





## P A P A E R P R E S E N T A T I O N S

### -- SHAPING & FABRICATION · INSTRUMENTATION & CONTROL --

APRIL 1, 1985

286	Roll speed control in full float mandrel mill. Toshio Imae, et al. ....	S287
287	Outline of new heat treatment furnaces and development of the control model for optimum heating. Shuichi Kishida, et al. ....	S288
288	Effects of circumferential residual stress distribution on collapse strength of oil country tubular goods. Ken-ichi Tohyama, et al. ....	S289
289	CAD/CAM <sup>2</sup> /CAE system for casing & tubing connections. Haruo Kozono, et al. ....	S290
290	Behavior of tool surface at piercing of seamless pipe. Akira Ohnuki, et al. ....	S291
291	Improvement of rolling characteristics by lubrication on edge rolling mill. (Application of rolling oil on edge rolling mill--II). Katsumi Takada, et al. ....	S292
292	Application of high chrom roll. Yutaka Horiuchi, et al. ....	S293
293	Practical application of chromium plated roll. Tomoya Izushi, et al. ....	S294
294	The effect of viscosity of lubricant on roughness wear down of W.R. (An experimental study about the cause of work roll wear on the cold rolling of Al-killed CC steel--IV). Daisuke Ozaki, et al. ....	S295
295	Evaluation of lubricity of commercial lubricants. (Study on evaluation of lubricants in cold sheet rolling--VI). Yoshihiko Kita, et al. ....	S296
296	Fundamental study on iron extraction step. (Recovery of acid and iron from pickling waste liquid of stainless steel--II). Kazuhiro Uchino, et al. ....	S297
297	Operation condition of Fe extraction plant. (Recovery of acid and iron from pickling waste liquid of stainless steel--III). Toshio Watanabe, et al. ....	S298
298	Development of water separator for rust preventive oil. Takaharu Komatsu, et al. ....	S299
299	Production control system for steel manufacture and rolling synchronization. Mitsunari Matsubara, et al. ....	S300
300	Control system for iron and steel making. (Development of total production control system for ironmaking, steelmaking and rolling--II). Makoto Kijima, et al. ....	S301
301	Thin plate production system. (Development of total production control system for ironmaking, steelmaking and rolling--III). Tadao Shibata, et al. ....	S302
302	Plate production system. (Development of total production control system for ironmaking, steelmaking and rolling--IV). Takahiro Yamamoto, et al. ....	S303
303	The development of the integrated production control system of the heavy plate mill. Yasumasa Nariai, et al. ....	S304
304	The outline of total bar and rod rolling information system at Mizushima works, Kawasaki Steel Corp. (Total bar and rod rolling information system at Mizushima Works, Kawasaki Steel Corp.--I). Kiyoji Ino, et al. ....	S305
305	The application of a voice input terminal to Mizushima bar and rod mill. (Total bar and rod rolling information system at Mizushima Works, Kawasaki Steel Corp.--II). Kohsei Aoki, et al. ....	S306
306	Integrated production scheduling system for seamless pipe cold mill. Yasuo Katagi, et al. ....	S307
307	Development of railway transportation process computer. (A control system of railway transportation at Fukuyama Works, Nippon Kokan K.K.--II). Taichi Aoki, et al. ....	S308
308	An application of microcomputer network system for pipe finishing line by optical fiber loop. Kazuhiro Iga, et al. ....	S309
309	Outline of data analysis system for quality control. Motohiko Igata, et al. ....	S310
310	A control system of hot direct rolling at Fukuyama No.5CCM-No.2 hot strip mill. (Development of HDR system--I). Katsumi Matsumura, et al. ....	S311
311	Automatic control system at NKK Fukuyama 5CCM. (Development of HDR system--II). Masaki Takenaka, et al. ....	S312
312	New computer control system of hot strip mill in Muroran Works, Nippon Steel Corp. Yukio Wakamatsu, et al. ....	S313
313	Development of set up system of edger upstream finishing mill. Katsuji Matsuo, et al. ....	S314
314	Development of width control system in installing in-line sizing mill. Hiroyuki Mizuno, et al. ....	S315

315	Development of crop-shape detector in hot strip mill. Issei Ikenoue, et al. ....	S316
316	Outline of heat insulator of Fukuyama No.2 hot strip mill. Takumasa Terauchi, et al. ....	S317
317	Development of lateral motion detector in hot strip mill. Shin-ichiro Taniguchi, et al. ....	S318
318	Development of inline roll grinding for hot strip mills. Kouichi Sakamoto, et al. ....	S319
319	Pre-rolling method by hydraulic width-controller. (Development of a new rolling method to get high yield on edge rolling mill--I). Katsumi Takada, et al. ....	S320
320	Development of a new rolling method to get high rolling capacity in edge rolling mill. Katsumi Takada, et al. ....	S321
321	End-effect in edge rolling. Tadashi Hashimoto, et al. ....	S322
322	Development of crown prediction model for high crown control mill at Mizushima hot strip mill of Kawasaki Steel Corp. (Operation and quality of high crown control mill (HC mill)--III). Yutaka Naruse, et al. ....	S323
323	Developments of strip crown set up system of high crown control mill at Mizushima hot strip mill of Kawasaki Steel Corp. (Operation and quality of high crown control mill (HC mill)--IV). Akihiko Takeya, et al. ....	S324
324	Profile control of a hot strip by VC roll. Takeshi Masui, et al. ....	S325
325	Decrease of edge drop by work roll shift rolling. Yasuyuki Miyai, et al. ....	S326
326	Wedge control by dual-AGC system. (Development of canber control system--I). Nobuhiro Kawano, et al. ....	S327
327	Coiling temperature control of high carbon steel. Eiji Kako, et al. ....	S328
328	Experimental investigation on rolling properties of rib-strip. (Development of hot strip with longitudinal ribs--I). Sadakazu Masuda, et al. ....	S329
329	Production of hot rib-strip and its application to spirallpipe with inner ribs. (Development of hot strip with longitudinal ribs--II). Sadakazu Masuda, et al. ....	S330
330	Outline of modified coiler of Fukuyama No.2 hot strip mill. Takumasa Terauchi, et al. ....	S331

#### APRIL 2, 1985

331	Plate crown and steepness control by VC roll in plate mill. Yasuhiro Yamamoto, et al. ....	S332
332	Quantitative estimation of wave generation mechanism. Yasuhiro Yamamoto, et al. ....	S333
333	Development of a high strength mill spindle and consideration of strength evaluation method for the spindle. Noriaki Inoue, et al. ....	S334
334	High precision new type shear for plate. (Modernization of plate shear line at Fukuyama Works, Nippon Kokan K.K.--I). Kazuhiro Hirose, et al. ....	S335
335	Automatic system for new shear line. (Refresh of plate shear line--II). Seita Terao, et al. ....	S336
336	Process computer system for new plate shear line. (Refresh of plate shear line--III). Shinji Oohori, et al. ....	S337
337	Analysis on camber of plates after longitudinal cut. (Shape control in controlled cooling of steel plates). Naotake Yoshihara, et al. ....	S338
338	Outline of controlled cooling equipment in Nagoya Works, Nippon Steel Corp. Katsuhiko Oka, et al. ....	S339
339	Automatic hook for crane handling. Takeo Tokano, et al. ....	S340
340	Outline of modified reheating furnace of Fukuyama No.2 hot strip mill. Hisatomo Eda, et al. ....	S341
341	Development of heat resistant skid metal in hot skid pusher furnace. Kiyoshi Takagi, et al. ....	S342
342	Application of hot skid and KS burner for continuous reheating furnace at Mizushima bar and rod mill, Kawasaki Steel Corp. Yoshitaka Sasa, et al. ....	S343
343	Outline of bar edge heater of Fukuyama No.2 hot strip mill. Takumasa Terauchi, et al. ....	S344
344	No.2 rotary furnace for silicon steel. Shigeru Yoshida, et al. ....	S345
345	Optimum strip-temperature control for a continuous annealing furnace. Naoharu Yoshitani, et al. ....	S346
346	The combustion optimization system by CO-opacity and hydrocarbon control. Motoyoshi Mine, et al. ....	S347
347	Development of a new-type burner for blast furnace gas. Kunihiro Yabuki, et al. ....	S348

348	Improvement of roll quenching technique. (Research on continuous annealing method--IV). Mineki Okura, et al. ....	S349
349	Water-filled cooling tube for bar and its cooling characteristics. (Temperature control technique for controlled rolling and cooling of bar--I). Mitsuru Moritaka, et al. ....	S350
350	Instability phenomena of heat transfer caused by scale on hot steel surface. (Study on cooling technology of heat treatment of pipes). Kyouhei Murata. ....	S351
351	Strip breakage mechanism of starting mills and the countermeasure. Tsutomu Sakimoto, et al. ....	S352
352	Simulation model of strip shape by roll spot cooling in HC mill. Kengi Hara, et al. ....	S353
353	A technique for reducing the edge drop of cold rolled steel strip by the application of tapered work roll. Kazumi Jiromaru, et al. ....	S354
354	Edge drop control by work roll shift technique in cold rolling. Taketo Sasaki, et al. ....	S355
355	Effect of temper rolling conditions on coil set of tin plate. Yoshitsugu Sakamoto, et al. ....	S356
356	Development of automatic operation system for pickling line. Hideo Toyosaka, et al. ....	S357
357	Development of new high speed electric cleaning line. Akishiro Yoshihara, et al. ....	S358
358	The summary of high speed tension leveler for cold rolled sheets. Masao Ono, et al. ....	S359
359	New strip guide system for horizontal looper. Toshiro Fukuokaya, et al. ....	S360
360	Development of the manufacturing technology for ERW pipe. Yoshihiro Kouno, et al. ....	S361
361	Forming load of ERW pipes. Yukihiisa Kuriyama, et al. ....	S362
362	Occurrence mechanism of hook-crack in ERW tubes. Yuuji Hashimoto, et al. ....	S363
363	Temperature rising characteristics in electric resistance heating of stainless steel. (High-frequency welding phenomena of stainless steel--I). Yuuji Hashimoto, et al. ....	S364
364	Discrimination of flaw types in weld of ERW tube. Kazuo Fujisawa, et al. ....	S365
365	Development of high-carbon (0.6 % C) steel ERW tubes. Yasuo Kimiya, et al. ....	S366
366	Forming characteristics of small-diameter and heavy-wall ERW tubes. Yoshinori Sugie, et al. ....	S367
367	Theoretical study on straightening of steel pipe. Tetsu Matoba, et al. ....	S368
368	Application of industrial robot. (Development of UO pipe tab cutting system--I). Tetsuo Tanabe, et al. ....	S369
369	Tab position recognition system. (Development of UO pipe tab cutting system--II). Kuniyoshi Yamasaki, et al. ....	S370
370	Development and automation of plate-tab method in UOE pipe-making process. Teruyuki Tanaka, et al. ....	S371

APRIL 3, 1985

371	Improvement of billet rolling yield by press preforming of strand cast bloom. Tatsuya Yoshida, et al. ....	S372
372	Actual rolling of wide flange beams from CC-slab. (Rolling of wide flange beams from CC-slab--II). Michihiro Ohama, et al. ....	S373
373	Universal rolling of H beams with driven vertical rolls. Ichiro Nakauchi, et al. ....	S374
374	Development of new rolling method for H-shape with protrusions. Shuji Noguchi, et al. ....	S375
375	Universal roller guide of rail. Toshio Tanaka, et al. ....	S376
376	Improvement of consumption of rolls for shapes. Katsuya Iwano, et al. ....	S377
377	Application of fuzzy information processing to potimum bloom cutting system in a section mill. Hiroshi Higashinaka, et al. ....	S378
378	Practical application of CAD for bar rolling. Mikio Moriga, et al. ....	S379
379	Reconstruction of the process for rolling 2 ton coil of wire rod. Masao Fukuchi, et al. ....	S380
380	Development of the coil reforming technique of wire rod. Yasuo Kosuge, et al. ....	S381
381	Development of direct quench by cold water for EDC process. Kenji Fukuyasu, et al. ....	S382
382	Process computer system of the bar and rod mill at Mizushima Works, Kawasaki Steel Corp. Hidetoshi Torikoshi, et al. ....	S383
383	Computerized process control system for high speed rod mill. Yasuhiro Ogawa, et al. ....	S384

384	Simulation model of rolling temperature in rod and bar mill. Katsuhiko Mori, et al. ....	S385
385	One approximate solution for strain analysis in tension leveler. (Effect of tension leveler for hot strip stainless steel--I). Toshio Watanabe, et al. ....	S386
386	Relation between shape and elongation of hot strip stainless steel in tension leveler. (Effect of tension leveler for hot strip stainless steel--II). Masahiko Ito, et al. ....	S387
387	As cast billet hot extrusion of continuously cast round billets of austenitic stainless steel. Tsunetoshi Takahashi, et al. ....	S388
388	Direct hot extrusion of Ni-base alloys produced by electro slag remelting. Manabu Tamura, et al. ....	S389
389	Emissivity of metals for radiation thermometry. Masashi Mizuno, et al. ....	S390
390	Development of radiation thermometer. Masashi Mizuno, et al. ....	S391
391	Development of on-line gloss measurement system for stainless steel sheets. Motoji Shiozumi, et al. ....	S392
392	Development of the automatic surface defects inspector by specular and diffused reflection. Muneo Ikejiri, et al. ....	S393
393	Diagnosis technology of coiler with link motions. Takushi Nakada, et al. ....	S394
394	Work roll bearing diagnosis system. Yutaka Horiuchi, et al. ....	S395
395	Development of a diagnosis for the rolling mills-back up roll journals by acoustic-emission. Noriaki Inoue, et al. ....	S396
396	Development of laser range finder. Kazuo Hiramoto, et al. ....	S397
397	Development of scarfing flame observation. (Automatic detection of hot slab subsurface inclusion--I). Shuji Matsumoto, et al. ....	S398
398	Hot surface defect detection device. Hidefusa Ishiwatari, et al. ....	S399
399	Surface defect detection device for round billet. Hidefusa Ishiwatari, et al. ....	S400
400	Double-sound transmission type C-scan ultrasonic testing. Hajime Takada, et al. ....	S401
401	Development of ultrasonic flaw detector for rail interior. Yoshiaki Makino, et al. ....	S402
402	The inspection system for surface and inner defects of steel round bar. Yasunori Kido, et al. ....	S403
403	Mechanization of nondestructive examination on forge shells for pressure vessel. Takenori Watanabe, et al. ....	S404
404	All cross sectional inspection system of steel wires. Shigeaki Matsumoto, et al. ....	S405
405	Improvement of eddy current detection for the internal crack of alloy steel. Hisashi Iwasaki, et al. ....	S406
406	Development of automatic seam tracer for ERW pipe seam UT. Mikio Aratama, et al. ....	S407

-- CHEMICAL ANALYSIS · SURFACE TREATMENT --

APRIL 1, 1985

407	Determination of trace amounts of As, Bi, Sb, Se and Te in steel and Ni-base alloys by flow injection-hydride generation-atomic absorption spectrophotometry. Kazuo Matsubara, et al. ....	S408
408	Determination of Fe <sup>3+</sup> by flow injection analysis with absorptiometry. Yasuo Inokuma, et al. ....	S409
409	Determination of micro-amounts of lead and tellurium in steels by extraction-atomic absorption spectrometer. Kiyotaka Ito, et al. ....	S410
410	Determination of Sn <sup>2+</sup> and Sn <sup>4+</sup> by voltammetry. Hirofumi Kurayasu, et al. ....	S411
411	Analysis of oxygen, nitrogen in steel by striking from block sample and electrolytic polishing preparation. Takamasa Takahashi, et al. ....	S412
412	Determination of trace amount of carbon in steels. (In frared absorptiometric method after combustion with an induction furnace). Yuuji Kusumoto, et al. ....	S413
413	Effect of inclusions and quenching ways on glow discharge spectrometry in steel analysis. Koichi Chiba, et al. ....	S414
414	Effect of injection flow rate of ultra fine particle to plasma torch on high sensitive analysis. (Ultra fine particle generation- ICP emission spectrometry for steel analysis--VI). Kengo Senoo, et al. ....	S415
415	Determination of trace elements in pure zirconid and zircon. Kyoko Fujimoto, et al. ....	S416

APRIL 3, 1985

416	Development of full automatic pig sample preparation and analysis system. Takashi Sugihara, et al. ....	S417
417	Correction method for interelement effects in X-ray fluorescence analysis of high-alloy steels. Tadashi Mochizuki, et al. ....	S418
418	Measurement of particle size distribution of fine Al <sub>2</sub> O <sub>3</sub> in clean steel. Atsushi Chino, et al. ....	S419
419	Analysis of free cutting steel by computer aided micro analyzer. Hiroki Hamada, et al. ....	S420
420	Improvement of image quality of a new X-ray tomographic scanner. Isamu Taguchi, et al. ....	S421
421	Molecular structure changes of a baked epoxy resin for steel coating by the field desorption mass spectrometry. Toshio Koike, et al. ....	S422
422	Analysis of the lubricating oil adhered to the cold rolled steel sheet surfaces. Yuji Fujioka, et al. ....	S423
423	Determinaton of coating weight of powder on metal surface by measurement of infrared reflectance. Shu-ichi Yamazaki, et al. ....	S424
424	Comparison of depth profiles between ion microprobe mass analyzer and scanning auger microprobe. Yoko Baba, et al. ....	S425
425	Micro-analysis of oxidized films in air on ferritic stainless steels using secondary ion mass spectrometry. Koichi Nishizaka, et al. ....	S426
426	Micro analysis of titanium by secondary ion mass spectroscopy. Shigeru Maeda, et al. ....	S427
427	Analysis of oxygen in zinc-iron interface by auger electron spectroscopy. Hideaki Ishida, et al. ....	S428
428	Chemical analysis of the scale on steel by ESCA. Takako Yamashita, et al. ....	S429
429	X-ray fluorescence analysis of film with different incident and take-off angle technique. Yoshiro Matsumoto, et al. ....	S430
430	Quantitative analysis of phosphate films by glow discharge optical spectrometry. Masanori Suzuki, et al. ....	S431
431	Surface analysis of titanium by glow discharge spectroscopy. Ken-ichi Suzuki, et al. ....	S432

APRIL 2, 1985

432	Effects of wet and dry cycles on perforation corrosion behaviors of precoated steel sheet. Shigeo Kurokawa, et al. ....	S433
433	Relation between phosphate film structure characterized by electrochemical method and paint adhesion. Akito Sakoda, et al. ....	S434
434	Effect of P on phosphatability and perforation corrosion resistance of cold rolled steel sheet for automobile body. Kenji Takao, et al. ....	S435
435	Corrosion resistance after organic coating of deformed galvanized steel sheets. Shinji Hori, et al. ....	S436
436	Development of organic composite-coated steel sheet with high corrosion resistance. Shun-ichi Tsugawa, et al. ....	S437
437	Electrochemical characteristics of cationic-electrodeposited steel in salt solution. Sakae Fujita, et al. ....	S438
438	Effect of iron coating on phosphatability. Akihiko Furuta, et al. ....	S439
439	Analysis of various phosphate films by glow discharge optical spectrometry. Masanori Suzuki, et al. ....	S440
440	Analysis of colored films in stainless steels. Yasutaka Maegama, et al. ....	S441
441	Improvement of corrosion resistance of Fe-Zn alloy coat. Ichiro Suzuki, et al. ....	S442
442	Electrodeposition of zinc-chloride composite. Ichiro Suzuki, et al. ....	S443
443	Phase transition of electrodeposited Fe-Zn alloy. Masanari Kimoto, et al. ....	S444
444	Couette flow and velocity distribution in electroplating cell. (Study on Zn-Fe alloy electroplating technology--I). Masaki Kawabe, et al. ....	S445
445	Effect of flow rate and strip speed on Zn-Fe alloy electrodeposition. (Study on Zn-Fe alloy electroplating technology--II). Masaru Sagiyama, et al. ....	S446
446	Cracking of electrodeposited Zn-Ni alloy coatings under corrosive environments. (Corrosion resistance of Zn-Ni alloy electroplated steel sheets--I). Kouki Ikeda, et al. ....	S447
447	Surface appearance control of bright composite electrogalvanized steel sheet with glossmeter. Takao Nishimura, et al. ....	S448
448	Development of a new insoluble anode for an electrogalvanizing	

line. Tadashi Nonaka, et al. ....	S449
449 Features of the new continuous electro-galvanizing line at Kashima Steel Works, Sumitomo Metal Industries, Ltd. Kazuo Asano, et al. ....	S450
APRIL 3, 1985	
450 Durability up of embedded panzermast with protection coatings. Ken-ichi Tanigawa, et al. ....	S451
451 Durability of coating material. (Durability of polyurethane-elastomer coated steel pipe sheet piles--I). Masami Ishida, et al. ....	S452
452 Durability of coating pipe in sea water. (Durability of polyurethane-elastomer coated steel pipe sheet piles--II). Teruo Takamatsu, et al. ....	S453
453 The non destructive measurement of coating film-steel bond strength using ultrasonic resonant frequency method. Shoji Suzuki, et al. ....	S454
454 Effect of epoxy primers on anticorrosion of polyethylene coated steels. Fuminori Mukaihara, et al. ....	S455
455 Method of predicting service life of epoxy coated steels. Fuminori Mukaihara, et al. ....	S456
456 The durability of polypropylene anti-corrosion coating at high temperature. Masakazu Ohkita, et al. ....	S457
457 Coating condition control in internal polyethylene powder coated pipes. Shigemichi Yamauchi, et al. ....	S458
458 The effect of the structures of additive multifunctional monomers to polymer on the properties of the paint film. (A study of electron beam curing reaction--I). Ryōji Nishioka, et al. ....	S459
459 Characteristics of pre-coated steel sheets with heat resistant paints. Takafumi Yamaji, et al. ....	S460
460 Performances of fluorocarbon pre-painted stainless steel sheet. Hideaki Iwakura, et al. ....	S461
461 Development of the precoated electrogalvanized steel sheet with chromate-aqueous polymer. Masashi Takasugi, et al. ....	S462
462 Adhesion of PET-BO film on tin free steel. Atsuo Tanaka, et al. ....	S463
463 Effect of pre Ni flash coating on the performance of low tin coated steel sheets. Yoshihiro Kaneda, et al. ....	S464
464 The effect of the steel composition on the corrosion resistance of continuous casting steel for tinplate. Osamu Yoshioka, et al. ....	S465
465 Measures for quality improvement of 2CGL at Nagoya Works, Nippon Steel Corp. Michinori Suhara, et al. ....	S466
466 Appearances, crystal orientations and impurity distributions in the spangle of galvanized steel. (Study on the spangle of hot dip metal coated steel--I). Yasushi Fukui, et al. ....	S467
467 Heating conditions for galvanized steel sheet with 20-30 % Fe high alloyed coating. Junji Kawabe, et al. ....	S468
468 Development of a build-up resisting hearth roller for heating furnace of C.G.L. Yoshiaki Shia, et al. ....	S469
469 Continuous measurement for Fe content in galvanized coating. Junji Kawabe, et al. ....	S470
470 Effect of Fe content in galvanized coating on chromate activity Yuko Takeuchi, et al. ....	S471
471 Corrosion test of galvanized and chromate treated steel sheets. Kazuko Uchida, et al. ....	S472
472 Alloying characteristics of zinc-vapor deposited steel sheets. (Development of zinc-vapor deposited steel sheets--IV). Nobuhiko Sakai, et al. ....	S473
473 Liquid metal embrittlement cracking of steel in hot dip galvanizing. (Discussion of effect of some factors on time dependence fracture in molten zinc). Kei Uchikawa, et al. ....	S474
474 Grain boundary segregation and zinc concentration profile on grain boundary. (Liquid metal embrittlement--V). Tetsujiro Takeda, et al. ....	S475
475 Structural change of coatings of Zn-Al alloy coated steel sheets by cyclic heating. Yukio Uchida, et al. ....	S476
476 Influence of microstructure on corrosion resistance in Zn-Al alloy coating. Tetsuya Kiyasu, et al. ....	S477
477 Effect of Si, Mn and Cr on the strength properties of extra-low carbon-0.2Ti steel. (Development of high strength aluminum coated steel sheet--I). Toshiro Yamada, et al. ....	S478
478 Effect of steel compositions on heat resistance. (Development of hot dip aluminized steel sheet with excellent characteristics--I). Ken-ichi Asakawa, et al. ....	S479
479 Effect of steel compositions on high temperature strength. (Development of hot dip aluminized steel sheet with excellent	



	characteristics--II). Ken-ichi Asakawa, et al. ....	S480
480	Effect of steel compositions on corrosion resistance. (Development of hot dip aluminized steel sheet with excellent characteristics--III). Takayuki Ohmori, et al. ....	S481

-- PRODUCTS AND PROPERTIES --

APRIL 1, 1985

481	Impact properties of duplex stainless steel. Hiroshi Ohtsubo, et al. ....	S482
482	Phase stress behavior of duplex stainless steel at high temperature and in tension test. Noboru Tani, et al. ....	S483
483	Effect of thermomechanical treatment on mechanical properties of duplex stainless steel. Yoshiki Kamemura, et al. ....	S484
484	The effects of alloying elements on toughness of high purity ferritic stainless steel welds. Keiji Osaki, et al. ....	S485
485	Effect of alloying elements on properties of high chromium- molybdenum ferritic stainless steels. Kazuo Mashimo, et al. ....	S486
486	Surface defect on hot rolling of ferritic stainless steel. Yuichi Higo, et al. ....	S487
487	Effects of bright anneal conditions on the surface oxide film of 19Cr-lowC-0.4Nb stainless steel. Nobuaki Ohhashi, et al. ....	S488
488	Effects of carbon on hot workabilities of chromium stainless steel. Tetsuya Shimada, et al. ....	S489
489	Fracture morphology and softening behaviour of 13 Cr stainless steel. (Physical properties of martensitic stainless steels--II). Terutaka Tsumura, et al. ....	S490
490	Hot corrosion resistance of Mn-Al steel--III. Keiichi Seino, et al. ....	S491
491	Effect of siliconizing on the high temperature steam oxidation behavior of austenite stainless steels. Hideaki Itoh, et al. ....	S492
492	Influence of Si addition on fire side corrosion of coal fired boiler. Naotsugu Yamanouchi, et al. ....	S493
493	Effects of Nb, N contents and manufacturing process on grain size of Nb stabilized austenitic stainless steel. Akira Tooyama, et al. ....	S494
494	Grain refining of austenitic stainless steels by $\alpha'$ to $\gamma$ reversion. Seiji Tanimoto, et al. ....	S495
495	Effect of nitrogen on deformation behavior of austenitic stainless steel single crystal. Toshihiko Takemoto, et al. ....	S496
496	Effect of microalloying elements on mechanical properties of heavy section austenitic stainless steel. Yoshihiro Kataoka, et al. ....	S497
497	The elevated temperature strength and micro-structure of several high strength austenitic steels. Yoshiatsu Sawaragi, et al. ....	S498
498	Precipitation of Cu-rich phase in 17-14CuMo stainless steel during creep and high temperature aging. Hideto Kimura, et al. ....	S499
499	Through thickness proof stress distribution in SUS 304 stainless steel plates. Takanori Nakazawa, et al. ....	S500
500	The effects of peening on several properties in liquid quenched 18-8 stainless steel. Mikiya Tachi, et al. ....	S501
501	Mechanical properties of stainless steel welded joints with various filler wires in the CBL application. Masahiko Ito, et al. ....	S502
502	Representation of creep curves of 1Cr-1Mo-1/4V steel. Kouichi Maruyama, et al. ....	S503
503	Long-term creep curve and creep life prediction in 1Cr-1Mo-1/4V steel. Kouichi Maruyama, et al. ....	S504
504	Long-term creep-rupture properties of 1Cr-0.5Mo (SCMV 2NT) and 2.25Cr-1Mo (ASTM A542) steels. Masaru Shimizu, et al. ....	S505
505	Creep-fatigue interaction for a 1Cr-Mo-V steel under combined loadings. Kiyoshi Kubo, et al. ....	S506
506	Evaluation of creep damage and long time rupture of 2.25Cr-1Mo steel for boiler tube. Junro Kyono, et al. ....	S507
507	Mechanical and structural changes with long term service and remaining creep life of boiler tubes. (Carbon steel and 2 1/4Cr-1Mo steel). Akihiro Matsuzaki, et al. ....	S508
508	Relation between heat treatment and strength in 1Cr 0.3Mo seamless steel pipes of boiler use. Yoshimitsu Iwasaki, et al. ....	S509
509	Effect of W on mechanical properties of 9Cr-2Mo-V-Nb heat-resisting steel. Katsuro Oda, et al. ....	S510
510	Quantitative evaluation of creep damage by measurement of density change. Masatsugu Kaise, et al. ....	S511
511	Mechanical properties and high temperature properties of large-diameter and thick-walled 9Cr-2Mo steel pipe for high temperature plant. Kunihiko Yoshikawa, et al. ....	S512

512	Applicability evaluation of large-diameter and thick-walled 9Cr-2Mo steel pipe for high temperature plant. Fujimitsu Masuyama, et al. ....	S513
513	Effect of long-term heat exposure on microstructural changes of high Cr ferritic heat resistant steels. Atsurou Iseda, et al. ....	S514
514	Effect of nitrogen content on creep rupture strength and charpy impact properties of low Si-9Cr-2Mo-V-Nb heat-resisting steels. Kentaro Asakura, et al. ....	S515
515	Effect of Mo, W on mechanical properties of the high strength 12 % Cr heat-resisting steel. Ko Yo Ryu, et al. ....	S516
516	Temper embrittlement of 13Cr-4Ni cast steel. Yoshitaka Iwabuchi, et al. ....	S517
517	Manufacturing of 12 % Cr rotor shaft for blast furnace gas turbine. Toshikazu Tobe, et al. ....	S518
518	Effect of aging and Nb content on high temperature low cycle fatigue properties of SUS347 stainless steels. Shozo Azuma, et al. ....	S519
519	Effect of aging and Mo content on high temperature low cycle fatigue properties of SUS316 stainless steels. Takemi Yamada, et al. ....	S520
520	Effect of controlled strain waveform on low cycle fatigue life at elevated temperature of SUS304 stainless steel. Mitsuo Yamashita, et al. ....	S521
521	Application to ferritic steels. (Development of miniature sample testing methods for mechanical property evaluation--I). Kentaro Asakura, et al. ....	S522
522	14MeV neutron irradiation to ferritic steels. (Development of miniature sample testing methods for mechanical property evaluation--II). Akira Kohyama, et al. ....	S523
523	DBTT of 9Cr-Mo ferritic/martensitic dual phase steels. Naohiro Igata, et al. ....	S524
524	Evaluation of tearing modulus ( $T_{mat}$ ) from instrumented charpy test. Isamu Yamamoto, et al. ....	S525
525	Influence of micro structures on critical COD of welded joint. Shuji Aihara, et al. ....	S526
526	Experiment on abrasion in the air conveyor duct of pulverized iron. Tomohiro Marui, et al. ....	S527
527	Influence of sulfide morphology on machinability of resulfurized steel. Sadayuki Nakamura, et al. ....	S528
528	Machinability of continuously cast resulfurised free machining steels. Masashi Sato, et al. ....	S529
529	Development of machinability evaluation method. (Improvement of machinability of continuously cast low carbon free cutting steel--I). Sakae Katayama, et al. ....	S530
530	Effect of cutting tool-chip interface on built-up edge formation. (Improvement of machinability of continuously cast low carbon free cutting steel--II). Sakae Katayama, et al. ....	S531
531	Effect of MnS on machinability. (Improvement of machinability of continuously cast low carbon free cutting steel--III). Tatsuya Imai, et al. ....	S532
532	Influence of microstructure on the mode II crack formation of fatigue fracture surface for carburized steels. Chitoshi Masuda, et al. ....	S533
533	Some factors influencing the near-threshold fatigue crack growth in a machine structural steel. Takao Aoki, et al. ....	S534
534	Effects of case depth and notch shape on fatigue properties of induction hardened steel. Shizuyo Konuma, et al. ....	S535
535	Influence of defect size on the relation between fatigue strength and hardness for steels. Chitoshi Masuda, et al. ....	S536
536	Fatigue strength of carbon steel with sintered high alloy diffusion bonded. Akio Fuji, et al. ....	S537
537	Fatigue strength of high strength steel pipes for motorcycle frame use. Masatoshi Shinozaki, et al. ....	S538
538	Development of full size rotary bending fatigue tester. Syunji Nishi, et al. ....	S539
539	Experimental method for determining the corrosion fatigue crack growth curve at low $\Delta K$ region. Saburo Matsuoka, et al. ....	S540
540	Corrosion fatigue crack growth behaviors at low $\Delta K$ region for various steels. Saburo Matsuoka, et al. ....	S541
541	Effect of cyclic frequencies on corrosion fatigue strength. (Corrosion fatigue properties of high tensile steels for offshore structures--I). Shin-ichi Nishida, et al. ....	S542
542	Influence of crack length to corrosion fatigue crack growth behavior. Hiroyuki Masuda, et al. ....	S543
543	A consideration of equation to evaluate the corrosion fatigue life for low alloy steels. Chitoshi Masuda, et al. ....	S544
544	Cyclic damage of passive film on stainless steel during corrosion fatigue. Masashi Ono, et al. ....	S545
545	Prediction of creep-fatigue life for austenitic stainless steels. Koji Yamaguchi, et al. ....	S546

546	Development of long-term creep-fatigue testing machine. Koji Yamaguchi, et al. ....	S547
547	Fatigue properties and short crack propagation behavior of a 12Cr-rotor steel with artificial defects under variable strain conditions at elevated temperature. Tokihiko Mori, et al. ....	S548
548	Estimation of low-cycle fatigue life at elevated temperature by tensile properties. Kenji Kanazawa, et al. ....	S549
549	Existence of threshold for high temperature fatigue crack growth. Shiro Kubo, et al. ....	S550
550	Development of non scale technique on grain-oriented silicon steel. (Study on development of oxidation inhibitor--IV). Hisao Odashima, et al. ....	S551
551	Antioxidation mechanism of Si-SiC system oxidation inhibitor. (Study on development of oxidation inhibitor--V). Hisao Odashima, et al. ...	S552
552	The behavior of decarburization under the tandem dew point method. (Effects of decarburizing annealing conditions on the properties of high permeability grain-oriented silicon steel--II). Kenzo Iwayama, et al. ....	S553
553	Characteristics of local texture of 3 % Si steel analyzed by ECP method. (Analysis of texture by ECP--III). Ryo Shimizu, et al. ....	S554
554	Transmission kossel study of goss grains after a decarburization and primary recrystallization annealing in grain oriented silicon steel containing a small amount of molybdenum. Chizuko Maeda, et al. ....	S555
555	Characteristics of hydrogen assisted cracking of 2 1/4Cr-1Mo steel obtained by holding load method. Hiroshi Yamamoto, et al. ....	S556
556	Investigation of contributing factors on damage in 0.5 Mo steel welds of equipment due to hydrogen at elevated temperatures and pressures. (Studies on hydrogen attack of 0.5 Mo steel welds--I). Ryuichi Chiba, et al. ....	S557
557	Effect of post-weld-heat-treatment on hydrogen attack of heat affected zone of 0.5 Mo steel weld. (Studies on hydrogen attack of 0.5 Mo steel welds--II). Ryuichi Chiba, et al. ....	S558
558	Plant test results on degradation of pressure vessel steels. Seishi Tsuyama, et al. ....	S559
559	Hydrogen attack and diffusion behaviour of hydrogen in 2 1/4Cr-1Mo steels under high pressure and high temperature hydrogen atmosphere. Yoichi Maeda, et al. ....	S560
560	Acoustic velocity changes and hydrogen attack during exposure at high temperature and high pressure of hydrogen. Michio Miki, et al. ....	S561
561	Precipitation sequence of carbides in Cr-Mo steels during heat treatment. Jun-ichi Shimomura, et al. ....	S562
562	Properties of heavy section steel plate for pressure vessel in sour environment. Hiroshi Gokyu, et al. ....	S563
563	Development of normalized heavy-section 2 1/4Cr-1Mo steel plate with low susceptibility to weld cold cracking. Hiroaki Tsukamoto, et al. ...	S564
564	Development of low carbon equivalent heavy section steel plates for pressure vessels. Akitoshi Teraguchi, et al. ....	S565
565	Metallurgical aspect of B bearing low alloy steel. (Development of extra heavy high strength low alloy steel plate--I). Tetsuo Kikutake, et al. ....	S566
566	Characteristics of a modified 3Cr-1Mo steel developed for the multilayer pressure vessel. Katsukuni Hashimoto, et al. ....	S567
567	Investigation about strength and elongation of hot strip. (Development of controlling technique of mechanical properties in hot strip direct rolling process--XIII). Osamu Kawano, et al. ....	S568
568	Isothermal transformation of carbon-manganese steel. (Development of controlling technique of mechanical properties in hot strip direct rolling process--XIV). Jun-ichi Wakita, et al. ....	S569
569	A prediction model of ferrite, pearlite, bainite volume fraction of hot rolled sheet. (Development of controlling technique of mechanical properties in hot strip direct rolling process--XV). Jun-ichi Wakita, et al. ....	S570
570	Effect of Ti on the mechanical properties of direct-rolled steel sheet. Noriaki Nagao, et al. ....	S571
571	Effect of second phases on the mechanical properties of tri-phase steel. Kazuhiro Mimura, et al. ....	S572
572	C-Mn type ferrite-bainite hot rolled high strength steel sheet. Shun-ichi Hashimoto, et al. ....	S573
573	Effect of sheet temperature at hot run table on mechanical properties. (Producing of hot strip with various mechanical properties by controlled cooling--II). Akio Tosaka, et al. ....	S574
574	Anisotropy of stretch flanging ability in Nb-bearing hot-rolled high strength steel sheets. Yoshihiro Matsumoto, et al. ....	S575

APRIL 2, 1985

575	Casing design system for OCTG. Haruo Kozono, et al. ....	S576
576	Statistical estimation for the performance limit of collapse strength of OCTG. Toshitaro Mimaki, et al. ....	S577
577	Effect of finishing temperature on hydrogen induced cracking (HIC). (Development of high toughness line pipe steels made from CC-slabs for sour gas service--II). Akira Ito, et al. ....	S578
578	Improvement of susceptibility to hydrogen induced cracking by soaking process in high strength pipe line steel. Koichi Yamamoto, et al. ....	S579
579	Hardenability of seam bond of B-containing ERW steel pipes for oil-wells. Katsutoshi Yamada, et al. ....	S580
580	Manufacture of duplex stainless steel seamless pipe. (Development of duplex stainless steel seamless pipe--I). Toshikazu Masuda, et al. ....	S581
581	Quality of duplex stainless steel seamless pipe. (Development of duplex stainless steel seamless pipe--II). Tadao Katagiri, et al. ....	S582
582	Mechanical properties and corrosion performance of girth weld metal. (Development of duplex stainless steel seamless pipe--III). Katsuomi Tamaki, et al. ....	S583
583	Development of new HT60-grade steel plates by DQT process. Noboru Aikawa, et al. ....	S584
584	Hardenability of boron bearing 80 kgf/mm <sup>2</sup> steel by DQ process. (Behavior of boron during recrystallization of austenite). Makoto Imanaka, et al. ....	S585
585	Development of 56~62 kgf/mm <sup>2</sup> grade steel plate for large heat input welding by DQ-T process. Youichiro Kobayashi, et al. ....	S586
586	Quench-hardenability of boron-bearing steels in direct quench process. Rikio Chijiwa, et al. ....	S587
587	Development of high toughness HT100 with superior weldability. Seiichi Watanabe, et al. ....	S588
588	Development of new 100 kg/mm <sup>2</sup> class high tensile strength steel. (Study for 100 kg/mm <sup>2</sup> class high tensile strength steel--I). Yoshihiro Okamura, et al. ....	S589
589	Notch toughness of heat affected zone of 80 kgf/mm <sup>2</sup> class heavy section steel. Hidetaka Chiba, et al. ....	S590
590	Properties of heavy gauge steel plates for offshore structures. Hiroshi Nishizaki, et al. ....	S591
591	Metallurgical factors of stress relief embrittlement. (Study on stress relief embrittlement of HAZ in low alloy high strength steel--I). Ken Kanaya, et al. ....	S592
592	Atmospheric corrosion resisting steel for low temperature service. Kotaro Hatakeyama, et al. ....	S593
593	Effect of Ni content on fracture toughness of forged steel for nuclear reactor pressure vessels. Takahiro Kubo, et al. ....	S594
594	Hardenability in medium carbon steels. Nobuo Shikanai, et al. ....	S595
595	Fracture toughness and fatigue crack growth behavior at 4.2 K in 22Mn-13Cr-5Ni non-magnetic heavy thickness steel plates. Shoji Tone, et al. ....	S596
596	Effect of chemical compositions on strength and toughness. Hitoshi Kumon, et al. ....	S597
597	Microstructure and mechanical properties of high Mn-high Al steels--IV. Michiyuki Ichinose, et al. ....	S598
598	Effects of Mo, Mn and N on the mechanical properties of 12Cr-12Ni austenitic steel at low temperatures. (Development of high strength structural steel for superconducting magnets in fusion reactor--I). Ritsu Miura, et al. ....	S599
599	Effect of P and S in low carbon-high manganese non-magnetic steels (0.25C-30Mn) on hot workability and hot cracking in welding. Terufumi Sasaki, et al. ....	S600
600	Low temperature brittleness of high manganese non-magnetic steel with high content of nitrogen. Koji Shibata, et al. ....	S601
601	Effect of various factors on the strength at cryogenic temperature of austenitic steels. Nobuo Yamagami, et al. ....	S602
602	Influence of the alloy elements on the temper softening property of adamite roll. Ryosaku Nawata, et al. ....	S603
603	Fracture analysis of rolling mill back up roll. Hiroshi Goto, et al. ....	S604
604	Effect of heat treatment on fracture toughness of roll steel for cold strip mill. Shoichi Hino, et al. ....	S605
605	Development of the expander segment material. Osamu Kawano, et al. ....	S606
606	Effect of cold drawn on hardening hardness of tool steels. Tamiki Yanagisawa, et al. ....	S607
607	Effect of microstructure on the toughness and high-temperature strength of a 0.4C-1.5Ni-2.5Cr-Mo-V hot work alloy tool steel. Toshio Okuno. ....	S608

608	Effect of surface microstructure of hot forging die on wear resistance. Yasufumi Fujishiro, et al. ....	S609
609	Development of maraging steel for aluminum die casting mold. (Development of mold steels with excellent thermal fatigue properties--IV). Noriyoshi Sagara, et al. ....	S610
610	Applicability of a copper alloy to die mold for squeeze casting. (Development of mold steels with excellent thermal fatigue properties--V). Tokihiko Mori, et al. ....	S611
611	Calorimetric study on austenite reverse transformation of 18 % Ni maraging steel. Takayuki Nakamura, et al. ....	S612
612	Development of fine-grained and high-creep-rupture-strength 347H stainless steel for boiler tubes. Satoshi Araki, et al. ....	S613
613	Effect of microstructure on formation of creep damage in austenite stainless steels. Masaharu Murata, et al. ....	S614
614	Effect of testing temperature on stress relaxation behavior for SUS316 stainless steel. Toshio Ohba, et al. ....	S615
615	Effect of $M_2_3C_6$ and MC carbides on the creep rupture strength of 18%Cr-14%Ni-Mo-Ti-Nb stainless steel. Yusuke Minami, et al. ....	S616
616	Effect of Al, B and Ti addition on high temperature strength of 17Cr-14Ni-2.5Mo heat resisting cast steel. (Development of material for high temperature-high pressure steam turbine casing--II). Kiyoshi Hiyama, et al. ....	S617
617	Effect of $\sigma$ phase on high temperature creep properties of carbon free 25Cr-20Ni steels. Yasuhiro Yamaguchi, et al. ....	S618
618	Effects of Nb and Ti contents on high temperature strength of 25%Ni-20%Cr austenitic steel. (Study of high strength austenitic heat resisting steel--V). Masao Kikuchi, et al. ....	S619
619	Effect of cooling rate in solution treatment on creep rupture properties of an iron base alloy. (Investigation of the high temperature strength of 15Cr-26Ni-1.25Mo iron base alloy--V). Katsumi Iijima, et al. ....	S620
620	Effect of Ti and Nb additions on creep rupture strength of 15Cr-25Ni-Mo steel for fast breeder fuel cladding tubes. Hiroyuki Uchida, et al. ....	S621
621	Effect of carburizing on high temperature tensile properties of centrifugally cast HK40. Masahiro Matsushima, et al. ....	S622
622	High temperature fatigue properties of niobium-containing centrifugally cast tubes after long-time heating in a steam reforming furnace. Takanari Okuda, et al. ....	S623
623	Characteristics of double wall tubes for ultra super critical boilers. Yoshiatsu Sawaragi, et al. ....	S624
624	Alloy design for low-nickel iron-base superalloy. Takehiro Ohno, et al. ....	S625
625	Effect of Ti, Al and Mo on the high temperature strength of $\gamma'$ precipitating Fe-base superalloys. Kazuaki Nishino, et al. ....	S626
626	Creep rupture strength and microstructure of 23Cr-34Ni iron base alloy. (Fundamental investigation of Incoloy 800 --V). Hiroyuki Doi, et al. ....	S627
627	Environmental effect of impure helium at creep cracks of Ni base heat resisting alloys strengthened by $\alpha$ -W or $\gamma'$ precipitates. Fujio Abe, et al. ....	S628
628	Effect of Ta/W ratio in $\gamma'$ phase on creep strength of single crystal Ni-base superalloys. Toshihiro Yamagata, et al. ....	S629
629	Embrittlement of $\gamma'$ and $\gamma''$ precipitation-hardened nickel-base superalloys caused by high temperature aging. (The strengthening mechanism of $\gamma'$ and $\gamma''$ precipitation-hardened nickel-base superalloys--II). Masaaki Igarashi, et al. ....	S630
630	Manufacturing of cold rolled strip for porcelain enameling by continuously cast slab containing high oxygen content. Haruo Nishiyama, et al. ....	S631
631	Effect of Sb on enamel adherence of Ti bearing extra low C steel sheet. Junko Ikehira, et al. ....	S632
632	Production of 980 MPa (100 kgf/mm <sup>2</sup> ) grade cold rolled high strength steel sheet with high ductility. Yoshiki Tanaka, et al. ....	S633
633	Formulation of carbide precipitation during rapid-cooling of continuous annealing. (Behaviour of cementite precipitation during over-aging treatment of continuous annealing of low-carbon steel sheets--V). Kazuo Koyama, et al. ....	S634
634	Effect of the straining during over-aging treatment on the mechanical properties of continuously annealed steel sheet. Yoshihiro Hosoya, et al. ....	S635
635	Over-aging process after rapid cooling in continuous annealing. (Development of continuous-annealed low-temper tinplate--VI). Takashi Obara, et al. ....	S636

636	Influence of cementite on drawability of continuously annealed steel sheet. Kazumasa Yamazaki, et al. ....	S637
637	Effect of nitrogen content on mechanical properties of low carbon aluminum killed colled sheet by continuous annealing. Tsuyoshi Kawano, et al. ....	S638
638	Effect of nitrogen content on the mechanical properties of continuous-annealed Al-killed steel sheets. Naomitsu Mizui, et al. ....	S639
639	Effects of Nb and Ti addition on mechanical properties of extra low carbon cold-rolled steel sheet. (Development of Nb and Ti added extra low carbon steel sheet--II). Masato Yamada, et al. ....	S640
640	Development of highly formable continuous-annealed extra-low-carbon steel sheet with Nb and Ti addition. (Development of Nb and Ti added extra low carbon steel sheet--III). Teruaki Yamada, et al. ....	S641
641	Effect of metallurgical factors on the F-value of the low carbon cold rolled steel sheets added titanium. Akihiko Nishimoto, et al. ....	S642
642	Control of precipitate dispersion in interstitial-free type cold-rolled steel sheets. Susumu Satoh, et al. ....	S643
643	Degassed extra low carbon and nitrogen steel sheet with good deep drawability and bake hardenability. Masayuki Kinoshita, et al. ....	S644
644	Reversion phenomenon in strain aging of ultra-low-carbon-steel. Hajime Saitou, et al. ....	S645
645	Effect of phosphorus and manganese on carbide precipitation in low carbon steel. Hidenori Era, et al. ....	S646
646	Decomposition of Cr-C dipoles during quench-ageing in low-carbon steels. Yoshiyuki Fukuda, et al. ....	S647
647	Grain growth and development of {111} texture by application of strain during heating in pure iron. Satoshi Nishimura, et al. ....	S648
648	Effect of change in texture across the thickness direction on r-value of Al killed steel sheet. Yasuji Tanaka, et al. ....	S649
649	Effect of precipitation heat treatment on the recrystallization texture and drawability of Fe-P-C alloys. Hirosuke Inagaki. ....	S650
650	Effect of cold rolled reduction per pass on mechanical properties of cold rolled sheet--IV. Siroh Sanagi, et al. ....	S651

APRIL 3, 1985

651	Effect of alloying element on grain boundary segregation of phosphorus in austenite region. Takashi Abe, et al. ....	S652
652	Dissolution and precipitation of TiN in a low alloyed steel. Munetaka Koda, et al. ....	S653
653	Occurrence condition of dynamic recrystallization with multiple peaks flow curve in low carbon and vanadium microalloyed steels. Masanori Ueki, et al. ....	S654
654	Effect of high-reduction working on hot deformation behavior and microstructure in austenitic steels. Masakazu Niikura, et al. ....	S655
655	Recrystallization and texture formation during hot rolling of austenitic stainless steel. Yoshihiro Saito, et al. ....	S656
656	Texture gradient through the thickness of hot rolled ferritic steel sheets. Munetsugu Matsuo, et al. ....	S657
657	Kinetics of ferrite pearlite transformation in control-rolled low carbon steel. Hirosuke Inagaki. ....	S658
658	Effect of microalloying addition on the $\gamma$ - $\alpha$ transformation in steels. Hideyuki Ohtsuka, et al. ....	S659
659	Effect of rolling conditions on mechanical properties and roll force and torque in plate rolling. Yoshiyuki Saito, et al. ....	S660
660	Investigation of chemical compositions and microstructures of controlled rolled and cooled steels. (Research about the property control of the controlled cooled thick plates--IV). Hiroshi Yoshikawa, et al. ....	S661
661	Effect of strain, recovery and recrystallization on ferrite nucleation behavior in accelerated cooling. (Fundamentals of accelerated cooling--II). Takashi Abe, et al. ....	S662
662	Effect of microstructure on yield strength of accelerated cooled steel plates. Toyoaki Shiwaku, et al. ....	S663
663	Investigation on large heat input weldability of tensile strength 50 kgf/mm <sup>2</sup> grade steel plates for arctic offshore structures. Nozomi Komatsubara, et al. ....	S664
664	Properties of TMCP steel tolerable of PWHT. Ichiro Seta, et al. ....	S665
665	Development of high strength and high toughness low C-Ti-B steel line pipe with dynamic accelerated cooling process. Yasuo Nakatsuka, et al. ....	S666
666	Weldability of low carbon B-treated line pipe steel. Yuichi Komizo, et al. ....	S667

667	Submerged arc welds toughness and girth weldability of grade X-60 heavy wall pipe by accelerated cooled plates. Fumimaru Kawabata, et al. ....	S668
668	A Mössbauer spectroscopic study of steel-rust. Hiroshi Iijima, et al. ....	S669
669	Development of laboratory corrosion test for evaluating automobile muffler. Toshiro Adachi, et al. ....	S670
670	Estimation of internal corrosion depth and durable years of over-head pipe-line system. (Corrosion control for industrial pipe-line--V). Shigeru Mizoguchi, et al. ....	S671
671	Corrosion behaviour of high alloys in aqueous H <sub>3</sub> BO <sub>3</sub> -Cl <sup>-</sup> environment at elevated temperatures. Hideaki Miyuki, et al. ....	S672
672	Influence of simulated welding heat cycles on pitting corrosion resistance of the duplex stainless steel. Yoshiro Kuriki, et al. ....	S673
673	Effects of Ti and Nb on corrosion properties of ferritic stainless steel at welding zone. Akio Yamamoto, et al. ....	S674
674	Corrosion behaviour of stainless steels in sulfuric acid. Yoshito Fujiwara, et al. ....	S675
675	Corrosion resistance of stainless steels in nitric acid containing various metal ions. Michio Nakata, et al. ....	S676
676	Effect of alloying elements on corrosion resistance of alloy 690. Kazuo Yamanaka, et al. ....	S677
677	Effect of heat treatment on corrosion resistance of alloy 690. Hiroo Nagano, et al. ....	S678
678	Evaluation of corrosion resistance of alloy 690 in high temperature water. Toshio Yonezawa, et al. ....	S679
679	Mechanical properties of thermally treated alloy 690. Nobuya Sasaguri, et al. ....	S680
680	Autoradiography of pure iron. (Estimation of trapping energy of hydrogen in iron by tritium simulation--II). Kiyoshi Kusabiraki, et al. ....	S681
681	Corrosion products formed on low alloy steel surface under high pressure sour gas environments. Akihiro Miyasaka, et al. ....	S682
682	Evaluation method of sulfide stress cracking for welds in line pipes. Teruo Kaneko, et al. ....	S683
683	A consideration concerning metallographic factors which affect SSC at heat affected zone. (Study on sulfide stress corrosion cracking of linepipe--II). Tomoaki Hyodo, et al. ....	S684
684	Influence of a little amount of H <sub>2</sub> S on CO <sub>2</sub> corrosion of Fe-Cr binary alloys. Masakatsu Ueda, et al. ....	S685
685	Effects of phosphorus and manganese on sulfide stress corrosion cracking resistance of high strength steels (110 ksi). Hitoshi Asahi, et al. ....	S686
686	Effect of Cr on resistance to sulfide stress corrosion cracking of steels containing Nb and Ti. Kojiro Kitahata, et al. ....	S687
687	Stress corrosion cracking behaviors of low-carbon bainitic steels in carbonates solutions. Nobuhiro Seki, et al. ....	S688
688	Stress corrosion cracking of duplex stainless steel in H <sub>2</sub> S-Cl <sup>-</sup> environments at low temperature. Katsuomi Tamaki, et al. ....	S689
689	Aging behavior on Ni-26Cr-17W alloys at 1 000 °C. Tatsuhiko Tanabe, et al. ....	S690
690	Grain boundary reaction and creep rupture properties of a Co-base superalloy HS-21. Hiroshi Iizuka, et al. ....	S691
691	Development of manufacturing process for P/M superalloy turbine disc. (Mechanical properties of hiped P/M superalloys). Kenji Iwai, et al. ....	S692
692	Practical usefulness assessment of a new type of creep test. (Impression creep test). Masaharu Yamaguchi, et al. ....	S693
693	Alloying effect on the electronic structure of bcc Fe. Masahiko Morinaga, et al. ....	S694
694	Prediction of the phase stability for Ni-, Co- and Fe-base austenitic alloys. (d-electrons alloy design and its applications--III). Natsuo Yukawa, et al. ....	S695
695	Prediction of the properties for Ni-, Co- and Fe-base austenitic alloys. (d-electrons alloy design and its applications--IV). Natsuo Yukawa, et al. ....	S696
696	Effect of transition elements on the composition, morphology and phase stability of MC-carbide in IN-100. (Analysis of solidification behavior of high alloys by the doping method and its application--I). Yoshinori Murata, et al. ....	S697
697	Prediction of MC-carbide compositions in nickel-base superalloys. (Analysis of solidification behavior of high alloys by the doping method and its application--II). Yoshinori Murata, et al. ....	S698
698	Effect of forging temperature and chemical composition on austenite grain size of warm forged steels. Takeshi Takahashi, et al. ....	S699

699	Effect of alloying element on mechanical properties of warm drawn steel bars. (Improvement in properties on warm drawing--I). Tetsuo Shiraga, et al. ....	S700
700	Metallurgical factors influencing the relation between strength and toughness of worm worked middle carbon steel. Tatsuro Ochi, et al. ....	S701
701	Warm forgeability of case-hardening steel. Takeshi Nakahara, et al. ....	S702
702	Effect of alloying elements on the rotating bending fatigue properties of carburized steels. Kunio Namiki, et al. ....	S703
703	Production method of direct-normalizing during hot rolling of specialty steel. Katsukiyo Kawaguchi, et al. ....	S704
704	Workability and annealability of low Al and N steel. (Development of low Al and N steel for bar and wire rod--II). Yutaka Tamai, et al. ....	S705
705	Case hardenability of low Al and N steel. (Development of low Al and N steel for bar and wire rod--III). Sadao Shoji, et al. ....	S706
706	Production and mechanical properties of low Al-low N steels by RH-CC process. (Development of rimmed equivalent steels for wire rod and bar--I). Eihachiro Sunami, et al. ....	S707
707	Mechanical properties of steel bars manufactured by a combination of controlled rolling and controlled cooling. (Thermo-mechanical treatment of steel bars--VII). Susumu Kiyokoba, et al. ....	S708
708	Effect of heat temperature and hot rolling on the mechanical properties of high strength steel bar. Toshio Fujita, et al. ....	S709
709	Effect of microstructure on strength and ductility in low carbon dual phase steel wire rods and bars. (Development of dual phase wire rods and bars--I). Toshiaki Yutori, et al. ....	S710
710	Cold workability of dual phase steel. Takashi Matsumoto, et al. ....	S711
711	Investigation of the center line segregation and the drawing-limit of continuously cast high-carbon steel wire rod. (Study on the center line segregation of continuously cast high-carbon steel wire rod--I). Yoji Hida, et al. ....	S712
712	Influence of tundish superheat on manganese microsegregation in high-carbon steel wire rod. (Study on the center line segregation of continuously cast high-carbon steel wire rod--II). Hiroshi Ohba, et al. ....	S713
713	Change in mechanical property with low temperature annealing in high tensile strength steel wire. Hitoshi Tashiro, et al. ....	S714
714	Influence of heat-treatment technique on ductility and toughness of Si-Cr steel. (Strengthening and toughening of steels by induction heat-treatment--I). Kazuhiro Kawasaki, et al. ....	S715
715	Influence of grain size on ductility and toughness of Si-Cr steel. (Strengthening and toughening of steels by induction heat-treatment--II). Kazuhiro Kawasaki, et al. ....	S716
716	Pickling properties of low-alloy steel wire rod. Hideo Kanisawa, et al. ....	S717

-- NEW MATERIALS AND NEW PROCESSING --

APRIL 2, 1985

717	Application of titanium and its future technology. Hidetake Kusamichi. ....	S718
718	Development of titanium alloy for rocket motor. Tsuneo Kakimi. ....	S719
719	Research of titanium alloy pressure hull for 6 000 m class deep submergence research vehicle. Tsutomu Toyohara, et al. ....	S720
720	Titanium for seawater desalination plant. Nobuhisa Hiraishi. ....	S721
721	Quality test results on welded titanium tubes served for 10 years at Kakogawa No.5 turbine condenser of Kobe Steel, Ltd. Toshio Matsumoto, et al. ....	S722
722	High-purity titanium sponge by sodium reduction process. Minoru Harada, et al. ....	S723
723	Heat transfer characteristics on VAR furnace during melting of titanium alloy. Akihiro Yamanaka, et al. ....	S724
724	High efficiency melting process for large titanium ingot. Noriyuki Mitsui, et al. ....	S725
725	Melting of Ti-6Al-4V solid scrap using a plasma electron beam furnace. Toshio Suzuki, et al. ....	S726
726	Electron beam weldability of Ti-6Al-4V plate heat-treated STA. Mitsutane Fujita, et al. ....	S727
727	Effect on thickness of filler metal and heat treatment condition to the fracture toughness of electron beam welds in titanium alloys. Yoshihiko Obata, et al. ....	S728



728	Effects of friction welding conditions on the joint strength of Ti-6Al-4V. (Study of friction welding--I). Tomio Nishikawa, et al. ....	S729
729	Properties of Ti-6Al-4V alloy powders made by EBREP and isothermal forging of HIP'ed preforms. Yoshio Nishino, et al. ....	S730
730	Mechanical properties of Ti-6Al-4V alloy fabricated by blended elemental method. Masuo Hagiwara, et al. ....	S731
731	Bendability of titanium and titanium alloy sheets. Seishi Ishiyama, et al. ....	S732
732	Calculation model for $\gamma$ value of commercially pure titanium sheet. Koji Kishida, et al. ....	S733
733	Crevice corrosion of titanium. Kazuhiro Taki, et al. ....	S734
734	Repassivation potential for crevice corrosion of titanium in NaCl solution. Fumiaki Iki, et al. ....	S735
735	Recrystallization behavior of commercially pure titanium in a hot deformation process. Takehide Senuma, et al. ....	S736
736	Development of a manufacturing procedure for a commercially pure titanium wide plate. Yoshikatsu Tsumori, et al. ....	S737

#### APRIL 3, 1985

737	Structure and mechanical properties of titanium alloys. Hirozo Kimura. ....	S738
738	Calculation of electronic structure. (Evaluation of titanium alloys by the electronic theory--I). Masahiko Morinaga, et al. ....	S740
739	Estimation of alloy properties. (Evaluation of titanium alloys by the electronic theory--II). Masahiko Morinaga, et al. ....	S741
740	Evaluation of microcracking in Ti alloy by AE source characterization. Teruo Kishi, et al. ....	S742
741	Influence of microstructure on the strength of Ti-6Al-4V alloy. Hiroyoshi Suenaga, et al. ....	S743
742	Microstructure factor which controls the toughness of Ti-6Al-4V alloy. Mitsuo Niinomi, et al. ....	S744
743	Anisotropy of mechanical properties in Ti-6Al-4V hot rolled plates. Seiichi Muneki, et al. ....	S745
744	Fatigue rupture of Ti-5Al-2.5Sn ELI alloy at liquid helium temperature. Kotobu Nagai, et al. ....	S746
745	Effect of the crystal system on creep strength: titanium and thallium. Hiroshi Oikawa. ....	S747
746	Effects of hot working conditions on tensile properties of $\alpha + \beta$ titanium alloys. Hisao Kamiya, et al. ....	S748
747	Effect of heating temperature on deformation properties and tensile properties of Ti-6Al-4V bar. Takeo Ashiura, et al. ....	S749
748	The effects of hot extrusion condition on the mechanical properties and structures of c.p.Ti and Ti-6Al-4V alloy. Tsunetoshi Takahashi, et al. ....	S750
749	Hot workability of a Ti-6Al-4V alloy. Hideki Fujii, et al. ....	S751
750	Improvement of finish hot workability in Ti-6Al-4V by suitably controlling its prior microstructure. Toshio Matsumoto, et al. ....	S752
751	Effect of processing and heat treatment on mechanical properties of Ti-6Al-2Sn-4Zr-6Mo alloy. Hirotooshi Yano, et al. ....	S753
752	Mechanical properties of aged Ti-13V-11Cr-3Al alloy. Kohji Kitano, et al. ....	S754
753	Mechanical properties of aged Ti-15V-3Cr-3Al-3Sn alloy. Kohji Kitano, et al. ....	S755
754	Fracture toughness and fatigue strength of Ti-10V-2Fe-3Al. Kazuo Toyama, et al. ....	S756
755	High temperature deformation of Ti-10V-2Fe-3Al. Atsushi Ogawa, et al. ....	S757

#### APRIL 3, 1985

756	Research and development in composite materials. Osamu Watanabe. ....	S758
757	Elastoplastic behavior of carbon fiber-reinforced aluminum. (Deformation anisotropy in cross-ply and angle-ply laminates). Kenji Wakashima. ....	S760
758	Microstructure and mechanical properties of SiC/Al composite materials. Akira Kohyama, et al. ....	S761
759	Fabrication and property of B/Al composite materials. Koichi Honda, et al. ....	S762
760	Effect of FRM fabrication factor on tensile characteristics of coreless silicon carbide fiber. Hideharu Fukunaga, et al. ....	S763
761	Production of FRM mixed with short length metal fiber by cast-forging. Takeo Nakagawa, et al. ....	S764

762	Cast iron-graphite composite material for self-lubrication by fiber metallurgy. Takeo Nakagawa, et al. ....	S765
763	Research and development of carbon-carbon composite using bulk mesophase. Masahiro Anzai, et al. ....	S766
764	Flow characteristics of the stainless fiber reinforced plastic in the injection mold. Hironobu Takahama, et al. ....	S767
765	Hand lay-up method of MR-FRP joint. Yuzuru Fujimura. ....	S768
766	Properties of CFRP as a suspension leaf springs. Ryohei Kobayashi, et al. ....	S769
767	Junctionability of iron containing multiple boride base hard alloy. Ken-ichi Takagi, et al. ....	S770
768	Wear characteristics of multiple boride base hard alloy. Masahito Fukumori, et al. ....	S771
769	Influence on wearing endurance by composite condition of ceramics-iron. Yoshikazu Suzuki, et al. ....	S772
770	Production of particle reinforced laminate composite metals by mushy-state rolling. Manabu Kiuchi, et al. ....	S773
771	Casting of bismuth strip by means of direct-rolling. Yoshihiro Saito, et al. ....	S774
772	Development of iron powder core. Mikio Morita, et al. ....	S775
773	Superparamagnetism of amorphous slag with iron oxide. Kazuhiro Nagata, et al. ....	S776
774	Steel sheet-plastic foam sandwich panel, its properties and production by continuous line. Takao Nakajima, et al. ....	S777
775	Fatigue strength of composite vibration damping steel sheets. Hiroyuki Kagawa, et al. ....	S778
776	Adhesion inspection method of drawn composite vibration-damping steel sheet components by transmission type ultrasonic tester. Masatoshi Shinozaki, et al. ....	S779