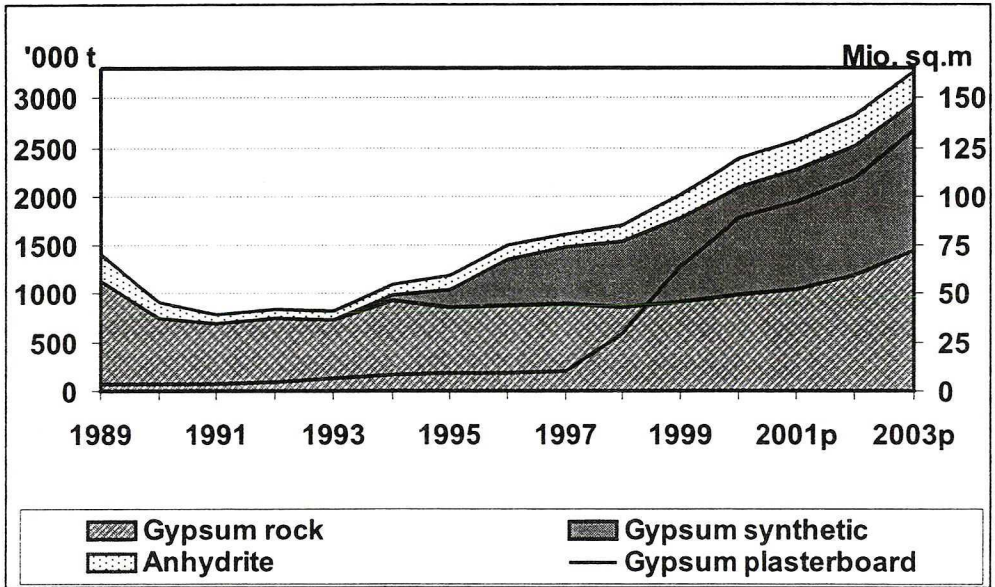


Fig. 1. Production of gypsum raw materials and gypsum plasterboards in Poland

Rys. 1. Produkcja surowców gipsowych i płyt gipsowo-kartonowych w Polsce

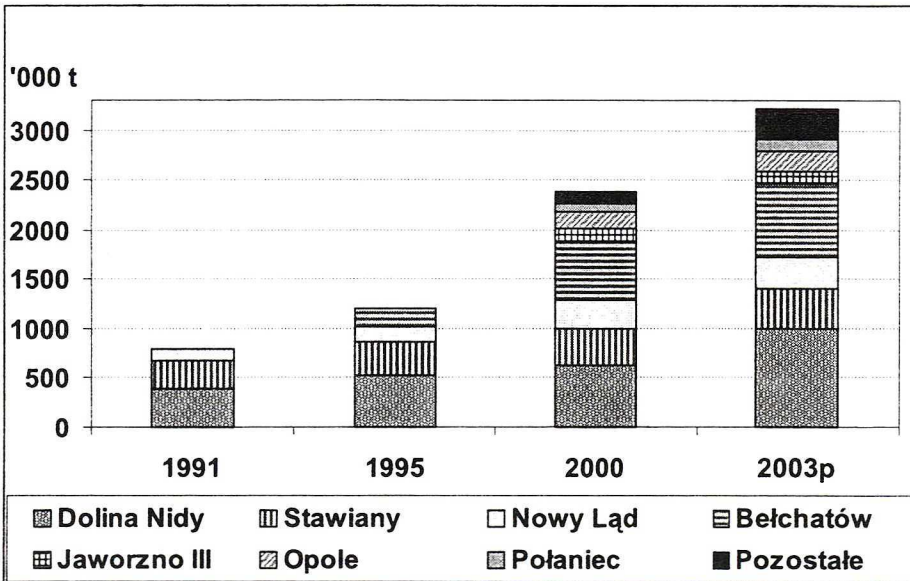


Fig. 2. Structure of gypsum raw materials production in Poland

Rys. 2. Struktura produkcji surowców gipsowych w Polsce

Nidy” in Gacki. However, in the early 1990s the smaller mine — Borków-Chwałowice — was separated from “Dolina Nidy” company and finally sold to British Plaster Board (UK) through its Austrian subsidiary Rigips.

“Dolina Nidy” currently operates Leszcze gypsum rock mine, as well as neighbouring Gacki processing plant. Its annual production of gypsum rock fluctuated between 400,000 and 600,000 tpy in the 1990s. 60—70% of total gypsum rock production is consumed for the company internal needs, while the balance is sold mainly to cement plants. “Dolina Nidy” and its subsidiary — “Nida Gips” — for years were the leading Polish gypsum products suppliers, delivering gypsum binders, plasters and plasterboards. On the turn of 1999, “Dolina Nidy” was sold to the consortium of Polish company “Atlas” Łódź and French company “Lafarge”. “Atlas” established the “Atlas Gips” company, which will manage gypsum binders, plasters and blocks production, whereas “Lafarge” through its subsidiary “Lafarge Gips Polska” will manage gypsum plasterboard production in “Nida Gips”. During the next two years the consortium will invest over 60 million US\$ to increase gypsum products manufacture on site. It will probably result in increase of gypsum rock production there to even over 1.0 million tpy. Company will also probably limit sales of gypsum rock to cement plants and discontinue its sales to gypsum binders and plasters manufacturers, as well as its exports.

The second mine — Borków-Chwałowice — was sold to British Plaster Board in 1995 and currently belongs to its subsidiary — Rigips Polska Stawiany. Up to 1999, the whole gypsum rock production (260,000—400,000 tpy) was sold outside, mainly to cement plants. However, after commencement of a new Rigips plasterboard plant in April 1999, these sales were sharply reduced, now constituting ca. 50% of its total gypsum rock production.

Smaller amounts of gypsum rock — less than 20,000 tpy — are traditionally supplied by the “Nowy Łąd” plant in Niwnice. It comes from the upper part of the Nowy Łąd deposit, extracted by open pit. However, it delivers white gypsum of the best quality, entirely processed on site.

TABLE 1

Gypsum raw materials statistics in Poland ('000 t)

TABELA 1

Gospodarka surowcami gipsowymi w Polsce [tys. t]

Year	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Production	1 416.0	916.0	788.0	843.0	831.6	1 100.2	1 198.2	1 502.5	1 617.9	1 702.7	2 023.1	2 380.3
Gypsum rock	1 133.0	755.0	688.0	752.0	727.9	944.1	866.3	879.8	900.0	862.8	925.7	998.6
Synthetic gypsum	—	—	—	—	—	44.7	175.0	474.3	582.9	673.8	860.4	1 097.0
Anhydrite	283.0	161.0	100.0	91.0	103.7	111.4	156.9	148.4	135.0	166.1	237.0	284.7
Exports	—	—	9.0	21.1	6.5	20.0	30.1	41.6	87.6	82.1	69.4	66.1
Imports	—	—	—	7.7	8.4	4.1	7.1	4.7	5.9	55.0	66.0	78.4
Consumption ^a	1 416.0	916.0	779.0	829.6	833.5	1 084.3	1 175.2	1 465.6	1 536.2	1 675.6	2 019.7	2 392.6

a — apparent.

The total production of gypsum rock in Poland fell from over 1,100,000 t in 1989 to under 700,000 t in 1991. However, in the second part of the 1990s it increased to almost 1,000,000 t in 2000 (Tab. 1). In the next few years it should grow even to over 1,400,000 tpy due to expected development of “Dolina Nidy” production.

2.2. Anhydrite

Production of anhydrite in Poland was traditionally carried out by the “Nowy Łąd” plant in Niwnice, on the basis of anhydrite mined underground in the lower part of Nowy Łąd deposit. The level of production was reaching 300,000 tpy in the 1980s due to its intense use for sulphuric acid production at the Wizów plant. On the turn of the 1980s, production of “Nowy Łąd” plant decreased by over three times (as a result of cease of sulphuric acid at the Wizów plant), but — on the opposite — anhydrite production was commenced in a part of former “Konrad” copper ore mine, known currently as “Lubichów” plant. In the mid-1990s, both plants were consolidated by Dolnośląska Spółka Inwestycyjna (Lower Silesian Investment Company) belonging to KGHM “Polska Miedź”, under the common name: “Nowy Łąd” Gypsum and Anhydrite Mine. This company was purchased in 1998 by the leading domestic producer of construction dry mixes and binders: “Atlas” Łódź. As a result of investments and extension of range of anhydrite products delivered, production significantly rose to ca. 285,000 t in 2000 (Tab. 1, 2).

Up to the late 1990s, the whole mining production of “Lubichów” plant was processed into anhydrite powder, while at the “Nowy Łąd” plant a large portion of extracted anhydrite was processed only into anhydrite lumps for cement plants, with only minor part used for the production of anhydrite powder. However, after modernisation of this plant, anhydrite lumps

TABLE 2

Structure of gypsum raw materials production in Poland ('000 t)

TABELA 2

Struktura produkcji surowców gipsowych w Polsce [tys. t]

Year	1992	1996	2000
Gypsum rock	752	880	998
— Dolina Nidy	462	533	628
— Stawiany (BPB Rigips)	290	347	370
Synthetic gypsum	—	474	1 097
— Bełchatów	—	371	600
— Jaworzno III	—	103	123
— Other power plants	—	—	374
Anhydrite	91	148	285
— Nowy Łąd	91	148	285
Gypsum raw materials, total	843	1 502	2 380

deliveries to cement plants will be very limited or ceased (in 2000 they were under 60,000 t comparing to over 80,000 t in 1996). This results from the fact, that “Nowy Łąd” company focuses on development of anhydrite binders and self-levelling layers (on the basis of anhydrite powder), with reduction of anhydrite lump production and sales. Further growth of production is expected, to minimum 320,000 tpy in the next few years.

2.3. Synthetic gypsum

Synthetic gypsum, obtained from flue gas desulphurization (FGD) installations in power plants, is a very important substitute for gypsum rock, having similar applications. Its production in Poland started in September 1994 with the commissioning of the first installation at the “Bełchatów” power plant. Currently, such installations operate on six power units in this power plant, having total capacity of ca. 600,000 tpy. As a consequence, production of synthetic gypsum at the “Bełchatów” has risen from 45,000 t in 1994 to 600,000 t in 2000. Installations on the next two power units are under construction and should be commenced in 2002. So, total synthetic gypsum production capacity at the “Bełchatów” power plant should rise to ca. 750,000 tpy.

Desulphurisation installation at the “Jaworzno III” power plant was commenced in September 1996. It delivers 110,000—125,000 tpy of synthetic gypsum. There are no plans for additional installations, though the existing one desulphurise only ca. 60% of flue gas.

The third FGD installation was constructed at the “Opole” power plant in 1997. It supplies up to 170,000 tpy of FGD gypsum, which in the next years can be increased to ca. 190,000 tpy. The fourth installation started also in 1997 at the “Konin” power plant, having capacity of 40,000 tpy. Production fluctuated between 27,000 and 34,000 tpy, and in the near future will not exceed 35,000 tpy.

The two next FGD installations were constructed at the “Połaniec” and “Łaziska” power plants. The FGD facility at the “Połaniec” was commenced in January 1999, desulphurising flue gases from four of total eight power units. It has nominal capacity of even over 160,000 tpy, but due to lower sulphur content in hard coal used it delivers 92,000—94,000 tpy of synthetic gypsum. In the next few years this recovery can increase only slightly to 100,000—120,000 tpy. “Łaziska” power plant supplies similar quantities of FGD gypsum from a new facility, which started in the beginning of 2000. It is expected, that this plant can deliver ca. 90,000 tpy of gypsum in near future.

As a consequence of the mentioned above investments, production of synthetic gypsum in Poland rose from zero in 1993 to 1,097,000 t in 2000. The installations currently in operation had a total capacity of ca. 1,150,000 tpy. However, in the beginning of 2001 FGD installations of two power units of “Dolna Odra” were installed, with the next two expected in 2002 (total expected capacities ca. 45,000 tpy) In 2001, a new FGD installation was also commenced at the “Kozienice” power plant (projected capacity of ca. 160,000 tpy), while in 2002, the “Bełchatów” capacity will rise by ca. 150,000 tpy. So, total FGD gypsum production in Poland can achieve maximum ca. 1,500,000 t in 2003 (Fig. 1, 2).

3. Changing demand pattern for gypsum raw materials in Poland

Gypsum raw materials are the basic materials for the production of a wide range of construction products. In the majority of applications, calcined gypsum is used. Only in cement production, raw gypsum or anhydrite is utilised. In terms of gypsum consumption tonnage, the most important is the manufacture of:

- cement (crude gypsum or anhydrite as a few % additive),
- gypsum binders and plasters,
- gypsum plasterboards.

For many years, cement industry was the main consumer of gypsum and anhydrite. In terms of volume, utilisation of these raw materials in cement production has had slightly increasing tendency in recent years, but due to rising demand in other applications, the share of this sector in total gypsum raw materials consumption declined from over 60% in the beginning of the 1990s to under 50% in 1995 and only 33% in 2000 (Fig. 3). Consumption of gypsum in the second important application, i.e. production of gypsum binders and plasters, varies between 500,000 and 600,000 tpy (Tab. 3), while its share in total consumption decreased to ca. 22%. The most spectacular development was observed in the third important sector consuming gypsum, i.e. gypsum plasterboards, where nine-fold increase of production was noted in the years 1997—2000 (Tab. 4). As a consequence, the share of this industry grew from only 4% in 1991 to 42% in 2000 (Fig. 3).

Production of gypsum wall elements, blocks, self-levelling floor layers and other construction products is of minor importance. Among them, the area of self-levelling floor layers

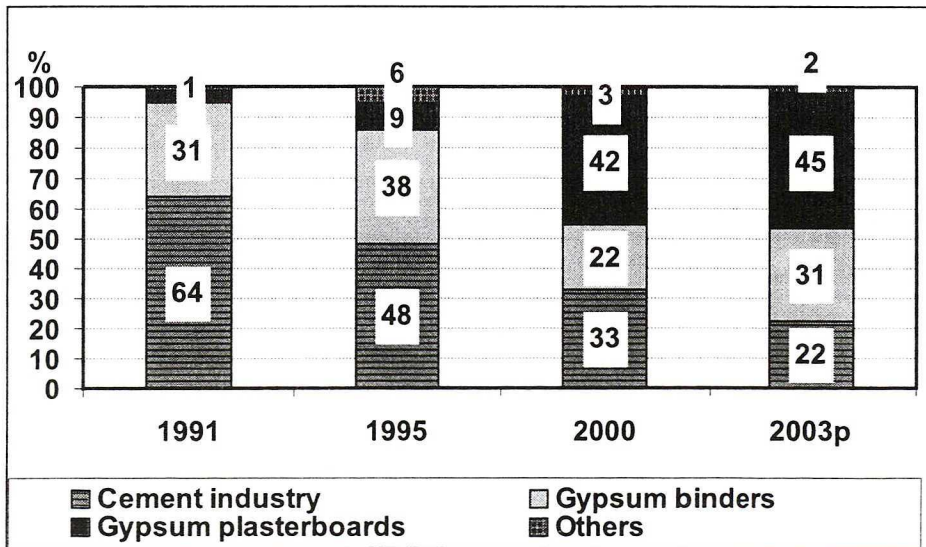


Fig. 3. Structure of gypsum raw materials consumption in Poland

Rys. 3. Struktura zużycia surowców gipsowych w Polsce

TABLE 3

Gypsum binders statistics in Poland ('000 t)

TABELA 3

Gospodarka spoiwami gipsowymi w Polsce

Year	1995	1996	1997	1998	1999	2000
Production	407.5	450.1	503.9	511.1	458.6	444.7
Exports	2.5	3.5	7.1	9.0	9.2	13.6
Imports	19.1	40.7	81.7	119.5	180.2	127.1
Consumption ^a	424.1	487.3	578.5	621.6	629.6	558.2

a — apparent.

TABLE 4

Statistics of gypsum plasterboards in Poland

TABELA 4

Gospodarka płytami gipsowo-kartonowymi w Polsce

Year		1995	1996	1997	1998	1999	2000
Production ^c	[million m ²]	9.0	9.0	10.5	29.0	64.0	89.0
Exports	['000 t]	6.7	11.1	16.9	42.8	251.6	332.8
	[million m ²]	0.7 ^c	1.2 ^c	1.8 ^c	4.6 ^c	27.0 ^c	35.8 ^c
Imports	['000 t]	92.6	183.9	235.5	249.1	190.7	155.8
	[million m ²]	9.9 ^c	19.8 ^c	25.3 ^c	26.8 ^c	20.5 ^c	16.8 ^c
Consumption ^{a,c}	[million m ²]	18.2	27.6	35.0	51.2	57.5	70.0

c — estimated,

a — apparent.

and anhydrite binders — on the basis of anhydrite powder from the “Nowy Łąd” Co. — have reported the largest growth, having also the best promises for further development.

3.1. Cement production

Cement plants use natural gypsum rock, anhydrite lump, and — in recent years — also synthetic gypsum from power plants (“Bełchatów”, “Konin”, “Połaniec”, “Łaziska”). These materials are used there as corrective constituents for setting time regulation in a batch for Portland cement production (4—6%), and — in minor quantities — for the production of anhydrite cement and other high quality cement grades. The consumption of gypsum raw materials in cement plants depends primarily on the level of cement production, therefore in recent years it stabilised at ca. 800,000 tpy. It is noteworthy, that share of synthetic gypsum usage has been increasing, and achieved 35% in 2000. Gypsum raw materials consumption in this

sector will probably be very close to the current level or even will decrease, if ashes from fluidised bed combustion will start to be used in significant quantities. They can be used simultaneously as pozzolanic admixture and as material for setting time regulation (instead of gypsum raw materials).

3.2. Gypsum binders and plasters

The most traditional use of gypsum is the production of gypsum binders, plasters and mortars. The level of Polish production in the early 1990s was only 200,000—250,000 tpy, with the “Dolina Nidy” Gypsum Plant as the dominant supplier. However, domestic production has increased rapidly in the mid-1990s to 450,000—500,000 tpy (Tab. 3). “Dolina Nidy” is still the main producer, but more than 20 other domestic and international companies have also entered the market (e.g. “Knauf”, “Henkel”, “Lafarge”, “BPP”, “Kreisel”, “Arel-Gips”). In addition to natural gypsum rock, traditionally used in Poland for the production of gypsum binders, synthetic gypsum has also been introduced for this purpose (e.g. by “Knauf” plant in Jaworzno, “Arel-Gips” plant in Bełchatów). In the next years a noticeable increase of gypsum binders, plasters and mortars is expected, mainly due to:

- development of gypsum binders, plasters and mortars production at the “Dolina Nidy” by 250,000 tpy to 2003 (planned investment by “Atlas”),
- continuous development of gypsum binders, plasters and mortars on the basis of synthetic gypsum by the “Knauf Jaworzno III” plant in Jaworzno (commenced in July 1999),
- further development of extra white gypsum binders at the “Nowy Łąd” plant.

As a result of these investments, domestic production of gypsum binders should grow in the next few years by ca. 400,000 tpy to the level of min. 900,000 tpy.

3.3. Gypsum plasterboards

Until 1997, gypsum was used to produce gypsum plasterboards only at one plant: “Nida-Gips” Ltd. of Gacki (subsidiary of “Dolina Nidy” Co.), delivering up to 10 million m² of plasterboard per year (Fig. 1, 4). In the period 1997—2000, three other plasterboards plants have been commenced: two of them based on synthetic gypsum and one on natural gypsum rock. In 1997, German “Knauf” company opened the “Knauf Bełchatów” plant with capacity 12 million m²py near the “Bełchatów” power plant, and in 1998 doubled this capacity to 24 million m²py. In 1998, the Norwegian “Norgips” company constructed another plant based on synthetic gypsum near the “Opole” power plant (capacity 40—50 million m²py). Yet another plant, based on gypsum rock from the Borków-Chwałowice mine in Szarbków, with a capacity of 26 million m² per year, was commissioned by Rigips Polska Stawiany (BPP) in 1999. Although gypsum plasterboard production in Poland has grown dynamically in recent years — from less than 10 million m²py to over 90 million m² in 2000 — it could not keep pace with increasing domestic demand until 1999 (Tab. 4). However, since 1999 Poland have become a very significant supplier of gypsum plasterboards to Central and Eastern Europe markets.

As a result of growing plasterboards production in Poland, domestic use of gypsum (both natural and synthetic) for this purpose rose from ca. 100,000 tpy to ca. 900,000 tpy, and its share

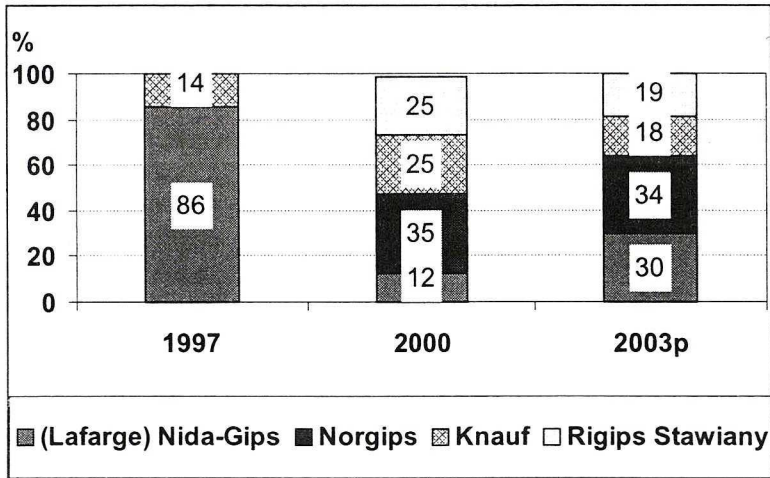


Fig.4. Structure of domestic production of gypsum plasterboards

Rys. 4. Struktura krajowej produkcji płyt gipsowo-kartonowych

in total consumption of gypsum raw materials increased from only 4% in the beginning of the 1990s to ca. 38% in 2000 (Fig. 3). This share will probably slightly increase again — to ca. 41% — because another new plasterboard plant is to be constructed. This is connected with the fact, that one of the new owners of “Dolina Nidy” Co. — “Lafarge” — through its subsidiary “Lafarge Gips Polska” started to manage gypsum plasterboard production in “Nida Gips” Ltd. and changed its name to “Lafarge Nida Gips” Ltd. This investor plans to construct, near existing plant, a new one with initial capacity 25 million m^2/y (possible further development to 35—45 million m^2/y). It is also very probable, that “Norgips Opole” production will rise by an extra 10—15 million m^2/y . Taking these facts into account, we can expect that total domestic plasterboard production should rise to 130—135 million m^2 in the next three years, and gypsum consumption for this purpose to minimum 1,500,000 tpy.

4. Relationships between producers and consumers of gypsum raw materials in Poland

Among the most significant users of gypsum raw materials in Poland, are the following: three large gypsum binders producers: “Dolina Nidy”, “Knauf”, and “Nowy Łąd”, four large gypsum plasterboards producers: “Norgips”, “Knauf”, “Rigips Polska Stawiany”, and “Nida Gips”, as well as a wide range of cement plants. “Dolina Nidy”, “Rigips Polska Stawiany”, and “Nowy Łąd” possess their own mines of gypsum or anhydrite to secure their internal needs for raw materials. However, the rest of the companies mentioned above have to buy raw materials from these gypsum/anhydrite mines, or from synthetic gypsum suppliers.

A strong competition between particular gypsum binders or plasterboards producers occurs on domestic market, so sales from gypsum/anhydrite mines are limited mostly to cement plants, but not to other gypsum binders or plasterboards producers (Tab. 5). Therefore, it is well seen

TABLE 5

Estimated directions of gypsum raw materials use from particular domestic sources in 2000

TABELA 5

Szacunkowe kierunki użytkowania surowców gipsowych od poszczególnych producentów krajowych w 2000 r.

Gypsum raw material supplier	Type of raw material	Main customers
Dolina Nidy	Gypsum rock	Internal needs (ca. 30%), Lafarge Nida Gips (ca. 20%), cement plants (ca. 35%), gypsum binders producers (ca. 5%), exports (ca. 10%)
Rigips Polska Stawiany	Gypsum rock	Internal needs (ca. 50%), cement plants (ca. 50%)
Nowy Łąd	Anhydrite, white gypsum	Internal needs (ca. 80%), cement plants (ca. 20%)
Bełchatów	Synthetic gypsum	Knauf Bełchatów plasterboard plants (ca. 50%), Knauf Jaworzno III binders plant (ca. 15%), Arel—Gips Bełchatów and other binders plants (ca. 15%), cement plants (ca. 20%)
Jaworzno III	Synthetic gypsum	Knauf Jaworzno III binders plant (100%)
Opole	Synthetic gypsum	Norgips Opole plasterboard plant (100%)
Konin	Synthetic gypsum	Cement plants (100%)
Połaniec	Synthetic gypsum	Norgips Opole plasterboard plant (ca. 70%), cement plants (ca. 30%)
Łaziska	Synthetic gypsum	Norgips Opole plasterboard plant (ca. 70%), cement plants (ca. 30%)

that all needs of “Knauf” and “Norgips” plants, as well as substantial portion of cement plants needs, must be satisfied by synthetic gypsum suppliers. Quickly increasing domestic demand for gypsum raw materials resulted even in some shortage of these materials on the market and some amounts of synthetic gypsum are currently imported, mostly by cement plants. Power plants, being synthetic gypsum suppliers, have currently a favourable position, because demand for their gypsum is higher than amounts they can deliver. This is why practically all sales are on the basis of long-term contracts. “Knauf” maintains an advantageous position, because it established joint companies with “Bełchatów” power plant (“Knauf Bełchatów” plasterboard plant) and “Jaworzno III” power plant (Bełchatów Jaworzno III” binders plant). Thus it ensured deliveries of synthetic gypsum from these two power plants, practically eliminating such deliveries to other binders and plasterboards producers (like “Norgips”).

“Norgips” constructed near Opole the largest plasterboard plant in Poland (maximum capacity up to 50 million m²/y), but it not ensured appropriate supplies of gypsum. The nearby “Opole” power plant, being a minor shareholder in this plant, secures supplies of synthetic gypsum allowing for the production of under 20 million m²/y. In order to increase production level, “Norgips Opole” seeks other sources of synthetic gypsum. The examples are “Połaniec” and “Łaziska” power plants, which signed long-term contracts with this company (the most

recent example will probably be “Kozienice” and “Dolna Odra” power plants, where FGD installations have been commenced in 2001).

Cement plants have also problems with deliveries of gypsum raw materials for the cement production. Their traditional suppliers, i.e. companies extracting gypsum or anhydrite rock, started to use the majority of their mining output for their internal needs, reducing deliveries to cement plants (to ca. 330,000 t in 2000). The reply of cement plants was an increase of synthetic gypsum usage (to 45% in 2000). However, possibilities of this raw material purchase also have been limited on domestic market, therefore since 1998 some cement plants have had to import supplementary amounts of synthetic gypsum, primarily from Germany (Tab. 1). It is estimated, that in 2000 ca. 270,000 t of synthetic gypsum were used in the cement industry, including only ca. 200,000 t from domestic sources (“Bełchatów”, “Konin”, “Połaniec”, “Łaziska”) and over 70,000 t from Germany.

5. Future outlook

The total domestic production of gypsum raw materials should achieve the level of 3.1—3.2 million tpy in 2003 (Fig. 1). It will be the consequence of expected production increase of all three gypsum raw materials: gypsum rock, anhydrite, and synthetic gypsum. In case of gypsum rock and anhydrite, it will follow the growth of internal needs of their producers, while in case of synthetic gypsum — commencement of next desulphurisation installations:

- the total production of gypsum rock should rise even to over 1.4 million tpy due to expected development of “Dolina Nidy” production of binders and plasterboards;

- the production of anhydrite at the “Nowy Łąd” company is expected to grow to minimum 320,000 tpy in the next few years because of further development of anhydrite binders and self-levelling layers production;

- the total synthetic (FGD) gypsum production in Poland is expected to achieve maximum almost 1.5 million t in 2003 due to commencement of FGD installation on the next two power units in “Bełchatów” power plant, as well as new such facility in “Kozienice” and “Dolna Odra” power plants (Fig. 1).

The quick increase of domestic gypsum raw materials consumption will be also maintained, and its rate will be even higher than in case of production. It will probably achieve the level of 3.3—3.4 million tpy in 2003, mainly due to further growth of gypsum binders and plasterboards industries:

- consumption in gypsum plasterboards industry will climb by 400,000—450,000 tpy to 1,400,000—1,500,000 tpy, because domestic plasterboard production should rise to 130—135 million m² (primarily from new “Lafarge Nida Gips” plant, but also due to probable increase in the production in “Norgips Opole” and “Rigips Stawiany Polska”);

- consumption in gypsum binders industry will increase by over 500,000 tpy to the level of min. 1,000,000 tpy, mostly as a consequence of production increase in “Dolina Nidy”, and “Knauf Jaworzno III” plants;

- consumption in the cement industry will be rather stable or even decrease due to the introduction of use of ashes from fluidised bed combustion.

Among other construction products made on the basis of gypsum raw materials, the production of binders and self-levelling floor layers, provided by "Nowy Łąd" Co. on the basis of its own anhydrite, shall also significantly increase.

It is very probable, that slight excess of demand over supply on domestic market of gypsum raw materials will be maintained in the next few years. This shortage will certainly be supplemented by imports of synthetic gypsum, probably mostly from Germany. These imports will probably fluctuate between 50,000 and 200,000 tpy. On the opposite, exports of gypsum rock from "Dolina Nidy", exceeding even 80,000 tpy in recent years (Tab. 1), will be halted due to development of gypsum processing at this company.

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PODAŻ I POPYT SUROWCÓW GIPSOWYCH W POLSCE

Słowa kluczowe

Kamień gipsowy, gips syntetyczny, anhydryt, źródła, produkcja krajowa, struktura zużycia

Streszczenie

Artykuł prezentuje źródła i produkcję surowców gipsowych w polsce w ostatnich latach, jak również charakteryzując tendencje rozwoju czołowych branż przemysłu będących głównymi konsumentami tych surowców. Przedstawione są także relacje między krajowymi producentami i użytkownikami tych surowców. W podsumowaniu przedstawiono przewidywany bilans surowców gipsowych na krajowym rynku w najbliższych latach.