

GLASSHOUSE POTS

The fireclay deposits of the Halifax district were the basis for the foundation of PSR and remain the principal raw material for the manufacture of Glasshouse Pots.

Raw Materials

Located in the hillside region of West Yorkshire PSR operate 2 sites for the extraction of glasshouse potclay. One is a drift mine, set in the picturesque Shibden Valley near Halifax. The other is an open-cast quarry at Denholme near Bradford. Both sites contain different outcrops of the same 'Halifax Hard Bed Clay', a fireclay unique to the region that has been associated with the manufacture of glass for more than 200 years. Unlike most common fireclays that will not withstand temperatures greater than 1300°C/1350°C, the clays used by PSR will operate at temperatures as high as 1450°C/1500°C depending upon their application and usage. This unique refractoriness, coupled with low iron and low impurity, make Halifax clays the ideal material for the manufacture of glasshouse pots.

Manufacturing skills

PSR manufacture pots only by hand using techniques and skills developed over decades of experience. This allows total flexibility of production and ensures that all types of pot from open to semi-open and covered can easily be accommodated.

Quality Control

Accreditation by CICS (Ceramic Industry Certification Scheme) to the international standard ISO-9002 ensures that the systems and processes involved in the manufacture of pots are closely controlled and conform to international standards.



THE MATERIALS

PSR's principal potclay mix, G25, is derived from the local Halifax Hard Bed clay seams. In addition an aluminous mix, M42, is available for special applications.

G-25 25% Al₂O₃ / 72% SiO₂

G-25 is the traditional PSR potclay mix that has been used by the UK & Irish lead crystal industry for generations. It is classified as an 'acid' clay in that it is high in SiO₂ and low in Al₂O₃. Its siliceous composition and low iron content make it the perfect companion for most types of glasses, enabling low refractory contamination and easy dissolution, and its low Al₂O₃ content prevents the generation of aluminous cord. The majority of PSR's output is in the form of finished pots and rings but G-25 is also available for sale pre-mixed and ready for use.

Recommended uses: lead-crystal glasses, soda-lime glasses, coloured glasses, borosilicate and opal glasses.

M-42 42% Al₂O₃ / 54% SiO₂

M-42 is a mix specially formulated for applications where a higher Al₂O₃ content is required. Classified as 'basic' because of its alumina content M-42 is made from sintered English china clays formulated into a matrix that can be worked in a similar manner to PSR's traditional potclay mix. It is extremely pure, with a very low iron content.

Recommended uses: borosilicate and opal glasses, special 'hand-made' shapes for all sectors of the glass industry.

Typical chemical analysis

	Al ₂ O ₃	SiO ₂	Fe ₂ O ₃	TiO ₂	CaO	MgO	Na ₂ O	K ₂ O
G-25	25.25	71.69	1.5	trace	0.18	0.16	0.43	0.60
M-42	42.0	54.5	1.1	0.07	0.06	0.31	0.1	2.0

All values are average and subject to change without notice

Arching & sintering of PSR pots

PSR pots use standard techniques for arching and sintering. After delivery they should be stored in warm, dry conditions, and before starting the arching cycle should preferably be held in the furnace for 24 hours at a temperature well below 100°C. Up to 900°C an even and controlled climb must be maintained, particularly through the critical 500-680°C range. A top soak temperature of 1440°C is recommended in order to obtain proper sintering of the pot. Temperatures above 1450°C however should be avoided as some deformation is likely to occur in the range between 1460-1500°C.

Skeletal-firing

A practice recommend for covered pots is one known as 'skeletal firing'. This technique involves densifying the inside of the pot to elevated temperatures at the end of the arching cycle and requires a supplementary burner to be fired through the mouth of the pot whilst normal top furnace temperature is maintained. A temperature of 1500°C measured on the back wall of the pot and held for 12 hours at a furnace temperature of 1440°C can significantly improve pot life and reduce contamination of the molten glass from refractory stones. Temperatures above 1500°C will damage the pot.

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