

JIS ESTIMATION OF POPULATION FOR JOHKASOU 浄化槽の人員算定(JIS A 3302-2000)

JSA(Johkasou System Association)
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JIS A 3302-2000

Estimation of population for Johkasou (Decentralized STP)

1. Prescribe standards for calculating the number of people of the Johkasou based on the purpose of the building.

(建築物の用途別による浄化槽の処理対象人員算定基準について規定する)

2. The criteria for calculating the number of people of the Johkasou are as shown on the table. Specified in total 11 large categories, 57 equations. Reference values for water volume per calculation unit and BOD and influent time is also shown. Discharging time is required for Eq. tank design. However, if the regulations clearly do not match the actual situation, the number of personnel may be increased or decreased. (建築物の用途別による浄化槽の処理対象人員算定基準は、表の通りとする。

Total 11 large categories, 57 equationsで規定する。算定単位当たり水量、BODそれから排水時間も参考値で示されています。排水時間は調整槽の大きさの設計が必要です。

(ただし、規定が明らかに実情にそぐわない場合は、人員を増減できる。)

3. If the same building has two or more different uses, each calculated by adding the term for building use.

(同一の建築物に2つ以上の異なった建築用途がある場合は、それぞれの建築用途の項を加算して算定する。)

JIS A 3302-2000

Estimation of population for Johkasou

1 P.E. = 200L/day, 40g BOD/day, BOD 200mg/L

Large categories(Detail categories(No.of equation))

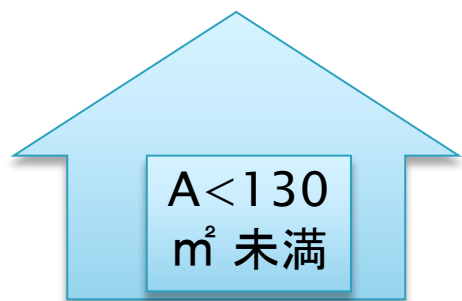
1. **Public hall** (Theater, etc. (3))
2. **Residence** (Apartment, etc. (6))
3. **Accommodation**(Hotel Motel, etc. (4))
4. **Medical facility** (Clinic, etc. (5))
5. **Shop**(Shop,Restaurant, Café etc. (6))
6. **Amusement facilities** (Disco, Amusement Park etc. (13))
7. **Parking** (Highway rest area, gas station etc. (7))
8. **School** (Elementary school, Collage,Library, etc. (3))
9. **Office** (with canteen, without canteen. (2))
10. **Workshop** (factory, Laboratory, etc. with canteen, without canteen(2))
11. **Others** (Public toilet, etc. (6))

Total 11 large categories, (Detail categories 57 equations)

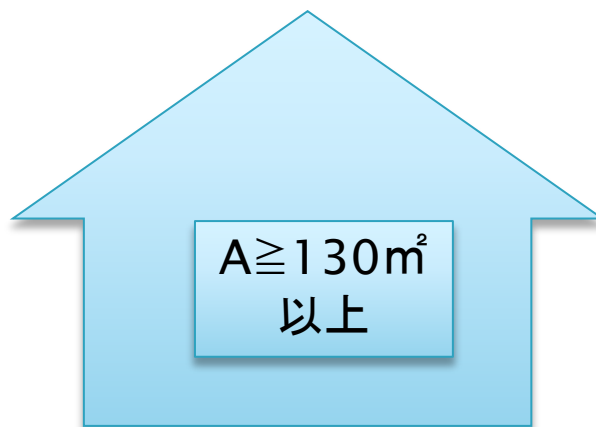
2. 1. Residence 住宅

【Equation】

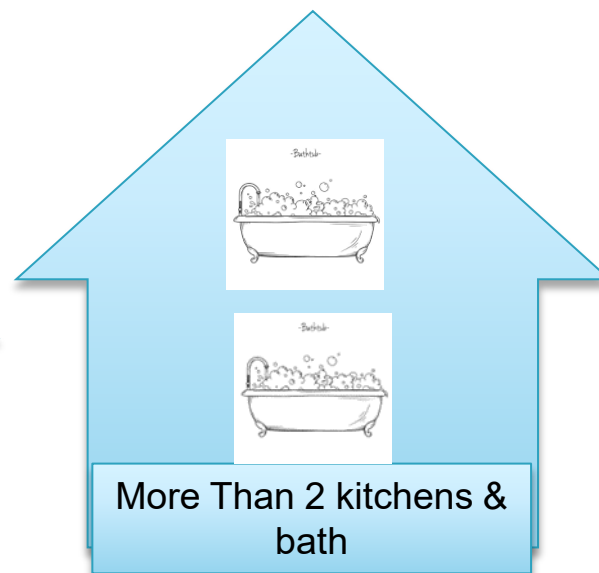
If total floor area A (m^2) $< 130m^2$, Johkasou capacity (P.E.) shall be 5 P.E.



$n = 5$ p.e. 人槽



$n = 7$ p.e. 人槽



$n = 10$ p.e. 人槽
2 family house
2世帯住宅

2.2. Apartment 共同住宅

▶ Apartment 共同住宅

【Equation】

Johkasou Capacity (P.E.) $n = 0.05 \times A$ (p.e.)

(A (m²) : total floor area)

Ex. If one house A=50 m² and 150 houses 戸

$n = 0.05 \times 50 = 2.5$ p.e. < 3.5 p.e

then $n = 3.5$ and

Total $n = 3.5 \times 150 = 525$ p.e. 人槽

○ $Q = 0.2 \text{ m}^3/\text{p.e.}/\text{d} \times 525 \text{ p.e.}$

○ $= 105 \text{ m}^3/\text{d}$

○ BOD=200mg/L



4. Medical Facilities 医療施設関係

Example

Large hospitals with commercial kitchens or laundry facilities

【Equation】

$B(\text{beds}) < 300$: $n = 8 \times B$ (p.e.)

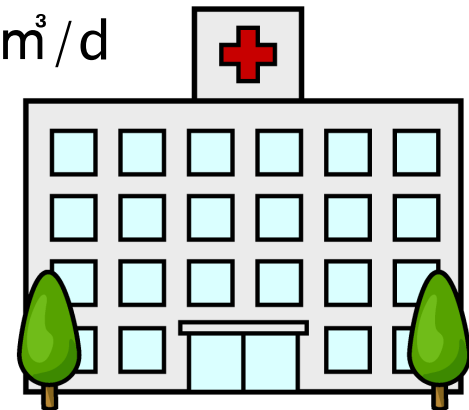
$B(\text{beds}) \geq 300$: $n = 11.43 \times (B - 300) + 2.400$ (p.e.)

Ex. If $B = 100$ beds

$n = 8 \times 100 = 800$ p.e.人槽

$Q = 0.125 \text{ m}^3/\text{p.e.}/\text{d} \times 800 \text{ p.e.} = 100 \text{ m}^3/\text{d}$

$\text{BOD} = 320 \text{ mg/L}$



5. Shop 店舗関連

① Shop/market 店舗、マーケット

【Equation】

Johkasou capacity (P.E.) $n = 0.075 \times A$

(A (m²) : total floor area)

② Restaurant(General) 飲食店(一般)

【Equation】

Johkasou capacity (P.E.) $n = 0.72 \times A$

Ex. 1,000m² Restaurant レストラン

$n = 0.72 \times 1000 = 720$ p.e 人槽

$Q = 0.18\text{m}^3/\text{p.e.}/\text{d} \times 720 \text{ p.e.} = 129.6 \rightarrow 130\text{m}^3/\text{d}$

BOD = 220mg/L



9. Office 事務所関連

Office with kitchen 事務所

【Equation】

(With kitchen 厨房施設有り)

Johkasou capacity (P.E.) $n = 0.075 \times A$

(A (m²) : total floor area)

(Without kitchen 厨房施設無し)

Johkasou capacity (P.E.) $n = 0.06 \times A$

Ex. 400m² with kitchen

$$n = 0.075 \times 400 = 30 \text{ p.e. 人槽}$$

$$Q = 0.2 \text{ m}^3/\text{p.e./d} \times 30 \text{ p.e.} = 6 \text{ m}^3/\text{d}$$

$$\text{BOD} = 200 \text{ mg/L}$$



10. Workshop 作業場関係

Factory, laboratory 工場、研究所(厨房施設有り)

(With kitchen 厨房施設有り)

【Equation】

Johkasou capacity (P.E.) $n = 0.75 \times P$

(P : Full number (person)※定員)

(Without kitchen 厨房施設無し)

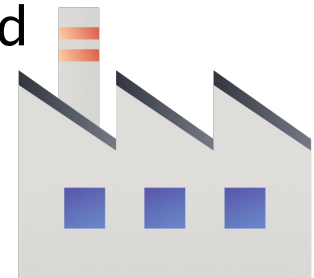
Johkasou capacity (P.E.) $n = 0.3 \times P$

Ex. P=100 persons with kitchen 厨房有

$n = 0.75 \times 100 = 75$ p.e. 人槽

$Q = 0.133 \text{ m}^3/\text{p.e./d} \times 75 \text{ p.e.} = 10 \text{ m}^3/\text{d}$

BOD=300mg/L



11. Others その他施設

Ex. Public Toilet 公衆便所

【Equation】

Johkasou capacity (P.E.) $n = 16 \times C$

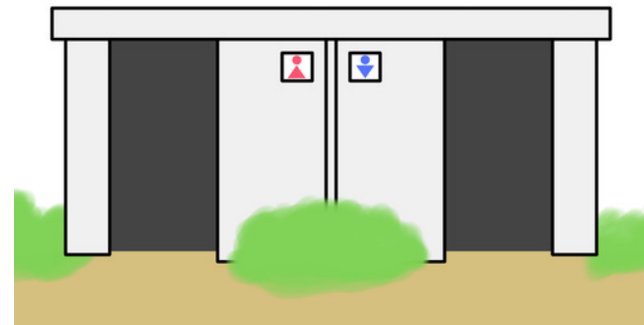
(C: Number of lavatory basin 総便器数)

Ex. C=10 Public toilet 便器10個の公衆便所

$n = 16 \times 10 = 160$ p.e. 人槽(24m³/日)

$Q = 2.4\text{m}^3/\text{set}/\text{d} \times 10 \text{ sets} = 24 \text{ m}^3/\text{d}$

BOD = 260mg/L



Application Overseas

海外での適応

●The JIS calculation standards are determined statistically based on survey (took several years for dozens of JSA companies) data such as drainage volume, number of population, and total floor area for actual construction purposes in Japan. It is reviewed and revised from time to time in response to changes in lifestyle.

JISの算定基準は、日本での実際の建築用途の排水量、使用人員、延べ床面積などの調査データ(JSA数十社で数年かかった)から統計的に定めているもの。時折生活様式の変化などに合わせ、見直し改定が行われている。

●When overseas, estimation of population should be done according to the lifestyle of the country.

海外では、その国の生活様式に合わせた算定を行うことが望ましい