The Macsteel Metallurgical Services Division (MSD) has been set up as an aid to both the Special Steels Division and the Heat Treatment Division. The MSD department also acts as an independent business unit that does work for outside customers.

The MSD Laboratory performs the following services:


SPECTROGRAPHIC CHEMICAL ANALYSIS DETERMINATION

The department has two instruments at its disposal, one ARL 3360 laboratory instrument capable of analyzing for C, Si, Mn, S, P, Cr, Ni, Mo, Cu, V, Al and Ti and one SPECTROTEST mobile instrument capable of analyzing for C, Si, Mn, S, P, Cr, Ni, Mo, Cu, V, Al, Sn, As and B at virtually any site where accessible. Chemical analysis service include product identification, sorting, verification, etc. of components, stock in virtually any form.

Typical steel grades that can be analyzed either for identification and/or verification are:

Carbon steels including Hollow Bar
070M30 (EN 3A), 080M40 (EN 8), 070M55 (EN 9), 150M19 (EN 14B), St52, SAE 1020

Alloy steels
709M40 (EN 19), 817M40 (EN 24), 826M40 (EN 26), 835M15 (EN 39B), 835M30 (EN 30B), K0006, 655M13 (EN36)

Tool steels
D2 (1.2379), H13 (1.2344), S1 (1.2542), O1 (1.2510), L6 (1.2714), D6 (1-2436)

MECHANICAL TESTING

Tensile testing up to 500 kN with an AVERY universal tensile machine on standard and sub-size test pieces as well as many different components with the aid of custom designed grips. Impact testing of "Charpy" or "Izod" specimens and can be done from Room temperature (20°C) down to -189°C. Brinell hardness measurements can be performed on virtually any component on site and off site. Rockwell, Vickers and Micro-Vickers hardnesses can be done on suitably prepared components and samples where necessary. Machining and preparation of samples for mechanical testing are done in the preparation room situated next to the testing laboratory. These include machining of tensile test pieces, Charpy and izod test specimens, surface preparation for hardness testing, etc.

NON DESTRUCTIVE TESTING

Ultrasonic testing of any product can be performed by qualified SNT-TC-1A Level 2 technician/s on request. Testing can be done to specific customer requirements on site, prior to processing, after Heat treatment, after processing and in special cases off site. Typical testing is done on round and square bar after heat treatment, prior to machining and after rough machining (to the more stringent specifications) Specifications generally utilized is AAC 999/6, AQL level 1,2 & 3, etc.

FAILURE INVESTIGATIONS & METALLOGRAPHIC EVALUATIONS

A laboratory equipped with two optical light microscopes, micro-hardness tester, low power stereo microscope, Rockwell hardness tester, sample preparation machines, etc. enables the Metallurgical Services Department to provide a full metallurgical service not only to the Heat Treatment and Sales & Marketing Departments but also to customers and end-users in the steel and engineering industry.

Services provided are, among many others:
Micro-hardness testing
Case hardness determination
Microstructure determination and evaluation
Technical information and support
Metallographic examination and evaluation of materials and products
Metallurgical investigations and evaluations of failures
Material/steel grade classification, verification and validation