

Gauge Plate / Ground Flat Stock Datasheet

Sheffield Gauge Plate supply ground flat stock, also known as gauge plate, of the highest quality. Our GFS is a precision ground flat bar made from AISI O1 tool steel grade. However, we can supply other steel grades upon request, such as [D2](#), [EN8](#), [420](#), [H11](#), and [P20](#).



Ground Flat Stock Application

[O1 tool steel](#) is an oil-hardened cold-work steel containing a fine grain with superior sharpening abilities. Therefore, this universal steel is suitable for industrial machine knives, blades, shear knives, press tools, thread gauges and woodworking tools.

In addition, as this steel grade contains a high carbon level with manganese, it provides a fantastic material with low dimensional movement/ distortion following the hardening process. Overall, GFS offers good machinability in the pre-supplied condition and is suitable for general use with high wear resistance due to the addition of Tungsten, Vanadium and Chromium.

O1 Tool Steel Analysis

The chemical composition below comprises O1 tool steel, the standard steel grade for ground flat stock and gauge plate.

Carbon	0.95%
Manganese	1.20%
Chromium	0.50%
Tungsten	0.50%
Vanadium	0.20%
Silicon	0.25%



These [elements of steel](#) increase the GFS's hardenability and the capability to resist grain growth. It is supplied in an annealed condition with a maximum Brinell hardness of 229HB (50 Tons per Sq. In. Tensile Strength) and a Rockwell C scale between 14-20.

Ground Flat Stock Form of Supply

At Sheffield Gauge Plate, we have fantastic in-house manufacturing facilities. As a result, we can produce almost any size gauge plate and flat stock, depending on your requirements and desired applications.

Ground flat stock is supplied in the below forms:

- Sheet
- Flat
- Plate

In addition to our standard **metric** and **imperial** sizes, we can supply bespoke, non-standard measurements in large and small quantities.

Metric Ground Flat Stock

Width:

6mm, 10mm, 15mm, 20mm, 25mm, 30mm, 40mm, 50mm, 60mm, 70mm, 75mm, 80mm, 100mm, 125mm, 150mm, 200mm, 250mm, 300mm, 350mm, 405mm, 500mm.

Thickness:

1mm, 1.5mm, 2mm, 3mm, 4mm, 5mm, 6mm, 8mm, 10mm, 12mm, 15mm, 20mm, 25mm, 30mm, 40mm, 50mm.

Imperial Ground Flat Stock

Width:

1/4", 3/8", 1/2", 5/8", 3/4", 1", 1.1/4", 1.1/2", 2", 2.1/2", 3", 4", 5", 6", 8", 10", 12", 14".

Thickness:

1/32", 1/16", 3/32", 1/8", 5/32", 3/16", 1/4", 5/16", 3/8", 1/2", 5/8", 3/4", 1", 1.1/4", 1.1/2", 2".

	Imperial	Metric
Width	1/4" - 14"	6mm - 500mm
Thickness	1/32" - 2"	1mm - 50mm
Length	18", 36"	500mm - 1000mm

For more information on our sizes, stock availability and lead times, please contact the team at [0114 233 5291](tel:01142335291).

Annealing O1 GFS

All our wear-resistance O1 stock is supplied in an annealed format, making annealing unnecessary. However, to re-anneal, heat the product uniformly until 780° – 800° C. Once you have reached this temperature, hold the steel for around one hour.



Next, bring the temperature back down slowly in a furnace and do not exceed a rate of 25° C per hour for the first 200° C. You can use a faster cooling rate once you have brought your O1 grade back to 200° C.

Hardening O1 GFS

Hardening your O1 steel is sometimes necessary if you require the finished application to hold additional mechanical properties. The two options to harden your O1 steel include; the **direct method** and the **martempering method**.

Direct Method

Heat the steel to the hardening temperature of 790° C – 810° C. Depending on your supplied size, the recommended temperature may differ. Once you have reached the temperature, proceed to quenching, oil hardening, or water hardening.

Martempering Method

The difference between methods is that a salt bath quenching facility is used during martempering, which reduces distortion, internal strain, and quench cracking.

Heat the steel piece to the hardening temperature used in the direct method. Then, it can be quenched in oil using your salt solution, which should sit at approximately 200° – 210° C. Once equalisation has been performed, and you have held in the salt bath for a maximum of 10 minutes, remove, air cool to 80° C – 100° C and immediately temper.

Tempering O1 GFS

Tempering removes excess stress introduced during the hardening process and should be performed between 80° C – 100° C.

To temper, soak for around one hour and use an air-circulating furnace, if possible.

[Sheffield Gauge Plate](#) has been producing steel at our facility for over 40+ years; therefore, we guarantee quality with all ground flat stock orders. Our expertise, knowledge and experience will deliver your order on time, at the correct size and weight.

Order by phone: [0114 233 5291](tel:01142335291)

Order by email: sales@sgpltd.co.uk

