

### **3. Position of Chinese Gum Rosin in the world**

It is reported that the total production of rosin (including gum rosin, floating rosin and carbonation rosin) in the world was XX Mt/year. These rosin include

- 1) Floating rosin and carbonation rosin XX Mt/year, made in America and Europe
- 2) Gum Rosin XX Mt/year, including
  - China XX-XXMt/year
  - Indonesia XX Mt/year
  - Brazil XX Mt/year
  - Mexico XX Mt/year
  - India XX Mt/year
  - Russia XX Mt/year
  - Portugal XX Mt/year
  - Other countries

The above figure shows that the gum rosin from China accounts about XX of the total production of gum rosin in the world.

### **4. Pine Resource in China**

Gum rosin and many other downstream products of terpene chemistry all derive from one natural source of raw materials – oleoresin tapped from the pine tree.

#### **1) Geography**

Pine resources in China are plentiful with over 1million hectares of pine growing and a total growing stock of around XX million cubic meters. Pine available for tapping accounts for some XX of the total growing area. The major pine growing areas are found in the provinces of Guangxi, Guangdong, Fujian, Jiangxi, Yunnan, Hunan and Hubei.

Table 1. Pine Resources in the major pine growing provinces

Province	Guangxi	Guangdong	Fujian	Jiangxi	Yunnan	Hunan	Hubei
Pine area (thousand hectares)	XX	XX	XX	XX	XX	XX	XX
Pine area for tapping (thousand hectares)	XX	XX	XX	XX	XX	XX	XX
Proportion (%)	XX	XX	XX	XX	XX	XX	XX
Growing stock (million M <sup>3</sup> )	XX	XX	XX	XX	XX	XX	XX
Trees for tapping (million)	XX	XX	XX	XX	XX	XX	XX
Major gum production Districts	XX	XX	XX	XX	XX	XX	XX

## 2) Types of pine

According to the "Flora of China", Chinese pine species are divided into 2 subgenera (*Strobus* and *Pinus*), 4 sections (*Strobus*, *Parrya*, *Sula* and *Pinus*) and 22 species with 10 varieties.

The pines used for oleoresin tapping mainly belong to the *pinus* section and the most important pines related to the turpentine industry are

Chinese native pines:

- *Pinus massoniana* Lamb ,
- *Pinus kesiya* Royle ex Gord var. *langbianensis* ,
- *Pinus yunnanensis* Franch.,
- *Pinus latteri* Mason and *P. koraiensis* Sieb. Et Zucc.
- *P. elliotii* Engelm - an American pine introduced to southern regions of China from the 1960's.

Of these, the two most important pines are *P. massoniana* Lamb and *P. elliotii* Engelm, whose oleoresin production is estimated at XX%, and XX-XX%, respectively of the total PRC oleoresin production.

Table 2. Distribution of pine species in China.

<b>No.</b>	<b><i>Pine species</i></b>	<b><i>Distribution area in China</i></b>	<b><i>Output of gum oleoresin (kg/tree/ yr)</i></b>
1	Pinus massoniana Lamb	XX	XX
2	P.kesiya Royle ex Gord var. langbianesis	XX	XX
3	P.yunnanensis Franch.	XX	XX
4	P.latteri Mason	XX	XX
5	P. elliotii Engelm	XX	XX