SiTec is an experienced technology partner for the production of trichlorosilane using direct chlorination (DC) or hydrochlorination (HC) technology. Depending on the customer needs, existing infrastructure, local conditions etc. the most suitable technology package will be provided.

In the direct chlorination process, TCS is produced from metallurgical silicon (MG-Si) and hydrogen chloride (HCl) at ~300-360 °C and ~6 barg according to the reaction:

$$\text{MG-Si} + 3 \text{HCl} \rightarrow \text{HSiCl}_3 (\text{TCS}) + \text{H}_2$$

The slightly endothermic hydrochlorination process takes place at 500-550 °C and 25-33 barg. TCS is produced from metallurgical silicon, silicon tetrachloride (STC) and hydrogen (H₂) according to the reaction:

$$\text{MG-Si} + 3 \text{SiCl}_4 (\text{STC}) + 2 \text{H}_2 \rightarrow 4 \text{HSiCl}_3 (\text{TCS})$$

The product of TCS synthesis (DC and HC) is a mixture of chlorosilanes, which needs further separation and purification. SiTec supplies complete engineering and technology package for the production of solar and microelectronic grade TCS.
Technology Package for Polysilicon Plants

Trichlorosilane (TCS) Production

Componentsof TCS Technology Package

- TCS synthesis in FBR (Fluidized Bed Reactor)
- Dust separation
- Condensation
- Treatment of metal chlorides
- TCS/STC separation
- TCS purification
- STC purification
- DCS separation, distillation and dismutation

Features

- Guaranteed performance
- High efficient metal chloride removal
- High conversion efficiency
- Long uninterrupted uptime of the FBR
- High efficient dust scrubbing
- Integrated solid waste treatment system
- Proven track records

Benefits

- The most suitable for the customer TCS production solution
- Commissioning and start-up supervision included
- Optimized design with reduced operating costs

SiTec GmbH is a leading company providing an Integrated Engineering and Technology Package for solar and microelectronic grade polysilicon. Our proven technology has been realized in numerous projects in China, South Korea, India, North America, Europe, CIS and Middle East.

SiTec GmbH
Buergermeister-Wegele-Str. 12
86167 Augsburg
Germany
T +49 821 45016 600
F +49 821 45016 610
info@centrotherm-sitec.de
www.centrotherm-sitec.de