

# Technical Information Papers

## Numerical Listing

NOTE: This list was updated December 14, 2018.

(wd) = withdrawn TIP

### Coating and Graphic Arts 0100

<u>TIP #</u>	<u>Publication</u>	<u>Title</u>
0102-01	(wd - 1997)	Literature references on the measurement of water retention of paper coatings
0104-01	(wd - 1997)	Specific gravity of soy protein solutions
0104-02	(wd - 1999)	Binder effects on coated gloss literature review
0106-01	2002	Physical data of calcium carbonate-water suspensions
0106-02	2005	Physical data of hydrous kaolin-water suspensions
0106-03	(wd - 2001)	Physical properties of anatase slurry
0106-04	(wd - 2001)	Guidelines for reporting of SQC data by pigment suppliers to the paper and paperboard industries
0106-05	(wd - 2014)	Calcium carbonate pigment index
0106-06	2017	Kaolin clay pigment index
0106-07	(wd - 2011)	Titanium dioxide pigment index
0106-08	(wd - 2001)	Specialty coating pigments index
0106-09	2006	Physical data of calcined kaolin-water suspensions
0108-01	(wd - 2001)	Definitions of graphic arts terms
0108-02	(wd - 1999)	TAPPI OCR glossary
0108-03	(wd - 1999)	Electrophotography definitions and standardizations of terms
0110-01	(wd - 1999)	Factors to be considered in selecting screening media for coating processes
0110-02	(wd - 2000)	Viscosity of coating colors at high shear rates

### Polymers, Laminations, Adhesives, Coatings, and Extrusions 0200

<u>TIP #</u>	<u>Publication</u>	<u>Title</u>
0200-01	2011	Guidelines for web conveyance and winding tension levels
0206-01	(wd - 1997)	Hot melt coated/saturated corrugated board end use profile

### Corrugated Packaging 0300

<u>TIP #</u>	<u>Publication</u>	<u>Title</u>
0301-01	2008	Corrugated boxplant - list of potential hazards
0302-01	(wd - 2002)	Prefeeder quick reference specifications (English Units)
0302-02	(wd - 1999)	Corrugator steam systems
0302-03	(wd - 2002)	Corrugator roll/pressure roll journal failures
0302-04	2001	An alternative method for designating flute sizes
0303-01	(wd - 1996)	Computerization of maintenance department
0303-02	(wd - 1996)	Engineering economics using discounted cash flow
0304-01	2008	Procedure for setting up a raw material trial on the corrugator
0304-02	2008	Box plant quality measurement: why test?
0304-03	(wd - 1992)	Corrugated box plant quality targets

0304-04	2001	Corrugated caliper: why is it so important?
0304-05	(wd - 1999)	Quality assurance of a corrugating adhesive: starch gelatinization temperature
0304-06	2002	Starch adhesive preparation and distribution systems: housekeeping
0304-07	2010	Cross direction warp in corrugated board
0304-08	2011	Some questions and answers on gel temperatures and on the gel temperature test for corrugating adhesives
0304-09	2014	The edge crush test (ECT): its relationship to box compression and its derivation from containerboard edge stiffness
0304-10	2002	Troubleshooting a glue lap problem
0304-11	2002	Utilizing statistical process control techniques to assist in meeting specification at finishing crush process control points to the paper and paperboard industries
0304-12	2002	Obtaining combined board caliper off the corrugator for use in statistical process control procedures
0304-13	2003	Statistical process control - procedures for charting warp
0304-14	2002	Statistical process control of starch gelatinization temperature
0304-15	2002	Statistical process control of starch viscosity
0304-16	2012	Evaluating glue lap adhesive properties
0304-17	2001	Addendum to <i>Corrugating Defect Terminology Manual</i> - defects related to the use of fingerless singlefacers
0304-18	2011	Viscosity reading procedure for flexographic corrugated inks
0304-19	2008	Curtain coating weight test
0304-20	2009	Calibration of flexible beam crush tester
0304-21	(wd – 2004)	Caliper measurement of corrugated board
0304-22	2006	Starch adhesive trial
0304-23	2008	Statistical process control pin adhesion
0304-24	2009	Calibration and maintenance of the burst tester
0304-25	2010	Understanding formaldehyde management
0304-26	2010	Common curtain coating problems: causes, detection and correction
0304-27	(wd-2012)	Green peel bond test at the corrugator ( <i>withdrawn and replaced with UM 822</i> )
0304-28	(wd - 1999)	Rapid determination of moisture content in starch products
0304-29	(wd - 2003)	Petroleum waxes used in the corrugated industry
0304-30	2008	Calibration and maintenance of the manually operated micrometer
0304-31	2013	Splicer defects and cures
0304-32	2014	Causes and corrections of common corrugator bonding problems
0304-33	2006	Proper methods of measuring starch adhesive viscosity
0304-34	2002	Statistical process control: friction - slide angle
0304-35	2003	Procedure for utilizing statistical control techniques to monitor the tare weight of a run of boxes
0304-36	(wd - 1999)	Liquid caustic soda for starch adhesive preparation
0304-37	2009	How to prevent score cracking in a boxplant
0304-38	2011	Material safety data sheets - what to look for, how to understand them
0304-39	2008	In-line coating at the corrugator
0304-40	2008	Techniques for bonding of densified liners
0304-41	2003	Understanding hazardous materials warning labels
0304-42	2008	Go/no go gauge devices for the boxplant
0304-43	2011	High density papers -- what are they?
0304-44	2001	Using washup water as the vehicle in starch based corrugating adhesive
0304-45	(wd - 2002)	(Renumbered as TIP 0306-20 upon review in 2001)
0304-46	2008	Techniques for running "WRA" (water resistant starch adhesive)
0304-47	2018	Corrugator bearing clearance checks and their impact
0304-48	(wd -2001)	Guidelines for training laboratory technicians
0304-49	2011	Suggestions for developing a box plant quality manual
0304-50	2012	Techniques to minimize twist warp
0304-51	(wd – 2004)	A source of information on the German "green laws"
0304-52	(wd - 2001)	Characteristics of starch (flow properties)
0304-53	2015	Tests for corrugator roll wear
0304-54	(wd - 2004)	Measurement of rub resistance of a printing ink

0304-55	(wd - 2001)	Corrugated boxplant - list of potential hazards
0304-56	2009	Total indicated runout and its impact on combined board quality
0304-57		<i>Not assigned</i>
0304-58	2018	An explanation of the toxics in packaging (formerly CONEG) heavy metal guidelines
0304-59	2001	Important quality parameters of a printing ink
0304-60	2008	A method to proof a flexo printing ink
0304-61	2008	The role of copper in a printing ink
0304-62	2014	Checking the parallel of corrugating rolls with "NCR" paper
0304-63	wd - 2014	Determination of moisture in containerboard using a hand held moisture meter
0304-64	2011	How to minimize rolling scores on lightweight and high-performance liners in diecutting operations
0304-65	2002	Conducting a corrugator temperature audit
0304-66	2012	The impact of doublebacker hot plate level on board quality and how to measure it
0304-67	(wd - 2006)	Reference system for technical information paper use
0304-68	2010	Improved techniques to measure corrugator glue machine meter gaps
0304-69	2017	Understanding wet strength: what are MRA, WRA, and WPA?
0304-70	2006	Short-run statistical process control: a basic charting method
0304-71	2004	How to perform a gauge (instrument) repeatability and reproducibility study (measurement/range type)
0304-72	2008	Critical properties to consider when unitizing
0304-73	2013	Checking for coating wear on corrugating rolls
0304-74	2017	Understanding and troubleshooting hot melt adhesives
0304-75	2015	Checking the flute depth of corrugating rolls
0305-01	(wd - 2000)	A two-minute lesson in computers
0305-02	2013	Maintenance on computer-assisted machinery
0305-03	(wd - 1999)	Computer-assisted machinery glossary
0305-04	2006	Introduction to flexo folder gluer/rotary diecutter TIPS
0305-05	(wd - 1999)	Computer-assisted setup for flexo folder gluers
0305-06	2007	Machinery considerations and selection
0305-07	2007	Purchase order
0305-08	(wd - 2001)	Automatic strapping units
0305-09	(wd - 2001)	Automatic feeders
0305-10	(wd - 2001)	Palletizers
0305-11	(wd - 2001)	Wastewater treatment equipment
0305-12	2013	Installation
0305-13	2010	Project leader
0305-14	(wd - 1999)	Printing plates
0305-15	(wd - 1999)	Ordering printing plates
0305-16	(wd - 1999)	Flexographic ink
0305-17	(wd - 2004)	Importance of anilox rolls
0305-18	2013	Proper use of pull bands
0305-19	(wd - 2001)	Plate mounting systems
0305-20	(wd - 1999)	Preplanning checklist for rotary die cutting
0305-21	2008	Ordering cutting dies
0305-22	(wd - 1999)	Slot design for good stripping
0305-23	2007	Rotary cutting die maintenance
0305-24	(wd - 1999)	Storage racks for rotary cutting dies
0305-25	2008	Buying, storing, and handling flexo folder gluer/rotary diecutter adhesives
0305-26	2008	Introduction to the flow chart
0305-27	(wd - 2016)	In-process checklist
0305-28	(wd - 2001)	Setup and run checklist
0305-29	(wd - 1994)	Productivity
0305-30	2013	The need for planned maintenance
0305-31	(wd - 2013)	Daily and month-to-date status report
0305-32	2007	Housekeeping at order and shift change and weekly
0305-33	2007	Cleanup procedures for flexo folder gluer/rotary diecutters

0305-34	2008	Daily, weekly, and monthly maintenance checklists
0305-35	2007	Rotary diecutter urethane anvil maintenance
0305-36	(wd - 2007)	Common operating problems and probable solutions: introduction
0305-37	(wd - 2001)	Feed section
0305-38	2008	Troubleshooting the printing section
0305-39	2008	Troubleshooting the diecutting section
0305-40	2011	Reduction or elimination of ink and/or varnish smear when printing and rotary die cutting in one pass
0305-41	(wd - 2001)	Slotting section
0305-42	2007	Folding section
0305-43	2007	Extruded glue mechanism supplement
0305-44	2007	Counter ejector section
0305-45	2007	Squaring flap cut (center special) boxes
0305-46	2011	Stacking off the rotary diecutter
0305-47	2011	Multiple-out rotary diecut stacking
0305-48	(wd - 1999)	Divider rails for multiple-out rotary diecut stacking
0305-49	2007	Checklist: preparing diecuts for shipment
0305-50	(wd - 2001)	The state of the art of feeders
0305-51	(wd - 2001)	Folder-glurers
0305-52	(wd - 2001)	Counter ejectors
0305-53	2014	Machinery considerations and selection: yoked scoring slotting section
0305-54	2014	Material handling considerations for flexo folder glurers
0306-01	(wd - 1997)	The use and care of ink transfer rolls
0306-02	2017	Computer assisted mounting systems
0306-03	(wd - 2007)	Photopolymer plate update
0306-04	(wd - 1996)	Improved water washable ink drying on soft anvil rotary die cutters
0306-05	(wd - 1992)	Glossary of flexographic terms
0306-06	2007	Drying and curing techniques for in-line flexographic printing
0306-07	(wd - 1999)	SPC as it applies to corrugated flexo presses
0306-08	(wd - 2000)	Automatic viscosity controllers for flexo inks
0306-09	2008	Ink metering systems for corrugated flexo presses
0306-10	(wd - 2001)	Instruments for handling color
0306-11	2012	Quality techniques using existing equipment
0306-12	(wd - 1998)	Anilox rolls: How do we keep them clean without harming them?
0306-13	(wd - 2004)	Mounting procedures & equipment
0306-14	(wd - 2003)	Laser anilox cell configurations and angles
0306-15	2012	Identifying anilox roll volume measuring equipment
0306-16	2005	Guideline for direct contact printing bar code symbols on corrugated
0306-17	2009	Overview of the selection process for a laser engraved ceramic anilox roll
0306-18	2012	Cleaning anilox rolls: procedures and options
0306-19	(wd - 2005)	Flat mounting techniques
0306-20	2008	A guide to proper wipe roll selection for the corrugated box industry
0308-01	(wd - 2006)	Determining construction (basis weight) of corrugated board
0308-02	(wd - 2001)	Edge crush comparison, waxed vs. neckdown
0309-01	(wd - 1989)	Specific problems and their solutions in corrugating operations
0309-02	(wd - 2003)	Troubleshooting guide - corrugating
0309-03	(wd - 1995)	Caliper, compression, and high load presses

## Engineering 0400

<u>TIP #</u>	<u>Publication</u>	<u>Title</u>
0401-01	(wd - 2004)	Index of safety resources
0402-01	(wd - 2001)	Suction roll shell service report
0402-02	(wd - 1999)	Digester inspection report

0402-03	2010	Guidelines for corrosion resistant weld metal overlay of digester vessels in alkaline pulping service
0402-04	(wd- 2014)	Clad-steel plate use
0402-05	(wd)	Chemical resistant brick: chemical and physical properties
0402-06	(wd)	Mortars for chemical resistant masonry construction: physical properties
0402-07	(wd)	Chemical resistance of typical mortars for corrosion resistant masonry construction
0402-08	(wd - 1992)	Plate bonding fatigue testing in a corrosive environment
0402-09	(wd - 2005)	Rotating bar bending fatigue testing in a corrosive environment
0402-10	(wd - 2001)	Guide for evaluation of paper machine suction roll shells
0402-11	2014	Liquid penetrant testing of new suction roll shells
0402-12	(wd - 1997)	Guidelines to assure quality radiography of boiler tubes and pipe weldments in the paper industry
0402-13	2015	Guidelines for specification and inspection of electric resistance welded (ERW) and seamless boiler tube for critical and non-critical service
0402-14	(wd - 2002)	User guide to zinc and zinc-rich coatings for corrosion protection
0402-15	2016	Field welding of pin studs in black liquor recovery boilers
0402-16	2015	Guidelines for inspection and nondestructive examination of paper machine dryers
0402-17	2015	Weld repairs on new suction roll shells
0402-18	2015	Ultrasonic testing (UT) for tube thickness in black liquor recovery boilers: Part I – Guidelines for accurate tube thickness testing Part II – Default layouts for tube thickness surveys in various boiler zones
0402-19	2018	Guidelines for nondestructive examination of suction roll shells
0402-20	(wd – 2008)	GTAW root pass welding of 6% molybdenum austenitic stainless steel pipe - open root joint with hand-fed filler
0402-21	2018	Ultrasonic technician performance test for boiler tube thickness measurement
0402-22	2013	Guidelines for batch digester inspections
0402-23	(wd – 2014)	Welding of duplex stainless steels
0402-24	2017	Guide to the use of stainless steel pipe specifications
0402-25	2005	Guidelines for procurement of cast stainless steels for large pumps and valves for the pulp and paper industry
0402-26	(wd – 2013)	Guidelines for welding and inspection of stainless alloy piping
0402-27	2015	Guidelines for inspection of continuous digesters and impregnation vessels
0402-28	2016	Guidelines for inspecting used FRP equipment
0402-29	(wd – 2008)	Qualification of welding procedures for duplex stainless steels
0402-30	2012	Inspection for cracking of composite tubes in black liquor recovery boilers
0402-31	2006	Guidelines for evaluating quality of boiler tube butt welds with ultrasonic testing
0402-32	2010	Guidelines for thermal spray coatings installed to prevent corrosion in pulp mill process equipment
0402-33	2006	Guideline for obtaining high quality radiographic testing of butt welds in boiler tubes
0402-34	2011	Paper machine reel-spool journals: guidelines for crack testing and repair or replacement
0402-35	2014	Post-fabrication cleaning of stainless steel in the pulp and paper industry
0402-36	2013	Guidelines for detection, monitoring and prevention of flow accelerated corrosion (FAC) in the pulp and paper mill
0402-37	2014	Fluoropolymer properties and applications in pulp and paper mills
0402-38	2015	Best practice guidelines for detecting and mitigating stress-assisted corrosion (SAC) in power and recovery boilers
0404-01	2002	Determination of water removal by wet presses
0404-02	2015	Measurement of dryer condensing rates (batch method)
0404-03	2003	Measurement of dryer condensing rates (continuous method)
0404-04	2015	Recommended tensions in dryer fabrics
0404-05	2018	Methods of evaluating high velocity dryers
0404-06	(wd - 2001)	Drying and related ventilating terminology
0404-07	2017	Paper machine drying rate
0404-08	(wd – 2005)	TAPPI drying rate - corrugating medium
0404-09	(wd – 2005)	TAPPI drying rates of linerboard
0404-10	(wd - 1994)	Evaporation of water for coated sheet
0404-11	(wd - 1994)	Evaporation of water for uncoated sheet
0404-12	(wd – 2005)	TAPPI drying rates of woodfree printing and writing grades

0404-13	(wd - 1988)	Paper machine drying rate
0404-14	(wd – 2005)	TAPPI drying rate – bleached board
0404-15	(wd – 2005)	TAPPI drying rate – newsprint
0404-16	(wd – 2005)	TAPPI drying rate – kraft papers
0404-17	2018	Recommended minimum dryer pocket air requirements
0404-18	2013	Measurement of dryer condensing rates (vertical separator method)
0404-19	2018	Press section monitoring
0404-20	2015	Physical characterization of press fabrics: basis weight, air permeability, void volume under loading and pressure uniformity
0404-21	2013	Press fabric record book
0404-22	2013	Press section economic evaluation
0404-23	(wd - 1993)	Standardization of pressing and drying symbols, nomenclature and units of measurement
0404-24	2014	Guidelines for the design, operation, performance evaluation, and troubleshooting of a paper machine hood and air systems
0404-25	2018	Through drying
0404-26	2014	Paper machine clothing performance analysis
0404-27	2013	Press fabric dewatering and conditioning - suction box (Uhle box) design and vacuum requirements
0404-28	2017	Method for evaluating thickness of wet press fabrics
0404-29	2004	Porosity measurement of press felts on the paper machine (HSPT)
0404-30	(wd - 1990)	Dryer section economics
0404-31	2016	Recommended dryer differential pressures
0404-32	(wd - 1998)	Felt uniformity impression method
0404-33	2017	Dryer section performance monitoring
0404-34	(wd - 1994)	Void volume measurement in wet felts
0404-35	2016	Application of dryer bars
0404-36	2013	Paper grade classifications
0404-37	(wd – 2016)	Press roll cover application guidelines
0404-38	2018	Dryer fabric cleaning
0404-39	2016	Dryer surface temperature measurement
0404-40	(wd – 2005)	TAPPI drying rates of wood-containing paper (excluding newsprint)
0404-41	2017	Granite roll material and surface requirements
0404-42	(wd – 2005)	TAPPI drying rate – after-size press dryers
0404-43	2013	Water permeability of press fabrics
0404-44	2017	Sheet handling devices
0404-45	2002	Psychrometric charts
0404-46	2014	Techniques for nip impressions
0404-47	2016	Paper machine performance guidelines
0404-48	2012	Terminology for high temperature pressing
0404-49	2018	Yankee dryer steam condensing rates
0404-50	2015	Paper machine room ventilation guidelines
0404-51	2013	Paper machine clothing cleaning and conditioning for recycled fiber use
0404-52	2018	Press section optimization
0404-53	2017	Dandy roll applications
0404-54	2018	Headbox approach piping guidelines
0404-55	2018	Performance evaluation techniques for paper machine vacuum systems
0404-56	(wd – 2005)	TAPPI drying rate – pulp (can dryers)
0404-57	2017	Troubleshooting cross-machine direction moisture profile problems
0404-58	2016	Steam shower applications in the forming and press section
0404-59	2018	Methods to minimize sheet rewet in the press section
0404-60	2015	High vacuum sheet dewatering
0404-61	2017	Paper machine shower recommendations
0404-62	(wd – 2011)	Index of suppliers for press section monitoring
0404-63	2016	Paper machine energy conservation
0404-64	2015	Press fabric guiding

0404-65	2016	Chemical Cleaning Guide for Press Fabrics
0406-01	(renumbered)	Selection of motors for barking drum drives (became TIP 1102-03)
0406-02	(renumbered)	Selection of chipper drives (became TIP 1102-04)
0406-03	(renumbered)	Refiner drive motors and thrust requirements (became TIP 1102-05)
0406-04	(renumbered)	Power requirements of cylinder machines (became TIP 1102-06)
0406-05	(renumbered)	Power requirements of fourdrinier machines (became TIP 1102-07)
0406-06	(renumbered 1)	Power requirements of yankee tissue machines (became 1102-08)
0406-07	(renumbered)	Power transmitting ability of fourdrinier rolls (became TIP 1102-09)
0406-08	(wd - 1998)	Supercalender power requirements
0406-09	(renumbered)	End thrust problems of flexibly coupled electric motors (became TIP 1102-10)
0406-10	(renumbered)	Calculation of voltage dips on motor starting (became TIP 1102-11)
0406-11	(renumbered)	Guide recommendations for color coding electrical control and power cable jackets (became TIP 1102-12)
0406-12	(renumbered)	Recommended electrical wiring practice for automated control and regulating systems (became TIP 1102-13)
0406-13	(renumbered)	Checklist for industrial electrical distribution (became TIP 1102-14)
0406-14	(renumbered)	Regulating systems: definitions of terms (became TIP 1102-01)
0406-15	(renumbered)	Environmental factors affecting the performance of regulating systems (became TIP 1102-02)
0406-16	(renumbered)	Winder power requirements (became TIP 1102-15)
0406-17	(renumbered)	Selection of motors for centrifugal pump drives (became TIP 1102-16)
0406-18	(wd - 1988)	Service factors for gears used on major equipment in the pulp and paper industry
0408-01	2018	Checklist for a properly planned project
0408-02	2018	Maintenance considerations in new construction and rebuilds
0410-01	(wd - 1993)	Fan pump calculations
0410-02	2004	Flow from a vertical slice
0410-03	2004	Flow from a 45° slice
0410-04	2004	Flow from a nozzle (slice) with inclined upper lip
0410-05	2015	Head of stock behind slice (head/jet relationships)
0410-06	(wd - 1997)	Headbox piping system - general design guide
0410-07	2005	Fourdrinier drainage performance evaluation – blow test method
0410-08	2015	Control of stock jump on a fourdrinier wire
0410-09	2017	Flow determination by chemical method
0410-10	2012	Weirs and flumes
0410-11	(wd)	Viscosity of coating colors at high shear rates
0410-12	(wd - 1997)	Pipe friction pressure loss of pulp suspensions: literature review and evaluation of data and design methods
0410-13	(wd - 1992)	Suggested methods of obtaining pipe friction data for flowing pulp
0410-14	2012	Generalized method for determining the pipe friction loss of flowing pulp suspensions
0410-15	2013	Optimum consistency for pumping pulp
0412-01	(wd - 1999)	Characteristics of bulk materials
0412-02	(wd - 2007)	Capacity chart for rotary table chip feeders (17 ft. diameter)
0412-03	(wd - 1986)	Hot lime elevators
0412-04	(wd - 1989)	Sweating of paper
0412-05	(wd - 2004)	Desired workplace dimensions
0412-06	(wd - 2004)	Row size specifications for paper roll storage
0412-07	(wd - 2004)	Biomechanics checklists
0412-08	(wd - 2005)	Allowed elemental times: fork and grab trucks
0412-09	(wd - 2007)	Typical task time values - pulpwood handling
0412-10	(wd - 2004)	Typical task time values - pulp, paper, converting; lift truck operations
0412-11	(wd - 2004)	Typical task time values - pulpmill, wood chip handling; unload with skid steer
0416-01	2011	Recovery boiler performance calculation - short form
0416-02	2017	Definitions of black liquor recovery furnace availability
0416-03	2011	Water quality and monitoring requirements for paper mill boilers operating on high purity feedwater
0416-04	2005	Design engineer decisions tree: paper mill boiler feedwater

0416-05	2018	Response to contamination of high purity boiler feedwater
0416-06	2018	Keys to successful chemical cleaning of boilers
0416-07	2015	Evaluating reverse osmosis for treating makeup to the boiler feedwater in a pulp and paper mill
0416-08	2016	Guidelines for replacement of generating bank tubes with expanded joints in two-drum boilers
0416-09	2014	Collection and burning of concentrated noncondensable gases: regulations, design, and operation
0416-10	2015	Stripping of kraft pulping process condensates: regulations, design and operation
0416-11	2015	Recommended test procedure for black liquor evaporators
0416-12	2004	Estimating the first melting temperature of fireside deposits in recovery boilers
0416-13	2013	Water treatment-related opportunities for energy conservation in a paper mill powerhouse
0416-14	2011	Water quality guidelines and monitoring requirements for paper mill boilers operating with softened makeup water
0416-15	2015	Chloride and potassium measurement and control in the pulping and chemical recovery cycle
0416-16	2008	Recovery boiler energy efficiency improvements
0416-17	2008	Sampling procedures for biomass fuel for boiler performance testing
0416-18	2008	Performance test procedure for boilers using biomass as fuel
0416-19	2009	Recovery boiler sootblowers: the basics
0416-20	2009	Recovery boiler sootblowers: practical guidelines
0416-21	2009	Guideline specification for procurement of an economizer for a recovery boiler
0416-22	2009	Guidelines for operating and maintenance practices impacting an economizer on a recovery boiler
0416-23	2014	Explanation of recovery boiler leak indications
0416-24	2015	Energy checklist: pulp mill
0416-25	2015	Nitrogen oxide emissions control from biomass and kraft recovery boilers in the pulp and paper industry
0416-26	2015	Best Practice for Recovery Boiler Inspection (Optimizing Inspection Scope)
0418-01	(wd - 2001)	Solubility of sodium carbonate in sodium sulfide solutions
0418-02	2003	Recausticizing material balance equations relating to digester requirements
0418-03	(wd - 2002)	Recommended nomenclature for agitators, mixers and pulpers
0420-01	(wd - 1997)	Grinding paper mill rolls
0420-02	(wd - 2007)	Maintenance of covered rolls
0420-03	(wd - 1997)	Noise survey techniques for noise mapping in pulp and paper mills
0420-04	(wd - 1997)	Guidelines for stainless steel, bonnetless, flanged, wafer and knife gate valves
0420-05	(wd - 1997)	Design guide for the selection of rolling contact bearings for paper mill service
0420-06	(wd - 2007)	Roll crown specifications and definitions
0420-07	(wd - 1997)	Guidelines for stainless steel, bonnetless, flanged and butt-weld end wedge gate valves
0420-08	(wd - 2001)	Mounting, sealing, lubrication, and troubleshooting guide for paper mill rolling contact bearings
0420-09	(wd - 1997)	Measuring the hardness of rubber-covered rolls
0420-10	(wd - 1997)	Horizontal end suction centrifugal stock pumps
0420-11	(wd - 2001)	Guidelines for selection and maintenance of parallel shaft speed reducers with surface hardened gearing
0420-12	2012	Guidelines for evaluation of liquid ring vacuum pump performance
0420-13	2015	Guidelines for side-entering stock agitators
0420-14	2018	Guide for increasing the maximum allowable working pressure of cast iron, ASME constructed paper machine dryers
0420-15	2002	Nozzle maintenance and clogging
0422-01	wd - 2015	Energy checklist: pulp mill ( <i>This number withdrawn, but TIP was reissued as TIP 0416-24</i> )
0425-01	2013	Guidelines for routine periodic inspection and testing of cast iron Yankee and MG dryers
0425-02	2013	Inspection guidelines for Yankee hood systems
0425-03	2016	Design, monitoring and maintenance guidelines for Yankee dryer bearings
0425-04	2017	Guidelines for properly sampling steam & condensate in Yankee dryer steam systems
0425-05	2018	Guidelines for usage of MAP on raw Yankee surfaces

## Paper and Board Manufacture 0500

<u>TIP #</u>	<u>Publication</u>	<u>Title</u>
0502-01	2013	Paper machine vacuum selection factors
0502-02	2005	Determination of winder sets per reel
0502-03	2006	Reel diameter for various reel spool and roll core sizes
0502-04	(wd - 1993)	Paper machine production ratio
0502-05	(wd)	Paper machine production chart (basis: 24 x 6 in.)
0502-06	(wd - 1993)	Paper machine production chart (basis: 25 x 38 in.)
0502-07	(wd)	Paper machine production chart [basis: grams per square meter (metric tons)]
0502-08	(wd)	Paper machine production chart [basis: grams per square meter (tons)]
0502-09	(wd)	Paper machine production chart (basis: pounds per 1000 sq. feet)
0502-10	2001	Broke loss calculations
0502-11	2003	Weight of newsprint rolls
0502-12	2010	Drainage evaluation by mass measurement
0502-13	2010	Retention definitions
0502-14	2018	Forming section monitoring
0502-15	2015	Selection criteria for wet end ceramics
0502-16	2018	Pilot paper and wet laid nonwoven machines
0502-17	2008	Papermaker's formulas
0502-18	(wd - 2007)	Press section water balance using portable sensors
0502-19	2011	Use of ceramics on the forming section: diagnosing and preventing forming fabric wear
0502-20	2016	Catalog of stock prep pilot plants
0506-01	(wd - 2001)	Corn starch - water suspensions physical data
0506-02	(wd - 2001)	Papermakers' alum - properties
0508-01	(wd - 1996)	Pulp storage capabilities
0508-02	(wd - 2005)	A glossary of terms used in refining
0508-03	(wd - 1999)	Bulk density relationships for slushed and shredded paper stock in the consistency range of 15-35% oven dry (o.d.)
0508-04	(wd - 1999)	Evaluating the performance of a fractionator using fiber length data
0508-05	(wd - 2001)	Refiner plate intensity
0508-06	2013	Refiner systems, their inspection and maintenance
0508-07	2002	Conical refining intensity
0508-08	(wd - 2005)	Thick stock and broke screening systems, evaluation, inspection and maintenance
0508-09	(wd - 2005)	Paper machine approach (head box) screening systems, evaluation, inspection and maintenance
0508-10	2007	An introduction to centrifugal cleaners

## Pulp Manufacture 0600

<u>TIP #</u>	<u>Publication</u>	<u>Title</u>
0601-01	(wd)	Density of aqueous sodium sulfide solutions
0601-02	(wd)	Density of caustic soda solutions
0601-03	(wd)	Properties of sodium hydroxide: specific gravity of caustic soda at various temperatures
0601-04	(wd - 2000)	Thermal conductivity of sulfate black liquor
0601-05	(wd - 1997)	Standard terms used in the alkaline pulping process
0602-01	(wd - 2002)	Woodyard flume design
0602-02	(wd - 2008)	Bark content in wood chips
0602-03	(wd - 2017)	Calibration technique for the drum style chip thickness classifier
0603-01	(wd - 1997)	Typical relationships of baling pressure to bale density of selected paper stocks
0603-02	2011	Stickies definition and classification
0605-01	2004	Grinder pulpstones - cubical contents
0605-02	2004	Pulpstone speed chart

0605-03	(wd)	Relationship of ground wood freeness and bursting strength
0605-04	(wd – 2005)	Screening symbols, terminology and equations
0606-01	(wd - 2003)	Equilibrium solubility of chlorine in water at 1 atm (14.7 psi)
0606-02	2002	Chlorine gas curve
0606-03	2006	Density of chlorine gas
0606-04	2002	Heat of vaporization of liquid chlorine
0606-05	2002	Viscosity of liquid chlorine
0606-06		<i>Not assigned</i>
0606-07	2006	Specific heat of caustic soda solutions
0606-08	2002	Relative enthalpy (heat content) of sodium hydroxide solutions
0606-09	2002	Dilution of caustic soda solutions
0606-10	2002	Specific gravity of sodium chloride solutions
0606-11	2002	Viscosity of sodium hydroxide solutions
0606-12	(wd - 2001)	Equilibrium solubility of chlorine dioxide in water
0606-13	(wd - 2001)	Specific gravity of sodium chlorate solutions
0606-14	(wd)	Steam consumption for heating pulp
0606-15	(wd - 1999)	Physical and chemical properties of hydrogen peroxide (H <sub>2</sub> O <sub>2</sub> )
0606-16	(wd - 1999)	Physical and chemical properties of sodium silicate (Na <sub>2</sub> SiO <sub>3</sub> )
0606-17	(wd)	Chlorate cell liquor in chlorine dioxide generator feed
0606-18	(wd - 2001)	The Kubelka and Munk relationship between absorption/scattering coefficients and reflectance
0606-19	(wd – 2002)	Flow rate for hypochlorite bleach liquor
0606-20	2002	Specific gravity and density of caustic soda solutions
0606-21	2008	Recommended pulp bleaching stage designation method
0606-22	(wd - 2001)	Measurement and control of bleached pulp color
0606-23	2013	Bleach plant washer efficiency guide
0606-24	2017	Hydrogen peroxide (H <sub>2</sub> O <sub>2</sub> ) safe storage and handling
0606-25	2012	Methanol (CH <sub>3</sub> OH) safe storage and handling
0606-26	2012	Sulfuric acid (H <sub>2</sub> SO <sub>4</sub> ) safe storage and handling
0606-27	2008	Caustic soda (NaOH) safe storage and handling
0606-28	2012	Gaseous ozone (O <sub>3</sub> ) safe handling
0606-29	2012	Bulk oxygen (O <sub>2</sub> ) safe storage and handling
0606-30	2012	Chlorine dioxide (ClO <sub>2</sub> ) safe storage and handling
0606-31	2012	Sodium chlorate (NaClO <sub>3</sub> ) safe handling and storage
0607-01	2002	Sulfur burner gas strength volume
0607-02	(wd - 2004)	Aqua ammonia
0607-03	(wd - 2004)	Solubility of ammonia in water
0607-04	2002	Physical and chemical properties of magnesia-base pulping solutions
0607-05	2002	Density of milk of lime solution
0607-06	2002	Solubility of sulfur dioxide
0607-07	2002	Solubility of sulfur dioxide, Ca(HSO <sub>3</sub> ) <sub>2</sub> solutions
0607-08	(wd – 2004)	Solubility of sulfur dioxide [lime and NH <sub>3</sub> base]
0607-09	2002	Solubility of sulfur dioxide in magnesium bisulfite solution
0607-10	2002	Solubility of sulfur dioxide in saturated magnesium bisulfite solution
0607-11	2002	Vapor pressure of sulfur dioxide solutions
0607-12	2002	Vapor pressure of water and sulfur dioxide above sodium bisulfite solutions (25°C)
0607-13	2002	Density of aqueous sodium bicarbonate solution
0607-14	2002	Density of aqueous sodium carbonate solution
0607-15	2002	Specific heat of sodium carbonate solution
0607-16	2002	Vapor pressure of sodium carbonate solution
0607-17	2002	Viscosity of sodium carbonate solution
0607-18	2002	Density of aqueous sodium sulfite solution
0607-19	2002	Sulfite waste liquor concentration
0607-20	(wd)	Sulfite waste liquor viscosity
0607-21	2002	Boiling point rise of spent sulfite liquors
0607-22	2002	Viscosities of various spent sulfite liquors at 26.7°C and other temperatures

0607-23	2002	Viscosity of a neutral sulfite spent liquor (Ostwald capillary viscometer)
0607-24	(wd)	Specific gravity of a neutral sulfite spent liquor
0607-25	2014	Definitions of terms in the sulfite pulping process
0609-01	2018	Common or local names for a nonwood fiber raw material

## Process and Product Quality 0800

<u>TIP #</u>	<u>Publication</u>	<u>Title</u>
0800-01	2012	Units of measurement and conversion factors
0804-01	(wd - 1998)	Light sources for evaluating papers including those containing fluorescent whitening agents
0804-02	(wd - 1998)	Optical measurements terminology (related to appearance evaluation of paper)
0804-03	(wd - 1998)	Interrelation of reflectance, $R_0$ ; reflectivity, $R_\infty$ ; TAPPI opacity, $C_{0.89}$ ; scattering, $s$ ; and absorption, $k$
0804-04	(wd - 1998)	The determination of instrumental color differences
0804-05	(wd - 1998)	Indices for whiteness, yellowness, brightness, and luminous reflectance factor
0804-06	(wd - 1998)	Photometric linearity of optical properties instruments
0804-07	(wd - 1998)	Calibration of reflectance standards for hemispherical geometry
0804-08	(wd - 1998)	Storage of paper samples for optical measurements and color matching
0804-09	2001	Basic guidelines for image analysis measurements
0808-01	(wd)	Grammage (formerly basis weight)
0808-02	2004	Moisture content of paper: terminology and conversion
0808-03	2002	Equilibrium relative humidities over saturated salt solutions
0808-04	2018	Paper test rooms: design considerations
0808-05	2005	Testing atmospheres simulating end use conditions
0808-06	2005	Relative humidity tables
0809-01	2004	Interconversion of freeness
0810-01	(wd - 1998)	On-line moisture verification/calibration of infrared moisture sensors
0810-02	(wd - 1998)	On-line verification of caliper sensors

## Environmental 0900

<u>TIP #</u>	<u>Publication</u>	<u>Title</u>
0906-01	(wd - 2000)	White water loss determination
0906-02	(wd - 1991)	Disposal of mercury wastes from water laboratories

## Finishing and Converting 1000

<u>TIP #</u>	<u>Publication</u>	<u>Title</u>
1004-01	2015	TAPPI Roll Number for inventory/tracking systems and bar codes
1008-01	(wd - 1997)	Chart for converting known roll weight of one diameter to equivalent weight of any roll diameter
1008-02	(wd - 2012)	Method for determining length and other properties in rolls of various diameters and basis weights
1008-03	(wd - 1999)	Techniques for finished splices

## Process Control, Electrical & Information 1100

<u>TIP #</u>	<u>Publication</u>	<u>Title</u>
1101-01	2017	Calculation and partitioning of variance using paper machine scanning sensor measurements
1101-02	(wd - 2003)	Tuning guide for basic control loops
1101-03	(wd - 2007)	Instrument symbols and nomenclature

1102-01	(wd - 2001)	Regulating systems: definitions of terms
1102-02	(wd - 2001)	Environmental factors affecting the performance of regulating systems
1102-03	(wd - 1997)	Selection of motors for barking drum drives
1102-04	(wd - 1997)	Selection of chipper drives
1102-05	(wd - 1997)	Refiner drive motors torque and thrust requirements
1102-06	(wd - 1998)	Power requirements of cylinder machines
1102-07	(wd - 1998)	Power requirements of fourdrinier machines
1102-08	(wd - 1999)	Power requirements of yankee tissue machines
1102-09	(wd - 1998)	Power transmitting ability of fourdrinier rolls
1102-10	(wd - 1997)	End thrust problems of flexibly coupled electric motors
1102-11	(wd - 1999)	Calculation of voltage dips on motor starting
1102-12	(wd - 1997)	Guide recommendations for color coding electrical control and power cable jackets
1102-13	(wd - 1997)	Recommended electrical wiring practice for automated control & regulating systems
1102-14	(wd - 1999)	Checklist for industrial electrical distribution
1102-15	(wd - 1999)	Winder power requirements
1102-16	(wd - 1997)	Selection of motors for centrifugal pump drives
1103-01		Not currently assigned; was assigned in error in 1992; see TIP 1101-03
1103-02	(wd - 1998)	Millwide guidelines
1103-03	(wd - 2001)	Graphic development guidelines for first-time users

## Nonwovens 1200

<u>TIP #</u>	<u>Publication</u>	<u>Title</u>
1205-01	(wd - 2001)	Acrylic fibers for nonwovens
1205-02	2008	Cotton in nonwovens